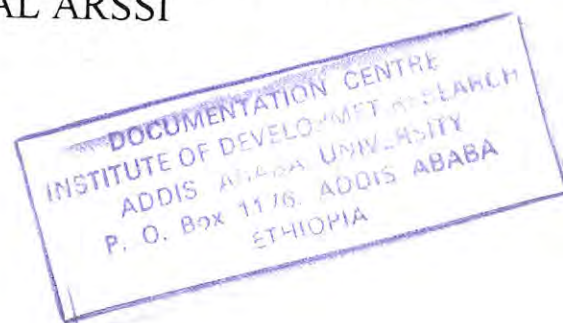


RELATIONSHIP BETWEEN HOUSEHOLD SOCIO-ECONOMIC
AND
DEMOGRAPHIC CHARACTERISTICS AND EXPENDITURE
PER ADULT IN RURAL ARSSI



BY
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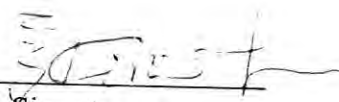
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ABSTRACT

In this paper attempt is made to explore the relationship between standard of living and some demographic characteristics of rural households in Arssi region (now one of the zones in Oromiya region), based on the 1981/82 Rural Household Income Consumption and Expenditure Survey data. By taking household consumption expenditure as an indicator of standard of living, the thesis examines its association with household size, age composition of members of the household, and age and sex of the head of the household. Furthermore labour force participation level of household members in the working age group and school participation level of school-age household members are considered to see their association with the welfare of the household. Both approaches of level of welfare, relative standard of living and absolute poverty are employed in the study. Descriptive, bivariate and multivariate statistical methods of analysis are applied in the investigation.

The major findings of the study are: standard of living is negatively associated with household size and dependency ratio. It is also non linearly associated with age of head of the household. Sex of the head of the household is not found to have significant relationship with standard of living. School participation level has no relationship with standard of living while the relationship between standard of living and labour force participation is unclear. Difference in standard of living in the Awrajas of the region is found significant. Arbagugu was found to be the better off as compared to Chilalo and Ticho. Compared to Arssi as a whole, Chilalo and Ticho showed lower whereas Arbagugu showed higher standard of living. Although Chilalo is relatively developed in terms of infrastructure and social services, the standard of living measured by household expenditure in this study indicated that Arbagugu to be the better off Awraja. One reason for this could be the higher population density in Chilalo than other Awrajas, which might have resulted in relatively lesser land holding per household. However, this requires further study and analysis.

CHAPTER I

INTRODUCTION, BACKGROUND AND OBJECTIVES

1-1 INTRODUCTION AND BACKGROUND

The question of promoting standard of living or welfare of people is probably one of the most burning issues for most societies and particularly so for developing countries like Ethiopia. It is the final goal of any discussion, plan or undertaking concerning human development.

The concern becomes of paramount importance for poor societies suffering from the various dimensions of poverty. Needless to say, that poverty alleviation/ reduction programs are the priority areas of attention in the development policies of governments, international development agencies and non-governmental organizations.

Poverty reduction programs can achieve their objective if they are based on objective policies and plans which in turn are designed on complete assessment of the nature, extent, profile, and influencing factors of existing poverty level in the society.

The assessment can be at national level covering all parts of a country or may concentrate on particular areas or subregions, depending on the scope of the given program. Studies that concentrate on particular areas, under the general framework can contribute to the overall assessment of poverty in a society. With this in mind, the aim of this paper is to explore the relationship between standard of living and demographic characteristics of rural households.

Prior to dealing with the details of the study, a general background on the state of welfare in Ethiopia, and the general conceptual framework of the study are discussed below.

Ethiopia is one of the poorest countries in the world and also among the lowest in the group identified as having low-income economies. According to the 1994 world development report (World Bank, 1994), Ethiopia is the second from the bottom in GNP per capita ranking, with a GNP per capita of 110 (USD) in 1992. GNP per capita is 390 USD for the low-income economies. Considering the lower boundary of the poverty line defined by the world bank, which is US\$ 275 per capita (World Bank, 1990), it is obvious that most of the Ethiopian population would be regarded as poor. The average annual growth rate in per capita GNP for Ethiopia in the period 1980-1992 was -1.9% which showed a declining trend. Other social and economic indicators of development given in the report also show the extremely low levels of welfare of the people. In another country report of the World Bank (World Bank, 1992), it was indicated that about 27 million people (51% of the total population) are in chronic and transient poverty in Ethiopia out of which 20 million live in rural areas (which makes 74% of the poor). This overwhelming incidence of poverty in the country, therefore makes, addressing the problem of poverty, knowing its causes, exploring its contributing factors and possible ways of its alleviation to be of first priority in any development plan for Ethiopia.

The causes of poverty in Ethiopia are mainly structural which include low productivity, small holder agriculture, exceptionally low technological base, high population growth, high dependency ratios and very narrow fragmented domestic market (MOPED, 1994). The world bank report (AEOD, 1992), also stated that "the two persistent underlying factors which have clearly contributed most to poverty and social deprivation in Ethiopia are poor economic performance and the acceleration of population growth." While these factors resulted in

chronic poverty, transient causes, war and drought exacerbated the state of poverty in the country.

The first step in any effort to promote the standard of living of the people should be identifying the extent of poverty prevailing not only at the national level, but more importantly at the household level. Based on this, the profile of the population classified by different levels of standard of living against socio-economic and demographic characters of the groups can be determined. This helps to know who the poor are and which groups or sectors of the population are more affected by poverty and should be target groups in the poverty alleviation strategies. Moreover, it would be possible to further explore possible associations between standard of living and the demographic and socio-economic characteristics of the households.

Though standard of living in its broadest sense can be taken as level of total welfare including economic and social well-being, economic status is a good approximation of the former as it determines the capability of a household or person to afford ones basic consumption and other needs (food, shelter, clothing and other social services). Thus, usually standard of living as economic status is operationally measured by the amount of one's real income or by one's expenditure for a given period. Alternatively depending on the availability of data, assets like size of land and number of livestock owned by a household can be used to measure economic status in rural areas. Because such assets are the means of generating income in rural households.

