Food-Energy-Intake (Fei) Measures and Analysis of Poverty in Urban Ethiopia

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ABSTRACT

The focus of this paper is to analyses the determinants of incidence of urban poverty in three cities. The study covered a total of 600 household heads. Using the descriptive statistics of the data set both the demographic and socio-economic characteristics of the respondents is exhaustively executed. By making use of the Food-Energy-Intake (FEI) and Foster, Greer and Thorbecke (FGT) indices, the surveyed households are identified as the poor and non-poor. Consequently, about 339 (56.50%) and 261 (43.38%) are found to be poor and non-poor in South Wollo urban centers, respectively. Surprisingly, the result shows that the highest proportion of poor is observed in big city, Dessie (45.38%), followed by small city, Hayq (42.19%), while the lowest result if found in medium city, Kombolcha (39.88 %).

A Binary logistic regression model is employed and estimated based on the primary data, with the probability of a household being poor as a dependent variable and a set of demographic, individual-level and community-level characteristics as the explanatory parameters.

1. Introduction

Ethiopia is located in the North-East of Africa, is one of the largest and most populous countries of the continent, with an estimated population of nearly 73.9 million and a growth rate of 2.6 percent per year. The country's population is highly diverse, containing over 80 different ethnic groups, (CSA, 2008). The recent UN (2014) estimation and projection also shows that only 19 percent of the population lived in urban areas of at least 2,000 people. For the whole Africa, Sub-Saharan and East African Countries, however, the percentage was 40, 37 and 25, respectively.

Ethiopia has also experienced strong economic growth over the past decade. Economic growth averaged 10.7 percent per year in 2003/04 - 2011/12 compared to the regional average of 5.4 percent. Since a rising population contributed to economic growth, output per capita growth more accurately reflects the underlying economic performance. Still, at 8.3 percent per capita growth, Ethiopia outperformed the average Sub Saharan African country (3.3 percent) (World Bank (2013).

Furthermore, Ethiopia has a high rate of urbanization (estimated at 4.4 percent per year) corresponding to Sub-Saharan and Low-Income countries, the level of urbanization is still very low. Only 17.6 percent of the total population is estimated to live in urban areas as of 2011, against 13 percent in 1999 (EDHS, CSA 2006). The urban population is expected to reach 22 million people by 2020, based on the 4.4% estimated annual growth rates (PASDEP 2006 cited in Muzzi 2008, p.4).

Nevertheless, Ethiopia is still one of the poorest in the world, and it is among the bottom of the developing countries. Poverty is very chronic like other sub Saharan African countries. Ethiopia's 2012 HDI of 0.396 is below the average of 0.466 for countries in the low human development group and below the average of 0.475 for countries in Sub-Saharan Africa. From Sub-Saharan Africa, countries which are close to Ethiopia in 2012 HDI rank and population size are Rwanda (HDI=0.434) and Uganda (HDI=456), which have HDIs ranked 167 and 161 respectively. Ethiopia has one of the lowest HDI values in East Africa, placing it well below the sub- Saharan average of 0.475. Life expectancy has steadily increased, from 51.7 years in 2000 to 59.7 years in 2011 (WB, 2013).

2. Objectives

1. To analyze the socio-economic factors associated with Incidence of Urban Poverty in South Wollo Administrative Zone of Amhara National Regional State, Ethiopia, so as to provide basis for appropriate poverty mitigating & preventive measures.
2. To describes the theoretical and empirical review, in the existing literature, vis-à-vis the situation and determinants of poverty in Ethiopia. Section
3. To highlights the nature of data and methodological issues. Results and discussions are present in section
4. To which shows the detailed analysis of incidence of urban poverty determinants. Finally, Section
5. To summarizes the findings of and policy recommendations of the study.

