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Determinants of Urban Household Poverty in Arsi Zone, Oromiya, Ethiopia

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Abstract
The main objective of this paper is to assess determinants of urban household poverty in urban setting with a case study from Arsi administrative Zone, Oromiya, Ethiopia. Primary data were collected from 174 households, selected randomly from four towns. Data were analyzed using descriptive statistics, one way analysis of variance and multiple linear regression model. Results show that income poverty was positively influenced by educational level, household size and business participation status of household heads. It was found that income poverty was negatively affected by age of households, marital status and economic status of parents. It was also found that income poverty was higher among divorced and widowed household heads as compared to the married groups. However, income poverty was lower for those participating in different business activities than household heads who do not participate in business activities.
Keywords: Arsi, Ethiopia, Determinants, Oromiya, Urban Household, Poverty.

Introduction

Poverty is usually understood as the lack of financial capacity to purchase the basic human needs but different scholars define it beyond having minimum income. It is also defined as a human condition characterized by sustained or chronic deprivation of resources, capacities, choices, security and power necessary for an adequate standard of living and other civil, cultural, economic, political, as well as social rights (Makoka and Kaplan, 2005; Adem, 2013). Moreover, poverty is not a simple concept. It includes hunger, lack of shelter, being sick and being unable to see a doctor, not having access to school and not knowing how to read and write, not having a job, fear for future, losing a child to illness brought about by unclean water, powerlessness and lack of representation and freedom (World Bank, 2005 ; Siddiqui, 2009, Adem 2013). It can involve not only the lack of necessities of material wellbeing (the material requisite of life) but also the denial of opportunities for living a tolerable life (Raj *et al*., 2007). Poverty measures should take into account social injustice and other aspects that make one deprived of many rights (Sahl, 2010).

Not denying this fact poverty is multidimensional problem, the current study is limited to income poverty only because of budget and time constraints faced during the survey time. The most commonly 'accepted' definition is related to an income based approach which states that poverty is the lack of income or financial resources to satisfy the individuals' basic needs and/or to achieve a minimum standard of living (Singer, 2006).

Besides this, Robinson (2011) stated that a strategy in eradicating poverty among the urban households in business sector does not only aim at increasing the income level, but also increasing overall number of entrepreneurs in a country. Robinson also revealed that urban poor households must be aided not only in terms of business capital, but also in terms of motivational and skill oriented training that inculcates entrepreneurship values to be utilized in commencing socio-economic developments that illustrates the importance of entrepreneurship oriented human development. Although there may be some poverty studies both in urban and rural context in the country, little has been done in Arsi Zone to identify determinants of urban poverty, especially in relation to entrepreneurial participation. Adem (13), for example investigated the rural poverty in Arsi zone, but has not considered the urban cases. This study was, therefore, designed to fill such a gap. The result of the study is believed to serve the policy makers to solve the existing income related problems and plans to prevent such problems from happening in the future. Added to Adem (2013), it may also give a sort of overall poverty in the zone (both rural and urban). It is also important for further research in urban poverty and creating awareness about urban poverty.

With this brief introduction, the next discussions in the paper are structured as follows. The methods of data collection and data analysis are given in the part two. The third part of the paper summarizes the major findings followed by discussion of the findings in part four. Finally, part five presents conclusions and recommendations based on the findings of the study.

MATERIALS AND METHODS

Method of Data Collection

This study was undertaken in Arsi zone of the Oromiya Regional State, Ethiopia. Arsi zone is found in the central part of Oromia. The zone is divided into 25 districts of which one is the Asella town. The study applied multistage sampling procedure. In the first stage, four towns namely Asella, Sagure, Diksisi and Ticho were randomly selected

from 25 towns. Data were then collected from Administration offices of the selected towns on the characteristics of the urban kebeles under them. On the second stage a total of 9 kebeles were selected randomly. Finally, 174 households were selected for the interview based on simple random sampling.