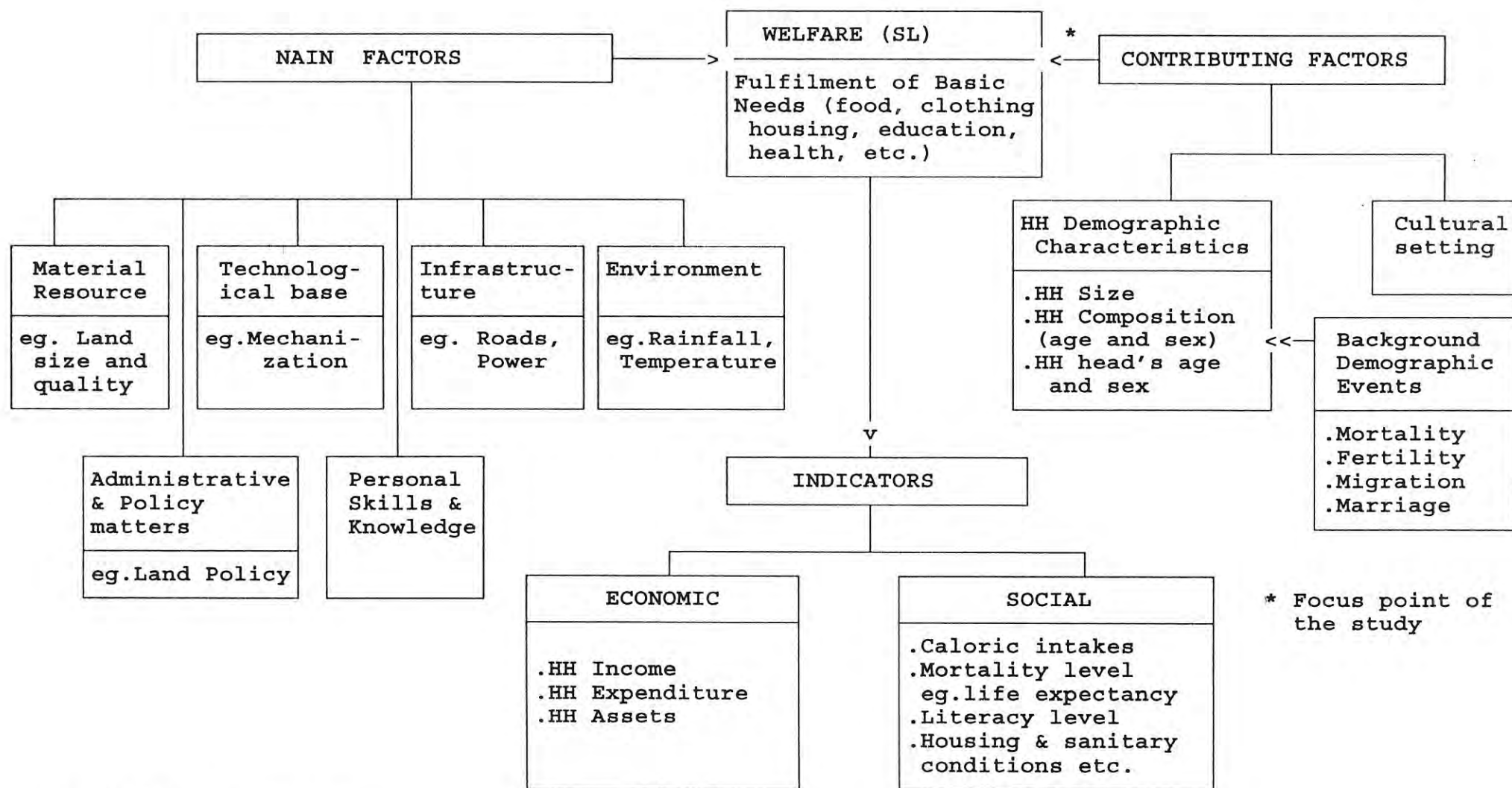
Standard of living of a household is basically determined by its material endowments such as land, livestock, salaries and wage, the technology to which it has access and personal skill and ability which are used in combination to realize a given level of income.

Nevertheless, within a given set of material and technological state, household demographic characters like its size, its composition by age and sex and, age and sex of the head of the household can have considerable influence in improving or in the deterioration of its standard of living. This is so because primarily the household members are the producers as well as consumers, hence their number will naturally affect the production and consumption level of the household. Secondly as the production and consumption capacity of the members differ by their age and sex, the age and sex composition influences household production and consumption levels.

The broad conceptual relationship between standard of living (welfare), its main determinants and the contributing factors, as well as, its indicators are presented schematically in figure 1, below.

A complete assessment of the state of welfare in a society should describe the state and interrelationship of all the component parts indicated in the framework. However, due to mainly non-availability of data the focus of this paper would be on the interrelationship between welfare and some demographic and socioeconomic characteristics of households. The following are the general and specific objectives of the study.

FIGURE 1. CONCEPTUAL FRAMEWORK OF THE RELATIONSHIP BETWEEN WELFARE (STANDARD OF LIVING), ITS MAIN AND CONTRIBUTING FACTORS.



Note: HH = Household
SL = Standard of Living

* Focus point of the study

1-2 OBJECTIVES OF THE STUDY AND JUSTIFICATION.

General Objectives.

In this paper, the primary objective would be investigating the association between standard of living (as measured by household consumption expenditure amount) and the demographic characteristics of households which are listed above, using data for rural Arssi in the early 1980's. Also attempt is made to investigate the relationship between standard of living and some socio-economic characteristics of households¹. The socio-economic characteristics to be considered are occupation of the head, labour force participation of household members in the working age group and school participation rate of school-age members of the household. In addition to this, the level of poverty will be measured for the whole region, main subregions as well as for important subgroups of households which are classified by household demographic characteristics (household size groups, groups by age and sex of head) and type of occupation of the head.

