



INDRA GANDHI NATIONAL OPEN UNIVERSITY  
SCHOOL OF SOCIAL SCIENCE  
FACULTY OF ECONOMICS

Determinants of Urban Household Poverty in Bahir Dar City  
of the Amhara Region, Ethiopia

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## DETERMINANTS OF URBAN HOUSEHOLD POVERTY IN BAHIR DAR CITY OF THE AMHARA REGION, ETHIOPIA

Project Work Submitted to the Indira Gandhi National Open University, in partial fulfillment of the requirements for the award of the Degree-Masters of Arts (Economics). I hereby declare that this work has been done by me and has not been submitted elsewhere.

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## CERTIFICATE

I certify that the project work entitled “**Determinants of Urban Household Poverty in Bahir Dar City of the Amhara Region, Ethiopia**” submitted by Yiblet Adane Engida is his own work and has been done in the light of evaluator comment’s under my supervision. Hence, it is recommended that this project be placed before the examiner for evaluation.

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02 November 2013

## **DEDICATION**

This thesis is dedicated to my family, particularly to my beloved wife Tesfanesh Demeke, and to my children Martha Yiblet and Theodros Yiblet for their patience and unreserved support; and to my brother Nigus Adane and his wife for their contribution and encouragement throughout my studies.

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## **ABSTRACT**

*The aim of this study is to assess the determinants of urban poverty, and poverty conditions in Bahir Dar city, and to draw possible conclusions and provide policy suggestions. The researcher selected five Kebeles such as: Tana Kebele, Belay Zeleke Kebele, ShumAbo Kebele, Hidar11 Kebele, and Sefene Selam Kebele from the total of 9 urban kebeles of BahirDar city. The source used in the study comes from primary data. A total of 264 sample household heads were selected using systematic random sampling approach for undertaking the study. In the study, demographic characteristics, social services, negative and positive relations of different variables are assessed.*

*The study used both qualitative and quantitative data. The researcher used Food Energy Intake (FEI) approach extensively for the analysis of the data collected. In addition Cost of Basic Needs (CBN) approach and the internationally accepted 1\$ a day poverty line was employed for comparison purposes. A Logistic regression model was 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 and socioeconomic variables as the explanatory variables.*

*The study found that head count, poverty gaps and severity indices are 0.572, 0.761, and 0.829, respectively. The variables that are positively correlated with the probability of being poor are: sex, household size, health status of the household (sick member) and dependency ratio. Variables negatively correlated with probability of being poor are: income, educational level, marital status, employment, age, housing tenure, and water source. Variables, which affected significantly the incidence of poverty in the city, are: average monthly income, family size, marital status, educational level, health status of the households and electric connection. Main source of water and telephone line are found statistically insignificant indicators of poverty.*

*The research findings indicate that, the incidence of poverty is high in BahirDar city, and kebele administrative areas have different and severe poverty status. Thus, the study results suggest the need for urgent intervention measures to be taken by the stakeholders aimed at curbing the fate of the poor.*

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## **ABBREVIATIONS**

ACSI	Amhara Credit and Saving Institute
CBN	Cost of Basic Needs
EIA	Environmental Impact Assessment
ETC	Ethiopian Telecommunication Corporation
FDRE	Federal Democratic Republic of Ethiopia
FEI	Food Energy Intake
HDI	Human Development Index
JMP	Joint Monitoring Program
NGO	Non Governmental Organazation
MoFED	Ministry of Finance and Economic Development
UNICEF	United Nation Children Fund
UNDP	United Nation Development Program
WB	World Bank
WHO	World Health Organization

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Poverty is a global concern. Chen and Ravallion (2008) had revised and updated the previous studies of population living below poverty line. In their recent study, the population living below 1\$ a day poverty line is estimated to be 1.4 billion. It is one fourth of the population of the developing world some 25 years ago; there were 1.9 billion poor people in the world. According to the study findings of the same researchers, poverty continues to be a major impediment to human development and economic progress of the world. Therefore, Knowing how many people live in households with income or consumption expenditure below the 'poverty line' has helped to raise the attention of researchers' to study about the extent of poverty; and has informed policy makers for fighting poverty. In line with this, the aim of this paper is to discuss different key correlates/determinants of poverty (such as gender, marital status, household age, household size, education, employment type, housing condition, health, asset ownership and income/ total household expenditure), in Bahir Dar city ,and to draw possible conclusions and provide policy implication based on the study findings.

Ethiopia is a country where the majority of the population is poor and there is a significant variation in individual and household level experiences of poverty. The Ethiopian population is predominantly rural, with only around 16% living in urban areas. With per capita gross national income of a mere USD 380 (World Bank Group, 2011), Ethiopia is among the poorest countries in the world. Moreover, for decades poverty in Ethiopia has remained pervasive and ever-deepening, in spite of considerable macroeconomic stability achieved following the policy reforms of mid-1990s. According to UNDP (2011), still Ethiopia's score of human development index 0.363 (which is 174 out of 187) is among the lowest in the world. The HDI of Sub-Saharan Africa as a region increased from 0.365 in 1980 to 0.463 today, placing Ethiopia below the regional average.

In Ethiopia, many urban people don't meet their basic needs. According to the official statistics (FDRE 2003), the proportion of the urban population under food poverty (those persons whose food expenditure per adult equivalent was less than the food poverty line) was 47 percent in 1999/00 as compared to 41 percent in rural areas. Moreover, between 1995 and 1999/00, the urban food poverty head count index increased by 43.7 percent (FDRE, 2002).

A report entitled "dynamics of growth and poverty in Ethiopia" (MoFED, 2004/05) indicated a notable drop in the incidence of rural poverty (a decline in the rural head count index from 47.5% to 39.3%). However, measures of aggregate inequality declines very slightly in rural areas from 0.271 to 0.260; but, rises sharply in urban areas from 0.338 to 0.436

There is little evidence on poverty trends in urban areas with much of the discussions focusing on cross-section evidences. Tadesse (1998) showed the trends in urban poverty between 1995 and 1997 using subjective and objective (consumption) poverty lines. His findings show that poverty slightly increased according to the subjective poverty lines (SPL); and decreased according to the consumption poverty lines. When we look at the disaggregated results, we observe heterogeneous trends across cities. Poverty has decreased in Addis Ababa, Awassa and Mekele while it increased in Bahir Dar, Dessie, Dire Dawa and Jimma according to SPL. According to the consumption poverty line, poverty has decreased in Addis Ababa, Awassa, Bahir Dar, and Mekele; and relatively increased in Diredawa and Jimma. The poverty level, however, remained the same in Dessie (Tadesse, 1998).

Bigsten (2003) reported poverty trends (using consumption poverty lines based on Ravallion and Bidani, 1994) for urban Ethiopian between 1994 and 1997. Accordingly, for all urban areas, the study showed an increase in poverty from 1994 to 1995 and a decline in poverty from 1995 to 1997. Likewise, according to Tadesse (1998), the trends vary by cities. Between 1994 and 1995, poverty was reported to have declined in Addis Ababa, Awasa, Bahir Dar and Jimma; while it increased in Dessie, Diredawa and Mekele cities.

Currently, unemployment and underemployment have become critical problems in Ethiopia. The unemployed citizens in urban Ethiopia are relatively well-educated. For example, most

young adults who completed 12 years of schooling, but fail to pursue their studies further are unemployed. In addition, due to the recent economic reforms, the Ethiopian government has stopped the allocation of graduates of higher institutions of learning to provide employment opportunities since 1992. This, currently, creates a serious unemployment and underemployment problems in Ethiopia (Abi and Kedir, 2003).

Even though the government of Ethiopia has tried to address some problems related to poverty, the focus given to urban areas does not relate with the extent of the problem. High population growth due to migration, food price increase, and unemployment has made life difficult in urban Ethiopia (Abi and Kedir, 2003).

## **1.2 Statement of the problem**

There is a seemingly widely held perception that poverty is urbanizing rapidly in the developing world. Indeed, some observers believe that poverty is now mainly an urban problem. In an early expression of this view, the distinguished scientific journalist and publisher Gerard Piel (1996) explained at an international conference that (the world's poor once huddled largely in rural areas). In the modern world they have gravitated to the cities.” (Piel, 1997: 58). “Urbanization of poverty”, which means a rising share of the poor living in urban areas, has been viewed in very different ways by different observers. To sum up, urbanization of poverty has been seen as a positive force in economic development, as economic activity shifts out of agriculture to more remunerative activities; while to others (including Piel), it has been viewed in a less positive light a largely unwelcome carrier of new poverty problems.

In Ethiopia, poverty is the general feature of the nation causing many sufferings to the largest proportion of the population. It is a serious agenda for the government, donor agencies, NGOs and other actors to reduce the level and mitigate the effect and its associated impacts on the well being of the people. The Ethiopian government has been formulating and implementing various policy statistics and programs since 1991 that are in one-way or another related with poverty reduction. Yet most efforts have been biased towards rural areas (Tesfaye, 2006).



Previous studies on poverty in Ethiopia have, generally, focused on rural rather than urban sectors. This is understandable in light of the fact that around 85 per cent of the populations live in rural areas, and unfavorable weather fluctuations often causing a heavy duty on the lives of many rural farmers that brings them to the brink of starvation (Tesfaye, 2006). Most available poverty literatures in Ethiopia largely focus on rural areas; and mainly concentrate on food entitlement failures of farmers (Webb and Ban Braun, 1994).

Though, in absolute terms, poverty is still a rural phenomenon, there is currently a diffusion and growth of urban poverty. Living condition is becoming more severe with increasing income inequality (increase in Gini coefficient from 0.38 in 1999/00 to 0.44 in (2004/05) among the urban people (MoFED, 2007). However, studies conducted on urban centers are still scanty, while the number of urban poor is increasing at an unprecedented level that might be aggravated by the highest rural-urban exodus and alarming internal population growth (Yasin, 1997).

Even though, there are few researches undertaken in some cities like Awassa, Adama, Dire Dawa, Mekelle, and Bahir Dar in the past, the research outputs are said to be lacking in depth information on the determinants of urban poverty (EEA, 2002).

As mentioned above, to the knowledge of the researcher proper socioeconomic studies have not been undertaken for Bahir Dar city, (the capital of the Amhara National Regional State with a population of 221,991). The researcher has not come across any previous study that assesses the determinants of poverty of Bahir Dar city dwellers, in particular. Hence, the aim of this study is to assess the determinants of urban poverty in Bahir Dar city of the Amhara Regional State, and draw appropriate conclusions with practical policy suggestions based on the study findings.

### **1.3 Significance of the study**

The study is expected to specifying the poor from the non poor; and this may help in reducing the prevalence of poverty with targeted interventions in Bahir Dar city. No similar study has been conducted in this area before as to the knowledge of the researcher. This research,

therefore, will serve as a springboard for future studies. The findings of the study may also be used as an input for any interested stakeholders/actors who in one way or another are engaged in the development of the city, facilitating future investment efforts.

## **1.4 Objective of the study**

The main objective of the study is to assess the determinants of urban poverty and poverty conditions in Bahir Dar city, and to draw possible conclusions and provide policy suggestions.

The specific objectives of the study include:

- Analyzing some determinants, such as: demographic characteristics of the household head (age, sex, and marital status), family size, household head educational level, health and employment;
- Assessing the provision of households/ community level social services (including water supply, housing tenure, telephone, and electricity), and understanding the relationship between social services provided and poverty;
- Assessing the relationships (positive or negative) of variables on urban poverty in the study area;
- Identifying determinants which dominantly affect urban poverty in the study area; and
- Drawing possible conclusions and provide policy implications based on the study findings.

### **1.4.1 Hypothesis**

In this study, two main variables will be explored: the dependent (regressed) and independent (explanatory) variables. The regressed variable is urban poverty; and that of the independent/ explanatory variables are the determinants of urban poverty, which are thought to have significant role in determining urban poverty in Bahir Dar city.

**Household Head Education (hhed):** The higher the level of education of the household head, the higher the household's income will be. If the highest attainment is in primary education level, it takes the value of 1, 0 otherwise. Higher educational attainment by the household head could lead to awareness of the possible income generating sources, increase efficiency to perform the activity; and hence, increased income. Generally, if the heads

highest educational level is less than or equal to primary school complete, it takes the value of 1, 0 otherwise.

**Household Head Income (hhi):** The amount of household income at any one time shows the extent of poverty; or household's economic status. Economic theory tells that a household with a relatively better income will lead a decent life; and hence, reduces the incidence of poverty. In this study, a household with monthly income of less than or equal to 800 Birr (closer to 1 USD per day per adult as an international poverty line) is assumed to be poor and takes 1, 0 otherwise. It is expected that increased households' income decreases urban poverty.

**Household Head Occupation (hhoc) (edu father) (edu mother):** It is expected that households, where the head of the household have no education would be worse than households where the parents are educated. This is a test for whether he/she lacks of education from generation to generation. The study assumes household heads, that are not educated at all and those that have not completed grade eight as poor (1); and those above grade eight as non poor (0).

**Household Family Size (hhfs):** It is hypothesized that households with large family size are less likely to escape poverty. The assumption is that household heads of married families 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 developing countries, households with larger family sizes are associated with high incidence of poverty because many of the labor force are unemployed. Therefore, in this study (in Bahir Dar city), the researcher expects that households with larger family sizes are likely to be poorer than those with less family sizes.

**Household Head Age (hha):** It is hypothesized that, household heads in the age ranges of 20-60 are the productive ones whereby the probability of getting income is higher; while the rest of the household heads are assumed to be poor. Life cycle hypothesis says that income of the household is low at the younger age (below 20 years); but, high in adult age, and decreases in

the old age (above 60 years), ([http://www.investopedia.com/terms/life cycle hypothesis.asp](http://www.investopedia.com/terms/life-cycle-hypothesis.asp)). Empirically, Gaza (2001) found that there is a negative and significant relationship between the age of the household and the incidence of poverty. If the age of the household is below 20 or above 60 years, give 1, 0 otherwise.

**Household Head Sex (hhs):** The female headed the households are, the lower their incomes than male-headed households. Due to different social and cultural reasons, female headed households find it more difficult than men headed households to get access to various resources, including job opportunities. If the head of the household is female, it takes the value of 1, 0 otherwise.

**Household Health (hhh):** Households with members that frequently get sick are hypothetically exposed to poverty. Lack of proper health services will make people to become weak and unproductive. Households with frequent patient members take a value of 1, 0 otherwise.

**Household Water Ownership (hhw):** It is hypothesized that, the probability of households to be poor is low if they have private tap water in their compound. Those who don't have private tap water in their compound take the value of 1, 0 otherwise. It is hypothesized in this study that the probability for a household to be poor is low if they have private tap water in their compound.

**Household House Tenure (hht):** The probability of households to fall into poverty trap decreases as they possess their own houses and increases as they don't. It is hypothesized that households without their own house take the value of 1, 0 otherwise.

## **1.5 Scope of the study**

This study is undertaken to assess the main determinants that lead urban households to poverty; and it covers five sample kebeles from the total of nine kebele administrations of Bahir Dar city. The study also covers relevant socio-economic and demographic characteristics of households. The rural kebeles under the city administration are not part of

this study due to differences in their socio economic characteristics and lack of time and resources to collect data.

### **1.6 Limitation of the study**

Some sensitive variables such as income and properties (assets) were not to be correctly obtained and valued since few respondents were not willing to tell their actual income and income status. The responses, therefore, are not 100 percent perfect. Urban poverty is a function of multitude factors. In this study, only some variables, which were assumed to affect the incidence of poverty dominantly, are included.

### **1.7 Organization of the thesis**

The research report contains five chapters. The first chapter covers background of the study, statement of the problem, significance, and objectives of the study, the scope and limitations of the study. The second chapter presents/discusses the research methodology. The third chapter presents review of relevant literature including previous studies relating to the determinants of urban households poverty. The fourth chapter presents analysis results and the discussions of the findings of the study; while chapter five presents the conclusions and policy implications of the study.

## **CHAPTER TWO**

### **RESEARCH METHODOLOGY**

#### **2.1 Introduction**

The methodology chapter would deal with methods and procedures for assessing and analyzing of the socioeconomic conditions of a sample population in the sample area (Bahir Dar city) with the aim of assessing the poverty level of the sample respondents (including the household head personal details). Some geographical locations, socio economic (including demographic situation), historical and cultural issues of the study area (Bahir Dar city) are also discussed/presented below.

#### **2.2 The study area**

Bahir Dar city with nine kebele administrations is the capital of the Amhara Regional State; and it is one of the fast growing regional cities in Ethiopia. It is situated on the southern shore of Lake Tana, the source of the Blue Nile (or Abay) river. The city is located approximately 565 km northwest of Addis Ababa, at a latitude and longitude of 11°36'N 37°23'E and 11.6°N 37.38°E Coordinates, respectively with an elevation of 1840 meters above sea level.

Bahir Dar city's origin dates back to at least the sixteenth or seventeenth century; Pedro Paez (n.d) is credited with erecting several buildings in this city, one of which is "a solid, two-storey stone structure, with an outside staircase", and this is found in the compound of the present-day saint George church.

In the mid-19th century, Bahir Dar city served as the camping spot for the army of Emperor Tewodros II of Ethiopia. There, his army suffered from cholera outbreak, forcing the Emperor to move his troops to Begemeder, now South Gonder (Wikipedia, Retrieved on 06/08/ 2012).

Arthur J. Hayes (1903) spent a few days in Bahir Dar and he described the city as a village surrounded by a marsh of papyrus plants. Nearby the city were "two or three huts" inhabited

by the Weyto, an ethnic group which were considered outcasts by the Amhara, yet "proud of their isolation."

Emperor Haile Selassie's palace was located near the city. The Emperor even had considered moving the national capital to Bahir Dar city. On 15 June 1961, the Emperor inaugurated the new 226 meter-long highway bridge over the Abay river, situated at about 3 km from the center of Bahir Dar city. A Polytechnic Institute, built by the Soviet Union at a cost of Ethiopian Birr 2.9 million, was opened in 1963 in this city which later was expanded/promoted to Bahir Dar University established by merging two former higher education institutions, namely: the Bahir Dar Polytechnic and Bahir Dar Teachers' College. Now Bahir Dar University is among the well organized and growing universities in the Federal Democratic Republic of Ethiopia, enrolling more than 35,000 students with its 57 undergraduate and 39 graduate programs. This university, currently, is playing a major role in the socio-economic, and cultural development processes for Bahir Dar city.

Based on the 2007 Census conducted by the Central Statistical Agency (CSA) of Ethiopia, Bahir Dar Special Zone has a total population of 221,991, of which 108,456 (48.9%) are men and 113,535 (51.1%) women; 180,174 (81.16%) are urban inhabitants; while the rest of the population are living in the surrounding rural kebeles of Bahir Dar city. Of the total population more specifically, some 155,428 inhabitants live in Bahir Dar city; while the rest of the urban population live in Meshenti, Tis Abay and Zege towns which are parts of the Bahir Dar Special Zone. As Philip Briggs (2003) notes, Bahir Dar "is not only one of the largest cities in Ethiopia, but also one of the fastest growing cities. The three largest ethnic groups reported living in Bahir Dar Special Zone were the Amhara (96.23%), the Tigrayan (1.11%), and the Oromo (1.1%); other ethnic groups make up 1.56% of the population. Amharic is spoken as the first language by 96.78%; and 1.01% speak Oromiffa; while the remaining 2.21% are found to speak all other primary languages. According to CSA (2007), from the total population of the city 89.72% practice Ethiopian Orthodox Christianity; 8.47% Muslims, and 1.62% Protestants; while the remaining inhabitants follow other religion.

Bahir Dar City, as the main capital of the Amhara Regional State has many problems. Impoverished, unemployed and displaced people from the rural side of Gondar, Gojam and

other adjacent regions come to Bahir Dar city mainly in search of employment of income source. As a result, the population of Bahir Dar City has been growing more than ever, creating increasing urban poor with no other means of survival or income sources. This is reported to have been leading to high crime rates and other socio-economic and political problems (Ethiopian Hope Bahir Dar, 2006). Therefore, the researcher expects such problems to be addressed by the study and contribute for appropriate policy and strategies designing by the government to tackle the growing problems of urban sectors in general, and the study area in particular.