Sample size of the three towns (Diksisi, Sagure and Ticho) was determined using the formula,

$$n = \frac{\sum\left(N_i^{\,2}\frac{A_i}{v_i}\right)}{N^2D^2 + \sum N_i A_i} \qquad (1)$$

Where,

$$D = \frac{C}{Z_{\alpha/2}}, \qquad (2)$$

$$A_i = P_i(1-P_i) \qquad (3)$$

Sample size for Asella town was determined using simple random sampling formula,

$$n = \frac{Z^2_{\alpha/2}pq}{C^2} \qquad (4)$$

Where c is some margin of error to tolerate in estimation; p is the proportion of poor household; q is the proportion of non poor household; N is total number of households for three towns; n is sample of household for three towns $(n_1 + n_2 + n_3)$ and n of Asella town; Z is the value of standard normal distribution for a given level of significance (α); and v_i is the proportion of population of town i to the total population of household in the selected towns for three towns. In fixing this sample sizes $C = 0.07$ and $C = 0.086$ for three towns and Asella town, respectively at $\alpha = 0.05,\ P = 0.20$ were used. The selection of p is based on the proportion of households considered by Adem (2013) in his study on income poverty as there is no other related study conducted in the selected area. This proportion was supposed to approximate the proportion of poor in population, at least for setting the sample size for the three towns and Asella town. According to CSA (2007) the average household size of Arsi zone is 4.87 persons. By dividing the total number of predicted population of towns to the estimated household size (4.87) we can obtain the approximated numbers of household size. The researcher preferred to use this average household size since there was no detail information about current average household size in Arsi zone.

Primary data were collected (in January-February 2015) through personal interviews of the households and use of structured questionnaire with experienced and trained enumerators. The enumerators who know English language and with education levels of diploma up to first degree were recruited and trained on how to work in the survey. Data were collected under direct involvement and close supervision of the researcher.

Secondary data were also collected from the study kebeles and towns' administration offices and other related offices.

Method of Data Analysis

The method of data analysis used for this particular study were descriptive statistics for describing general characteristics of the households, one way ANOVA used to make comparisons between different groups of households with respect to the characteristics under consideration and multiple linear regression model to assess the determinants of income poverty. The dependent variable in the regression equation is monthly income of households, which is continuous.

The explanatory variables included in the regression model can be categorized as demographic, economic and social variables. The demographic variables include sex of household head, age of household head and marital status of household head. The institutional and initial condition variables include parental economic background. The social characteristics include religion.

Table 1. Sample size detail of selected towns

No	Town	Population (2007)[2]	Population (2015)[1]	Number of Households (Approximate)	Sample Size (households)	Sample Size of Business-Participants	Sample Size of Non- Business Participants
1	Diksisi	6,982	8,776	1,802	29	15	14
2	Sagure	12,017	15,105	3,102	40	20	20
3	Ticho	4,958	6,232	1,280	20	10	10
4	Asella	67,269	84,555	17,362	85	42	43
	Total				174	87	87

Source: Own Computation result except for Population[2] data generated by CSA (2007)
Note: The population forecast for 2015 was obtained using 2.9 percent growth rate (CSA, 2007) for Oromiya and the geometric growth model (Adem, 2009).

Table 2. Proposed determinants of Income poverty with the directions of their influences

Monthly Income	**Expected direction of influence**
Household sex	Not different for both sexes
Household head age	Negative
Educational level of household head	Positive
Household size	Positive
Religion	Not different for different religions
Marital status	Monthly income lower for divorced and widowed
Business participation status	Monthly income better for participated ones.
Economic status of parents	Better for rich groups parents

Multiple Linear Regression Model

Multiple regressions are a type of regression in which we have a dependent and two or more independent variables. The dependent variable is continuous and the independent variables may be quantitative or qualitative (category variables).

The model for a dependent variable, $\mathbf{Y}$, with observed value $y_1, y_2, ..., y_n$ (where n is the sample size) and q independent variables $x_1, x_2, ..., x_q$ with observed value $x_{1i}, x_{2i}, ...x_{qi}$, $i = 1, 2, ..., \mathrm{n}$ is:

$$Y_i = \beta_0 + \beta_1 X_{1i} + ... + \beta_q X_{qi} + \varepsilon_i \qquad (5)$$

Where, Y is the dependent Variable; X_i are explanatory variables, $i = 1, 2, ..., \mathrm{n}$; β_0 is the constant term; β_i is the coefficients for a given explanatory variable i, and ε_i is i[th] random error term (disturbance term). The term ε_i is the residual or random error for individual i and represents the deviation of the observed value of the response for this individual from that expected by the model. These error terms are assumed to have a normal distribution with mean zero and variance σ^2 . Thus, $\varepsilon_i = Y_i - \hat{Y}$ is normally distributed with mean zero and variance σ^2 .