3.   Data, Methods and Model Specification

3.1. Data Type and Source

The data used in this study has come from a primary household level survey conducted by the researcher from November to December, 2014 in three cities (Dessie, Kombolcha and Hayq) of South Wollo Administrative Zone. Data collection process undertakes through a face to face (personal) interview with the households using household consumption expenditure (HCE) questionnaire. The list of households for this purpose draws from list of Kebele Administration Office. A total of 600 households were included in the survey. In addition to the primary data collected using the household survey, pertinent documents to the study such as books, previous working literatures and policy evaluation reports, statistics, and checklists of facts and figures and unpublished materials were utilized.

3.2. Sampling Technique

It is well known that any household survey utilizes complex sample designs to control survey costs and time. In addition, complete sampling frames that list all individuals or all households are usually not available. Even when population registries are available, the cost of implementing a household interview survey based on a simple random sample design would be prohibitively high.

In South Wollo administrative, there are one major and one medium / emerging city and 17 small district towns/ centers. For this reason, the study followed a multi-stage sampling technique. In the first stage of sampling technique the central part, more crowded and slum areas/ cities, Dessie, Kombolcha and Hayq, have been directly selected according to their population size, number of households and the proportion of households engaged in non-agricultural activities to represent major, medium and small cities/district centers for purpose of intensive urban poverty analysis.

3.3. Model Specification
3.4. Poverty Indices

The most widely used poverty indices are the percentage of the poor (headcount index), the aggregate poverty gap (poverty gap index), and the distribution of income among the poor (poverty severity index). The poverty measure itself is a statistical function that translates the comparison of the indicator of household well-being and the chosen poverty line into one aggregate number for the population as a whole or a population subgroup. Many alternative measures exist, but the three measures described below are the ones most commonly used (MoFED 2012, p.4).

- **Incidence of poverty (headcount index)**. This is the share of the population whose income or consumption is below the poverty line; that is, the share of the population that cannot afford to buy a basic basket of goods.
- **Depth of poverty (poverty gap)**. This provides information regarding how far households are from the poverty line. This measure captures the mean aggregate income or consumption shortfall relative to the poverty line across the whole population. It is obtained by adding up all the shortfalls of the poor (assuming that the non-poor have a shortfall of zero) and dividing the total by the population. In other words, it estimates the total resources needed to bring all the poor to the level of the poverty line (divided by the number of individuals in the population).
- **Poverty severity (squared poverty gap).** This takes into account not only the distance separating the poor; from the poverty line (the poverty gap), but also the inequality among the poor, that is, a higher weight is placed on those households further away from the poverty line.

Given a vector of suitable measure of well-being, Y, in increasing order, Y_1, Y_2, Y_3,...,Y_N, where N represents the number of households under consideration, the FGT poverty index (Pα) can be expressed for the ith subgroup ($P_{\alpha i}$) is given below:

$$P_{\alpha i} = \frac{1}{N} \sum_{i=1}^{Q} \left[\left(\frac{z - c_i}{z} \right) \right]^{\alpha} = \frac{1}{N} \sum_{i=1}^{Q} \left(\frac{G_i}{z} \right)^{\alpha} \quad \alpha \geq 0 \tag{1}$$

When α=0
$$P_0 = \frac{1}{N} \sum_{i=1}^{Q} \left[\left(\frac{z - c_i}{z} \right) \right]^{0} = \frac{1}{N} \sum_{i=1}^{Q} \left(\frac{G_i}{z} \right)^{0} = \frac{Q}{N} \rightarrow \tag{2}$$

Poverty Incidence or Head count

α=1 $\quad P_1 = \frac{1}{N} \sum_{i=1}^{Q} \left[\left(\frac{z - c_i}{z} \right) \right]^{1} = \frac{1}{N} \sum_{i=1}^{Q} \left(\frac{G_i}{z} \right)^{1} \rightarrow$ Poverty gap or depth $\tag{3}$

α=2 $\quad P_2 = \frac{1}{N} \sum_{i=1}^{Q} \left[\left(\frac{z - c_i}{z} \right) \right]^{2} = \frac{1}{N} \left(\frac{G_i}{z} \right)^{2} \rightarrow$ Poverty Severity $\tag{4}$

Where z is the poverty line (2200 kilo calorie), Q is the number of the poor; G_i is the shortfall in the chosen indicator of well-being. If, for instance, c_i denotes the consumption expenditure of household i, then $G_i = z_i$ (=2200 kcal)-y_i, if $y_i < z$ (<2200 kcal); $G_i = 0$ if $y_i \geq z$, and α is the poverty aversion parameter (α ≥ 0).