### **2.3 Data types and sources**

As part of the primary data collection effort, the sample based household level data collection work was undertaken using pre-prepared structured questionnaire. At individual level, the selected sample household heads were asked (interviewed) about their respective sex, age, marital status, health condition, and education levels. Moreover, at sample household level, information collection included average monthly household income and expenditure, family size, housing condition, type of tenure, source of drinking water, types of kitchen, toilet, lighting, fuel types and sources used for cooking, and whether or not each household had a fixed telephone connection and mobile phone, a radio and a TV set. Pertinent documents for the study: including published and unpublished books, statistics, and figures were utilized/reviewed. That is, relevant literature (including previous studies), are reviewed consisting the issues under consideration. The questions from the structured questionnaires were posed to the sample heads of households to collect appropriate data. Hence, the collected data was processed/analyzed and interpreted using appropriate statistical methodologies and presentation techniques.

### **2.4 Data collection methods and procedures**

**Sample design and size:** Any research method chosen may have inherent problems. In order to minimize such problems, however researchers use a combination of research methods, (approaches) so as to support and complement one method by another (Mehari, 2003).



The researcher excluded all the rural kebeles, and took 5 sample kebeles from a total of nine urban kebeles of Bahir Dar city. The sample was determined using the minimum sample size formulae of Fowler (2001) as shown below.

$$n = \frac{[Z_{\alpha/2}]^2 P [q]}{D^2}$$

Where n= sample size

$Z_{\alpha/2}$  = the two-tailed critical value at 95 percent confidence interval (1.96).

P = assumed incidence of urban poverty in Bahir Dar.

q=1-p

D = Marginal error between the sample and population size (0.05)

The researcher took 0.22 as the incidence rate of Bahir Dar city which is obtained from the Poverty profile of the Ethiopian urban centers conducted by the Ministry of Finance and Economic Development (MoFED 2002).

The formulae gives  $n = (1.96)^2 \cdot 0.22(1-0.22) / (0.05)^2 = 264$ .

Based on the above calculation results, 187 male and 77 female sample households have been selected and interviewed. That is, a total of 264 sample household respondents have been selected and interviewed for collecting the necessary information in the study.

This study used a cross-sectional survey to assess the determinants of urban poverty in Bahir Dar city. In addition, both stratified and systematic random sampling techniques were employed to conduct for the study.

## **2.5 Method of data analysis**

### **2.5.1 Descriptive analysis**

To explain the situation of demographic and socioeconomic variables of the households descriptive analysis are made. The analysis was used to assess the overall livelihood of the population in the city. The specific method of data analysis involved includes tabulation and

cross tabulation, frequency, percentages, and computation of descriptive statistics, such as mean. To support the analysis, different tables, graphs, and figures are used.

**2.5.2 Econometric analysis**

To measure poverty and identify the poor from the non poor, empirical models were utilized. The models that are used for the study are indicated below.

Foster Greer Thorbeek (1986), food energy intake approach (FEI) and cost of basic needs approach (CBN) are used to determine absolute poverty line of the households. Food energy intake method can be done using regression in which dependent variable can be consumption expenditure or income and the independent variable is calorie intake. However, this method is considered as food poverty line.

Cost of basic needs (CBN) method is a continuation of FEI method that can be determined by giving some alliance to non food items. CBN approach explain urban poverty as is not only related with food poverty; but, also includes non food items, like: housing rent, education fee, transportation, sanitation fee, power consumption fee, water charges, etc. which show monetized characteristics of urban economy.

To determine food poverty line, the regression model used to estimate the parameter is  $lnX_j = a + bc_j$  ----- (1)

Where,  $X_j$  = Total value of food consumed per adult equivalent units by household j

$C_j$  = Total consumption per adult equivalent by household j, a and b are parameters to be estimated

The food poverty line  $Z_f$  is the estimated cost of acquiring the calorie recommended daily alliance:

$Z_f = e(a + bR)$  ----- (2)

Where,  $Z_f$  = food poverty line

$R$  = Recommended daily alliance of calories per adult equivalent, which is 2200 for urban consumption per adult person.

The steps that could be considered to estimate the above (1) and (2) or FEI poverty line is based on Greer and Thorbeck as cited by Getachew (2009).The details are shown below.

(a) Total value of food ( $X^*j$ ) consumed by each household, which is equal to the sum of the value of purchased food ( $V^*j$ ) and the value of own production consumed ( $K^*j$ ), was determined; hence

$$X^*j = V^*j + K^*j \text{ ----- (1)}$$

The value of purchased food consumed  $Vj^*$  by each household was established by multiplying the quantities of different food types purchased ( $Di$ ) by the prices per unit ( $Pi$ ).

$$Vj^* = \sum Di_j + Pi_j \text{ ----- (2)}$$

$Vj^*$  = value of purchased food consumed by the  $j$ th household

$Di_j$  = the quantity of  $i$ th food items purchased by  $j$ th household

$Pij$  = the local price paid by the  $j$ th household for the  $i$ th food item

The value of own output or donated food consumed by the household  $Kj^*$  is the product of own production (including donations) ( $Mij$ ) and the local prices ( $Pij$ ). The quantity  $Mi$  is the imputed value of consumption.

$$Kj^* = \sum MijPij \text{ ----- (3)}$$

(b) The adult equivalent  $Hj$  for each household was peroxide by the household size.

(c) Total value of food consumed per adult equivalent was derived by dividing the total value of food by household adult equivalent:

$$Xj = \frac{X^*j}{Hj} \text{ ----- (4)}$$

$Xj^*$  = total value of food consumed by  $j$ th household

$Hj$  = adult equivalent for  $j$ th household

$Xj$  = total value of food consumed per adult equivalent units

(d) The different types and quantities of foods consumed by the different households were converted to calories  $Cj$  using the calorie equivalents

(e) A regression model was fitted to estimate parameters to be used in determining food poverty lines:

$$\ln X_j = a + bC_j \text{ ----- (5)}$$

Where:  $X_j$  = total food expenditure per adult equivalent by household  $j$

$C_j$  = total calorie consumption per adult equivalent by household  $j$   $a$  and  $b$  are parameters to be estimated.

(f) The various measures of poverty ( $P_\alpha$ ) were computed using the following formula:

$$(P_\alpha) = \frac{1}{n} \sum_{i=1}^q \left( \frac{Z - Y_i}{Z} \right)^\alpha, \text{ ----- (6)}$$

where:  $Z$  = food poverty line

$y_i$  = per capita food expenditure for  $i$ th household ( $i = 1, 2, \dots, q$ ) living below the poverty line

$q$  = number of households below the poverty line

$n$  = total number of sampled households

$\alpha = 0, 1, 2$

World Bank (1990) in its World Development Report noted that most developing countries set their poverty lines at \$1 a day. In line with this, a household who receives US \$1 and above per day per person adjusted for a household size is regarded as non poor; and those below that level of income are in absolute poverty.

The simplest measure of the incidence of poverty is the proportion of households that fall below the food poverty line or the head-count index ( $P_0$ ). This is equal to the number of households falling below the poverty line divided by the total number of households.

The poverty-gap index ( $P_1$ ) captures the total proportional shortfall or depth of poverty (i.e., the difference between per capita food expenditures and the food poverty line and then divided by the food poverty line). If we simply add up the difference between the expenditure measure and the poverty line for all those who are below, we have the total money required to eliminate poverty.

The degree of inequality (distribution) is captured by the Foster–Greer–Thorbeck index ( $P_2$ ). A particular strength of the  $P_\alpha$  indicators is that they are decomposable. That is, indicators for the whole city can be calculated as a population weighted average of the indicators for each kebele.

**Logit model**

Logistic regression is a special, simpler case of multinomial regression. The logit function is useful because it can take as an input any value from negative infinity to positive infinity, whereas the output is confined to values between 0 and 1. The variable  $z$  represents the exposure to some set of independent variables, while  $f(z)$  represents the probability of a particular outcome, given that set of explanatory variables. The variable  $z$  is a measure of the total contribution of all the independent variables used in the model and is known as the logit. The variable  $z$  is usually defined as

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 \dots \beta_k X_k + \varepsilon \quad \text{-----} \quad (1)$$

Where,  $\beta_0$  is called the "intercept" and  $\beta_1, \beta_2, \beta_3,$  and so on, are called the "regression coefficient " of  $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9, x_{10}$ , respectively; and  $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9, x_{10}$  are household head education, household head income, household head age, sex and dependency ratio, though there are unexplained independent variables occupation, household head family size, household head age, household head health, household head water, and household head tenure respectively.

Aggregating the value yields

$$Z = \beta_0 + \sum_{k=1}^k \beta_k X_k + \varepsilon \quad \text{-----} \quad (2)$$

In practice,  $Z$  is an observed; and  $(\varepsilon)$  is systematically distributed with zero mean and has cumulative distribution function (CDF) defined as  $F(\varepsilon)$ . What we observe is a dummy variable  $z$ , a realization of a binomial process defined by:

$$Y = \{ 1 \text{ if } y > 0, 0 \text{ otherwise} \} \quad \text{-----} \quad (3)$$

From equation (2) leaving the constant term and rewriting the model yields

$$\text{Prob}(Z=1) = \text{prob}(\varepsilon > -\sum_{k=1}^k \beta_k X_k) = \text{prob}(\sum_{k=1}^k \beta_k X_k + \varepsilon > 0)$$

$$1 - F(\sum_{k=1}^k \beta_k X_k) \quad \text{-----} \quad (4)$$

The logit model usually takes two forms, which may be expressed in terms of logit or in terms of probability. Specifically, the logit model is expressed as:

$$\text{Log} \left[ \frac{p(y=1)}{1-p(y=1)} \right] = \sum_{k=1}^k \beta_k X_k \text{-----} (5)$$

Using equation 4 and 5, it can be transformed in to a specification of a logit model of event probability by replacing the general CDF, F with a specific CDF, L representing the logistic distribution.

$$\text{Prob}(y=1) = 1 - L \left[ \sum_{k=1}^k \beta_k X_k \right] = L \left[ \sum_{k=1}^k \beta_k X_k \right] = \frac{e^{\sum_{k=1}^k \beta_k X_k}}{1 + e^{\sum_{k=1}^k \beta_k X_k}} \text{-----} (6)$$

Equation (6) represents the probability of an event occurring.

$$\text{Prob}(y=0) = [ - \sum_{k=1}^k \beta_k X_k ] = L \left[ \sum_{k=1}^k \beta_k X_k \right] = \frac{e^{\sum_{k=1}^k \beta_k X_k}}{1 + e^{\sum_{k=1}^k \beta_k X_k}} \text{-----} (7)$$

For a non event, the probability is just one minus the event probability that is revealed in the equation (7).

In general, numerical methods are used to fit the parameters of logistic regression models. However, they may sometimes have difficulty in converging to a solution. Users should be alert to any warnings given by the stata software when problems occur with convergence, and resolved by simplifying the model.

## CHAPTER THREE

### REVIEW OF RELEVANT LITRATURE

#### 3.1 Definition of poverty

According to the Canadian fact book (1984), poverty has a long tradition. Yet no consensus exists on what is, or how to measure poverty. Due to this a number of scholars have been busy finding the tangible concept of poverty until 1930s (i.e. the great economic depression), and agreed that it has various angles in different professionals. It has also various interpretations in economic, social, political, institutional, environmental and cultural contexts. Because of its variation in conceptualizing poverty by different scholars, disciplines and interpretation, various approaches have been employed to understand the concept of poverty (Ibid, 1984).

Researchers in the past also indicated, variations in the forms and dimensions of poverty in categories such as rural-urban settings. While rural poverty is often marked by its connection with agriculture and land, urban poverty is said to be associated with heterogeneous economic and social factors. Nevertheless, the genesis of poverty is often found to be rural poverty. (Yasin, 1997).

The heterogeneity (different characteristics) of poverty in urban settings could be attributed to the high monetization of economies in such localities. Unlike in rural areas, urban poverty is defined at an individual level rather than communal level. Thus, poverty in such context is usually described in terms of occupation, income, and consumption level and employment status. The above-mentioned aspects, therefore, can serve as bases of urban poverty analysis (Getachew 2009).

Jayati Ghosh (1998:1) defines poverty as follows:

**The income criterion:** this concept defines a person as poor if his/her income (expenditure is below a defined poverty line. Usually this is in terms of per capita household income or

expenditure, for which more data are readily available. In a number of developing countries, poverty line is defined in terms of the minimum expenditure necessary to ensure access to food sufficient for survival according to nutritional norms. This is the most widely used, and the most restrictive definition of poverty as it uses only income/expenditure and food requirements as elements.

**The basic needs criterion:** this approach views poverty as deprivation in terms of various material requirements including food and other basic needs such as: access to basic health, shelter, education, adequate and safe housing, access to safe drinking water, sanitation and so on (Getachew 2009). Yared (2005) tried to explain the limitation of basic needs approach as a definition and measure of poverty. He argues that the set of basic goods and services is different for different individuals depending on age, sex and type of activity.

**The capability criterion:** What is emphasized in this school is neither the economic well-being nor the basic needs deemed to satisfy the minimum standard by the society. It is nevertheless, human abilities or capabilities to achieve a set of functioning. This is an alternative criterion for the definition and measurement of well-being which tells the extent to which people have capabilities to be and to do things of intrinsic worth.

Sen (1987:109) introduced the notion of capabilities in poverty definition and assessments. He defined poverty not only as a matter of low level of well-being, but also as lack of ability to pursue well-being precisely because of lack of economic means. He wrote that “the value of the living standard lies in the living, and not in the possessing of commodities”. Such an approach to the definition and /or measurement of poverty suggests a broader set of criteria for assessing poverty than just income and/or consumption. This approach, thus, incorporates the problem of social exclusion or marginalization in the idea of poverty; and is therefore; much broader than even the basic needs perspective. This approach is particularly relevant for gender differentials because even women belonging to non poor households by the income or basic needs criteria may be absolutely deprived in terms of the capability criterion.



## **3.2 Conceptualizing poverty**

Given the complexities of poverty concept and its definition, the fundamental question that comes uppermost in the analysis of poverty is the derivation of poverty line. In the derivation of poverty line scholars use different methods. The poverty threshold, or poverty line, is the minimum level of income deemed adequate in a given country. The common international poverty line had in the past been roughly \$1 a day (World Bank, 2000).

**Poverty line:** The most common way to defining the poor is to take those people who for one reason or another are unable to secure a certain income level called the poverty line; which may be relative or absolute in magnitude. Poverty line is cut off living standards level below which a person is classified as poor (Ravallion, 1992). In setting poverty line two approaches such as, absolute, relative or subjective approaches can be followed.

### **3.2.1 Absolute poverty line**

Absolute poverty lines should not be defined as stringent ("survival") poverty line. Rather, it should be the one which is fixed in terms of the living standards indicator being used and over the entire domain of the poverty comparison with two persons at the same real consumption. Thus, an absolute poverty comparison level to both be either "poor" or "non-poor" irrespective of the time or places being considered and with or without policy changes within the relevant domain (Ravallion, 1992).

According to Hagenars (1986), one of the common weaknesses of an absolute poverty line is it does not change with the living standards of the society in question. Thus, people are labeled "poor" when some absolute needs (i.e., needs that are not related to the consumption pattern of other people in a given society are not sufficiently satisfied. In other words, "poverty is viewed as acute deprivation, hunger, premature death and suffering" Hence, the assumption implicit in this notion of poverty is welfare depends on the extent to which some basic needs are met. However, it may be difficult, in practice, to define the absolute minimum, in a constant way. Though, the dividing line between acceptable and unacceptable deprivation is said to be biological, it changes in line with age, sex, season, climate, physical

built up, types of activities a person is engaged with and extra. The conceptual understanding, however, is that absolute poverty is an intolerable situation that requires prompt corrective action (Ibid).

### **3.2.2 Relative Poverty line**

The relative poverty line approach helps to define how income and inequality is distributed in a society. This approach takes poverty as a function of relative deprivation in terms of commodities, Defining poor households as those that are unable to attain given commodities that are normal for their society (Garza, 2001). Poverty is discussed here as the share of people whose equalized income falls below a poverty line. In practice, the most popular choice to set poverty line in this method is done by taking certain percentage of mean or median incomes of the population. Many studies in the developed countries have used a poverty-line which is set at 50 percent of the national mean income. Other studies use 60 percent of the median incomes as a measure of the risk of poverty. However, the scientific justification for the use of certain percentages of the median or mean equivalent threshold is not well-grounded (Ravallion, 1992, Bradshaw, 2001 as cited in Sallila and Hiilamo, 2004).

The problem of defining relative poverty-line stems from the assumption which states the poverty line to be a constant proportion of the mean. The implication of this assumption is the elasticity of the poverty-line and the mean is unity. However, there are cases where this might not hold true (Ravallion, 1992).

While a median income threshold lacks warranted objectivity, it conveys a meaningful interpretation of deprivation according to the standards of necessities in a particular society. Also the threshold based on median is claimed to be more solid as it is not affected by an increase in high incomes (Sen, 1979).

In general, poverty in this sense is defined as a relative deprivation with respect to various commodities. Hence, households or individuals are deemed "poor" when they lack certain commodities that are common in the society they are living. "However, the relative importance of studying poverty as comparative phenomena is justified as modern societies

confront economic liberalization, ageing population, marital dissolution and increased labor force participation by women. Relative poverty is a concern of developed countries where as measuring absolute poverty is the main aim of developing countries". (Ravallion, 1992 :32-33).

### **3.2.3 Subjective poverty line**

The method of defining subjective poverty line depends on the subjects themselves. The procedure lets people to define poverty through their life experience. Hence, the identification of the "poor" and the "non-poor" is left to self-perception of the individual concerned (as Saith, 2005: 24-25).

As poverty in this sense refers to subjective well-being of individuals, the perceptions of people towards their own situations is of vital importance in setting poverty threshold. Hence, the method sets poverty line based on the relationship between survey responses on questions of minimum income, considered by an individual to be adequate enough to get along with a representative family size, and the actual income. The resulting definition is called the Leyden poverty -line definition named after its place of origination (Hagenaars, 1986).

This approach explicitly recognizes that poverty lines are inherently subjective judgments people make on the basis of socially acceptable standards of living in their own society. This is the rationale behind the notion of subjective poverty-line. In most cases, it holds true for the response on survey questions of the income level people consider absolutely minimal to make ends meet, to be an increasing function of the actual income. Hence, it might not be surprising if this method yields higher poverty lines such as: sanitation, education and health care than the traditional basic needs approach such as: food, shelter and clothing (Ravallion, 1992).

## **3.3 Measuring poverty lines**

The first step that needs to be clear in the analysis of poverty is to identify whether an individual is poor or not to distinguish the poor from the non-poor. For this purpose, poverty line plays a crucial role in quantifying the various indicators of well-being into a single index. Although the choice of poverty line is always arbitrary, the common argument is that there is

a minimum level of consumption of goods and services below which it is difficult to sustain our life. Hence, in order to get the poverty line, it demands thorough (systematic) work in that the level and type of goods and services must be accurately identified. Although there is a debate on how to exactly arrive at different levels of goods and services due to the presence of regional price difference, various commodities and individuals preferences, it is tolerable that a carefully examined work can give good estimation (World Bank, 2000).

In the construction of poverty lines, two methods can be employed. The first is to directly use current consumption of goods and services as an indicator of well-being. This requires identification of the minimum bundles of goods and services, which an individual has to consume. In this case, the bundle serves as a border line between the poor and non-poor. The second method uses income as a parameter to identify an individual as poor or non-poor. This necessitates specifying minimum income that enables an individual to achieve consumption of minimum bundle of goods and services defined by the minimum socially acceptable level. Various methods have been employed in constructing poverty lines. The most popular methods, however, are Food Energy Intake (FEI) and the Cost of Basic Needs (CBN) as cited Getachew (2009).