Specific Objectives

The Specific objectives of the study are to show :-

- . whether household size is associated with standard of living and in what direction ;
- . whether or not female headed families are over represented among the poor;
- . whether or not the age of the head of the household is related to the standard of living;

¹Broader consideration of more relevant socio-economic characteristics, like assets owned, education of the head, ethnicity, religion etc., is not possible since they are not included in the survey data collection.

- . whether or not the very young and the old (the vulnerable and unemployable') are over represented among the poor ;
- . whether or not the population in the working age group, aged 15 to 64, of the poor have more dependency burden
- . whether occupation (farming, trade, craftsmanship and others) has effect on standard of living of the household;
- . whether proportion of economically active members from those in working age (alternatively, the unemployment rate) has significant variation for households at different levels of standard of living ;
- . whether or not school-age members of the 'poor' have lesser school participation rate and,
- . whether the three Awrajas of the region show significant difference in the standard of living of households.

Justification of the study.

The study is based on the 1981/82 Rural Household Income Consumption and Expenditure Survey (RHICES) data.²

Even though the data used are long-dated and the results of the study would not be directly of use for current policy decisions, they could serve two relevant purposes. First, the results obtained can be compared with results of similar studies which are based on current data in order to see temporal change. Secondly, the methods to be applied in the study could be appreciated in providing insight into the relationship between standard of living and demographic factors.

² It is the only official data available for public use on this subject so far. Central Statistical Authority (CSA) is currently undertaking household consumption and expenditure survey, but it is still on the process and results were not released to be used at the time of writing the proposal for this thesis.

1-3-HYPOTHESES

Based on the available literature and evidences from different developing countries (see discussion in chapter 3, section 3-3) and considering the Ethiopian situation, the following major hypotheses are set and their validity is tested in this study.

- i. Household size is inversely related to standard of living. This is so because as household size increases, per person consumption level decreases within a given level of production. The level of production is not expected to increase much as land size is limited and method of farming is backward.
- ii. Age of the head of the household has a nonlinear (U-shaped) association with standard of living. Specifically, when the head of the household is young (below 24 years of age) or in the late middle age (say, above 45 but below 60 years of age) the standard of living of the household is relatively better or above average. Whereas when the head is between 25-44 years of age standard of living is expected to be low. The main reason for this relationship is, at young age of the head, the family size is low and per-capita consumption will be high. When the head is in the late middle age, there will be children in the family who are actively participating in the farming activity thus, more income and better standard of living. When the head is in the middle age say, in 25 - 44, the household, may have many young children (dependents) to support hence lower standard of living (see also section 3-3-4).
- iii. Female headed households are less well-off compared to the male headed ones. The expectation is, for one, the female headed households get less land size (See Hadgu, 1995 for a case in Arssi region). Secondly their capacity to utilize the land is lower than that of the male

headed households. Furthermore, female heads in polygamous marriages³ are expected to be economically disadvantaged since they share their husbands income among other cowives. (See the discussion in Dessalegn, 1992 and 1994).

iv. Household composition by age is associated with standard of living. Specifically, household dependency ratio (young and old age dependents to working-age members) is negatively associated with standard of living.

v. Labour force participation rate of eligible household members (in the 10+ age group) is associated with standard of living.

vi. School participation rate of school-age members of the household is negatively associated with household standard of living.

³Incidence of polygamous marriages in Arssi was common. In such marriages the husband is the head in the household where he regularly lives. Wives who live separately are considered as heads of their own households .

CHAPTER II

DESCRIPTION OF THE STUDY AREA, ARSSI

Arssi was one of the 14 ex-administrative regions and presently it is one of the zones in region 4 (Oromiya region). Its main city, Assela, is 176 km away from Addis Ababa and 75 km away from Nazerete, the nearest big city (See the attached map.). Arssi covers an area of 23,674.72 square kilometres (CSO, 1986).

By agro-ecological classification, most of Arssi is found in the Eastern highlands of Ethiopia, having both Weina-dega (temperate zone) with elevation of 1800-2400m. and Dega (cool zone) with elevation of above 2400m., of natural vegetation and climatic zones. Barely and wheat are the major crops while linseed, teff, sorghum, maize, pea, horse bean, lentils are also grown (Westphal (1975). Some part of Arssi lies in the southern rift valley and lake regions in which lake Langano and Zeway lie at the borders of Arssi and Shoa.

According to the former administrative division, Arssi has three Awrajas (subregions) namely Chilalo, Arbagugu and Ticho. Presently the administrative classification is based on Weredas and there are 22 weredas in Arssi region now. According to the 1984 population and housing census, the population of Arssi was 1,662,790⁴ of which 1,533,199 (92%) were in rural area. The distribution of the population in the three Awrajas is indicated in Table 2-1, below.

⁴For the year 1982, (the year for which data used for this research was collected) Arssi's population was 1,212,700 of which 90.7% in rural areas (CSO, 1982).