The parameter α represents the weight attached to a gain by the poorest. The commonly used values of α is, 0, 1, or 2, in their order. When we set α equal to 0, equation (1) is reduced to the headcount ratio, which measures the incidence of poverty or head count ratio. When we set α equal to 1, we obtain P_1 or the poverty gap. P_1 takes into account how far the poor, on average, are below the poverty line. Setting α equal to 2 gives the severity of poverty or FGT (2) index. This poverty index gives greater emphasis to the poorest of the poor, as it is more sensitive to redistribution among the poor.

3.4.1. The probability of being poor: Econometrics Model
Logit and Probit Models for Binary response

For this study, we used binary logistic (Logit) models to analyze the determinants of poverty indices (P_0) among urban households. Accordingly, a household is poor if its real consumption per adult equivalent is below the poverty line of Energy calorie intake of 2200 kcal. The general specification of limited dependent variable for any analyzing poverty determinant is as follows;

$$Poor_i = Poor_i^* = \beta_k x_i + u_i \tag{5}$$

Where u_i stochastic error term which is normally distributed in logit model, that is, $u_i \rightarrow N\left(0, \sigma^2\right)$; β_k is vector of model parameters; and x_i is a vector of independent variables, $Poor_i^*$ is the latent variable indicating poverty measure that an individual household is a value 1 if G_i greater than or equal to zero and 0 otherwise, (where, $G_i = z - y_i =$ poverty gap, z is poverty line=2200 kcal and y_i actual food calorie intake of the poor). That is $Poor_i^*$ is only observed if real consumption per adult equivalent not certain threshold (poverty line) and it is determined as follows;

$$Poor_i = \begin{cases} poor_i^* \text{ if } poor_i^* > 0 \\ 0, \text{ if } poor_i^* \leq 0 \end{cases} \tag{6}$$

Following the method of Bogale (2005, cited from Ibid) in analyzing the determinants of poverty incidence, equation (2), expressed in logistic form as in equation (3) below is used;

$$\text{Probability of poor (poor}_i=1) = \frac{\exp(x'\beta)}{1+\exp(x'\beta)} \tag{7}$$

The marginal impact of k explanatory variable on the probability of being poor is specified below;

$$\frac{\partial P(poor_i = 1)}{\partial x_i} = \frac{\exp(x'\beta)}{1+\exp(x'\beta)} x(\beta_k) \tag{8}$$

From equation (8) above, it can be seen that, unlike ordinary least squares regression, the marginal effect varies with values of the explanatory variables. The marginal effect of k explanatory variables on poverty depth or severity in specified in equation (5) below;

$$\frac{\partial P(poor_i)}{\partial x_i} = \beta_k \tag{9}$$

These limitations of the LPM can be overcome by using more sophisticated binary response models (Wooldridge 2000, pp.530-539 and Maddala 1992, pp.327-329).
An alternative approach is to assume that we have a regression model

$$y_i^* = \beta_0 + \sum_{j=1}^{k} \beta_j x_{ij} + u_j \tag{10}$$

Where we use x to denote the full of explanatory variables, it is common called "latent" variable. What we observe is a dummy variable y, defined by

$$Y_i= \begin{cases} 1 \text{ if } y^*>0 \\ 0, \text{ otherwise} \end{cases} \tag{11}$$

3.5. Setting the Poverty Line

The Food-Energy Intake (FEI) approach is used in the identification of the poor from the non-poor. This is done based on a predetermined value expressed in terms of calorie intake equivalents. In the identification of the poor from the non-poor the research used the food energy intake approach (FEI) and is preferred to the Cost-of- Basic-Needs (CBN) approach based on the following premises. First, during the survey period the prices of all commodities in the country and the study area as well have increased drastically because of crop failure (recurrent drought) in the country. Second, the FEI is preferred to the CBN for the latter need's enumeration and quantification of basics and non-basics of different items in monetary terms. The problem arises particularly in estimating the costs of non-basics.