### **3.3.1 Food energy intake approach (FEI)**

This FEI approach locates the poverty line as the income or consumption expenditure level just adequate to meet a predetermined food energy intake to an individual. The level of FEI, very much, depends upon the preference, activity, age and sex of an individual which could be obtained by finding the consumption expenditure or income level at which the person attains the food energy level (Ravallion and Bidani, 1994).

According to Couduel et al (2004), consumption is a better indicator of well-being for the following reasons. First, consumption is a better indicator of well-being due to the question of access, and availability of goods and services apart from the issue of income needed to get those goods and services. Second, consumption may be measured better than income. This is especially true in cases of poor agrarian economies, where there is frequent income fluctuation according to harvest cycle and the inconsistent flows of income as a result of large

informal sectors in urban economies of the developing countries. Consumption or expenditure may also better reflect households' actual standard of living and ability to meet basic needs. Thus, consumption expenditures indicate not only possessing of goods and services but also access to credit markets and savings in times of lower or even negative income level.

According to Mekonnen (2002), "the relative merits of using one method of measuring the poverty-lines over the others and the vice versa are still debatable." Each has its own strengths and weaknesses. Some argue that the poverty of the third world cannot be studied based on subjective criterion: since the very low level of income and the subsistence nature of economies made inaccurate results of such a measurement. On the other hand, others argue that poverty cannot be meaningfully quantified in excessively narrow and lean (slant) objective criteria." The fact that the concept, definition and setting of poverty lines are controversial, which invites one to look deep into how one can measure poverty. After measuring the poverty line the next step is setting the poverty line (Ibid, 2002).

Greer and Thorbecke (1986) as cited in Getachew (2009) proposed a method competing the food poverty line at which a person's food energy intake is just sufficient to satisfy a given required quantity of his/her daily calories.

### **3.3.2 Cost of basic needs approach (CBN)**

To implement the CBN method Ravallion and Bidani (1994) employed two stages: The first stage relates to determining the food consumption bundle just adequate to meet the required food energy requirements; while the second stage focuses on adding to the cost of an allowance for non-food needs. The food consumed is then valued at the prevailing price to obtain the food poverty line. The allowance for basic non-food consumption is again anchored on the consumption pattern of the poor. Two problems may arise. One problem relates to variation in estimating food components (minimum required nutrition level) across regions and ethnic groups, while the second problem may relate to estimating the non-food components of the poverty line since there are no objective criteria on which to base the satisfaction. In any case, the basic needs approach is the most widely used approach for setting poverty line in developed countries.

### 3.4 Poverty measures

There is no single measure of poverty; and all choices have their own pros and cons. The presence of a lot of instruments though each with some drawbacks, nevertheless, helps us to see the type and extent of poverty in a given society.

Generally, the measurement of poverty is said to consist of three phases. In the first phase, a choice of appropriate well-being indicator is made. In the second phase, the poor are identified from the population; and the third phase is concerned with the derivation of poverty indices using the available information. Concepts of poverty thresholds and lines have a long history extending back into and beyond the poor Laws in England. Despite their long history of operation, the methodology is still deeply flawed for analysis and the design of antipoverty policy interventions (Saith, 2005).

**Poverty indices:** is an indication of the standard of living in a country developed by the united nation (UN) to complement the human development index (HDI) and was first reported as the part of the human development report in 1997. In 2010 it was supplanted by the UN's multi dimensional poverty index. The poverty index reflects the socio economic differences and widely different measures of deprivation in developed and developing countries ([http://en.wikipedia.org/wiki/Human\\_Poverty\\_Index](http://en.wikipedia.org/wiki/Human_Poverty_Index)).

There are various types of poverty indices. However, the most commonly known ones are head count index (P<sub>0</sub>), poverty gap/depth index (P<sub>1</sub>), and the severity index (P<sub>2</sub>) (Getachew, 2009).

#### 3.4.1 Head count index (P<sub>0</sub>)

This index tells us the proportion of population, whose consumption expenditure falls below the predetermined poverty line. In other words, head count index is the proportion of the population whose measured standard of living (consumption) is less than the poverty line. While P<sub>0</sub> has an advantage of simple calculation it suffers from two problems: That is the head count index does not reveal how worse the poor; will be poorer; with a reduction in the

incomes of the poor; and it does not in any case depict distribution of income among the poor (Abbi and Andrew, 2003).

$$Po = q/N \text{-----} (1)$$

Where; q is the number of people earning income below the poverty line; and N the total number of people in the population.

### 3.4.2 Poverty gap/depth index (P1)

This measures how far an individual's income falls short from the poverty line. It is the difference between the poverty line and the mean income of the poor expressed as a ratio of the poverty line. Since this index is based on the aggregate poverty definition of the poor relative to the poverty line, it is by far better than head count index. Mathematically, P1 can be depicted as follows:

$$P_1 = 1/N \sum_{i=1}^q (Z - Y_i)$$

Where; P1= Poverty gap

Y<sub>i</sub> = Consumption expenditure or income of the poor

Z = Poverty line

Although this model measures the depth of poverty better than P0, it is insensitive to the number of individuals below the poverty line, and to the transfer of income among the poor (World Bank, 1983).

### 3.4.3 Severity index (P<sub>2</sub>)

The severity index, which is also called “the Foster-Greer-Thorbecke Index”, measures severity of poverty by squaring and averaging the gap between the income of the poor and poverty line. It is given by the formulae.

$$P_2 = 1/N \sum_{i=1}^q ((Z - Y_i)/Z)^2$$

Where, P<sub>2</sub> = severity index;

X<sub>i</sub> = income or consumption expenditure of household;

Z = the poverty line;

N = size of the population; and

q = the number of the poor.

This measure has clear advantages, such as comparing policies which are aiming to reach the poorest; and the measures can be thought of as the sum of two components: This includes an amount due to the poverty gap; and an amount due to the inequality amongst the poor.  $P_0$ ,  $P_2$ , and  $P_2$  tell the incidence, depth and severity of poverty among individuals, respectively.  $P_2$  changes in accordance with  $\alpha$ ; and it measures the mean of squared proportional poverty gaps. It gives more weight to the poverty of the poorest by squaring and averaging the gap.

### **3.5 Economics of scale**

Equivalence scale is an important aspect of comparing living standards across households. Households differ in size and consumption; compositions of simple aggregate households' consumption, though this could be quite misleading to understand about the wellbeing of individual member of a given household. As a result most analysis recognizes this problem; and use some form of normalization "consumption per adult male equivalent". For a household of any given size and demographic composition (such as one male adult, one female adult, two children) an equivalence scale measures the number of adult males which that household is deemed to be equivalent (Ravallion, 1992 as cited in Getachew, 2009).

### **3.6 Empirical evidence**

Poverty has many causes, though some differences exist according to the countries circumstances; and many scholars agree upon the major causes of world poverty. For example, Rosamund Ebdon (1995) outlined the primary causes, including: over population, the unequal distribution of resources in the world economy, inability to meet unequal standard of living and cost of living, inadequate education and employment opportunities, environmental degradation, certain economic and demographic trends, and inadequate income, and welfare incentives.

It is true that urban areas are hopes of life for they are centers of relatively better wealth, income, commerce, trade; and above all, they are sources of luxury. On the contrary, urban areas are also challenges to many. One of the many challenges it faces is growing urban poverty. The crucial determinants of poverty among the majority of mega cities and big urban areas; and nowadays the problem facing even medium towns of the third world is low levels



of physical and human capital, unequal distribution of productive assets, inadequate access to social services, high fertility especially amongst the urban poor, and urban development strategies which are biased against labor absorption (Oberia, 1993)

### **3.6.1 Urbanization and poverty**

Nowadays, the rapidly growing urban population of the developing nations poses unprecedented challenges for the national and urban policy makers. Urban areas in Ethiopia are in a state of expansion without the necessary preconditions; and this is paving the way for visible urban poverty. There is, indeed, ample evidence that urban areas are unable to cope with the increasing population; and delivery of services has deteriorated markedly over the years. Access to housing, health, and education services continues to be seriously limited. Basic sanitary conditions are terrible by any standard. Transportation facility, energy availability, access to job, labor market, skill reproduction, work entitlements, and finance are also at their lowest level (Dessalegn and Aklilu, 2002).

### **3.6.2 Chronic Poverty**

Abbi and Andrew (2003) analyzed the status of chronic poverty in urban Ethiopia. They conducted their study in three waves of panel data set on 1500 sample households collected through the Ethiopian Urban Household Surveys from 1994 to 1997. By making use of both descriptive and econometric methods, their study results showed the extent of “chronic and transitory poverty” (temporary poverty) in urban Ethiopia; and identified the characteristics of the poor and determinants that explain this chronic and transitory poverty. The researchers also examined the robustness (strength) of the pattern and trends of poverty suggested by the quantitative evidence by linking the subjective evaluation of welfare changes by households between two time periods. They conducted the study in the capital city, Addis Ababa and other secondary cities, such as: Bahir Dar, Nazereth, Dire Dawa, Mekelle, Awassa, Jimma, and Dessie.

Abbi and Andrew (Ibid) also analyzed poverty trends between 1994 and 1997 in the average welfare of 1045 households (whereby 555 are the rejected cases) in the panel as measured by real total expenditure per adult equivalent. They used total household consumption

expenditure as the best proxy for analysis because they found out that, in their survey, income has been reported by a much smaller number of households. The same researcher found out that during 1994-1997, median consumption expenditure per adult declined for the total sample from 100.46 Ethiopian Birr (ETB) to 73.4 Birr. This decline, according to their study, is evident in all regions; monotonic over the period, and particularly it is seen between 1994 and 1995. Overall, their study result suggested that household welfare deteriorated in urban Ethiopia between the years 1994-1997 (Ibid).

In the second and third waves of their study (1995 & 1997), Abbi and Andrew asked households' questions related to changes in household income, expenditure, and living standards since 1994 interview. The three questions asked to households were: (a) how has the households' income changed since 1994 interview? (b) how have households expenditure on basic needs changed since 1994 interview? and (c) to what extent has the living standard of the households changed since 1994 interview? The responses to these questions, though individual perceptions vary, most of the responses match to that of the quantitative evidence on poverty transitions between the two periods.

In general, the same researchers' study confirms that 40 percent of the cases indicated a significant match between the changes depicted by the quantitative evidence which shows that the percentage of their income changes is close to the percentage changes on the people's standard of living. The study further revealed that the connection between the subjective evaluation responses based on income and standard of living in contrast to the expenditure. Over all, their findings showed an increase in the incidence of urban poverty.

### **3.6.3 Determinants of poverty**

Tilman Bruk (2007) studied the determinants of poverty in Ukraine using probit regression model by estimating the household probability of either income or consumption poor. Ghazouani and Goaid (2001) undertook a study on the determinants of urban and rural poverty in Tunisia using logit and probit econometric models. The objective was to determine the potential factors of poverty and to evaluate their impact on the levels of the households' welfare. Ghazouani and Goaid used panel data that describe the statistical facts taken from a

“survey on budget consumption of the households” undertaken by Institute national de la statistique (INS). The results of this study show that, in both rural and urban areas, the main factors which discriminate against poverty include household head’s education, child dependency ratio, ratio of male and female employees in the household, socio-professional category of the head, and family residence. The result of the same study show that, the more educated the household head is, and a greater ratio of male and female employees in the household; and an increase in the number of children in secondary education reduces the likelihood of poverty.

Furthermore, the study results indicated that the economic disadvantage of female headship is mainly an urban phenomenon, where female headed household is significantly associated with a higher level of poverty.

#### **3.6.3.1 Consumption and poverty**

The poverty lines and the real per adult consumption expenditures are used to aggregate consumption poverty indices. The real per adult consumption is obtained through first dividing the nominal consumption expenditure by nutritional calories based adult equivalence family size to arrive at per adult consumption expenditure (Getachew, 2009).

As Revalion and Bidan (1994) suggested, the square value of  $\log (Y_i/Z_i^f)$  allow a better fit to the data because it permits the income elasticity of demand for food to exceed unity of low value of  $y$ . Lilongwe and Zomba (2001) studied the determinants of poverty in Malawi using the Malawi’s Integrated Household Survey of 1997-98. This was based on modeling the natural logarithm of total daily per capita consumption of survey households, which is a household survey indicator. The outcome of the survey proved households headed by older individuals in rural areas, holding other variables constant, will tend to be poorer than those households headed by younger individuals. In contrast, in the urban centers, the level of household welfare does not seem to be determined by the ages of the household head.

### **3.6.3.2 Gender and Poverty**

There is a limited consideration of gender issues with respect to measuring urban poverty, and in identifying the urban poor. This has implications for the formation of policy and in the design of anti poverty programs (Getachew, 2009).

Consideration of urban poverty often neglects differentials between men and women in terms of their access to income, resources and services. Such differentials may occur within households between men and women or between individuals (i.e. between single man and single woman) or between households with women-headed households. There are also gender-based differentials in vulnerability to illness and violence (Shewaye, 2002 and Mekonnen, 2002).

Garza (2001) examined the determinants of poverty in Mexico. The data used in the study came from the 1996 national survey of income and expenditure of households. A Logistic regression was applied based on the data with the probability of a household being extremely poor as the dependent variable and a set of economic and demographic variables as the explanatory variables. The results of the Logistic regression show that, there is no evidence that female-headed households are more likely to be poor than male-headed households. These studies are not in conformity with the previous study results. Hence previous study findings of case in this point will suffice to take the works of Shewaye (2002) and Mekonnen (2002) in which female-headed households are found to be the most affected and vulnerable groups in experiencing hard core urban poverty.

### **3.6.3.3 Marital status and poverty**

In poverty determinant analysis, marital status of the household head is an important constituent of the demographic variables. Economic theory and most empirical literatures support the notion that the chance of falling into poverty increases as one is married. This is because when people get married household size will often increase as new children are born and expenditures increase which in turn leads to searching for mechanisms of fulfilling additional needs and necessities for the family (Saith, 2005).

On the basis of Getachew's argument (2009), the probability of falling in to poverty increases as one gets married. This argument is based on the rational that as an individual gets married; then the members of families will increase due to new births, causing the families' expenditure needs to rise.

On the other extreme, if an unmarried individual has enough income, and can properly manage it, his/her accumulated capital becomes larger; and he/ she might have the probability to get out of poverty. However, due to the indivisible nature of some consumption goods (such as: television, water, electricity, etc.), the current consumption expenditure becomes high and results in fewer savings. Hence, this might lead to poverty mainly at an old age. In case of widows and divorces, different reasons are repeatedly reported; i.e., widows and divorced household heads sell their valuables and productive assets to solve their family members facing acute problems such as food shortages, unable to settle education fee, health care and other expenses; and this rise in family expenditures lead the household heads' probability of falling in to poverty (Ibid, 2009).

Unlike the above argument, as one is married the probability of falling in to poverty trap decreases due to the presence of additional labor force that generated additional income with economies of scale. Some consumption goods like: house light expense, TV set and other expenditures are indivisible in nature; and there should be variation in the expenditure whether a person is married or not. This premises lead to conclude that, marriage help to escape out of poverty (Ravallion, 1994).

#### **3.6.3.4 Age and Poverty**

Mekonnen (2002) undertake the determinates and dynamics of urban poverty in Ethiopia by using data on a panel of households drawn from the Ethiopian urban socio-economic survey conducted by the Economics Department of Addis Ababa University. The study used multivariate regression model to capture factors that determine changes in the standard of living and mobility of households in and out of poverty from the panel data. He employed total household expenditure per adult equivalent as the dependent variable in the model with the exogenously predetermined household characteristics as the explanatory variables.

Grootaert (1997) in Garza (2001) studied the determinants of poverty in Cote d'Ivoire by using Probit model. He used the data from Cote d'Ivoire living standards survey, which was conducted annually from 1985 to 1988 for analysis. He estimated the Probit model for both urban and rural areas separately. Both researchers (Mekonnen and Grootaert) found out that the probability to be poor decreases as the age of the household head increases.

#### **3.6.3.5 Household Size and Poverty**

Large households tend to associate with poverty (World Bank, 2000; Lanjaw and Ravallion, 1994). The effect of household size on household well-being very much depends upon the degree of rivalry in consumption among household members. All consumption in the family is probabilistic; so that every marginal increase in consumption increases the benefits of all household members; but, decreases the amount of saving in the household. Empirical literatures suggest that, there is a negative correlation between households size and poverty. For instance, Djavah Salehi-Isfahanicite in Yared (2005) for Iran concludes that households with larger number of family members tend to be poor. Likewise, Grootart (1997) for Cote d'Ivor; Garza (2001) for Mexico, also reached at similar conclusions.

#### **3.6.3.6 Education and Poverty**

Education has been taken as one of the poverty reduction/alleviation measures through the use of human development indicator; and is used to differentiate countries development level. Countries which have better educational attainment considered to be in a better development status than countries that have more illiterate citizens. Education impacts poverty in different ways. When an individual gets better educational attainment, his productivity, skill, bargaining power and competitiveness in the labor market as well as in the social set up become higher. This in turn helps households to earn more income, and reduces the probability to be impoverished (Getachew, 2009).

It is found out that poverty incidence, depth and severity decreases with increases in the level of education (schooling) of the head of the household. In urban areas, female headed households have been found to have higher poverty incidence, depth and severity than their male counter parts (MoFED, 2002).

### **3.6.3.7 Unemployment and Poverty**

The 1994 population census, estimated the rate of the overall unemployment in urban Ethiopia to be 22 percent in the age brackets 15-39 for which concentration of labor force is believed to be the highest. This accounts for the highest shares of serious social problems with their consequences, such as: juvenile delinquency, increasing crime, violence, higher number of street children and homeless people and become common features in many intermediate and bigger urban areas of Ethiopia. A study made by Dessalegn and Aklilu (2002) in urban Ethiopia witnessed the problem of unemployment to increase in the near foreseeable future. Their study revealed the depressing vision in that the prospects for economic growth and improvements in the labor market are very poor. Furthermore, the study results of the same authors revealed that, the issue of job insecurity is high in urban Ethiopia.

The unemployment rate in urban Ethiopia includes a large section of well-educated persons. This includes most young adults who complete 10 or 12 years of schooling; but, not fail to pursue their studies further becoming automatically unemployed. In any given year, there is around 190,000 of them a figure rising over time Abbi and Andrew (2003). With regard to the correlates of employment to urban poverty, Abbi and Andrew (2003) and Mekonnen (2002) found that, there is a negative and significant relationship between employment level of the household head and incidence of poverty.

### **3.6.3.8 Household house tenure**

Lack of access to secure and safe housing is a central feature of urban poverty. Housing is also an important productive asset since access to credit to secure a livelihood may depend on property ownership. The price and availability of land for housing influence on housing tenure and conditions which lead to the development of illegal or informal land markets for those poor who have limited capacity to pay, even though quantity, accessibility and tenure of housing are all important (Rajal Masika,1997).

### **3.6.3.9 Energy and poverty**

Access to electricity does not depend on the level of income. Rather it is mostly an issue of overall availability. There is a striking difference in the percentage of the population with

access to electricity as a lighting source across the urban spectrum. Access to shared electricity connections appear to be the norm in major towns and Addis Ababa, where virtually the entire population is covered by the grid. However, the escalation of the present tariff for electricity made households to shift from using the same energy for cooking to buying of charcoal (Shewaye, 2002).

According to Shewaye, this has, at least, brought two visible consequences. Firstly, the price of wood gets high in which the poor could not afford to buy. Secondly, it leads to the indiscriminate cutting-off trees to sale for the purpose of fuel wood. This has again a bad consequence to the sustenance of nature and will have direct/indirect effects to the well-being of the country as a whole. The issue of housing tenure has become a cross-cutting agenda of urban dwellers; and this is assumed to be used as one of the indicators of urban poverty. The numbers of house owners are believed to be small. This is particularly true in the capital city of Addis Ababa, and other secondary cities in the country. This is also getting attention in other medium towns of Ethiopia (Shewaye, 2002).