FIGURE 2 . . 1

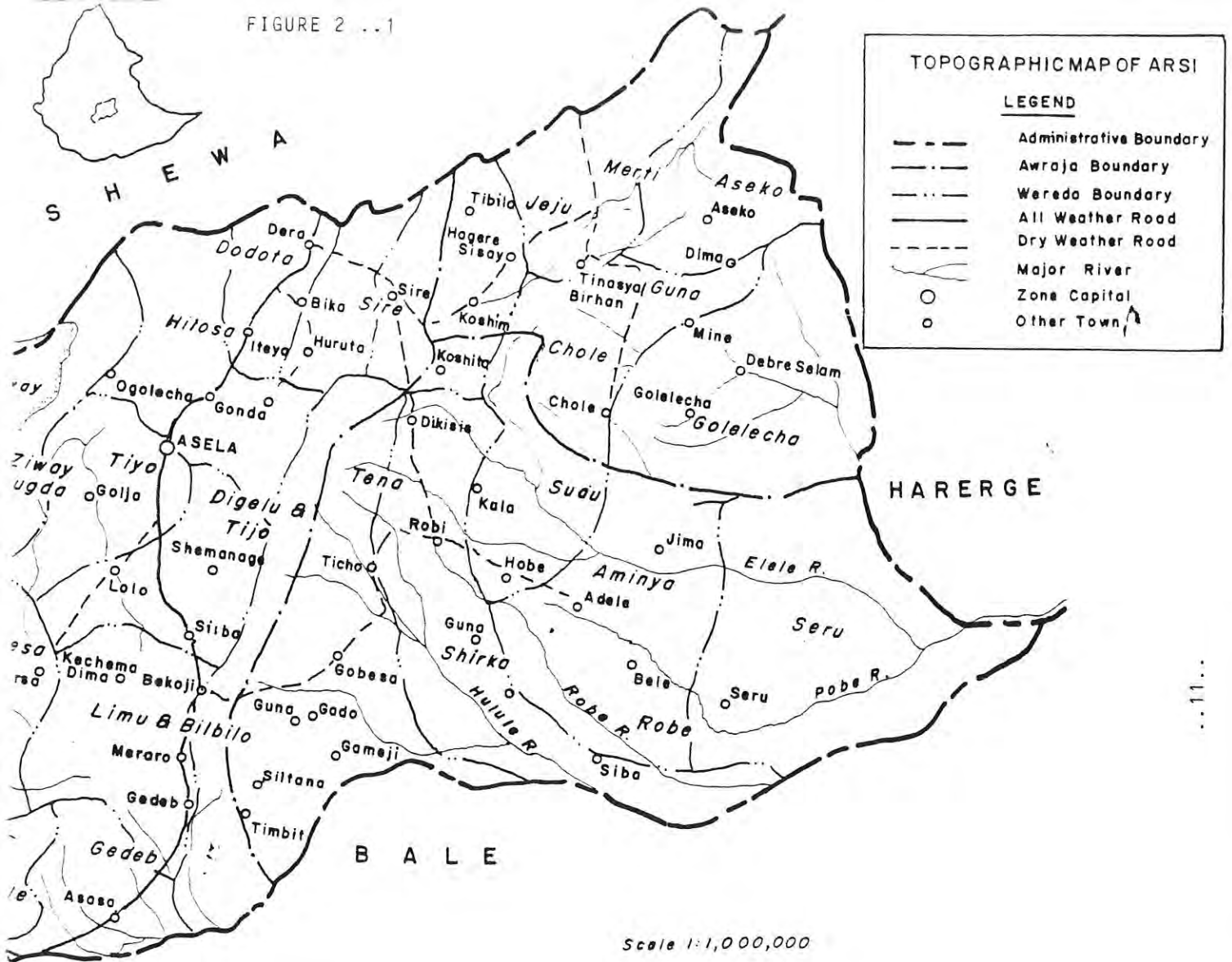


FIGURE 2.2

RELIEF MAP OF ARSI

LEGEND

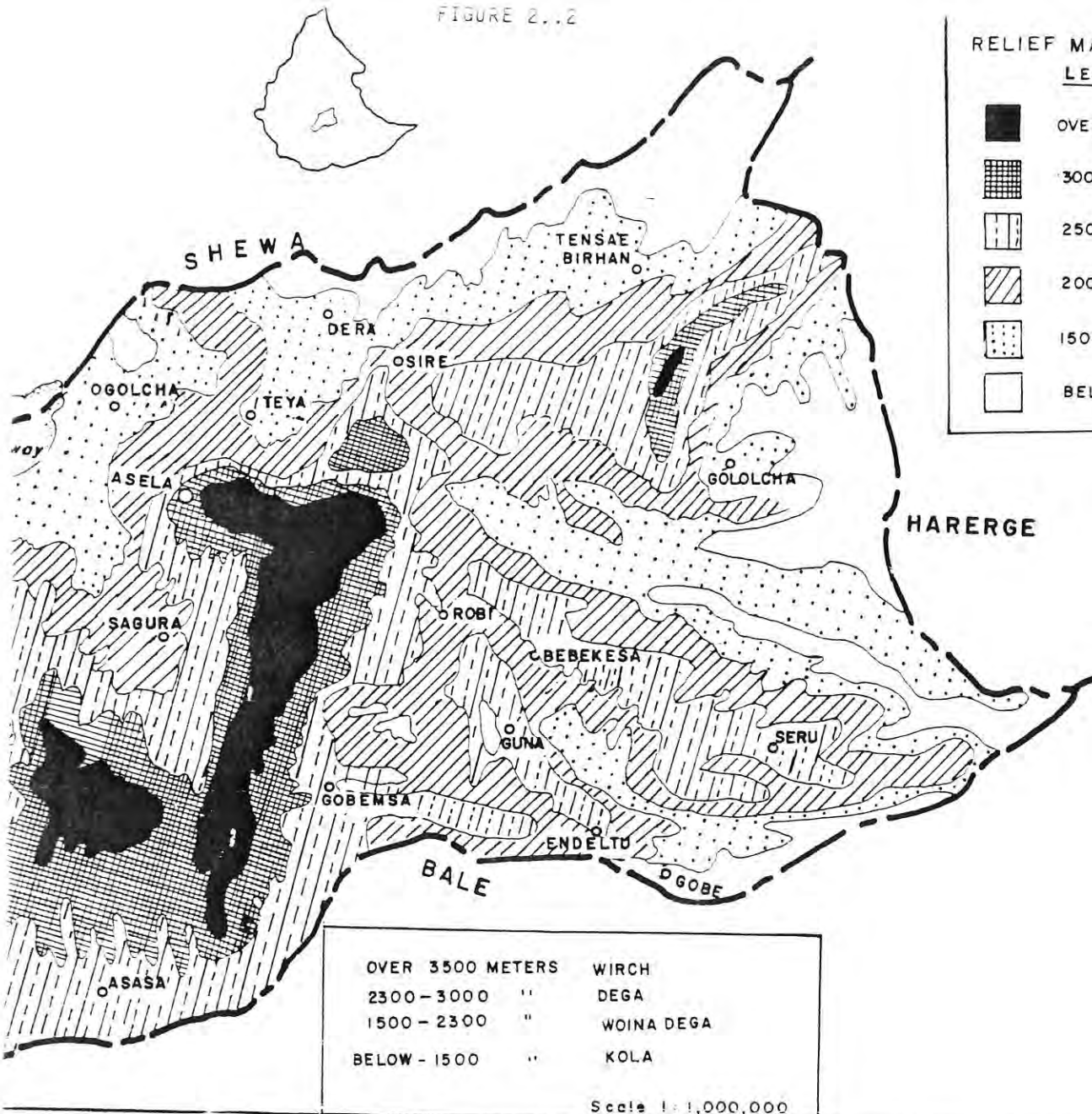
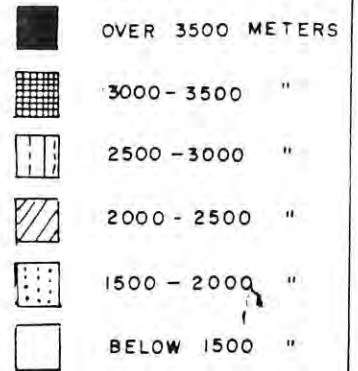