Consequently, the poverty line in this study is constructed by first identifying the poorest 50% as a reference household deemed to be typical of the poor. Next, the study identifies the food items commonly consumed by the reference household to constitute the food bundle. In this regard, a total of 17 food items are chosen and their quantity is determined in such a way that the bundle supplies predetermined level of minimum calorie requirement – 2200 Kcal. The calorie value of each food items constructs from **Ethiopian Health and Nutrition Institute Research Institute (EHNRI)** of the food nutrition table. The total calorie obtains from consumption of this basket of average quantity per adult by an individual is:

$$\Sigma q \text{ Kcal} =T^*kcal \text{ with Tkcal} \cong Tkcal^*, \text{ but } T^*kcal \neq Tkcal \tag{12}$$

Where T*kcal = total calorie obtains by individual adult from consuming of the average quantities. q_i = average quantity per adult of food item 'i 'consumes by individual, $Kcal_i$ = the caloric value of the respective food item 'i 'consumes by individual adult, Tkcal = recommended calorie of per day per adult (in this case, 2200 kcalorie), The average quantity per adult of each food item scales up and down by a constant value of $\dfrac{Tkcal}{T^*kcal}$ so as to provide total of 2,200kcalorie per adult per day before doing any activities. Line (refer Annex 1-2).

4.   Results and Discussions
4.1. Poverty Profile Households

As said earlier the next step is characterization of poverty profile of households in selected towns of the zone using the poverty indices to aggregate the information on individual household's welfare. Many alternative measures exist, but the three measures described below are the ones most commonly used (MoFED 2012, p.4). In view of that the study applies the well-known measure of poverty, the Foster, Greer, and Thorbecke, FGT (1984), the percentage of the poor (Headcount index), the aggregate poverty gap (Poverty Gap Index), and the distribution of income or consumption among the poor (Poverty Severity Index).
The research also used the predetermined level of minimum calorie requirement (2200 Kcal per day per adult) to get the number of poor and non-poor households in the study area. Accordingly, if **X** is total calorie intakes of a household

in a day and **Y** is the adult equivalent family size of the surveyed household in these three cities (Dessie, Kombolcha and Hayq), then calibrating the poverty line using Ethiopian standard figure, 2200 calorie per day for an adult person as recommended by nutritionists, yields:

1)

$$\frac{\sum_{i=1}^{600} X_i}{\sum_{i-1}^{600} Y_i} \geq 2200 kcalorie$$

Households are considered to be above the poverty line

2)

$$\frac{\sum_{i=1}^{600} X_i}{\sum_{i-1}^{600} Y_i} < 2200 kcalorie$$

Households are considered to be below the poverty line

Accordingly, about 339 (56.50%) and 261 (43.38%) are found to be poor and non-poor in South Wollo urban centers, respectively. Surprisingly, the result shows that the highest proportion of poor is observed in big city, Dessie (45.38%), followed by small city, Hayq (42.19%), while the lowest result if found in medium city, Kombolcha (39.88 %), (refer Table 1)

Table 1: Poor and Non-Poor Household Head by Place of Residence/ City

Incidence of Poverty (P_0)	City			Total
	Dessie	Kombolcha	Hayq	
Non-poor	201	101	37	339
%	54.62	60.12	57.81	56.50
Poor	167	67	27	261
%t	45.38	39.88	42.19	43.50
Total	368	168	64	600
%	100	100	100	100.00

Source; Computation from own survey, 2014/15

Next, the study has decomposed the incidence, depth and severity of poverty by household place residences, / cities. The result is reported in Table 2, below. The result shows that the highest Incidence (P_0) and Depth/ Gap (P_1) of poverty are found in big city, Dessies, 43.38% and 12.75%, while about 42,19% and in small city, Hayq, 42.19% and 12.34%, and in medium city, Kombolcha, 39.88% and 11.30%), in their order. In other words, 12.75%, 12.34% and 11.30% of the poverty line is needed to escape from poverty for all cities in the study area.