### **3.6.3.10 Water supply and poverty**

Access to improved water supply in urban areas of Ethiopia is low, but significantly higher than in rural areas. Some 45 percent of the urban population has access to improved water supply, based on the 1999 HICES/WMS data. The remaining 55 percent of the urban population use unimproved sources of water supply, like public standpipes and/or unprotected wells. On the other hand, urban areas are significantly better than rural areas, where access to improved water supply is as low as 2 percent in the rural.

The WHO/UNICEF Joint Monitoring Program (JMP) estimates a higher access rate to improved water supply in both urban and rural Ethiopia. In 2002, 81 percent of the Ethiopian urban population is estimated to have access to improved water supply, against 11 percent of the rural population (WHO/UNICEF, 2004). The discrepancy of access to water supply is likely to be related to a definitional issue given that, the JMP model classifies public standpipes as an improved source of water supply; while in this study, out-of-compound share taps. The others are classified as an un-improved source of water supply. The difference may



also reflect the difficulty of empirically testing the standard definition of improved water supply, in a context where shared water connection is the norm. International comparisons, based on JMP data, shows that urban access to water supply in Ethiopia (81 percent) is in line with the Sub-Saharan African average (estimated at 80 percent); while rural water supply access (11 percent) falls significantly behind Sub-Saharan African average (42 percent) (UNICEF, 2004).

#### **3.6.3.11 Telephone accessibility**

Africa is in the midst of a technological revolution, and nothing illustrates that fact than the proliferation of mobile phones. More Africans have access to mobile phones than to clean drinking water. In South Africa, the continent's strongest economy, mobile phone use has gone from 17 percent of adults in 2000 to 76 percent in 2010. Today, more South Africans – (i.e., 29 million) use mobile phones than radio (28 million), TV (27 million) or personal computers (6million). Only 5 million South Africans use landline phones. (<http://www.nielsen.com/us/en/newswire/2011/mobile-phones-dominate-in-southafrica.html>).

Ethiopia still practices government monopoly of telephone lines control almost all areas of its telecom sector. Market penetration is still very low, but major efforts to roll out a national fiber backbone and wireless access networks have resulted in an acceleration of growth in all market segments. Furthermore, a massive investment into fixed, mobile and Internet services, totaling US\$4 billion, was planned for the five years to 2012. According to the Ethiopian Telecommunication Corporations (ETC) report (2009), the Ethiopian government has a plan to privatize the national operator, ETC; and to introduce competition in mobile and Internet services. This report provides an overview of the telecommunication sector in Ethiopia, a profile of ETC, key statistics, and scenario forecasts for the years 2010 to 2015.

The mobile sector has been growing by 100% or more per annum in recent years, taking the network to its capacity limit, resulting in major infrastructure expansion efforts. Several broadband initiatives launched during 2004 promise to bring the country closer to the information society.

According to ETC's report (2009), for rapidly expanding national operator (ETC), the government has budgeted a record amount for the financial year 2004/2005 for infrastructure improvements. This report covers details of the developments taking place in Ethiopia's telecommunications market with key industry statistics.

The Ethiopian government with the help of its new information technology (IT) program is endeavoring, in a way similar to several other African countries to avoid the decaying public services. The plan helps to proceed an entire generation of infrastructure by going directly to internet technology (ETC report, 2009).

### **3.6.3.12 Health and poverty**

Health, without doubt, is a fundamental element in assessing the extent to which urban poverty prevails; simply because in the absence of proper health, the working force whether professionals, skilled or trained ones cannot have the capability to do jobs effectively and efficiently. Efficiency of workers considerably depends on their health. Workers whose health is not good and who fall sick quite often cannot do their job effectively and efficiently; and thus, their effectiveness and efficiency is bound to remain low (Somashakar, 2003).

According to the World Development Report (WD, 1993) as cited in Somashakar (2003), health plays immense contributions in reducing poverty. According to the same report, improved health contributes to economic growth in particular in the following four ways:

- i. It reduces production losses caused by workers illness;
- ii. It permits the use of natural resources that had been totally or nearly inaccessible because of various diseases;
- iii. It increases the enrollment of children in schools, and makes them better able to learn; and
- iv. It makes free for alternative uses of resources that would otherwise have to be spent on treating illness.

The economic gains are relatively greater for poor people, who are typically handicapped by ill health, and who stand to gain the most from the development of underutilized natural resources, balanced nutrition and medical care. Improvements in the health of the population

would contribute to increase their productive capacity, and leads to qualitative improvement in human capital. This, indeed, will have a gradual positive effect on reducing poverty.

Poverty very much relates with the health of households. Poor households are likely to be affected by any disease because they cannot afford the cost of high vitamins, and nutritionally rich food items. Low sanitation in their living environment also contributes its part. Moreover, when one member of the poor family become sick, poor economic capacity of poor households hinders providing medical care for the sick and the disease becomes transmitted to all household members (Getachew, 2009).

#### **3.6.3.13 Income and Poverty**

Urban poverty could also be determined by the income of individual. In Ethiopia, historical evidence shows that in most cases, the family depends on a single breadwinner. This single breadwinner, usually, does not have the capacity to fulfill the need and interest of the whole family, particularly those families composed of under age children, youngsters, the old aged ones, and the extended families. This would have a negative impact on the family to face continuing vulnerable life. Lack of access to skill development and upgrading of workers have a negative effect on income of an individual. Since urban life is a function of monetized economy, absence/presence of sustained family income plays a direct and great effect on urban poverty (Mekonnen, 2002).

# CHAPTER FOUR

## ANALYSIS RESULTS AND DISCUSSIONS

### 4.1 Introduction

Analysis of data collected from field survey involving sample households in Bahir Dar City and analysis results (findings) are discussed under this chapter in three sections. The first section deals with the derivation of food poverty and total poverty (food plus non food poverty) line head count, poverty gap, and poverty severity indexes derived based on food, food plus non food consumption and international poverty line of \$1 a day measurement reference. The next section discusses the descriptive analysis, mainly focusing on the relation between poverty and other socio economic and demographic variables. The socio economic and demographic factors (determinants of poverty) include: household head education, household head income, household head age, sex and dependency ratio, occupation, household head, family size, household head age, household head health, household head water, and household head tenure, sick household member, employment status, asset ownership, and access to credit services. The last section focuses on econometric/ regression analysis and the findings about determinant factors of poverty in Bahir Dar city.

### 4.2 Identifying the Poor

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 this study cost of basic needs approach (CBN) that permits some allowance for non food items are employed. International poverty line of \$1 a day per adult equivalent is also employed to measure poverty.

#### 4.2.1 Food energy intake method (FEI)

This method employs regression of natural logarithm of expenditure as dependent, and daily calorie intake as independent variable to compute the food poverty line at which a person's food energy intake is just sufficient to satisfy a given required quantity of his or her daily calories.

Thus, the following is the regression model used to estimate the parameter:

$$Y_j = a + bc_j,$$

where  $y_j$  = income or expenditure, and

$C_j$  = daily calorie intake.

The regression result of Bahir Dar city households' survey is shown below:

**Table 1: Regression statistics for food poverty line of Bahir Dar city.**

Multiple R	0.957753018							
R Square	0.917290844							
Adjusted R Square	0.91697516							
Standard Error	2.400121357							
Observations	264							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	16738.67828	16738.68	2905.727	8.1375E-144			
Residual	262	1509.272622	5.760583					
Total	263	18247.9509						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.086359215	0.29159207	0.296164	0.767339	-0.487802983	0.660521413	-0.487802983	0.660521413
X Variable 1	0.001123262	9.21198E-05	53.90479	8.1E-144	0.004784308	0.005147086	0.004784308	0.005147086
<b>zf=e<sup>(a+b)</sup></b>	a	b	bR	a+bR	zf			
	(0.086359	+0.001123	*2.471177	2.557536	12.90			

Where,  $z_f$  = food poverty line

$a$  = intercept of the regression

$b$  = coefficient of calorie intake, and

$R$  = the standard calorie intake of person per day

Thus, from the above regression result  $z_f = e^{(0.086359215 + .001123262 * 2200)}$

$$= 12.90$$

In Bahir Dar city, people who obtain an income or with expenditure of below Birr 12.90 are considered below food poverty line (poor); and those obtained more than Birr 12.90 are categorized in the above food poverty line (not poor). The estimation of the poverty line is based on adult equivalent consumption; and thus, people who spend or with expenditure below Birr 12.90 per adult equivalent per day is food poor; while those who earn or spend above Birr 12.90 are non food poor.

**Table 2: Food poverty status of Bahir Dar city by kebeles**

Kebele	Poor	%	Not poor	%	Total Respondent	%
Tana Kebele	23	8.71%	29	10.98%	52	19.70%
Hidar 11 Kebele	32	12.12%	24	9.09%	56	21.21%
Shum Abo Kebele	30	11.4%	24	9%	54	20.45%
Belay Zeleke Kebele	28	10.61%	24	9.09%	52	19.70%
Sefene Selam Kebele	38	14.39%	12	4.55%	50	18.94%
Grand Total	151	57.2%	113	42.8%	264	100.00%

Source: Author's field level survey of 2012

As shown in Table 2 above, from the total population of the survey 57.2% of the sample households live below food poverty line; and the remaining 42.8% are above food poverty line. From all sample households of those kebeles of Bahir Dar city, Sefene Selam Kebele is reported to have the highest food insecure households that account 14.39%. The other kebles such as, Belay Zeleke Kebele, Shum Abo, Hidar 11 , and Tana kebele each accounts with 12.12 % , 11.4% , 10.61% , and, 8.71% food insecure households, respectively. In sum, Sefene Selam Kebele is found with the highest population facing the highest food shortfall, a kebele with many poor residents. Tana kebele accounts for only 8.71% of food poverty groups, which is the least kebele to face food poverty problem.

#### **4.2.2 Cost of basic needs approach (CBN) /Total poverty line:**

People in urban areas are characterized by monetized economy. They do not only spend their money on food items; but also on clothing, education, health and other socio-economic activities. Therefore, computing poverty line that includes food and non food spending (total poverty) is an inevitable approach to analyze poverty. To determine total poverty line, the food poverty line Birr 12.90, and some allowance for non food items should be included.

Revallion and Bidani (1994) introduced a better technique to calculate the total poverty line based on cost of basic needs approach. According to these authors, households usually spend on non food goods as some non food goods are similarly basic. Thus, similar to food poverty, total poverty line can be computed using the regression equation as indicated in the methodology part (chapter 2). The result of the regression analysis are presented in Table 3 below.

**Table 3: Regression statistics for total poverty line of Bahir Dar city**

RSquare	0.485913353							
Adjusted R Square	0.483951191							
Standard Error	0.106407175							
Observations	264							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	2.803920073	2.80392	247.6417	9.84307E-40			
Residual	262	2.966491572	0.011322					
Total	263	5.770411646						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.786042466	0.02303674	25.43947	9.57E-73	0.540681749	0.63140318	0.540681749	0.631403183
X Variable 1	-0.045473392	0.002889651	-15.7366	9.84E-40	-0.051163288	-0.0397835	-0.051163288	-0.039783496

Source: Author's field level survey of 2012

As revelation and Bidani (1994) suggested, the square value of  $\log (Y_i/Z^f)$  allow a better fit to the data because it permits the income elasticity of demand for food to exceed unity of low value of  $y$ . Based on this principle the household survey data is regressed and provide the above parameter ( $\alpha$  and  $\beta$ ) results. Total poverty line  $Z$  is then determined as:  $Z=z^f(2-\alpha)$

Where,  $Z$  = total poverty line

$z^f$  = food poverty line and

$\alpha$  = parameter that is estimated from the above regression,

Thus from the above regression result we get:

$$Z = 12.90 (2- 0.786042)$$

$$= 15.66 \text{ Birr per day per adult equivalent.}$$

In Bahir Dar city people who obtain an income or with expenditure of below Birr 15.66 are categorized below total poverty line (poor); and those obtaining an income more than Birr



15.66 are categorized in the above poverty line based on adult equivalent consumption of basic needs. Hence, people who earn an income with expenditure below Birr 15.66 per adult equivalent per day are categorized as poor; and those who earn or spend above Birr 15.66 are categorized as non poor.

**Table 4: Total poverty status of Bahir Dar city by Kebele**

<b>Kebele</b>	<b>Poor</b>	<b>%</b>	<b>Not poor</b>	<b>%</b>	<b>Total Poverty</b>	<b>%</b>
Tana Kebele	35	13.26%	17	6.44%	52	19.70%
Hdar 11 Kebele	44	16.67%	12	4.55%	56	21.21%
Shum Abo kebele	40	15.15%	14	5.30%	54	20.45%
Belay Zeleke Kebele	39	14.77%	13	4.92%	52	19.70%
Sefene Selam Kebele	43	16.29%	7	2.65%	50	18.94%
<b>Grand Total</b>	<b>201</b>	<b>76.14%</b>	<b>63</b>	<b>23.86%</b>	<b>264.00</b>	<b>100.00%</b>

Source: Author's field level survey of 2012

As shown in Table 4 above, from the total sample households drawn in Bahir Dar city, the share of people living below total poverty line are 201 (76.14%); while 63 (23.86%) of the sample households live above poverty line with an income of Birr 15.66 per adult per day.

Even though the poverty line of Bahir Dar city is computed; and poor and non poor are identified based on 12.90 Birr income per adult per day food poverty line; and 15.66 total poverty line, the researcher used the international poverty line of \$1 a day to compare different population groups living below poverty line.

As shown in Table 5 below, the percentage of people living below poverty line based on one dollar a day principle is 82.95. This shows that the number of people earning below one dollar a day increases by 25.72% and 6.81% compared with food poverty line and total poverty

line, respectively. The total poverty status of people in sample kebeles as shown in Table 4 above shows slightly having different share for the whole city poverty status in that, Hidar 11 Kebele and Sefene Selam Kebele are the leading residence being as a home of poor people living below poverty line.

**Table 5: One dollar a day poverty status of Bahir Dar city by Kebeles**

<b>Kebeles</b>	<b>Poor</b>	<b>%</b>	<b>Not poor</b>	<b>%</b>	<b>Grand Total</b>	<b>%</b>
Tana Kebele	42	15.91%	10	3.79%	52	19.70%
Hidar 11	48	18.18%	8	3.03%	56	21.21%
Shum Abo kebele	45	17.05%	9	3.41%	54	20.45%
Belay Zeleke Kebele	40	15.15%	12	4.55%	52	19.70%
Sefene Selam Kebele	44	16.67%	6	2.27%	50	18.94%
Grand Total	219	82.95%	45	17.05%	264.00	100.00%

Source: Author's field level survey of 2012

As noted earlier, Sefene Selam and Hidar 11 kebeles have less economic capability than the other selected sample kebeles. That is, Sefene Selam could be taken as the home of daily labourers, guards, etc. where different business enterprises are also operating; while Hidar 11 Kebele is one of the remotest kebeles with weak infrastructure networks in comparison with the other four selected sample kebeles.

### **4.3 Poverty indices**

Poverty measures such as head count index, poverty gap index and foster Greer Thorbeke index which is also called poverty severity index are the most frequently used measures of poverty. In the study, after the determination of food and total poverty lines, the poverty indices indicated are computed using the field survey household data. The results of the survey are presented in the following subsections.

### 4.3.1 Head count index ( $P_0$ )

This index tells us the proportion of population, whose income or consumption expenditure falls below the predetermined poverty line. It is the share of the population who cannot afford to buy or consume basic basket of goods. On the basis of the study findings (see table 6 below), the head count index for food poverty in Bahir Dar city is 0.572.

**Table 6: Food poverty indices of Bahir Dar city**

Kebele	$P_0$	$P_1$	$P_2$
Tana Kebele	0.4423	0.1210	0.0456
Hidar 11 Kebele	0.5714	0.1615	0.0655
Shum Abo Kebele	0.5926	0.1903	0.0864
Belay Zeleke Kebele	0.5385	0.1446	0.0514
Sefene Selam Kebele	0.7600	0.2136	0.0773
Grand Total	0.5723	0.1659	0.0653

Source: Author's field level survey of 2012

### 4.3.2 Depth of poverty or poverty gap ( $P_1$ )

This poverty measure captures the mean aggregate income or consumption shortfall relative to the poverty line across the whole population. It gives information about the households on how far they are from the poverty line. It is computed by adding all the shortfalls of the poor, and dividing the total by the total resource needed to bring all the poor to the level of the poverty line.

Thus, the poverty gap can be used as a measure of the minimum amount of resource necessary to eradicate poverty. In the case of Bahir Dar city, poverty gap index shows the amount that should be transferred to the poor with right targeting to bring all the poor out of poverty. That is, each poor should get exactly their income or expenditure shortfalls (the amount he/she needs) to be lifted out of poverty. The depth of poverty gap  $P_1$  of Bahir Dar city is for food

and food plus non food consumption are 0.1659, and 0.2571, respectively as shown in Tables 6 and 7. The amount of resources required to get people out of poverty in Bahir Dar city is 16.59% of food spending and 25.71% of food plus non food spending for food poverty and total poverty correspondingly. When the poverty gap index becomes higher, the amount of resources required to spend to the poor under proper targeting becomes higher. The above results indicate that people living below poverty lines in Bahir Dar city have averagely a shortfall of resources about 16.59% for food, and 25.71% for food plus non food consumptions. The analyses of outputs in the respective kebele administrations provide the same information as explained above for the whole of Bahir Dar city.

**Table 7: Total poverty indices of Bahir Dar city**

<b>Kebele</b>	<b>P<sub>0</sub></b>	<b>P<sub>1</sub></b>	<b>P<sub>2</sub></b>
Tana Kebele	0.6731	0.2015	0.0828
Hidar 11	0.7857	0.2601	0.1127
Shum Abo Kebele	0.7407	0.2745	0.1338
Belay Zeleke Kebele	0.7500	0.2313	0.0955
Sefene Selam Kebele	0.8600	0.3197	0.1392
Grand Total	0.7614	0.2571	0.1128

Source: Author's household level field survey of 2012

#### **4.3.3 Poverty severity (squared severity gap) (P<sub>2</sub>)**

This measure reflects the sum of two components, an amount due to the poverty gap, and an amount due to inequality amongst the poor. That means the index undertakes both the distance separating the poor from the poverty line and the inequality among the poor. The value of this index is higher for households far away from the poverty line. In addition, the value p<sub>2</sub> for a specific kebeles indicates the severity of poverty for people living in a same kebeles is higher. Thus, the p<sub>2</sub> results of household level survey in Bahir Dar city are 0.0673 and 0.1177 for food and food plus non food consumption, respectively.

**Table 8: Poverty indices of Bahir Dar city based on 1\$ a day**

Kebele	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Tana Kebele	0.8077	0.2665	0.1169
Hidar 11 Kebele	0.8571	0.3285	0.1537
Shum Abo Kebele	0.8333	0.3342	0.1722
BelayZelege Kebele	0.7692	0.295	0.1335
Sefene Selam Kebele	0.8800	0.3864	0.1876
Grand Total	0.8295	0.3218	0.1527

Source: Author's field level survey of 2012

In Bahir Dar city, the study results show that, the head count index for food poverty is 0.572; and the total poverty head count index is 0.7614 as shown in Tables 3 and 4, respectively. The international \$1 a day head count index is 0.8295. These results imply that, the proportions of people that live below food poverty, total poverty and 1 \$ a day poverty line are 57.23%, 76.14% and 82.95% of the total sample household respondents, respectively. The food energy intake or food poverty index tells that 57.2% the surveyed population cannot afford to buy or consume basic basket of goods. However, when the expenditure for non food goods, such as house rent, clothing, education and health expenditure, electric and water bill payments are added, the share of the population who are found below the total poverty line becomes 76.14%. This result assures that, high actual expenditure on spending of households in Bahir Dar city goes to non food consumptions particularly spending related to house rent, health and clothing. Expenditure for energy is reported to take great share of the household income. The analysis result shows that, People are forgoing/sacrificing food consumption (reduce the standard daily calorie intake) in order for households to maintain for other non food consumption expenditures/needs.