TABLE 2-1:-Population of Arssi, Area and Population density by Awraja: (1984)

Awraja	Population a	Area in Sq.Km b	Population Density/sq.km
Chilalo	964,077	11,243.47	85.7
Arbagugu	351,830	5,387.5	65.3
Ticho	346,883	7,043.75	49.2
Total for Arssi	1,662,790	23,674.72	70.2

Source: a. Office of Population and Housing Census Commission, Analytical report on Arssi Region, 1984.
b. CSO (1986), Statistical Bulletin, No. 49

The 1984 census analytical report on Arssi also indicated that:

There were 345,562 households of which 91% were in rural areas and average household size was 4.8 for rural and 4.4 for urban.

The ethnic composition of the population shows that Arssi's population was dominantly Oromo (76.7%) followed by Amhara (18%). Table 2-2 shows the ethnic composition by place of residence.

Other ethnic groups present include Gurage, Tigrawi and Wolaita in small proportions.

TABLE 2-2:-Percentage distribution of population of Arssi by ethnic composition and place of residence: (1984).

Ethnicity	Place of Residence		
	Rural	Urban	Total
Oromo	79.6%	42.0%	76.6%
Amhara	15.7%	43.0%	18.0%
Others	4.7%	15.0%	5.4%
Total	100 %	100 %	100 %

Source: Office of Population and Housing Census Commission,
Analytical Report on Arssi Region, 1984.

Over half of the population (55%) in Arssi were Muslim by religion and 44% are Orthodox christian. About a similar distribution existed in the rural while in the urban the Orthodox christians predominate. Table 2-3 shows this distribution.

TABLE 2-3:-Percentage distribution of population of Arssi by religion and place of residence: (1984)

Religion	Place of Residence		
	Rural	Urban	Total
Muslim	58.4%	22%	55%
Orthodox Christ	40.8%	77%	44%
Others	0.8%	1%	1%
Total	100%	100%	100%

Source: Office of Population and Housing Census Commission,
Analytical Report on Arssi Region, 1984.

The composition of the population by major ethnic groups and religion indicates that most of the Oromo are Muslim and the Amhara are Orthodox Christians. (Table 2-4 below).

TABLE 2-4:-Percentage distribution of population of Arssi by ethnicity and religion: (1984)

Ethnicity	Religion			
	Muslim	Orthodox Christian	Others	Total
Oromo	70 %	29 %	1 %	100 %
Amhara	0.9 %	99 %	0.1 %	100 %

Source: Office of Population and Housing Census Commission,
Analytical Report on Arssi Region, 1984.

Considering marital status distribution in the age group 15+, 82% were married. The singulate mean ages at marriage were 23.3 for male and 17.4 for female.

Considering headship of households, in the rural area 23.2% were female-headed households, of these female heads 50.1% were married and 31.8% widowed, the rest were divorced, separated or single. The relatively high proportion of married female heads is explained by the presence of polygamous marriages in the region in the analytical report.

The population dynamics of Arssi generally is noted for very high fertility and high mortality levels as compared to other regions. According to the 1981/82 demographic survey, the following fertility and mortality levels were observed.

Table 2-5:- Population dynamics indicators: Arssi 1981/82.

Population dynamics indicators	Arssi Region	Total for the 12* regions of the country	Rank as compared to other regions
<u>Mortality</u>			
- IMR	149/1000	144/1000	the 6 th highest
- Life expectancy at birth	45.1 years	46.0 years	the 6 th from the lowest
- CDR	19.4/1000	18.4/1000	the 6 th highest
<u>Fertility</u>			
- CBR	53.5	46.9	the highest
- TFR	8.3	6.9	the highest
Rate of natural increase	3.4	2.9	2 nd highest

* The demographic survey also covered 12 regions, excluding Eritrea and Tigrai.

Source:- Report on the results of the 1981 Demographic survey
(Jan 1981-Jan 1982), CSA, 1985.

Regarding economic activity of the rural Arssi, according to the Rural Labour Force Survey result⁵, the occupation of most of the rural working population is farming (91.2%) followed by animal husbandry (6.4%).

Considering rural land holding⁶, most of the farm land was used by private small holders (87 %), whereas state farms and cooperatives occupied 10 % and 3 % respectively.⁷

In terms of agricultural production, Arssi is traditionally known for its surplus production, having favourable climate, altitude and fertile land. It used to be referred as the country's 'food basket' and 'the wheat-barley' belt. The well-known Integrated Rural Development Projects launched in the region through the Chilalo Agricultural Development Unit (CADU), in 1967 and The Arssi Rural Development Unit (ARDU) in 1974, helped a lot in increasing agricultural productivity by way of supplying improved seeds, fertilizers, technical advice and enhancing mechanization. In the latter years also, the region remained to be among the economically secured regions in the country. A recent study classified Arssi in the 'not deprived' group when regions were categorized as 'not deprived,' 'deprived' and 'highly deprived,' on the basis of level of food deprivation (MOPED, (1994, p.97).

Arssi is chosen as the study area for this paper because of its manageable survey data size which makes it relatively easier to access the raw data from CSA database, as well as for economical use of the PC computer's processing space in data analysis. Moreover, Arssi's

⁵ Statistical Bulletin No. 51, CSA

⁶ Land was under 'public ownership' which can not be privately owned. Farmers have only 'use right', according to the 'Public Ownership of Rural Lands Proclamation' of 1975.