The assumptions of multiple regression are:

- Independent variables are strictly assumed to be fixed.
- Independent variables can include continuous, binary and categorical variables.
- Additivety and linearity**:** The regression model is that its deterministic component is or the expected value of the dependent variable is a linear function of the separate predictors.
- The error terms are uncorrelated (no serial correlation).
- Equal variance of errors**:** These random error terms have constant variance.
- Normality of errors**:** The regression model assumes that the random error terms are normally distributed with mean 0 and variance constant.
- No multicollinearity: The regression model assumes that there is no multicollinearity in the data.

The least squares estimate (OLS) is also the maximum likelihood estimate if the errors ε_i are independent with equal variance and normally distributed. In any case, the least squares estimator of a vector of linear regression coefficients β is given by:

$$\hat{\beta} = (X'X)^{-1}X'Y \qquad (6)$$

In practice, the computation is performed using various efficient matrix decompositions without ever fully computing $X'X$ or inverting it. For this study, it is merely useful to realize that is $\hat{\beta}$ a linear function of the outcomes y considering the predictors X is a linear combination of the data. The variation in the dependent variable can be partitioned into a part due to regression on the independent variables and a residual term. The latter divided by its degrees of freedom (the residual mean square) gives an estimate of σ^2 and the ratio of the regression mean square to the residual mean square provides F-test of the hypothesis that $\beta_0, \beta_1, ..., \beta_q$ takes the value zero.

Individual regression coefficients can be assessed by using t-statistics, the ratio:

$$t = \frac{\hat{\beta}_i}{SE(\hat{\beta}_i)} \qquad (7)$$

The presence of multicollinearity among the variables seriously affects the parameter estimates of any regression model. The Variance Inflation Factor (VIF) technique employed to detect the problem of multicollinearity for the continuous variables (Gujarati, 2004).

VIF can be defined as;

$$VIF(X_j) = \frac{1}{1 - R_j^2} \qquad (8)$$

Where R_j^2 is the squared multiple correlation coefficient between X_j and other explanatory variables. A larger value of VIF indicates the presence of multicollinearity among variables. As a rule of thumb if a VIF of a variable exceeds 10, the variable is said to be highly collinear with explanatory variables.

RESULTS

Demographic Characteristics of the sampled Households

Results of the study show that out of the 174 sampled households, 69% are male headed and 31% are female headed. The distribution of the households by marital status shows that 54% of them were married, 25% were single, while 21% were either widowed or divorced. The average household size in the study area is 2.89 with standard deviation of 1.17. The mean age of the household head is 34 years with standard deviation of 8.59. The ages of the household heads range between 23 and 65 years.

The ethnic composition of the sample households includes 46% Oromo, 42% Amhara and 12% belongs to other ethnic group. On the other hand, distribution of religion sample households shows that 56% are Orthodox, 23% are Muslim, 20% are Christian Protestant and 1% belongs to other religion groups.

Determinants of Income Poverty

Income poverty indicators considered in this study include sex of household head, age, educational level of household head, household size, religion, marital status, business participation status, economic status of parents and parental economic background. Finally, the model output of the determinants of household income poverty are given.

The survey results show that the monthly income of household heads was significantly different among marital status groups (married, single, divorced and widowed) or the marital status groups are not influenced by income poverty equal. Similarly, the income of household heads was significantly different between economic status of parents groups (rich, medium and poor) and results also reveals that monthly income of household head was not significantly different among religion of households and ethnicity groups (Table 4).

The results of the regression analysis, on the other hand, show that among the proposed explanatory variables for affecting monthly income, only age, educational level, household size, marital status (divorced and widowed), economic status of parents (medium, poor) and business participation status (participated) were found to be statistically significant in this study (Table 5). Accordingly, age of household head negatively determine the income of the household head which implies that younger households generate more income than old aged household heads. In addition, educational level of household head has a positively significant effect on the monthly income of households at 10% level of significance. Similarly, household size and participating in entrepreneurial

activities were positively related with monthly income of households.

Table 3. Households' Demographic Characteristics

Demographic characteristic	Category/measure	Value
Household sex	Male	69%
	Female	31%
Age of household head in years	Mean	34
	Standard deviation	8.59
Household size	Mean	2.89
	Standard deviation	1.17
Ethnicity	Oromo	46%
	Amhara	42%
	Others	12%
Religion	Muslim	23%
	Orthodox	56%
	Protestant	20%
Marital status	Married	54%
	Single	25%
	Divorced and Widowed	21%

Source: Survey Data

Table 4: One way ANOVA test among monthly income of households and different groups

Variables	Monthly income of household heads				
	Sum Squares	df	Mean Squares	F	Sign
Ethnicity	2.15E +6 1.079E +9	4 169	5.39E +6 6.387E +6	0.843	0.500
Religion	7.49E +6 1.093E +9	2 171	3.74E +6 6.394E +6	0.585	0.558
Marital Status	6.95E +7 1.031E +9	3 170	2.32E +7 6.067E +6	3.817	0.011
Economic status of parents	3.68E +8 7.329E +8	2 171	1.84E +8 4.286E+6	42.933	0.000

Source: Survey Data

Table 5: Determinants of household monthly income.