In general, the descriptive analysis of urban household poverty status of Bahir Dar city is measured based on food poverty line. As indicated above, the proportion of people living

below food poverty line becomes 57.23% .As shown in Table 6 (above) for grand total row and column Po, which is different from the Ethiopian urban areas poverty head count of 35% as reported by MoFED (2002).

#### **4.4 Descriptive analysis of urban household poverty**

As mentioned earlier, the descriptive analysis of this study is based on the socio economic and demographic characteristics of the data obtained by household survey in Bahir Dar city. The next descriptions take the food energy intake approach (FEI) or food poverty line to identify the poor households from the non poor households. The results obtained are discussed in the subsections below.

##### **4.4.1 Gender and poverty**

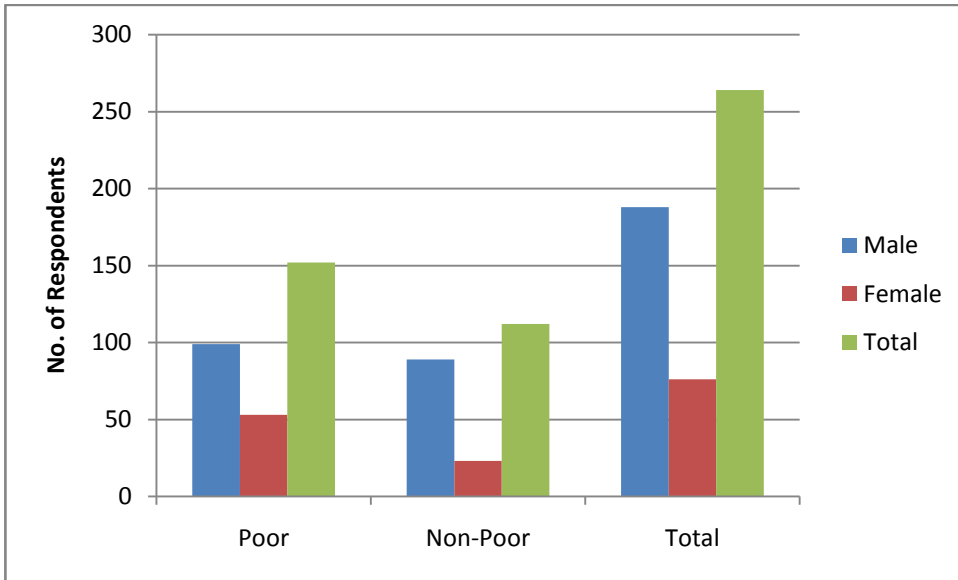
Due to socio-economic factors poor women headed households are greater than men headed households. Several studies, such as determinants of poverty in Gondar city studied by Getachew (2009), and determinants of poverty in Mexico studied by Shewaye (2002) reason out many factors for the case. Female headed households have less opportunity in monetary income generation than households headed by men.

**Table: 9 Samples showing Gender and poverty status in Bahir Dar City**

<b>Sex of samples</b>	<b>Poor</b>	<b>%</b>	<b>Non-Poor</b>	<b>%</b>	<b>Total</b>	<b>(100%)</b>
Male	98	64.9	89	78.8	187	70.8
Female	53	35.1	24	21.2	77	29.2
Total Samples	151	100	113	100	264	100

Source: Author's field level survey of 2012

**Figure 1: Distributions of samples by Gender and poverty status in Bahir Dar City**



Source: Author's field level survey of 2012

In the study, from the total of 264 sample households interviewed, 29.2% are female household heads, and 70.8% are male household heads. Of the total female headed households, 68.8% of them are found to be poor; and 31.2% are non poor. Of the total male headed households, only 52.4% of them are poor, and the rest (47.6%) are non poor.

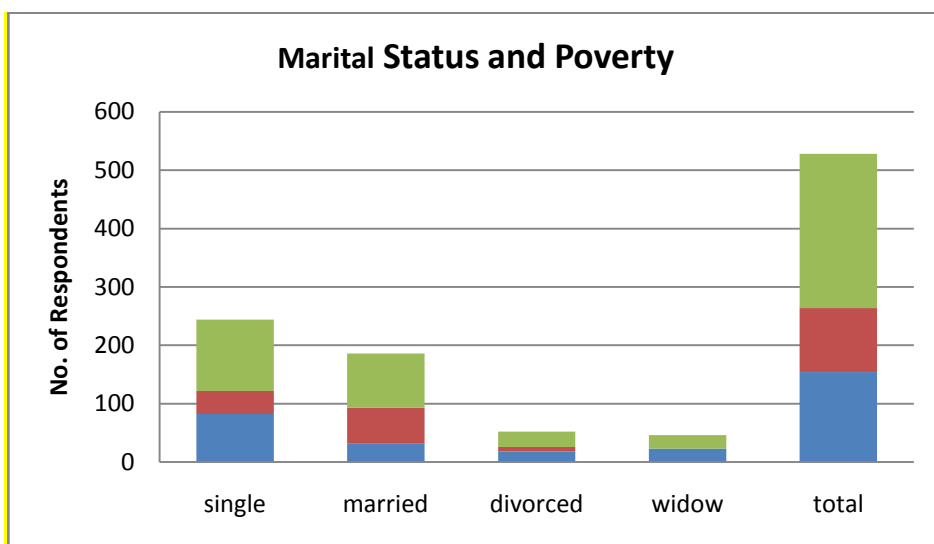
The study results obtained about gender of household heads and poverty status tally with or support the theories of Wratten (1995), Shewaye (2002) and Mekonnen (2002) that, gender-based differentials in vulnerability to illness and violence as well as women's subjected to discrimination in labor markets, in getting credit services, property ownership, etc. compared to men. Because of these, female-headed households are the most affected and vulnerable groups to growing urban poverty. The chi-square test  $\chi^2 (1) = 6.05 = \text{critical value} = 6.05$  also indicates significance at 95% confidence interval. This implies that poverty more affects female household headed ones than their male counter parts.

#### **4.4.2 Marital status and poverty**

Scholars, like Ravallion (1994) argue about the relation between poverty level and marital status of households. In poverty correlation analysis, marital status of the household head is

an important constituent of the demographic variables. Economic theory and most empirical literatures also support the notion that the chance of falling into poverty trap increases as one gets married. The actual result of the study area is discussed below.

**Figure 2: Sample distribution of marital status and poverty level in Bahir Dar City**



	Single	married	divorced	widowed	total
Total	122	93	24	22	264
Non poor	42	63	8	0	113
poor	80	30	18	23	151

Source: Author’s household level field survey of 2012

Of the total sample household respondents, 93 (35.22%) are married; 122 (46.21%) are unmarried (single); and the remaining 22 (8.33%); and 24 (9.10%) of sample household respondents are widowed and divorced ones, respectively. As shown in Figure 2 above, from the total of 151 poor sample household respondents who live below the poverty line, unmarried sample households accounts 80 ( 53%); while married poor sample households account 30 (19.9 %) followed by widowed 22 (15.2%), and divorced 18 (11.92 ).

Even though the proportion of the unmarried groups relative to the total poor unmarried (single) are found to be higher than the non poor unmarried (i.e., 65.6% of the total unmarried), the proportion of poor people in widowed and divorced proportional to the total widowed and divorced sample respondents are found to be high i.e. 100% and 69.23%,



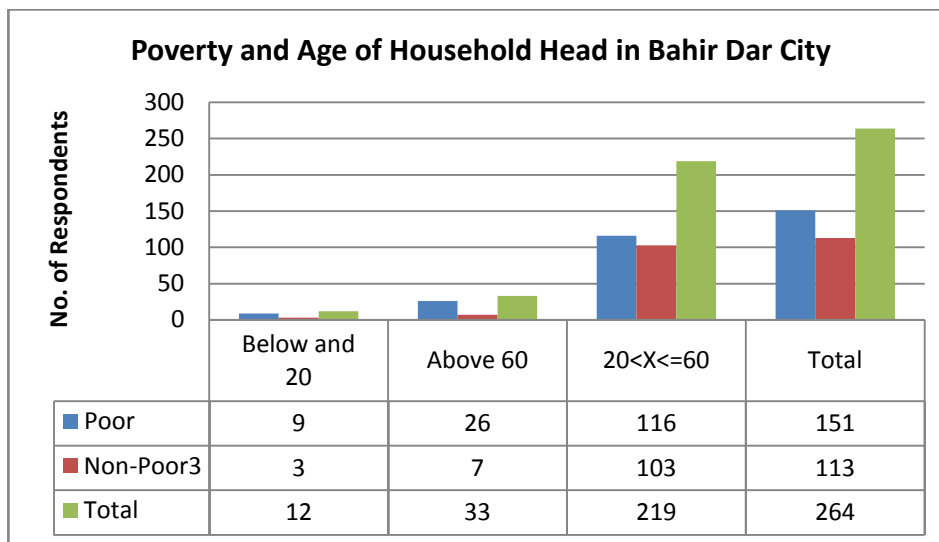
respectively. Thus higher proportion of the poor is found in widowed and divorced sample household categories, respectively.

The relation between marital status and poverty does not coincide with the arguments of Getachew (2009) that, the probability of falling in to poverty increases as one gets married. The chi-square test  $\chi^2(3) = 45.57$  is significant since it is much greater than  $\chi^2(3)$  critical =7.81 at 99% confidence interval. This implies that poverty increases as one does not get married as indicated in the report above; and this argument does not justify the argument that large families in developing countries are exposed to growing poverty.

#### 4.4.3 Poverty and household age

Scholars, like Mekonnen (2002) argue that, as an individual gets older, the probability of the same individual to be poor becomes higher and higher. This is true in developing countries where an individual becomes poor at old age as his/her productivity decreases having few savings to compensate for the loss of his/her productivity and income. At the younger age, the probability of being poor also becomes high due to low job opportunities and other priorities, like lack of education and the like.

**Fig 3: Sample distribution of poverty and age of household head in Bahir Dar city**



Source: Author's field level survey of 2012

In the study area, 82.9% of the households were within the age of 20 to 60; 12.5% of the respondents were found to be above the age of 60; and the remaining 4.5% of them have fallen below 20.

However, when we compute the share of the poor, within their age range total, some 76.8% (age 20 to 60) household heads are poor; while, 5.9 % and 17.2% of the poor are found with the age range below 20 and above 60, respectively. This result, however can lead to a wrong conclusion, in that the share of respondents in the age range of 20 to 60 are not considered properly. When we compute the share of the poor within their age range total, 53% are found in the age range of 20 to 60; while 78.8% and 75% of the poor are found in the age above 60 and below 20, respectively.

The study results are therefore, found to be in conformity with the findings of previous researchers (Mekonnen, 2002; Groot 1997; Garza 2001). In addition, the result was in conformity with the life cycle theories, which states that poverty is relatively high at younger ages due to low income; decrease during middle age due to increase in income; and then increase again at old age where income gets very limited. The chi-square test  $X^2(3) = 9.5$  obtained is greater than  $x^2(3) = 5.99$  critical value; and becomes significant at 95% confidence interval, assuring that differences exist between the poor and non poor households based on their age ranges.

#### **4.4.4 Poverty and household size**

The maximum and minimum household size of the study area is 12 and 1, respectively. The average household size is 4 people per household (See Table 10 below).

**Table 10: poverty and household size in Bahir Dar City**

Poverty status	Percentage shares by social categories					
	poor	%	non poor	%	total	%
Four and below	86	57%	88	77.8%	174	66%
Five to eight	62	41%	24	21.2%	86	33%
Nine and above	3	2%	1	1%	4	2%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

As shown in Table 10 above, the share of poor household size four and below are 57%; while poor households that have household sizes of five to eight are 41%, and with nine and above 2% of the total poor households. When we compute the share of the poor within their respective household size in terms of age ranges, it appears to be 49.4%, 72% and 75% for age ranges of four and below, five to eight and nine and above, respectively.

The result is consistent with the theory of Lawson (2003). According to Lawson's study in Uganda, an increase in household size has significant positive influence on the likelihood that a household is chronically poor or fall into poverty trap. The chi-square test  $X^2(3) = 12.61$  which is greater than  $x^2(3) = 5.99$  critical value, becomes significant at 99% confidence interval. The result of the study becomes consistent with the same theory in that as household size increases, the probability of the household to fall in poverty trap increases.

#### **4.4.5 Poverty and education of households**

In the study area, information about household's educational level was collected. Analysis of the data collected shows that among the total of 151 poor sample households 20.5% of them are illiterate. A total of 35 sample households (23%) of the poor sample category have attended up to grade eight or below. As shown in Table 11 below the number of sample households who attend secondary school at certificate level are 32 household samples, which make up 21% of the total households; while those households who graduates with first degree

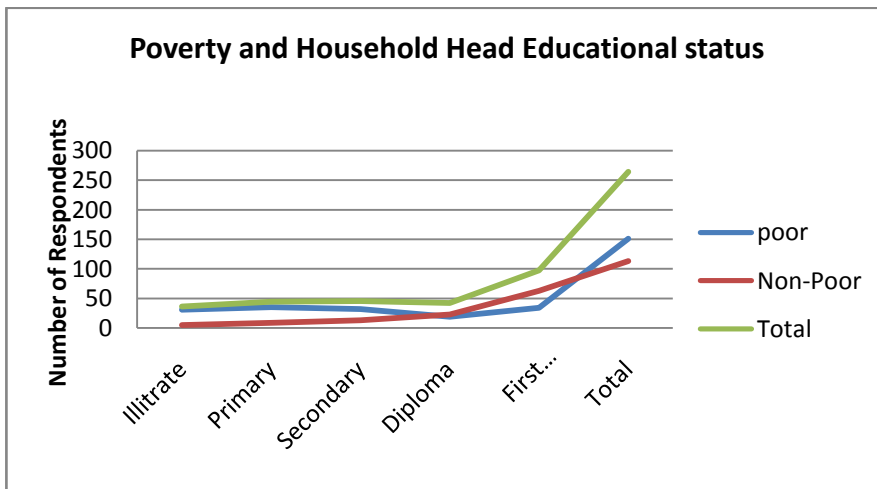
and above are 22.5%. Hence, analysis findings of the study suggest that, the trend to being poor diminishes as the educational attainment of households increase.

**Table 11: Poverty and households educational status by social categories**

Categories	Illiterate groups	Primary education	Secondary education level	Diploma level	First Degree and Above	Total
Poor	31	35	32	19	34	151
Non Poor	5	9	13	23	63	113
Total	36	44	45	42	97	264

Source: Author’s field level survey of 2012

**Figure 4: poverty and household heads educational status in Bahir Dar city.**



Source: Author’s field level survey of 2012

As shown in figure 4 above, the blue line shows a decreasing trend from illiterate to secondary certificate, diploma, degree, and above educational levels. This shows that as education levels of the households increase, their probability to be poor decreases and the vice versa. In the same figure above, the green line depicts averagely increasing from the lowest education level (illiterate) to the highest level (degree and above). This trend is in compliance with the theory of Getachew (2009) which states/argues that, as people get educational attainments, their productivity and income generating capacity increases; and less likely to become poor. The non poor sample households are small in number at lower level of

education. For example, analysis findings show that there were 4.4% illiterate non poor households, while the numbers of the non poor sample category at diploma and above educational level increased to 20.3% and 55.7% of the households, respectively.

The analysis results are found to be consistent with the theories of Mekonnen, Bereket and Abebe (2002) that assured the remarkable correlation between poverty and the level of education on their studies. The study found out that, the percentage of poor people significantly declines as the level of education of the household heads increase. The outcome of the researcher's survey also asserted that the size of non poor households' level of income increases relatively as the household educational attainment increases. The results of Chi-square test  $\chi^2(4) = 27.28$  greater than  $\chi^2(4)=9.49$  critical values significant at 99% shows the presence of significant relation between poverty and education level of households (i.e, poverty decreases as the household educational attainment become higher).

#### **4.4.6. Poverty and household head education**

Education plays a significant role in reducing poverty. As explained earlier households who attended higher educational level have low probability to be poor; and those who have not attended would have higher probability of being poor. Getachew (2009) argue that poverty can pass on from parent to child like other hereditary relationship. This is because parents who are poor are not able to invest on children's education; and this denies them the opportunity to create assets. As a result, a child who grows from poor family is very likely to become poor, though there could be exceptions. An assessment of the education level of sample households as it relates to poverty is indicated in Table 12 below.

**Table 12: Poverty and household head education in Bahir Dar city.**

Educational level	Percentage shares by social categories					
	Poor	%	Non Poor	%	Total	%
Illiterate	31	20.5	5	4.4	36	13.6
Primary (1-8)	35	23.1	9	7.9	44	16.6
Secondary to certificate	32	21.1	13	11.5	45	17
Diploma	19	12.5	23	15.2	42	15.9
Degree and above	34	22.5	63	55.7	97	36.7
Total	151	100	113		264	100%

Source: Author's field level survey of 2012

As shown in Table 12 above, of the total illiterate sample respondents, 86% of them are poor and the largest share of the poor come from such household base. From the total sample households, the percentage share of the poor for each primary, secondary to certificate, diploma and first degree and above educational levels are: 78%, 71%, 45% and 35%, respectively. Thus, with an increasing educational level of households, the numbers of households getting in to poverty tends to decrease. With regard to this, Human Capital Theory draws links between education and poverty. Education as a means of poverty reduction increases GNP at macro level. Thus, the same theory states that investment on education is one of the main policy intervention areas of a country that enables to alleviate poverty.

#### **4.4.7. Poverty and employment type:**

In the study area, the sample respondents' employment (occupation) type is summarized below based on analysis results shown in table 13.

**Table 13: Poverty and employment types in Bahir Dar City**

Employment Type	Percentage shares by social categories					
	Poor	%	Non-Poor	%	Total	%
Self Employed	90	59.6%	77	69%	167	63%
Government hired	26	17.2%	18	16%	44	17%
Private sector employed	15	9.9%	4	3.5%	19	7%
Non Government	2	1.3%	14	12%	16	6%
Daily Labourer	18	12%	0	0	18	7%
Total	151	100%	113	42.8%	264	100%

Source: Author's field level survey of 2012

From the total sample household respondents, 63% are self employed; while 17% are government employees. Some 7% and 6% of the sample respondents are employed in the private sector and NGOs, respectively; while some 7% of the total respondents sale their labour (as daily labourers).

The analysis results show that, the highest numbers of the poor (59%) are found self employed; and Government organizations are found as the second sources of employment for some 17% of the total sample respondents. The size of daily labourers and private sector employed sample households account for 12% and 9.9% of the total poor sample households, respectively. Self employment includes different employment types and activities, like: petty-trading, trade, metal and wood works, Tella/Tej preparation and selling, including other trading activities like hotel, and restaurants, and shopping related business activities. Abbi and Andrew (2003) did argue that, there is a negative and significant relation between employment level of the household heads and the incidence of poverty.

Therefore, identifying and understanding which type of self employment those poor households are engaged in is very important for promoting different job opportunities.

**Table 14: Types of self employment (occupation)**

Self-Employment Types	Percentage shares of self employment by social categories					
	Poor	%	Non-Poor	%	Total	%
Petty-trade	50	50%	18	23.7%	68	38.4%
Other trading activities	15	15%	32	41.5%	47	26.6%
Metal/Wood Works	13	13%	17	22.1%	30	16.9%
Hotel and restaurant	0	0	6	7.8%	6	3.4%
Tella/Tej preparation and selling, and others	22	22%	4	5.2%	26	14.7%
Total	100	56.5%	77	43.5%	177	100%

Source: Author's field level survey of 2012

From the total of 177 self employed sample households, 68(38.4%) respondents are employed in petty trading, and 47 (26.6%) in other trading activities; while 30 (16.9%) are engaged in metal/wood works, and 26 (14.7%) respondents engaged in the preparation and selling of local alcoholic drinks (tella/tej) and other micro activities. Only 6(3.4%) of the total respondents are engaged in hotels and restaurants. In particular, petty trading activities, like tella/tej preparation and selling, and other micro business activities are found to be the main poor households' employment sources. On the other hand, business activities relating to hotels and restaurant management in the sample study area is found to be non poors' ownership and employment sector. CSA (1999) national labour survey showed that, urban centers in Ethiopia have little economic dynamism and their economic base is largely services and trade.