However, the severity of poverty is very high (5.67%) among poor households in small city , Hayq, as compared with poor households in a big city, Dessie (5.32%)and medium city, Kombolcha, (5%), respectively. It means that there is a high degree of consumption inequality among the lowest quantile urban population in small cities than big and medium cities (Table 2, below).

Table 2: Decomposition of Poverty Indices by City (n=600)

City	Household head proportion	As proportion of poor (P_0)	P_0	P_1	P_2
Dessie	0.6133	0.2783	0.4338	0.1275	0.0532
Kombolcha	0.2800	0.1117	0.3988	0.1130	0.0500
Hayq	0.1067	0.0450	0.4219	0.1268	0.0567
Total	1.0000	0.4350	0.4350	0.1234	0.0527

P_0 = Poverty Incidence, P_1 = Depth of Poverty, P_2 = Severity of Poverty.
Source; Computation from own survey, 2014/15

4.2. Econometrics Analysis

As discussed earlier in the methodology part, since the probability of an event must lie between 0 and 1, it is impractical to model probabilities with linear regression techniques. The two most important disadvantages are that the fitted probabilities can be less than zero or greater than one and the partial effect of any explanatory variable (appearing in level form) are constant. These limitations of the LPM can be overcome by using more sophisticated binary response models (Wooldridge 2000, pp.530-539 and Maddala 1992, pp.327-329). That is Logistic regression analysis allows one to predict probability of a binary dependent variable from a set of independent variables that may be continuous, discrete, or a mix of them. Logistic regression method is a powerful technique because it is relatively free of restrictions and it allows analyzing a mix of all types of predictors. Let's now consider the following representation of poverty equation:

For that reason, the study applies a Binary Logistic Model to identify the determinant of incidence of urban poverty. The logistic model is chosen as an appropriate model when we assume the random component of the respond variable follows a binomial distribution and when most explanatory variables have categorical responses. That is, the Binary outcome logit model is used when we assume the dependent variable (in our case Probability of being poor) is dichotomous, the probability of an event lies between 0 & 1.

4.2.1.   Tests of Model Fit

The study has spent much of its time on data exploration process. To begin with, the statistics of the overall model indicates that the logistic regression is a good fit, with Pseudo R^2= 0.5388 and it is statistically significant, with p-value 0.000. Similarly, we examine a simple correlation coefficient matrix and Variation Inflation Factor (VIF) so as to test whether multicollinearity is present or not among the explanatory variables. Accordingly, the multicollinearity test using Variance Inflation Factor (VIF) indicates that multicollinearity problem is not observed in our data since the correlation matrix results are less than 0.8 and Variation Inflation Factor (VIF) is less than 10. In addition to this, Heteroskedasticity is not a serious problem. That is the variance of the error term is constant (Homoskedasticity) and our logistic regression cannot produce biased and misleading parameter estimates. The normality and specification error tests are also carried out (for details see Annex Tables 3-8 and figure1)

Model's Robustness (Predictive) Power: The suitability of the chosen model for econometric analysis very much depends on how much it predicates from the actual observation or what percent of the actual observation is really predicted by the model. There are no fixed points as to judge the model as a best or bad predictor yet it is generally agreed that a model with its overall predictive power of fifty percent or more is good.

Therefore, to assess whether or not the model fits the data, the study used a prediction table (classification table) as shown below. The on and off-diagonals respectively tell the correct and incorrect number of predictions of the data. Thus, using these diagonals we can see how many households are correctly classified and how many are misclassified. The diagonal entries of the table show that 169 out of 261 households who live below the poverty line are correctly predicted. Similarly, the model correctly predicted 375 out of 339 households who live above the poverty line. On the other hand, the off-diagonal entries of the table show that 64 households who live below the poverty line and 92 households who live above the poverty line respectively are incorrectly predicted.