⁷ Computed from data given in Statistical Bulletin No. 56, pp 92, 170 and 206 (CSA, 1982).

distinct demographic and economic characters described above being a high fertility and mortality area, demographically, and a surplus producing area economically, are supposed to influence markedly the variables of this study which are household size and composition and their standard of living. Because of this it is believed that Arssi is a conveniently set region to provide relevant information in the study of standard of living and its demographic correlates.

CHAPTER III

GENERAL CONCEPTS AND ISSUES

3-1 WELFARE OR LIVING STANDARD AND ITS INDICATORS

3-1-1 GENERAL

The dictionary⁸ meaning of welfare is the "state of faring or doing well; freedom from calamity; enjoyment of health; prosperity".

Welfare can be taken as the desirable state of living. It is the fulfilment of the needs of a person/household or community to survive and live comfortably.

Availability of enough and the required type of food, clean and safe drinking water; having the required kind of clothing and housing; being able to stay in good health, to be educated, having access to job opportunities and other social services are conditions which ensure the welfare of a person or household. The degree of well being or standard of living of a person/household can be measured depending on the extent to which these requirements are fulfilled.

The range and quality of these basic needs which are assumed to be required to live comfortably vary from place to place, time to time and for different persons. What is a basic requirement in one country could be a luxury at another, as norms, cultures and levels of civilization of the different societies influence the perception about the requirements of

⁸ Chambers Twentieth Century Dictionary, 1954.

comfortable living. Even for the same place (country) the assumed basic requirements to live comfortably change over time i.e. what is a necessity now may not be thought so, say, some 20 years back. Also, it is known that the food requirement of persons differ based on their age, sex, activity level and even their tastes, and for the same person over time.

Therefore it is clear that welfare or standard of living is inherently a 'relative' concept dependent on the reference time, place and individuals involved.

Nevertheless, for the practical purpose of measuring standard of living or degree of welfare in a given time-place setting, giving due considerations to perceptions and norms of the community under reference, it is possible to identify a workable list of basic requirements and check the extent to which they are fulfilled for a person or household.

3-1-2 MACRO AND MICRO LEVEL INDICATORS OF STANDARD OF LIVING.

Standard of living can be considered at macro or micro level. The macro level indicators refer to measures of economic performance, levels of social services available and mortality levels at the national level or for a community. GNP per capita, growth rates of different economic sectors, life expectancy, mortality rate, per capita supply of health and sanitary services and literacy levels are common macro level indicators of standard of living.

The micro level indicators are derived based on data at the household level and can indicate the state of welfare of individuals or households. This is mainly achieved by using household income or expenditure data, while nutritional level and educational attainment of individuals are supplementary indicators. The micro level indicators are more useful in

categorizing the population by their levels of standard of living and study the characteristics of different groups, say, the poor and non poor whereas the macro level indicators hide such variations within a population.

3-1-3 THE YARD STICK TO WELFARE OR STANDARDS OF LIVING.

AT HOUSEHOLD LEVEL.

In measuring the level of living standard ideally one must try to show the extent to which most of the basic consumption needs and other necessities are satisfied - food, water, clothing, housing, health and educational services, etc. A possible yardstick, thus is expected to reflect this. There are several indicators of standard of living although each may not give a complete description. Some of the commonly applied indicators are household income level; expenditure (consumption) level; assets available(owned); levels of mortality, like, infant mortality; nutrition level; literacy; and school participation . Broadly these indicators are categorized into two: Economic and social. The economic indicators are income, expenditure (consumption) levels and ownership of assets whereas the others are social indicators.

The economic indicators, especially household income and expenditure levels are the popularly applied measures for that, primarily they are believed to reflect to a large extent, the capability to buy or afford the basic needs and other necessities. Secondly they are directly and easily quantifiable at the household or individual level and are better suited for quantitative analysis.

It is important to identify explicitly what household income and expenditure constitute. According to Boeteng E. Oti and Ewusi k. (1990) income constitutes the following categories.

Income from employment; net household agricultural income; net non-farm self employment income; rent, actual and imputed (on own or free housing); educational scholarships; remittances received and other income. The household expenditure categories broadly are: consumer's expenditure on food; consumer's expenditure on non-food items like, actual rent, imputed rent, expenditure on health and education; remittances paid; other household expenses, and, domestic consumption of home produced food and non-food items.

On the other hand, economic status indicators alone cannot show one's level of welfare in all aspects (World Development Report (WDR), 1990). This is to mean that they may not wholly capture the social dimensions of well being, like, access to safe drinking water, health and educational services, public goods and common property resources. Households having access to free public services are better off than those without even if their incomes are the same (WDR, 1990).

That is why it is proposed many times, that in measuring living standards it is essential to supplement economic status indicators by the social indicators.

This of course depends on availability of data on the social dimensions of welfare at the household level. Non availability of data and other factors usually limit the task of measuring living standards to economic indicators only.

From the choices of economic indicators expenditure on household consumption (including, own production) is considered to be a better proxy variable to current standard of living as compared to income. This is because the real day-to-day needs of consumption goods and services are satisfied not by net income exactly, but through desaving and borrowing which

are all reflected in expenditure. But income of a given period could be less than what is spent on required goods or it may not be all spent in the reference time span. Thus income may not exactly reflect current standard of living.

Moreover income data are known to suffer from deliberate understatement and recall-error as compared to expenditure. Households remember better about what they consumed than they earned, particularly for agricultural household where source of income is own production.

As an alternative way or mostly in the absence of income or expenditure data, assets owned can be used as a proxy variable to economic status since ownership of assets indicate capacity to generate income and/or goods to be consumed. Particularly for rural areas size of land holding and number of cattle (oxen) owned are used as measures of standard of living (see MOPED, 1992). In the use of household income or expenditure data see, for instance, Visaria, 1983, 1980 on Peninsular Malaysia and some Asian countries respectively; Wright, 1994, on European countries; Dercon and Krishnan, 1994 on rural Ethiopia.