Respondents were asked whether they have unemployed active work force member in their household. Among the total sample respondents 185 (70%) replied 'yes' there is; while the other 79 (30%) households replied 'no' unemployed active work force in their respective households. Thus, in the study area, 70% of the households have unemployed household members who could significantly contribute to the respective families/household income and



to the city's economy at large, if they get the employment opportunities. Of the total respondents who replied having unemployed household members, 85 (56.3%) of them are in the poor household category; while the remaining 43.7% are from those sample households of the non poor social groups.

#### 4.4.8 Poverty and housing conditions

Housing conditions are important measures of poverty via increased utility and its impact on health status of households. In the study area, some 40.2% of the sample respondents have their own houses. The other 47% and 12.5% of the samples get the housing facility rented from private owners and kebele administrations, respectively. From the total poor sample households, some 38.4% of them have their own houses; and the remaining 45% and 16% of the households live in houses rented from private house owners and kebeles, respectively. The majority of the poor households who do not own houses live mainly in houses rented from private owners.

**Table 15: Poverty and housing conditions in Bahir Dar city.**

House ownership situation	Percentage share by social categories					
	Poor	%	Non-poor	%	Total	%
Own house	58	38.41%	48	42.5%	106	40.15%
Kebeles' house rented	25	16.55%	8	7.1%	33	12.5%
Private house rented	68	45.03%	57	50.4%	125	47.35%
Total	151	57%	113	43%	264	100%

Source: Author's field level survey of 2012

From the total of non poor sample households, 50.4% of them live in private rented houses; while 42.5% of them live in their own houses followed by 7.1% living in rented kebele houses. Ownership of houses is one way to differentiate the poor from the non poor households because the non poor households mainly have their own houses compared to their poor counter parts.

House building materials are important indicators as well as to judge the quality of the house those households live in. The main materials used for constructing houses in the study area are concrete blocks/bricks, houses built from wood plastered with mud (cement plastered walls). Responses of sample households on the nature of building materials of houses they live in are presented on Table 16 below.

**Table 16: Composition of building materials of houses where sample respondents live in Bahir Dar city.**

Building Material composition of houses	Percentage shares by social categories					
	Poor	%	Non-poor	%	Total	%
Wood plastered with mud, and cement sand mix plastered walls	105	69.5%	51	45.1%	156	59.1%
Concrete blocks	46	30.5%	60	53.1%	106	40.1%
Bricks	0	0	2	1.8%	2	0.8%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

Of the total sample respondents, 59.1% of them live in the house built from wood plastered with mud followed by 40.1 and 0.8% 'ashewa girf' (cement and sand mix plastered wall) and hollow concrete block/bricks, respectively. As shown in Table 16 the majority of both poor and non poor sample households mainly live in houses made from wood plastered with mud.

The chi square test shows  $X^2 (2) = 17.43$  greater than 5.99 critical value which is significant at 99% confidence interval, showing the presence of relations between poverty and types of living houses. The study results also indicate that many of the households whose living houses are built on hollow concrete blocks and bricks are none poor social groups.

Place of cooking meal can also be an indicator to see and identify the condition of households with different economic status. Households usually use differing kitchens, living rooms and open spaces for cooking purposes depending on their economic status. Households with better economic status mainly use all the facilities mentioned; while poor households mostly use living rooms and open spaces. To identify sample respondents condition following their

respective cooking places, they were asked questions (see annex 1); and their reply is summarized in table 17 below.

**Table 17: Poverty and food preparation space and facilities used by sample households in Bahir Dar city**

Type of cooking space/facilities	Percentage shares by social categories					
	Poor	%	Non-poor	%	Total	%
Use kitchen facility	99	65.6%	77	68.1%	176	66.7%
Using living rooms	26	17.2%	30	26.5%	56	21.2%
Using open spaces	25	16.5%	2	1.8%	27	10.2%
No cooking facility	1	0.7%	4	3.5%	5	1.9%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

From the total sample households, some 66.7% use kitchens for cooking meal. However; 21.2% and 10.2% of the sample households use living rooms and open spaces, respectively for cooking their meal; while the remaining 1.9% of the samples do not cook their own food. When we look at the situation of facilities of food preparations of the samples, some 33.3% of the respondents are found facing serious problem to cook their meals due to lack of proper cooking facilities. Since households' meals are not prepared in safe and proper places, the consequence in terms of their health situation is reported to have been very hazardous.

Households in non poor category use more and better kitchen facilities than those from poor category. Of the total poor samples, some 65.6% of the poor households and 68% of the non poor households use kitchen facilities. Moreover, 17.2% of the poor and 26.5% of the non poor household samples cook their meal in their living rooms; while 16.5% of the poor and 1.8% of the non poor sample respondents use open spaces. Only 0.7% of the poor and 3.5% of the non poor sample households do not cook their own food. According to the sample respondents, that do not cook their food, the poor in particular buy bread from shops to eat; while, the non poor ones use hotels and restaurants for buying their regular food to eat.

Though households in non poor category use their kitchen facilities more than the poor categories, generally finding proper cooking areas (facilities) are reported to be a serious challenge for both the poor and non poor households.

**Table 18: Poverty and availability of electrometer in Bahir Dar city**

Availability of Electrometer	Percentage shares by social categories					
	Poor	%	Non-poor	%	Total	%
Yes	70	46.4%	63	55.8%	133	50.4%
No	81	53.6%	50	44.2%	131	49.6%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

Of the total sample respondents, 50.4% have their own electrometers; while the remaining 49.6% do not have such facility. From the total poor sample households, 46.4% have electrometers in their houses; while the other 53.6% do not have access to the same facilities. From the total non poor sample households, 55.8% of them have their own electrometer; while 44.2% do not have the same facility. Though many households have not their own electrometers, they use electricity from home light rented from neighbors. The researcher did ask households about the type of cooking fuel they actually use for which their replies are summarized in Table 19 below.

**Table 19: Poverty and type of cooking fuel sample households use in Bahir Dar city.**

Types of cooking fuel used	Percentage shares by social categories					
	Poor	%	Non-poor	%	Total	%
Cow dung and wood	18	11.9%	3	2.7%	21	8%
Cow dung wood ,and charcoal	61	40.4%	25	22.1%	86	32.6%
Charcoal	14	9.3%	10	8.8%	24	9%
Wood and charcoal	14	9.3%	23	20.4%	37	14%
Electricity	2	1.3%	18	15.9%	20	7.6%
Butagas	27	17.9%	22	19.5%	49	18.6%
Butagas and others	15	9.9%	12	10.6%	27	10.2%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

Households in Bahir Dar City mainly use charcoal and fuel wood to cook their food in normal times as well as for ceremonial occasions. As presented in Table 19 above, from the total respondents 32.6% of households use cow dung, wood, and charcoal as their sources of fuel for cooking; while, others 18.65% and 14% of the sample households use 'Butagas' fuel wood and charcoal, respectively. Those households who use Butagas and others are 10.2%, while 7.6% of the total respondents use electricity as cooking power. When poor and non poor sample households are compared, 40.4% of the poor and 22.1% of the non poor sample households use cow dung, fuel wood, and charcoal; while 17.9% of the poor and 19.5% of the non poor sample households use 'Butagas'. Some 9.9% of the poor and 10.6% of the non poor sample households use 'Butagas' and others; while 9.3% of the poor and 20.4% of the non poor used 'Butagas' and cow dung and wood as sources of power. Some 11.9% of the poor as well as 2.7% of the non poor also uses cow dung only. Only 9.3% of the poor and 8.8% of the non poor sample households use charcoal; while the remaining 1.3% of the poor and 15.9% of the non poor use electricity as a source of power.

Shewaye (2002) wrote about the access to shared electricity connections that appears to be the norm in major towns and even in Addis Ababa, where virtually the entire population is covered by the connection of this electric network. However, the escalation of the present tariff for electric power supply made households to shift from using the same energy for cooking to buying of charcoal. The author also explained the visible consequences of tariffs for electric power use. One is the sharp rise of fuel wood price in which the poor could not afford to buy. Second, the sharp rise of fuel wood price led to the indiscriminate cutting of trees to sale for the purpose of selling fuel wood. This has again led to disastrous consequences for the sustenance of nature/ ecology, having a direct/indirect effect to the well-being of the society and the country as a whole.

Therefore, in Bahir Dar city, households use largely cow dung, wood, charcoal and ‘butagas’ and electricity for cooking purpose. Poor sample households who use electricity are very few (1.3%) compared to non poor sample households (i.e.15.9%). The power supply in Bahir Dar, however, has not brought any positive impact on the environmental protection efforts, since most of the households are still using charcoal, fuel wood through deforestation of the natural and manmade forests which is also one indicator of poverty (both as a cause and effects).

#### **4.4.9 Water supply and poverty**

Water is not only important as any other basic infrastructure, but also as a means of life; and it has great value in determining households’ health and overall life situations. Infrastructures, like: telephone, electricity, road, etc. make way of life easy, and facilitates income earning/generating capacity of people. The importance of water is even more than such basic economic advantages. It directly influences our life; and also helps to facilitate all economic and social set ups as other infrastructures. Based on these principles and advantages, households were asked about their sources of drinking water for which their responses are presented in Table 20 below.

**Table 20: Poverty/social status and sources of drinking water in Bahir Dar City.**

<b>Social/economic status</b>	<b>Pipe water by meter (private)</b>	<b>%</b>	<b>Water vender</b>	<b>%</b>	<b>Pip water at bono cite</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Poor	96	63.6	29	19.2	26	17.2	151	100
Non poor	105	92.9	1	0.9	7	6.2	113	100
Total	201	76.1	30	11.4	33	12.5	264	100

Source: Author's field level survey of 2012

According to the sample respondents, 76.1% of the households have water meter inside their compounds privately; while the remaining 12.5% of the households use pipe water at 'bono' cites, and 11.4% from neighboring water vendors. The poor as well as the non poor have almost similar way of accessing of drinking water sources. Poor households do not have access to pipe water inside their compound. Instead of it, the poor use/depend more on water vendors. The WHO/UNICEF Joint Monitoring Program (JMP) estimates a higher access rate to improved water supply in urban Ethiopia. According to their estimation, in 2002, 81% of the Ethiopian urban populations had access to improved water supply. The access to improved water supply situation in Bahir Dar city is, of course, similar to the estimation of UNICEF.

Generally, the poor as well as the non poor households still have some difficulties in getting sustainable potable water supply in Bahir Dar city. From the total sample household respondents, 11.4% households do not get any access to either pipe water or 'bono'(a ticket which is given to water users in a community tap water) or water meter at their compound. This problem of getting access to improved water supply sources affects the health status of households, having negative influence on productivity to generate income and other livelihood measures of the households. Therefore, improvement of water supply infrastructure could be one priority for improving the livelihoods of households in Bahir Dar City.

On the other hand, household in the study area (Bahir Dar city) use different types of toilets. This includes: pit latrine, shared pit or public toilet, flush toilet or in house toilet, and open

space. In the study area, sample households reported about their usual toilet access and existing practice the results of which are presented in Table 21 below.

**Table 21: Poverty and toilet types/facilities in use in Bahir Dar city**

Type of Toilet	Poor	%	Non-poor	%	Total	%
Shared pit	36	23.8%	10	8.8%	46	17.4%
Pit latrine	86	57%	54	47.8%	140	53.1%
Flush	20	13.2%	49	43.4%	69	26.1%
Open space	9	16%	0	0%	9	3.4%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

All listed toilet types have been used in the study area. Of the total sample households, some 53.1% of respondents mainly used pit latrine followed by 26.1% flush, 17.4% shared pit, and the remaining 3.4% of the sample households use open spaces.

From the total sample households, 57% of the poor households use pit latrine, 23.8% shared pit, 13.2% flush toilets; while 3.4% of the poor sample households used open space. From the non-poor category, 47.8% of households use pit latrines; 43.4% flush; and the remaining 8.8% of the households use shared pit latrines, respectively.

The chi-square test 38.53 greater than  $\chi^2(3) = 7.81$  critical value shows the presence of significant relation between the types of toilets in use and poverty status; and between the poor and non poor in owning toilets (non-poor use better toilets, like flush facilities; while the poor do not have access to it).

#### **4.4.10 Availability of phone lines**

Availability of phone line is expected to improve the livelihood of households. Those who have access to telephone lines can get information on time to do their businesses. As a result phone line improves the income earning capacity of households. Households that don't have access to phone lines cannot get the benefit of such basic information to make their business effective.



**Table 22: Poverty and households' access to phone lines in Bahir Dar City**

Type of Phone lines	Poor	%	Non-poor	%	Total	%
cell phone line	101	66.9%	78	69.1%	179	67.8%
fixed phone line	7	4.6%	7	6.2%	14	5.3%
Both	25	16.6%	24	21.2%	49	18.6%
Not at all	18	11.9%	4	3.5%	22	8.3%
Total	151	100%	113	100%	264	100%

Source: Author's field level survey of 2012

From the total sample respondents, 67.8% have their own cell phone lines; 18.6% have both fixed and cell phone; and 5.3% have only fixed phone lines. The remaining 8.3% of the respondents do not have any access to telephones.

From the total poor and non poor sample households, 66.9% of the poor and 69.1% of non poor have access to cell phone lines. Some 16.6% of the poor and 21.2% of the non poor sample households have both fixed and cell phone lines; while the other 4.6% of the poor and 6.2% of the non poor samples have their own fixed phone lines. The remaining 11.9% of the poor and 3.5% of the non poor do not have any access to telephone lines.

Sample respondents who have no access to phone lines gave different reasons that hinder them to have access to the same communication facility.

**Table 23: Reasons given by sample respondents for their lack of access to phone lines in Bahir Dar city**

<b>Reason given for lack of access to phone lines</b>	<b>Poor</b>	<b>%</b>	<b>Non-poor</b>	<b>%</b>	<b>Total</b>	<b>%</b>
Unaffordable subscription for phone line	14	77.8	2	50	16	72.7
Little importance of the phone line	4	22.2	2	50	6	27.3
Total	18	100	4	100	22	100

Source: Author's field level survey of 2012

Of the total household sample respondents who have no phone lines, some 72.7% of them explained problem of unaffordable payment to phone line services; while the other 27.3% of the sample respondents answered as little importance given phone line services as a reason. From the total poor samples, 77.8% of them replied unaffordable subscription to phone line; while 22.2% of them replied no or little importance of the phone line. Information is very important capital to participate in business as well as social affairs. Phone line takes the larger share to distribute and obtain information. Thus, creating information access for the poor households should be desirable to improve their life.

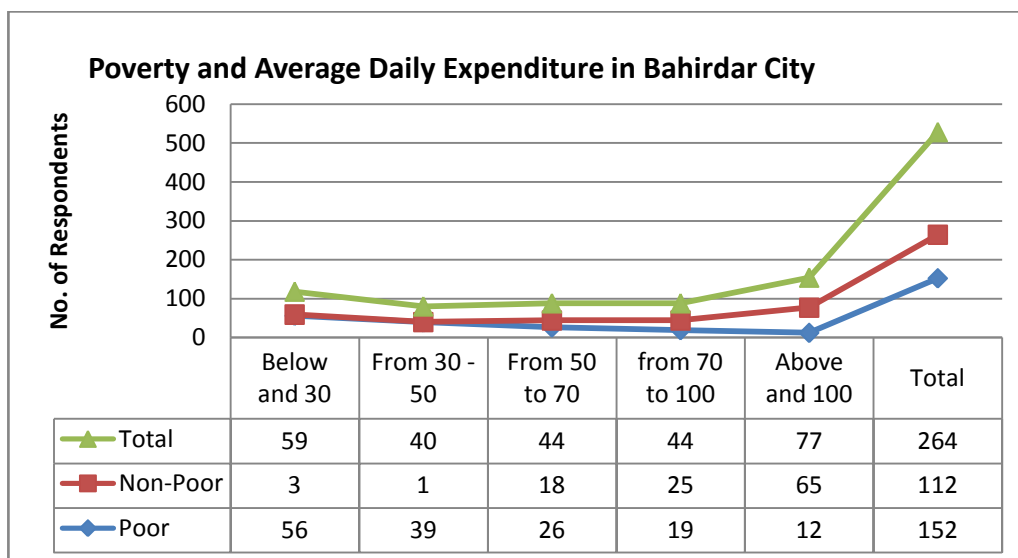
According to the research findings, however, phone lines could not be taken as an indicator to the economic status of households as poor or non poor groups; since the Chi square test result  $\chi^2(3) = 6.55$ , is lower than the  $\chi^2(3)$  critical value = 7.81 showing insignificant relationship between accessibility to telephone lines and poverty.

#### **4.4.11 Poverty and household average expenditure:**

There is a negative relationship between income and poverty (i.e., if the monthly income of a household increases, the probability of being poor declines). When households earn more income, the expenditure for consumption items increases. Sample households in the study area reported their monthly average expenditures. Figure 5 below shows the details of sample

responses to the poor and non poor households' expenditure. As shown in figure 5, the expenditure of the poor sample households are in the ranges between 800 and 3000 Ethiopian Birr. The analysis results show that, expenditures of the non poor sample households show an increasing trend; while the expenditure of the poor shows a declining trend.

**Figure 5: Poverty and average daily household expenditure of sample households in Bahir Dar city**



Source: Author's field level survey of 2012

Analysis results in fig 5 above show the expenditures for 21.2% of the sample respondents lie below 800 Birr; while the average monthly expenditures for some 14.8 % of the poor and 1.5% of non poor sample households lies in the range of Birr 800 - 1500. The details of the expenditure capacities of the poor and non poor are depicted in figure 5 above. The red line represents the expenditure for the non poor; while the blue line found below the red line represents the expenditure for the poor; and the yellow line is representatives of the total expenditure of the two social/economic categories. As depicted in the same figure, the red line becomes above the blue line showing an increasing trend; while the blue line remains below the red line, because many of the poor lie below the expenditure/income range of 1500 birr; and the majority of the non poor lie above the expenditure level of 1500 birr. This shows the presence of significant expenditure difference between the poor and the non poor households.

Therefore, the expenditures for the poor and non poor households is significantly different. This suggests that, the poor relatively spends smaller amount due to low capacity; while the non poor spends higher amount for their households. The chi-square test  $X^2(3) = 63.55$ , is greater than the critical value = 9.49 showing that the poor and the non poor households have significant expenditure difference at 99% confidence interval. Hence, based on this finding, we can conclude that, the poor could be identified from the non poor based on their respective average monthly expenditures.

Sample respondents were asked about the type of food frequently consumed in their households. The alternative food types/households menu are “Injera” with “Shiro wot”; ,”Injera” with “Kik Wot”; ”Injera” with meat; bread with “Shiro”; spaghetti/Macaroni and balanced food. Of the total sample respondents, 143(54.2%) replied that they consume “Injera” with “Shiro Wot”. The other 116 (44%) of the total sample respondents answered to frequently use “Injera” with “Kik Wot”. Hence, it is possible to conclude that about 98.2% of the poor and the non poor sample households consume “Injera” with “Shiro Wot” and “Injera” with “Kik Wot” frequently. This indicates that majority of the sample households do not get a variety of food and proper diet.

According to the sample respondents, households monthly saving range roughly from birr 1 to 6000; and the average/mean monthly saving of respondents is reported to be Birr 1359.76 with standard deviation 1685.36 Birr for the total respondents. Analysis of the study results show that from the total sample households, 182 (68.9%) have no any saving, of which 121 (45.8%) of them are are from the poor income group; while the remaining 61(23.1) are from the non income group.

Analysis of the survey results, show that of the total sample households only a few numbers of households 82 (31.1%) could save some amounts of money from this income. Of this 52 (19.7%) are from the non poor and 30 (11.4) are from the non poor. this minimal amount of saving has its own significant effects on the existence of poverty group in Bahir Dar city.