Variables	**Coef.**	**St.err**	**T**	**P>/T/**
Sex of household head: 1= male	-0.015	0.082	-0.18	0.855
Age of household head	-0.08	0 .004	-1.99	0.049
Educational level of household head	0.018	0.009	1.90	0.059
Household size	0.052	0.026	2.00	0.047
Marital status: 2= Married	-0.145	0.082	-1.17	0.129
3=Divorced	-0.371	0. 124	-3.00	0.003
4=Widowed	-0.289	0.140	-2.05	0.042
Participation status: 1=Participated	0.906	0.072	12.54	0.000
Religion of household head: 2=Orthodox	0.124	0.698	1.18	0.137
3=Protestant	0.083	0.088	0.94	0.348
Economic status of parents: 2=Medium	-1.091	0.264	-4.12	0.000
3=Poor	-1.113	0.266	-4.18	0.000
Constants	7.782	0.314	24.75	0.000

Note: Number of obs =174 F (12, 161) = 27.38*** Prob > F= 0.0000
R-squared= 0.6711, Adj R-squared = 0.6466, Level of significance is at α = 5% and 10%

The income of divorced and widowed households was less as compared to single household heads. It was also found that the income of household heads who come from medium and poor parents is less as compared to households who come from rich parents and the income of household heads who participated in different business activities more as compared to households who do not participated.

DISCUSSIONS

These findings are in agreement with what have been reported by Gan (2007), Masood and Nasir (2010) and

Ataguba *et al* (2012): as they all argued that family size and educational level are most important determinants to reduce poverty. But the current study contradicts with Gan, Masood and Nasir, and Ataguba with regards to other significant determinant variables: Such as, sex of household head, age of household heads, marital status, business participation status and economic status of parents.

Similarly, this study result is in agreement with Adem (2013) which pointed out that educational level of household heads, age of household heads, and economic status of parents were the most important variables for income poverty. But, contradicts with the variables such as household size, marital status, and business participation status. In line with this, findings of the present study are in agreement with Adofu (2013) which indicated that educational level of household heads play important role to reduce poverty. But the current study indicates that not only education of households, but also age of household heads, household size, business participation status, economic status of parents and others are important determinants for poverty reduction.

Abdel and Yasin (2013) revealed that participating in small enterprises could play important role in generating more income and Paul (2006) argued that small enterprises make a contribution to reduce poverty by creating employment and generate income for themselves and those they hire. Findings of the current study are in agreement with the idea of Abdel and Yasin (2003) and Paul (2006). But, somewhat contradict the idea of Paul, since this study claims that not only small enterprises but also participating in different entrepreneurial activities plays an important role to generate more income.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this study, the following conclusions are made. Firstly, younger household heads do generate more income than old household heads which implies that as age of households increase the ability to generate more income decreases. Secondly, Educational level of household heads is the most important component for income of households. Household size is also an important variable to reduce income poverty which implies that large family generates more income by participating in different works and reduces poverty. Thirdly, participating in different entrepreneurial activities is a very essential to generate more income. Fourth, divorced and widowed households are found to generate less income as compared to single groups. Generating less income may not allow the divorced and widowed households to concentrate on different business activities or other works as required and they are more affected by income poverty. Households who come from medium and poor parents are more affected by income poverty as compared to those coming from rich group parents.

Based on the findings of this study, the following recommendations or policy implications are made: Firstly, there is need to give attention on the households' education. Therefore, the relevant authorities should develop programme that give awareness on education of households. Secondly, there is need to give special attention to divorced and widowed households. So, it is better if government or concerned body give special attention to divorced and widowed households. This may include awareness creation, financial support or creating good condition/atmosphere for them. Thirdly, there is need to increase the number of participants in business activities. So, the government or relevant authorities should increase the capacity of entrepreneurs through awareness creation, financial support and other facilities.

Finally, further studies recommended that researchers or policy makers have to see the contribution of participation in entrepreneurial activities on multi-dimensional poverty, instead of income poverty in the future.

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