3-1-4 ACCOUNTING FOR HOUSEHOLD SIZE AND COMPOSITION

In considering income or expenditure of households as the standard of living indicator, per person values (income or expenditure) are preferred to per household values. This is for the simple reason that households at the same income or expenditure level but with different sizes are not expected to have the same level of welfare. Furthermore the particular composition of household members by age and sex has its own influence in the consumption level of the household as the consumption requirements of children and adults and also male

and female members are not the same. In addition to this the effect of economies of scale in consumption for non-single households should be considered. Therefore it is a common practice to express the expenditure or income level of a household in terms of per-adult-equivalent units. For such a purpose different equivalence-scales are proposed and used by economists.

These adult-equivalent scales mostly are formed on the basis of relative food consumption requirements of children and adults and cannot exactly represent relative needs for other goods and services. Generally, the selection of equivalence-scales has some degree of arbitrariness and it is difficult to determine the 'appropriate' scale in a given case. It is preferred to use one that is commonly applied in a given country for reasons of comparability with other studies.

Finally, the major concern in the study of standard of living is directed to the incidence of poverty or unsatisfactory living standard and its different aspects. It is the at most interest for policy makers, administrators and researchers to know the degree of poverty prevailing in a given society, who the poor are, what economic, social and demographic characteristics they have, in order to plan and carry out effective poverty alleviation programs.

3-2 THE CONCEPT AND MEASUREMENT OF POVERTY.

3-2-1 GENERAL.

Poverty generally is an outcome of low and unsatisfactory level of standard of living expressed in a multitude of forms. Altimir (1982) described poverty as:

"The perception of poverty is a situational syndrome expressed in terms of under consumption, malnutrition, poor sanitary conditions, illness, high mortality and morbidity, precarious housing conditions, low educational levels, marginalization in participatory activities to either contribute or benefit or both".

World Development Report (1990) puts poverty as "the inability to attain a minimal standard of living". Also, from the early works on the subject; Rowentree, as quoted by Rogers (1984) defined 'Primary poverty' as "earnings... insufficient to obtain the minimum necessities for the maintenance of merely physical efficiency".

From the above definitions given by different writers it is possible to observe that the concept of poverty has many aspects and dimensions, and putting them in their proper perspective helps in identifying the appropriate approach to measuring poverty and studying its association with other correlates, for a given particular purpose.

3-2-2 ECONOMIC AND SOCIAL DIMENSIONS OF POVERTY.

Low level of income or expenditure of a person or household which reflects the inability to afford the basic consumption needs and other necessities indicate the economic dimension of poverty. The social dimension is expressed in the form of poor health condition, poor housing and sanitary conditions, non-availability of safe drinking water-resulting in high morbidity and mortality, low educational levels, unemployment and limited employment opportunities. A 'complete' description or profile of poverty must show both dimensions for a household or community.

Poverty can be described at macro or micro level. At macro level it refers to the low status of economic performance and social amenities for a community or nation in an aggregated manner (for instance low GNP percapita, low life expectancy, high mortality rate etc). But as they are aggregate measures for the whole community or country, they are not useful in showing which part of the society is more affected by poverty. To some extent this can be achieved if additional effort is made to identify and measure the aggregate poverty indicators for groups, which by virtue of some shared characteristics constitute a distinct category with respect to poverty. Such groups can be for instance racial or ethnic groups or landless agricultural labourers or people in the informal sector of the economy. By being in a particular racial or ethnic group for instance, the problem or one cause of poverty could be discrimination in employment. Or being in the group of landless labourers may entail getting low wages, lack of independence as compared to employers, lack of access to education or other means of self development. Hence some of the aggregate type of poverty indicators (for instance, per capita supply of health services, life expectancy) can be determined for such groups of a society so that the groups that suffer more from poverty can be known.

Yet, it is a fact that within each such identified marginalized group, not every individual or household can be considered 'real' poor. There will be variations at household or individual level due to differences in individual fortunes, number of dependents, age compositions or personal behaviour. Thus a certain fraction of a marginalized ethnic/racial group or landless labourers may fall above the poverty line. Therefore such kind of grouping though useful may not help in identifying the 'poor' as a group.

To identify the poor in a society and study their economic social and demographic characteristics, the micro level studies are preferred. They are mostly based on households'

income, expenditure, assets owned or nutritional intake levels. Educational attainment, employment condition of members of households, can also be used to get wider profile.

However for reasons stated earlier i.e. due to non-availability of data and/or to limit the scope of data collection and analysis, largely because it is believed that levels of income and expenditure (economic status indicators) also reflect the extent to which one affords the basic needs including those in the social dimension, it is common to measure and describe the poverty status through income or expenditure or assets owned.

3-2-3 CONCEPT OF ABSOLUTE AND RELATIVE POVERTY

The two important aspects of poverty are absolute and relative deprivation. Absolute poverty refers to the situation where a person or household is unable to meet the minimum acceptable basic consumption needs to live satisfactorily. This assumes the identification of the minimum level of living. Different societies have their own such acceptable or tolerable level. On the other hand, relative poverty indicates the relatively lower standing of a person or household, economically, as compared to others. For instance on the standard of living ladder, say, indicated by household income or expenditure ranking, the lower 40% can be considered poor. It should be understood that in this context that, those considered 'poor' may not necessarily be deprived of the basic consumption needs and live in absolute poverty but rather it indicates that they are less well-off as compared to others. In short it shows income inequality rather than absolute poverty.

Though there is such wide difference between absolute and relative poverty concepts as they are defined above, it can be argued that poverty is essentially, a relative phenomenon.

since it is always defined in contrast between the individual and society. This is to say that even in assessing absolute poverty, what are identified as the minimum acceptable basic needs (nutritional intake, clothing, Shelter and other necessities) are always set in consideration of the particular society's practices, norms and culture which involve value judgments.