Sample household respondents were asked whether they take loan from any financial institutions. Only 33% of the total poor and 30.3% of the non poor replied to have taken loans. The rest 67% of the poor and 69.7% of the non poor income groups replied not to have

taken credit. From the total households 11% of the poor and 9% of non poor got loan from Amhara Credit, and Saving Micro Finance (ACSI); while 10% of the poor and 13% of the non poor got their loan from banks. Some 5% of the poor and 8% of the non poor replied to have taken credit from their relatives and friends; while only 7% of the poor also replied taking credit from their equb, and edir (local associations established for solving social problems).

As shown in the analysis above, the poor sample households get better access to credit from informal institutions and private sources than the non poor sample households. On the other hand, the non poor households get better access to credit from banks than poor households.

#### **4.4.12 Poverty and health of households**

Poor households are likely to be affected by diseases because they cannot afford the cost of medical expenses, including high cost of vitamins and nutritionally rich food items. Low sanitation in their living environment contributes its part. Respondents were asked whether there is a sick family member in their family at the time of the interview. According to the replies of sample household respondents in the study area, 46 (17.4%) of the samples replied “yes” there are sick family members. Of the sample households 28 (60.9%) of the total sick are from poor families; while the remaining 18 (15.9%) sample households are from the non poor family members. Sample respondents were also asked whether they got health services or not. From the total 28 poor sick family member sample households 15 (53.5%) of the sick members do not get any treatment and use traditional medicines; while the other 8 (28.5%) of sick poor family members replied that, they use government health stations to get medical treatments. The remaining 5 (17.8%) sick poor family members replied their inabilities to pay, but get free medical treatment from government health stations. According to their reply, no poor family members are treated in any private health institution.

In general, the incidence of disease is found to be significant variable while studying poverty and hence is a good proxy of urban poverty in the study area as 46 (17.4%) of the sample household replied the presence of sick members in their family which affects the working capacity of an individual; and hence affects the income generating capacity of households in the city.

#### 4.4.13 Poverty and asset ownership

The researcher tried to ask and identify the condition of households in owning assets, by taking common and permanently usable (exploitable) assets as the base of reference for comparison. Housing ownership, car, telephone line/both fixed and cell telephone/, refrigerator, television, stove, bicycle, cow/ox, are the main household assets which were assessed by the researcher.

Ownerships of some assets like: cell phone couldn't be found enough to evaluate the households' poverty status, as these assets are owned by the majority of the poor as well as the non poor. Therefore, the discussion instead focused on the following assets such as car, television, satellite dish and refrigerator.

**Table 24: Fixed Asset possession of sample households in Bahir Dar City**

Type of Fixed Assets owned	No		Yes		Total	
	Number	%	Number	%	Number	%
House	157	59.47	107	40.53	264	100
Car	248	93.94	16	6.061	264	100
Fixed telephone line	193	73.11	71	26.89	264	100
Mobile phone	46	17.42	218	82.58	264	100
Refrigerator	138	52.27	126	47.73	264	100
TV	76	28.79	188	71.21	264	100
Satellite Dish	178	67.42	86	32.58	264	100
Radio	104	39.39	160	60.61	264	100
Stove	188	71.21	76	28.79	264	100
Bicycle	192	72.73	72	27.27	264	100
Buta gas	194	73.48	70	26.52	264	100
Horse Cart	264	100	0	0	264	100
Ox & Cow	256	96.97	8	3.03	264	100
Mean	172	65.09	92.2	34.91	264	100

Source: Author's field level survey of 2012

Of the total sample respondents, 6.1% of them replied that, they own a car; and all of the sample households are from the non poor households. From the total sample household respondents, 126 (47.7%) have their own refrigerators. Of these sample respondents (126); 31 (24.6%) are poor and 95 (75.4%) are non poor. Satellite dish is not found to be a common owned asset of households. Of the total sample respondents only 86 (32.6%) of the households have satellite dish, of which one is from a poor household. Unlike satellite dish, television is found to be a commonly used asset in many households of the poor and the non poor in the study area. From the total sample household respondents, 188 (71.2%) have their own television. Of these (188) sample households, 98 (52.1%) are poor; while 90 (79.6%) are from the non poor social groups.

On the basis of the assessment findings, therefore, asset ownership could be an instrument to identify the poor from the non poor. Due to low capacity to afford buying durable assets and other priorities, the probability of the poor people to own assets is very minimal.

#### **4.5 Econometric analysis of the determinants/correlate of urban household poverty**

This section deals with the relative role of different factors that leads households to poverty. All of the factors presented are expected to have influence to push households to the poverty trap or to bring out from the poverty trap. Each factor has not the same effect. The purpose of this analysis is to identify the effects of individual factors. This could be achieved by fitting the probability of an individual being poor as a function of the various households' socioeconomic and demographic characteristics through the use of logit model.

In the subsections below, the assumption held in the regression of the model under investigation are treated first and, followed by the analysis of results and discussions.

##### **4.5.1 Heteroscedasticity**

Heteroscedasticity means a situation in which the variance of dependent variable in this study / the probability of being poor or non-poor/ varies across the data. Heteroscedasticity complicates analysis because many methods in regression analysis are based on the assumption of homoscedasticity or equal /homo/spread /scedasticity/ equal variance. In logit

analysis, there is no equal variance or homogeneity of variance assumption and the variance of the error terms is not constant.

#### 4.5.2 Multicollinearity

Multicollinearity is the situation in which the explanatory variables are highly correlated or show little variation between them. Multicollinearity does not change the estimators or coefficients. Multicollinearity can be detected by a number of ways. High standard error and variance inflation factor /VIF/ are main indicators in this study (i.e. standard error does not have problem for multicollinearity). The variance inflation factor is given by the formula  $VIF = 1/(1 - R^2_j)$ ; and is often given as the reciprocal of the above formula. That is,  $1/VIF$  which is equal to  $1 - R^2_j$ ; where  $R_j$  is the multiple correlation coefficient. In this research, VIF is computed using 'stata' soft ware; and Table 25 below shows these values for the lists and assumptions of the variables used in the model.

**Table 25: Multicollinearity Test (vif)**

Variable	VIF	1/VIF
age	2.05	0.49
agesquare	2.24	0.45
hhsiz	2.44	0.41
sexhh	2.22	0.45
marstatus	2.01	0.50
elec	1.78	0.56
educthh	1.67	0.60
house	1.56	0.64
depratio	1.30	0.77
income	1.25	0.80
emptye	1.12	0.89
sickmbr	1.10	0.91
Mean	1.73	



When there is collinearity among variables,  $R^2$  approaches one; while  $1/VIF$  approaches to zero. When there is no multicollinearity,  $R^2$  approaches zero; while  $1/VIF$  approaches one. In this case,  $1/VIF$  value would be slightly far away from zero; and it approaches one. In addition the mean value of VIF becomes 1.73. This implies that, there is less and acceptable collinearity.

#### 4.5.3 Model Result and Interpretation

The result of the logit model is presented in series of tables under this subsection. These consists the variables, the estimated coefficients, the odds ratio and the marginal effects for explanatory variables included in the model. The odds are the ratio of the probability of being poor to the probability of not being poor. The odds ratio indicates the change in the odds of being poor as opposed to not being poor in response to one unit increase in independent variables. Marginal effect is the percentage change on the probability associated with a unit change in the explanatory variable.

**Table 26: Logit estimates the odds of factors affecting urban household poverty.**

 *logit poverty age agesquare sexhh marstatus hhsizedepratio educdthh emptytype income sickmbr elec house*

Iteration 0:00	log likelihood = -180.246
Iteration 1:00	log likelihood = -130.643
Iteration 2:00	log likelihood = -114.398
Iteration 3:00	log likelihood = -113.181
Iteration 4:00	log likelihood = -113.176
Iteration 5:00	log likelihood = -113.176
Logistic regression	Number of obs = 264
	LR chi2(12) = 134.14
	Prob > chi2 = 0.0000
Log likelihood = -113.17631	Pseudo R2 = 0.3721

<b>poverty</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt;z</b>	<b>[95% Conf. Interval]</b>	
age	-0.14982	0.08755	-1.71000	0.09000	-0.32141	0.02177
agesquare	0.00199	0.00097	2.06000	0.04000	0.00009	0.00389
sexhh	-0.25052	0.59953	0.42000	0.68000	-0.92454	1.42558
marstatus	-0.03588	0.28571	-0.13000	0.90000	-0.59587	0.52411
hhsiz	0.46685	0.13243	-3.53000	0.00000	-0.72640	-0.20730
depratio	0.19596	0.29506	-0.66000	0.51000	-0.77427	0.38234
educthh	-0.46244	0.15633	2.96000	0.00000	0.15605	0.76883
emptype	-0.34320	0.31923	-1.08000	0.28000	-0.96889	0.28248
income	-0.00214	0.00036	6.02000	0.00000	0.00144	0.00283
sickmbr	0.57400	0.44811	1.28000	0.20000	-0.30428	1.45228
elec	-1.17985	0.47639	-2.48000	0.01000	-2.11356	-0.24613
house	-0.42801	0.19606	2.18000	0.03000	0.04375	0.81227
_cons	0.38682	2.40874	0.16000	0.87000	-4.33423	5.10787

Note: 0 failures and 1 success completely determined.

In the model, sex of a household head (sexhh), marital status, (marstats ), household size (hhsiz), dependency ratio (depratio), employment type (emptype), age of household head (agehh) education of household head (educthh), education of households head /hhpedutn), average income of adult equivalent per day (mothincm), sick member (sickmbr), electricity, housing condition (hcon) are determined. The negative coefficient of income implies that as the households per adult equivalent income increases from the average income, the probability of households falling in to poverty decreases. The positive coefficient of household size shows that, there is a positive relationship between household size and poverty. This means that, as a household size increases, the chance of falling in to a poverty

trap increases. This is consistent with the theory of World bank (2000), which states as “large household size tends to be associated with poverty.”

The positive sign in the logit regression shows the presence of sick members among the sample households, who are affected by frequent disease occurrence or illness. When the household member becomes sick, there will be cost of medication, job loss and loss of productivity which gradually leads the household to fall in to poverty. If the household is poor, family members cannot take balanced diet; and because of such problem, the sick often lacks resistance to different diseases. Thus, poverty and frequent illness of household members are reinforced each other; and have strong correlation.

The negative value of households’ employment type indicates that, as household heads are working in professional occupations in the public or private sectors, the probability of being poor decreases, while the probability of household heads who works in casual or informal work being poor increases. Households are assumed to earn more income in a formal and permanent work type than the casual or informal work types.

According to Getachew (2009), the negative value of households primary education implies that, an increase in the education level of the poor households tend to reduce their poverty. This is because education increases the stock of human capital, which in turn increases labor productivity and wages due to the fact that labour is the most important asset of the poor.

The model estimation for marital status and poverty shows negative relationship. When people get in to marriage, the probability of falling in to poverty diminishes. This is because the household can utilize the advantages of economies of scale and marriage can bring additional work force that helps to increase the household income.

The negative value of house ownership and probability of being poor indicates that as the household owns a house the cost of the house (i.e., rental expense) can be diverted to other necessities. In addition, house ownership enables to generate income through renting and using for other income generating activities. Since a house is a source and means of income,

the household probability to earn income rises; and the probability to be pushed in to poverty decreases.

Another important way to analyze the effects of the independent variable with the probability of being poor is through the effect of the odds ratio as the independent variables change. Table 27 below shows the details of the model estimation.

**Table 27: Odd ratio estimates of poverty determinants in Bahir Dar city.**

✚ logit poverty age age square sexhh marstatus hhsizedepratio educthh emptytype income sickmbr elec house.

Iteration 0:00		log likelihood = -180.246	
Iteration 1:00		log likelihood = -130.643	
Iteration 2:00		log likelihood = -114.398	
Iteration 3:00		log likelihood = -113.181	
Iteration 4:00		log likelihood = -113.176	
Iteration 5:00		log likelihood = -113.176	
Logistic regression	Number obs	=	264
	LR chi2(12)	=	134.14
	Prob > chi2	=	0.00
Loglikelihood=-113.17631	Pseudo R2	=	0.37

<b>poverty</b>	<b>OddsRatio</b>	<b>Std.Err.</b>	<b>z</b>	<b>P&gt;z</b>	<b>[95% Conf. Interval]</b>
age	0.86086	0.07537	-1.71000	0.08700	.7251239 1.022008
agesquare	1.00199	0.00097	2.06000	0.04000	1.000093 1.003896
sexhh	0.28469	0.77021	0.42000	0.67600	.3967145 4.160254
marstatus	0.96475	0.27564	-0.13000	0.90000	.551081 1.688947
hhsz	1.62698	0.08303	-3.53000	0.00000	.4836485 .8127753
depratio	1.82204	0.24255	-0.66000	0.50700	.4610421 1.465716
educthh	0.58795	0.24824	2.96000	0.00300	1.168886 2.157245
emptype	0.70949	0.22649	-1.08000	0.28200	.379505 1.326412
income	0.00214	0.00036	6.02000	0.00000	1.001441 1.002836
sickmbr	1.07536	0.79555	1.28000	0.20000	.7376554 4.272842
elec	0.30733	0.14641	-2.48000	0.01300	.1208072 .7818199
house	0.53420	0.30079	2.18000	0.02900	1.044718 2.253022

Note: 0 failures and 1 success completely determined.

As shown in table above, all variables which have odd ratio greater than one implies positively correlated with the probability of being poor, whereas variables which has odds ratio of less than one have negatively correlated with the probability of being poor. Thus variables such as female headed households, large households' size, large proportion of women, high dependency ration, and frequent illness of household members, and infrastructure services inaccessibility are positively correlated with probability of being poor. Variables, such as; being married, housing ownership, high level education of household head, high level of adult equivalent income of households have negative correlation with the probability of being poor.

The variable of household members or hh head employment type logit estimation shows negative and specifically significant outcome, implying that as chance of households public employment increases by one, *ceteris paribus* odds ratio of households of being poor will be decreased by 0.709 factors. Marital status of household also shows statistically positive significant result, implying that as the households gets married, *ceteris paribus* the odds and odds ratio of being poor decrease by factors of 0.035 and 0.964, respectively. On the other hand, if the number of family size of the household increases by a unit, the odds and the odds ratio keeping all other variables constant increase by a factor of 0.466 and 1.626, respectively. This indicates the positive relationship between household size and poverty. In other words, the result assures that an addition of a household size pushes the household to the poverty trap significantly. Similarly, the adult equivalent monthly household income, keeping all other variables constant, decreases by a factor of 0.002 for both odds and odds ratio. Improving income generating opportunities of household through different options would be an important step towards poverty reduction policies and strategies, particularly for the city of Bahir Dar. Ownership of house also has negative relation with the probability of falling to poverty. As the analysis result in Table 17 above shows, as household owns a house, the odds and odds ratio of being poor decreased by a factor of 0.534 and 0.428, respectively.

Completing primary education of the household head is found to be associated with poverty. The results obtained from the model revealed that as the heads of the households completed primary education, *ceteris paribus* the odds and odds ratio of the household being poor decreases by a factor of 0.462 and 0.587, respectively. This implies that lack of education is a factor that pushes households to fall in to poverty. Therefore, promotion of education becomes central in addressing problems of poverty, especially primary level education is found to have paramount importance in reducing poverty.

Since the logit model is not linear, the marginal effects of each independent variable on the dependent variable are not constant; but, it is dependent on the values of the independent variables (Green 1983). Thus, as opposed to the linear regression case, it is not possible to interpret the estimated parameters as the effects of the independent variables upon poverty.

However, it is possible to calculate the marginal effect to each variable at the mean values of the independent variables.

**Table 28: Showing marginal effects of each variable**

variable	dy/dx	Std. Err.	z	P>z	[95% Conf. Interval]		X
age	-0.03729	0.02177	-1.71	0.09	-0.07996	0.00538	39.02650
agesquare	0.00050	0.00024	2.06	0.04	0.00002	0.00097	1706.65000
sexhh	-0.06235	0.14919	0.42	0.68	-0.23005	0.35475	1.28409
marstatus	-0.00893	0.07110	-0.13	0.90	-0.14829	0.13042	1.77273
hhsiz	0.11620	0.03304	-3.52	0.00	-0.18095	-0.05144	3.59848
depratio	0.04877	0.07347	-0.66	0.51	-0.19278	0.09523	0.56439
educthh	-0.11510	0.03880	2.97	0.00	0.03906	0.19114	3.45455
emptype	-0.08542	0.07933	-1.08	0.28	-0.24091	0.07006	1.29924
income	-0.00053	0.00009	5.88	0.00	0.00036	0.00071	1009.80000
sickmbr	0.14287	0.11143	1.28	0.20	-0.07553	0.36126	1.81061
elec	-0.29366	0.11814	-2.49	0.01	-0.52521	-0.06210	1.48864
house	-0.10653	0.04881	2.18	0.03	0.01086	0.20220	2.03409

Marginal effects after logit

$$y = \text{Pr}(\text{poverty}) (\text{predict})$$

$$= 0.4667443$$

#### **hettest**

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

H<sub>0</sub>: Constant variance

Variables: fitted values of poverty

chi2 (1) = 8.43

Prob > chi = 0.0037

#### **ovtest**

Ramsey RESET test using powers of the fitted values of poverty

H<sub>0</sub>: model has no omitted variables

F (3, 248) = 14.83

Prob > F = 0.0000

The coefficients of marginal effects show the discrete change of explanatory variables keeping other things constant to change the probability of dependent variables/probability of being poor). As indicated in the table above an additional unit in the household size increases the probability of being poor by a factor of 0.116 keeping all other variables constant at their mean values. An additional unit in primary education decreases the probability of being poor by a factor of 0.115 holding all other variables constant at their mean values. This means that the risk of an individual being poor diminishes as the level of education increases.

On the other hand, an addition of ill household member in the household increases the probability of being poor by 0.142 holding all other variables constant at their mean values. Hence, improving health condition of a household needs proper policy intervention; and practical action is needed to bring out households in the study area from the poverty trap. This can be possible through establishment of proper health infrastructure and sanitation services throughout the city, and proper targeting of the poor households who settle in marginalized locations.



An additional unit of households per adult equivalent monthly income will decrease the probability of being poor by 0.0005 keeping other factors at their mean values. This suggests the need to focus on program activities that increases the average income of households. This would enable to reduce poverty drastically; and this suggests also the need for creation of income generating program activities as a priority of the city administration.

Employment of households in public/formal sector correlates negatively with the probability of being poor. As depicted in the marginal effects estimation, additional employment of households' members in the formal/public sector reduces the probability of being poor by 0.085. Housing ownership also reduces poverty greatly. When a household owns a house, the probability of being poor in the city reduces by 0.106. These all become true when all variables are kept constant at their mean values.

The interpretations of the remaining variables are similar to the variables explained above. The variables that have positive correlations/relationships increases the probability of households from being poor; and variables that have negative correlate reduces the probability of households to be poor . This can only be possible when the p- value is significant at defined confidence interval. Variables with no significant p-value can't affect the dependent variable by the factors/estimated coefficients in the model.

In summary, the econometrics regression outcome for most of the variables will go with the expectation of the researcher since their coefficients are significant. Education of a household head; marital status, employment type, house ownership, income of the household, health condition of the household, and household size are significant variables indicating that, these variables are determinants of urban household poverty.

## CHAPTER FIVE

### CONCLUSIONS AND POLICY IMPLICATION

#### 5.1 Conclusions

The objective of the study is to identify determinants of urban household poverty, in Bahir Dar city. Both primary and secondary sources were used to carry out the study. A total of 264 sample household heads were randomly selected; and the study was undertaken using a systematic random sampling method in five sample Kebele administrations in Bahir Dar city that include: Tana, Hidar 11, ShumAbo, Belay Zeleke, and Sefene Selam kebele administrations.