From a total of 261 households who live below the poverty line 75.78 percent are correctly predicted and out of 396 households who live above the poverty line 79.93 percent are correctly classified/ predicted. Generally, 83 percent of the 498 valid cases are correctly predicted. Therefore, the model is appropriate for the data, (Table 3)

Table 3: Classification Table

Observed	Predicted power		Percentage
	(P_0) Probability of being poor		
	Poor	Non-Poor	
Poor	169	64	75.78
Non-poor	92	375	74.93
Overall Percentage correct			74.00

Source; Computation from own survey, 2014/15

4.2.2.   Determinants of Urban Poverty

As shown on the following Table 4, the results of logistic regression model, some are statistically significant at 1%, 5% and 10% level while others are not significant even at 10% level of significance. But almost all explanatory variables entered with expected signs and are influential to determine incidence of urban poverty among households in the study area. The coefficients of variables, with positive signs, are positively associated and coefficients, with negative sign, are negatively correlated with the probability of becoming poor.

Among variables, mean age of household family members, adult equivalent family size, head-casual worker, head pensioner/retired, housing quality, energy sources, durable goods and place of residence in big city-Dessie significantly affect households falling into poverty at 1% level of significance (or at 99% confidence level), while head petty trade (guilit) and head years of schooling, significantly affect households falling into poverty at 5% (or at 95% confidence level) and House rented from kebele , house rented from other organizations and water and sanitation significantly affect the likelihood of households falling into poverty at 10% level (or at 90% confidence level), respectively.

Regarding to their marginal effect, holding other variable constant, adult equivalent family size explains the number of people in various disaggregated age group becomes visible to have positive & significant influence on incident of urban poverty in the study area. For one adult person increase in the household family, the probability of becoming poor increased by 14.46%. Being casual worker, pensioner/ retired/ or old age, petty trader (guilit) or hawker of household head, house rented from Kebele, House rented from other organizations and households live in big city, Dessie, the likelihood of falling into poverty   increased by 31.55%, 28.03%, 20.05%, 12.31%, 20.46% and 24.70%, respectively.

On the other hand, among variables negatively correlated with probability of being poor, increasing mean age of productive family members (or decreasing young dependent family members), increasing years of schooling of household head by one year, improving quality of houses, use of modern/ improved energy sources, increasing durable assets/ facilities, improving water and sanitations, the opportunity of joining to poor diminishes by 1.98%, 1.24%, 10.97%, 11.57%, 7.90% and 5.06%, respectively. This is may be due to the fact that their direct relationship with productivity, earning more income and wealth.

It is hypothesized that the household heads in the age range of 31-60 are productive and responsible to head the family ones whereby the probability of getting income is higher while the rest of the household heads are assumed to experience poverty. Consequently, we expect that age of household head has an inverse U-shaped relationship with welfare. At an early age, productivity and income increase of household increases thereby the probability of a household falling to poverty deceases, but at a later age, since productivity and income decreases, welfare of household will be deteriorated with age. However, the age and age squared of the head do not have any significant power to explain the welfare of the household in the study area.

The positive value of coefficients in household head sex also indicates that as female heads the household to fall into poverty increase by 9.04% than male headed households though its contribution to poverty is found to be insignificant variable. This suggests that male headed households are better off to escape from poverty as compared to female headed household. Likewise, married household increases the chance of falling into poverty by 6.90% than single household even its contribution to poverty is found insignificant variable. Actually, the households headed by married individuals are supposed to be larger in family size. Large families in developed countries mean large labor force which in turn reduces the incidence of poverty. But in the study area the reverse holds true in that larger households are associated with high incidence of poverty because many of the labor force are dependent on productive family members, unemployed, casual workers and engaged in unstable small business (guilit).