The researcher used the food energy intake approach in the identification of the poor from the non poor. The researcher first enumerated baskets of food items households frequently consume in the area. Secondly these bundles of food items were weighted in kilograms. Third, the aggregate kilograms of food bundles were divided into the number of family sizes. This gives the average amount of kilograms an adult person would consume in a day. This kilogram is again converted into the amount of calorie equivalents it yields; and is calibrated to the predetermined minimum value of 2200 calorie per day per adult.

The computed poverty line of Bahir Dar city as 12.90 Birr and 15.66 for food and non food items was taken, respectively. Based on the current exchange rate (at the time of the study) 1 US \$ costs 18 Ethiopian Birr and this amount is considered as international poverty line to identify the poor from the non poor. Of the total 264 respondents, the study found that 57.2% of them live below food poverty line; 76.14% below total poverty line; while 82.95% of the samples are found living below one dollar a day poverty line.

In Bahir Dar city, sample households living in sample kebele administrative areas are found at different food poverty levels. According to the research finding, Sefene Selam and Hidar 11 are the highest food insecure kebeles. From the total poor sample households who live below food poverty line, 14.39% and 12.12% of the poor are found in Sefene Selam and

Hidar 11 kebeles, respectively. These two kebeles are the home of many poor people than others.

Education attainment of the household head is found to be the most important variable to be related with urban poverty. Poverty showed a decreasing trend at different educational levels (from illiterate to degree and above educational levels). Even though the data in the descriptive analysis showed the presence of poor in all educational levels, the econometric regression/logit model revealed, that education and poverty are negatively related, implying that an increasing level of education decreases the poverty status of the household in Bahir Dar city.

In the descriptive analysis, the majority of the poor are found to be female headed households. This is significant at 95% confidence interval, implying that poverty more affects female headed households than their male counter parts.

On the basis of the study findings, when a person gets married, the household can gradually generate additional income than before because of the additional income earners from increased family size/workforce in the household. As a result the probability of being poor in the family diminishes as one gets married due to the increase in labor force of the family. However, the numbers of dependent household members can also increase as a result of additional new birth (due to marriage), which make the marital status theory of Ravallion (1994) unrealistic. On the other hand, the study findings show that, widowed and divorced households are found more poorer than the married ones. This is because as the household head becomes widowed or divorced, all responsibilities of the household falls on his/her shoulder, making them incapable to earn adequate income to manage the family needs.

Average household size of the study area is found to be four people per household. The numbers of poor households who have four and below household size are very few, but household size above the average takes the largest share (i.e., 35% of the total poor). The model estimation of the variable household size is positive and significantly correlated with poverty. This has a clear consequence for the residents of Bahir Dar city that, large household

size tends to derive the family to fall in to poverty trap easily than those who have an average and small family sizes.

In Bahir Dar city, employment type was found to be having significant relationship with the probability of being poor. Daily laborers and unemployed people are more impoverished than people employed in the formal sector. Due to job insecurity and other factors informal and casual workers earn less; and the probability of being poor was found to be high by the study; while people employed in the formal sector are found to be less vulnerable to poverty.

Analysis results of the study also show that, house ownership significantly correlates with the probability of households to be poor (i.e., house ownership helps households to come out of poverty, and negatively correlated with poverty. As households own houses the cost that is to be incurred as a house rent becomes saved; and the house itself can be used by the households could be taken as a productive asset. Households can use the house not only to live in it but for different purposes of service giving activities that generate income for the family. Therefore, encouraging and supporting households to have their own houses would be crucially important to minimize and alleviate urban household poverty.

The study findings show that, about 66.7% of households used kitchen facilities for cooking their meals; while 21.2% and 10.2% of households used their living rooms and open spaces for cooking meals, respectively. Those households who do not prepare in safe and proper places face health problems. Though households in non poor category used more kitchen facilities than the poor income category, finding cooking area facility in particular is reported to be a serious problem for poor as well as non poor households.

In the study area, 50.4% of the population own electrometer; and about 49.6% of the households use electricity as the main source of light for their houses. However, only 7.6% of the total respondents used electric power for cooking. When we compare electric power utilization by income groups; only 1.3% of the poor and 15.9% of the non poor households are using electric power for cooking purpose. As the majority of the households still use wood and charcoal as their sources of fuel through deforestation of the natural and manmade forests,

the researcher based on his finding of the study argues that electric power supply in Bahir Dar has not yet brought significant positive impact on environmental protection and sustainability. This will also have a direct/indirect effect to the well-being of the city, its surrounding and to the country as a whole.

The study results also showed that, the income of households and the probability of being poor are found to negatively correlate and significant. When the income of households increase, the vulnerability of households to poverty diminishes significantly. Though income alone is not a measure of poverty, the study found that, lack of income for the households is also a deficiency with other sources, like: house, education attainment, and other infrastructure facilities such as electrometer, etc.

The health of households is found to be having significant correlation with poverty status of households. Households that have family members that frequently get sick are more likely to be poorer than others. Moreover due to income shortfalls and high cost of health services, some household members use self treatment using traditional medicines and practices for cure from recurring diseases.

To conclude on the basis of the study results, the incidence of food poverty in Bahir Dar city is found to be very high (57.2%); which is greater than the Ethiopian urban food poverty incidence (35%). The outcome of this study also indicates that, 76.14% and 82.95% of the households in Bahir Dar city, live below total poverty and 1\$ a day poverty line, respectively.

## **5.2 Policy Implications**

Poverty can be addressed through different ways. In the study area the following are the main intervention areas that should be considered/given proper attention during policy formulation, planning and implementation processes.

Households in kebele administrative areas in Bahir Dar city are found at different poverty levels. Households in some kebeles are extremely poor and poorer than others. For instance, Sefene Selam, and Hidar 11 Kebeles with highly poverty affected households than other

kebeles. The city administration should undertake proper targeting of poverty alleviation measures based on households' poverty status by affected administrative area/locations.

Education is one determinant factor to alleviate household level poverty in Bahir Dar city. The city is still having larger (13.6%) illiterate population (households). Therefore, strengthening primary education as well as higher education, technical and vocational colleges should be given prior emphasis by the city administration and adequate attention should be given at higher government levels as well.

Female education should also be a fundamental part of poverty reduction policies, because female education enables to attain double goals such as: enhancing education attainments in terms of increasing productivity (including productive, health) and job security of females. This should have a positive impact on controlling household size as fertility is negatively correlated with females' education.

The economic model estimation of the study area assured that marital status and poverty have significant and negative correlation, which shows divorced and widowed households are more likely to be poorer than married households. Thus, encouraging marriage and family planning measure that helps reducing divorce could be another option to reduce poverty in the study area.

Poverty and household size are found significantly and positively correlating in the study area. Thus to reduce poverty in the area, awareness creation on family size control of poverty and the causes and effects of poverty should a priority action of the city administration. Family planning should be exercised and taken as important remedial measure to curve the presence of large family size, in general, and among poor households in particular.

Informal employment and poverty are found positively related; and formal employment reduces the probability of households to be poor. Income is also found to be the main determinant factor to escape from poverty. Therefore, to reduce unemployment and poverty, and hence, to increase income in the study area, employment generating schemes have to be

designed and implemented. Labour intensive technology based program activities should be introduced; and skill based training and credit facilities for unemployed workers have to be provided.

In the study area/sample Kebeles, households for running different production and service related activities to generate income. Therefore, encouraging and supporting administrative measures needs to enable them to own houses as one among another remedial measure to minimize and alleviate urban household level poverty. The support can be provided either in the form of granting free and fast land distribution or through condominium housing construction to be allocated with affordable credit facility.

In the sample study areas, many households cook their food in the living rooms and open spaces, indicating that cooking area is a serious problem for the poor as well as non poor households. This on the other hand suggests that, Bahir Dar city administration should create conducive environment for resident households in terms of providing supportive measures to enable them construct kitchen facilities; and help them to gradually minimize health and other related problems.

In the sample areas, households mainly use electricity for lighting purpose. Other power demands are largely fulfilled by using sources that are not environmentally friendly. This suggests that, great awareness training and other appropriate policy measures need to be undertaken in order to bring a cultural shift in power utilization for meal preparation for other production and processing activities. Unless, environmental stresses are minimized, poverty alleviation mechanisms at local as well as regional and national levels can not be effective and fruitful. This calls for serious attention to sustainable development issues specifically for designing appropriate policies and strategies focusing more on practical poverty alleviation programs and projects to be implemented at national, local and household levels.

Poor households are found to use public health services than others. Improvement of the service facilities of government health institution, and supporting the poor to get health

services from government health institutions should be a priority to address the poor. These can be done by the city administration, NGOS, and at higher government levels.

On the basis of the study findings, 57.2% of the sample households in Bahir Dar city are found below food poverty line which is higher than the Ethiopian urban areas food poverty incidence (35%). Therefore, the city administration and other stakeholders have to take measures on the different determinant factors to minimize the level of poverty in the city in general, and at the house hold level in particular.

This study took households as a benchmark for the analysis of different determinants of poverty and their correlations as well as the poverty status of households. The study also indicates city level poverty, even though the researcher couldn't include other detailed poverty analysis like: quality of governance, property right and their enforcement.

Finally, the poverty incidents and other socioeconomic and demographic variables of Bahir Dar city have shown the difficulties of households to break the vicious circle of poverty. Unless integrated efforts have been brought to fight against poverty, the condition of the poor households will be continuing more than what has been experienced (the existing situation). Therefore, joint efforts should be undertaken at all levels, including the coordinated efforts of the government, community based organizations, researchers, non government organizations, the poor themselves and other stakeholders.



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## ANNEXES

### Annex 1: Questionnaires

**Objective:** The purpose of this questionnaire is to gather information about *Determinants of Urban Poverty in Bahir Dar city of the Amhara Region, Ethiopia* for the partial fulfillment of the Master of Arts in Economics.

#### General Directions:

1. You are kindly requested to give genuine responses.
2. You don't need to write your identification.
3. Circle the corresponding number of your choices from the given alternatives.
4. Put the numbers you agree with to those questions which are not multiple choices.
5. The study is entirely academic and all responses are confidential.
6. Feel free to respond.

#### Thank You in Advance!

Date of interview \_\_\_\_\_

Name of Interviewee \_\_\_\_\_

Respondents Kebele \_\_\_\_\_

Code Number \_\_\_\_\_

#### A. Household Characteristics

1. Age of Household Head \_\_\_\_\_
2. Sex 1. Male 2. Female
3. Marital Status 1. Never Married 2. Married 3. Divorced 4. Widowed
4. Religion Denomination 1. Orthodox Christian 2. Catholic Christian 3. Protestant  
5. Islamic 5. Others (specify \_\_\_\_\_)
5. Ethnic Group 1. Amhara 2. Tigrie 3. Oromo 4. Other (specify) \_\_\_\_\_
7. Household Size \_\_\_\_\_
8. Number of economically active (productive) family members \_\_\_\_\_
9. Number of household/s age above 60 \_\_\_\_\_
10. Number of household/s age 0 to 15 \_\_\_\_\_
11. Total number of dependent household/s \_\_\_\_\_

12. Total number of household/s unemployed\_\_\_\_\_

13. Educational level of the Household head\_\_\_\_\_

### **B. Employment /Occupation**

14. Status of employment 1. Employed 2. Unemployed 3. Pensioner

15. If “employed” to question 14 inquire, what is your main occupation? 1. Self-employed 2. Government employee 3. Private Employee 4. NGO employee 5. others specify\_\_\_\_\_

16. If “self employed” to question 15 inquire, which type of own-account/self-employed are you engaged in? 1. Petty-trade/*Gulit* 2. Trade 3. Metal /Wood Work) 4. Hotel and restaurant 5. Preparing local drinks (Tella, Tej 6. Others specify\_\_\_\_\_

### **C. Assets**

17. If do you have the following assets, tick your answer based on the alternatives from the table and assign the price in terms of Ethiopian birr.

No	Type of Asset	Yes	No	Amount/quantity	Unit price	Total price
1	House					
2	Car					
3	fixed telephone					
4	cell phone					
5	Refrigerator					
6	Television					
7	Satellite Dish					
8	Radio					
9	Stove					
10	Bicycle					
11	Buta gas					
12	Horse cart					
13	Oxen/Milk Cow					
14	Other s (specify)					

**D. Income**

18. How much birr is your average income that you earn per month (in Birr)?\_\_\_\_\_

19. Does your household monthly income cover your expenditure? 1. Yes 2. No

20. If "no" to Q 19, inquire, how do you fill your household monthly income and expenditure gap?\_\_\_\_\_

21. Have you taken any loan for your household? 1. Yes 2. No

22. If "yes" to Q. 21 inquire, why you need loan? 1. Start up business 2.Housing rent 3. For food 4.for Medical purpose 5.for Education fee 6.Ceremony (weeding, holiday etc.) 7. others specify\_\_\_\_\_

23. Where did you get credit? 1. Amhara Credit and Saving Institute 2.Bank 3.Relatives and friends 4.If any other specify\_\_\_\_\_

24. How much Birr is your household total average income per month including all other members of the household?

25,How much does your family saving per month? Birr\_\_\_\_\_

26. Please rank the following difficulties your household experiences?

1. Food provision, 2. Housing 3. Clothing 4.Education fee 5.Medication 6.Transportation 7.If any other (specify and rank)\_\_\_\_\_

27. From the following types of food, which one is you frequently eat?

1.Injera with shiro wot , 2.Injera with meat, 3. Injera with kik wot 4. Others (Specify)

\_\_\_\_\_

**E. Consumption Expenditure**

28. Quantify the following items with the appropriate units of measure. For items 1 to 20 expenditures will be expressed monthly, while items from twenty one to twenty nine are expressed both monthly and annually.

Item no	Food/Drink Bases)	Items(on Monthly	Amount in Kilograms or Liters	price per K.g or litter inbirr
1	Teff (Kg)			
2	Wheat (Kg)			
3	Maize (Kg)			
4	Barely (Kg)			
5	Sorghum (Kg)			
6	Rice (Kg)			
7	Potato (Kg)			
8	Tomato (Kg)			
9	Onion (Kg)			
10	Beans and peas (Kg)			
11	Lentil (Kg)			
12	Vegetables (Kg)			
13	Dry pepper (Kg)			
14	Edible oil (Lit)			
15	Milk (Lit)			
16	Butter (Kg)			
17	Sugar (Kg)			
18	Coffee (Kg)			
19	Salt (Kg)			
20	Bread			
<b>B</b>	<b>Non food items</b>		<b>Cost in Birr/specified period</b>	
21	Clothes and shoes (in Birr/year)			
22	Education (in Birr/ year)			
23	Health (in Birr/year)			
24	Water (in Birr/month)			
25	House rent (in Birr/month)			
26	Fuel (wood, gas, charcoal/month)			
27	Ceremony (weeding, holiday etc./year)			
28	Domestic Service: (for guard, servant salary in Birr)			
29	Others specify_____			



## **F. About Water**

29. Which one is the main source of water for your household?

1. Pip/water meter private 2. Water vender 3. Pip/ water at bono 4. Others (Specify) \_\_\_\_\_

## **G. Health condition**

30. Have any of your household members frequently suffered from diseases? 1. Yes 2. No

31. If "Yes" to Q. 30, inquire, how many family members are sick? 1. One 2.two 3.Three  
4.More than three

32.Do you think that, does the disease have any influence on his/her activity? 1. Yes 2. No

33. If yes for "Q" 32, how do you explain the degree of influence? 1. Very high 2.High,  
3,Low, 4.No influence

## **H. About Telephone**

34. Which type of telephone you subscribe?

1.Cell phone /Mobil 2. Fixed 3.Both cell phone and fixed 4. I do not use\_\_\_\_\_

35. If " I do not use " to Q. 34 inquire, why are you not a mobile telephone subscriber?

1. Un affordable subscription 2. little importance of the line 3. Other (specify) \_\_\_\_\_

## **I. About Electricity**

36. Do you have your own electro meter? 1. Yes 2. No

37. If "Yes" to Q. 36, inquire for what purpose do you use? 1. Lighting only 2. Lighting and  
cooking 3.Lighting, cooking and ironing

38. Which type of fuel(s) does your household frequently use for cooking purpose?

1. Wood 2. Buta Gas 3. Cow dung 4.charckol 5. Electric 6.Other (specify)\_\_\_\_\_

## **J. Housing**

39. Who is the owner/ tenure of your housing unit?

1. Own occupied 2. Rent from Kebele 3. Rent from privates 4. Others (specify) \_\_\_\_\_

40. What are the main construction materials of the house you live in?

1. Wood with mud 2. Blocket 3. Bricks 4. Other (specify)\_\_\_\_\_

41. How many rooms does your house have? \_\_\_\_\_ Rooms

42. Concerning your family's housing which of the following is true?

1. It is less than adequate for my family's need

2. It is adequate for my family's need

3. It is more than adequate for my family's need

43. Where do you cook your meal? 1.Kitchen 2.Using living room 3.Using open space 4.No cooking

44. Do you have toilet facility? 1.Yes 2.No

45. If you say “yes” for question 44 , which does it belong to?

1. Flush 2. pit 3.Shared pit 3. Open space

46. Bathing/Shower facility

1. None 2. Private shower 3. Shared shower 4. Other (specify)\_\_\_\_\_

**Thank you!**

## Annex 2: Calorie Contents of Food Items

Consumption per 100 gram	Energy in calories
Teff	355
Wheat	340
Maiz	344
Sorghum	343
Barley	370
Rice	335
Potato	75
Onion	38
Beans & Pea	310
Lentil	325
Vegetables	75
Dry Paper	93
Edible Oil	900
Milk	79
Butter	700
Sugar	375
Coffee	119
Salt	67

Source: FAO and Ethiopian Health and Nutritional Research Institute

### Annex 3: Assumption of variables used in the mated estimated equation

Variables	Assumption
Dependent variable	
Urban poverty (hhp)	1 if poor, 0 otherwise
Explanatory variables	
Age (hh age)	1 if 15-20 >60, 0 otherwise
Sex of household heads (ghhh)	1 if female, 0 otherwise
Dependency ratio (depratio)	1 if >0.4, 0 otherwise
Marital status (marstatus)	1 if married, 0 otherwise
Household size (hhsiz)	1 if >5, 0 otherwise
Household head educational level (hheducn)	1 for <8, 0 otherwise
Parent of household head Education (hhfeducn)	1 for <5, 0 otherwise
Employment status (emtype)	1 if informal employment, 0 otherwise
Adult equivalent per month income (mhhincom)	1 if <800 birr, 0 otherwise
Access of basic services (access)	1 if without private tap water, 0 otherwise
Health status (sickm)	1 if sick frequently, 0 otherwise
House ownership (house)	1 if without private house

#### Annex 4: Correlation matrix of coefficients of regress model

e(V)	Age	Agesquare	sexhh	marstatus	hhsiz	depratio	educthh	emptye	income	sickmbr	elec	house
age	1											
agesquare	-0.9806	1										
sexhh	0.0063	-0.0047	1									
marstatus	-0.1	0.0823	-0.5937	1								
hhsiz	-0.1873	0.1115	0.1835	0.1272	1							
depratio	-0.2301	0.2664	0.0576	-0.0093	-0.2234	1						
educthh	-0.2887	0.3267	0.1964	0.1741	0.1688	0.0573	1					
emptye	-0.0036	-0.0283	0.0338	0.0404	0.1952	-0.1814	0.1539	1				
income	-0.0317	0.0449	0.2123	-0.1122	0.1505	0.1318	-0.1393	0.0089	1			
sickmbr	-0.0465	0.0815	-0.0611	0.0328	-0.1845	-0.0499	-0.0099	-0.0463	-0.1064	1		
elec	0.0682	-0.0250	0.0466	0.0262	0.2622	0.1024	0.1570	0.0318	0.2300	-0.0847	1	
house	0.0625	-0.0411	-0.0617	0.0406	0.2269	-0.1278	-0.0428	0.0959	-0.0506	0.0144	-0.2664	1
_cons	-0.6601	0.6009	-0.2841	-0.0095	-0.1945	0.1313	-0.2107	-0.2333	0.1147	-0.2386	-0.4127	-0.2069