Table 6.28: Determinants of Urban poverty Incidence (P_0): Binary Logistic Result
[1]Guilit local name of open market either daily or weekly base

Dependent Variable: (P_0) Probability of Being Poor					
Explanatory Variables	Coefficient	Std.err	z-value	p-value	(dF/dx)
Head age	.0342	.0520	0.66	0.510	.0083
Head age^2	-.0001	.0005	-0.25	0.803	-.00003
Mean age of household members	-.0442	.0154	-2.87	0.004***	-.0108
Dummy-Head female	.3691	.4197	0.88	0.379	.0904
Head Married	.2854	.4152	0.69	0.492	.0690
Adult Equivalent Family size	.5940	.0925	6.42	0.000***	.1446
Dummy-Head casual worker	1.3095	.3584	3.65	0.000***	.3155
Dummy- Head pensioner/retired	1.1521	.3916	2.94	0.003***	.2803
Dummy Head wage employed	.3406	.3226	1.06	0.291	.0837
Dummy-Head petty trade (guilit[1])	.8318	.3707	2.24	0.025**	.2050
Head years of schooling	-.0509	.0254	-2.00	0.045**	-.0124
Dummy-House rented from kebele	.4998	.2660	1.88	0.060*	.1231
Dummy-Rented from other organizations	.8306	.4575	1.82	0.069*	.2046
Dummy-House rented from private	.4627	.3337	-1.39	0.166	-.1144
Housing quality index	-.4507	.1163	-3.88	0.000***	-.1097
Energy source index	-.4754	.1177	-4.04	0.000***	-.1157
Durable goods index	-.3244	.1126	-2.88	0.004***	-.0790
Water and sanitation index	-.2078	.1084	-1.92	0.055*	-.0506
Dummy-City-Dessie	1.0593	.3718	2.85	0.004***	.2470
Dummy-City-Kombolcha	.4074	.3938	1.03	0.301	.1001
constant	-4.0980	1.3945	-3.09	0.002	-
No. Of obs=600 LR chi2(20) =202.83 Log likelihood=-309.39	Prob>chi2=0.0000 Pseudo R^2=0.2469			Correctly classified 74.00%	
*Significant at the 10% level; **Significant at the 5%level; ***Significant at the 1% level; Source: Computed from own survey, 2014/15.					

5. Brief Finding of the Study and Policy Recommendations

The study has employed the Food-Energy-Intake (FEI) approach to identify poor from non-poor households. Thus, the predetermined poverty line is 2200 kcal as per Ethiopian standard. Accordingly, about 339 (56.50%) and 261 (43.38%) are found to be poor and non-poor in South Wollo urban centers, respectively. Unexpectedly, the result shows that the highest proportion of poor is observed in big city, Dessie (45.38%), followed by small city, Hayq (42.19%), while the lowest result if found in medium city, Kombolcha (39.88 %).

The study has also decomposed the incidence, depth and severity of poverty by household place of residences/ cities. The result shows that the highest Incidence (P_0) and Depth/ Gap (P_1) of poverty are found in big city, Dessies, 43.38% and 12.75%, while about 42,19% and in small city, Hayq, 42.19% and 12.34%, and in medium city, Kombolcha, 39.88% and 11.30%), in their order. In other words, 12.75%, 12.34% and 11.30% of the poverty line is needed to escape from poverty for all cities in the study area. However, the severity of poverty is very high (5.67%) among poor households in small city, Hayq, as compared with poor households in a big city, Dessie (5.32%) and medium city, Kombolcha, (5%), respectively. It means that there is a high degree of consumption inequality among the lowest quantile urban population in small cities than big and medium cities.

We also hold the use of binary logistic model for analysis of determinants household's incidence of poverty against a series of independent variables. Regarding the analysis of factors affecting explaining incidence of poverty, measured as adult equivalent, in South Wollo Administrative zone. A number of specific conclusions can be drawn from the logit results.

Almost all explanatory variables entered with expected signs and are influential to determine incidence of urban poverty among households in the study area. The coefficients of variables, with positive signs, are positively associated and coefficients, with negative sign, are negatively correlated with the probability of becoming poor. Among variables, adult equivalent family size, head-casual worker, head pensioner/retired, head-petty trade, house rented from kebele, house rented from other organizations and place of residence in big city-Dessie are negatively related and significantly affect households falling into poverty.

On the other hand, among variables negatively correlated with probability of being poor, increasing mean age of productive family members (or decreasing young dependent family members), increasing years of schooling of household head by one year, improving quality of houses, use of modern/ improved energy sources, increasing durable assets/ facilities, improving water and sanitations, the opportunity of joining to poor would be diminished and significantly affect the likelihood of households falling into poverty. This is may be due to the fact that their direct relationship with productivity earning more income and wealth.

Concerning to recommendations, out of various determinants of incidence of poverty identified and considered, in this study is employment status is found to be the main determinate of poverty in the area. It may be due to the labor absorption capacity of the modern sector in Ethiopia is still very low, while the number of job seekers is growing higher each year. Currently, there is a high and ever-growing demand for employment opportunities in the country that far exceeds the supply. Creating sufficient job opportunities to eliminate or mitigate the problem of unemployment and poverty in urban areas is becoming a formidable challenge to be faced by policy makers. It is also well known that the experience of countries that have succeeded in reducing poverty significantly point to the important role of high rates of economic growth combined with high rates of employment growth. High rates of economic growth on their own are insufficient to guarantee that poverty reduction will occur unless the benefits of economic growth are more equitably distributed. The creation of productive employment plays a key role in this regard as a critical nexus between growth and poverty reduction.

Similarly, the experience of other countries in the world tells us urban poor face a different set of risks and opportunities than the rural poor. Policy makers must understand these risks and opportunities if they are to create effective social safety nets for urban. The urban poor are more integrated into the market economy, which makes them more sensitive to macroeconomic shocks, positive and negative. These shocks are transmitted mostly through the labor market, suggesting that a safety net strategy should focus on increasing labor market participation. Cities are also more complex economically and physically than rural areas, complicating the design of classic safety net programs, such as workfare or conditional cash transfers. The environment facing the urban poor is much more diversified socioeconomically, making targeting more difficult.

It is true that, in most developing countries including Ethiopia, the incidence of poverty among households creates weaker family ties, leaving more elderly and disabled people without family support. Combined with classic urban perils (drugs, crime and violence, gangs), these weaker family ties increase the social risk associated with child-rearing and create the problem of at-risk urban youth.

Therefore, the policy makers should design an appropriate urban poverty reduction policy as; Firstly, productive safety- net program, apart from creating permanent job opportunities in labor-intensive public works so as to provide effective grants for unemployed and casual workers and to ensure faire adults participation in urban public works projects. Besides, the direct support program intended to provide grants to households who are labour-poor and cannot undertake public works. And cash and food transfers for food insecure households are also another policy recommendation in the form of social security.

In addition to provision of labor-intensive public works, the micro and Small enterprises (MSEs) play an important economic role in poverty alleviation program. However, many studies in every country revealed that the key challenges hindering micro and small enterprises are ranged from accessing credit facilities to be high cost of repayment, strict collateral requirements, unwillingness of people to act as guarantors, high credit facilities' processing

fees and short repayment period, unable to get access and affordable house rent and free working place and other basic urban infrastructure. Therefore, it is recommended that financial and public institutions should set more flexible, affordable and attractive requirements in financing, providing working place, availability of infrastructural facilities & creating conducive working environment for micro and small enterprises.

The second influential factors of urban poverty are place of household residence and house ownership. Under conditions of rapid urbanization, urban population growth far exceeds the capacity of receiving cities to provide adequate housing and infrastructure, as well as to provide effective management of the process and consequences of urban development. In such situations, much of the growing population is accommodated in slums and squatter settlements.

As far as the remaining determinants concerned, age, marital status, family size, years of schooling, it is obvious a household with good education and training would enjoy a relatively better productivity and income to enjoy a well- managed family, health and happy life and thereby reduce the incidence of poverty.

To conclude, good poverty reduction policy must be supported by a comprehensive poverty analysis that identifies the nature and evolution of poverty, the profile of poor people, and all determining factors of poverty. But this task could be possible if only if the government, zone and town administrations, community based non-governmental organizations, researchers and local community are committed to devote their resources and to take timely policy action.

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