It therefore, changes as the characteristics of the society change. However, within a given place and time setting, through objective assessment of average actual requirements and allowing for some degree of arbitrariness and subjectivity, the vital needs can be identified so that their absence can be taken as incidence of absolute poverty. Regarding this, Rogers (1984) stated that, "It would then seem preferable to build a working conceptualization of poverty around deprivation of the goods, services and personal attributes which in a given society can reasonably be expected to be available to the mass of the citizens. Within this frame, perhaps one could profitably distinguish "ordinal" poverty - essentially involving comparisons between individuals in terms of access to economic, social and cultural goods, services and possibilities" (to mean relative poverty) "from "cardinal" poverty which involves failure to obtain some specific bundle of goods and services." (ie absolute poverty) (Rogers, 1984).

The use of absolute poverty concept is preferred in assessing real deprivation of basic needs in order both to guide policy decisions in the alleviation of real poverty as well as for comparative analysis overtime and over different places.

In identifying the "poor" or in the study of poverty in general the first step is determining a certain cut-off point in the level of living below which a person or household can be considered poor. This point is what is called the poverty line. A poverty line is usually determined based on income or consumption (expenditure) data. Absolute or relative poverty

concepts can be employed in setting a poverty line. Absolute poverty line is the value of the income or consumption necessary for (a) the minimum standard of nutrition and (b) other necessities (World Bank, 1993).

As Ravallion (1992) also described it, "an Absolute poverty line is based on the cost of the minimum consumption basket based on the food necessary for a recommended caloric intake. The poverty line is then augmented by an allowance for non-food needs, consistent with the spending patterns of the poor."

The real value of an absolute poverty line, theoretically is fixed over time. (Ravallion, 1992).

On the other hand, a relative poverty line is dependent on the average income or consumption set at some percentage value of the average income, say at one-half of the mean income. Therefore it varies with the level of average income.

Determining absolute poverty line

One of the common methods in use proceeds as follows. First a minimum required caloric intake is set. Then typical food items used in the concerned area by people deemed to be poor are identified in the right composition so as to give that fixed minimum caloric amount. The cost of these food items then is determined using the appropriate regional prices. This will give what is known as the 'food consumption poverty line' also referred to as "absolute" poverty in the sense that it is the minimum survival cut-off point ignoring other needs or, 'households whose total expenditure is below this do not (can not) spend enough to provide

minimum food consumption ' (Dercon and Krishnan, 1994). To add to this the cost of non-food necessities, it is, in principle, possible to proceed in the same way. That is to set a bundle of basic non-food goods and costing them. But identifying the list of basic non-food goods and pricing them is extremely difficult due to mainly, that, non-food needs can be very much varied from person to person or between groups due to individual tastes, cultural differences, time of study and other factors. Therefore, the common practice is to estimate the cost of basic non-food goods based on the expenditure pattern of the part of the society whose food consumption is exactly sufficient for basic food requirements. This can be achieved by estimating a regression equation between the food-share from total expenditure and total expenditure (food and non-food) itself. The particular form of regression suggested and the computational details of this procedure are described by Ravallion and Bidani (1994) and the method as a whole is applied for Ethiopian data by Dercon and Krishnan (1994).

3-2-4 MEASURING POVERTY

The poverty line is the corner stone in the task of measuring poverty and constructing a poverty profile for a given group. Once the poverty line is determined, the poor can be identified as those households or persons falling below the poverty line in their income or expenditure level or size of asset, which ever is used as a yardstick to measure standard of living.

In measuring the level of poverty, its three important features should be addressed and described, namely, the incidence, depth and severity of poverty.

Incidence of poverty is the simple and most common indicator of poverty which is the proportion of persons or households falling below the poverty line in a given group. It is also known as the head-count ratio.

The depth of poverty is the feature that shows how far the poor as a whole are falling off from the poverty line.

The third feature is the intensity of poverty, which shows the degree of poverty in the lowest poor. The interest here is to know how the poor are distributed below the poverty line, which answers the question that are the poor people very far off from the poverty line (poorest) or are they clustering close to the poverty line?

These features of poverty need to be measured and described for appropriate policy decisions, actions and examining policy effects in the alleviation of poverty. For instance if the interest is to decrease the proportion of the poor in a society, one is addressing just incidence of poverty. Whereas if the interest is to improve the lives of the poorest people, the intensity of poverty is being addressed.

The Foster-Greer-Thorbeck (FGT) (Foster, Greer and Thorbeck, 1984) standard measures of poverty, measure these three features. The first measure denoted by $P(0)$, gives the head-count ratio and measures incidence of poverty. The second denoted by $P(1)$, known as the poverty gap-index measures the depth of poverty in a group. It is the average shortfall from the poverty line of the poor persons or households as a ratio of the poverty line, taken over all the members of the population. The third measure, denoted by $P(2)$, referred as the Foster -Greer -Thorbeck index of poverty is intended to show the severity of poverty. It is one

of the distributional sensitive measures. In P(2) the gap between the poverty line and the income or expenditure of the poor person or household is weighted to reflect the extent that an individual's income or expenditure falls far below the poverty line. The formula and method of computing the FGT measures are described in chapter 4 section 4.2.2.

3-2-5 THE CHARACTERISTICS OF THE POOR.

After identifying the poor in a society by using the poverty line, it is important to describe their demographic, economic, social and other characteristics like their family size, age and sex composition, age and sex of the head of the household, fertility and mortality status, educational attainment, main occupation, labour force participation (employment status) and, nutritional status.

This can be done, of course, as far as the available data allows. Determining such a poverty profile (profile of the poor) is useful:

(a) in identifying which demographic or socio-economic group is more affected by poverty? (Say, large sized or single-member households? Female headed households? Households with greater dependency burdens? The unemployed? Those in agricultural sector compared to manufacturing? the illiterate?)

(b) in identifying what particular outcomes of poverty are the poor suffering from like, malnutrition, infant mortality lack of immunization, low level of education, unemployment, etc. and,

c) to throw light on the presence of possible association between standard of living and some demographic, economic and social factors.

The information from the poverty profile thus has also the practical use of guiding policy decisions to targeted groups for a particular mode of poverty alleviation program.

3-3 RELATIONSHIP BETWEEN STANDARD OF LIVING AND DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS

3-3-1 General

The demography and welfare of families are linked in different ways through different factors. The salient demographic characters of a household which are evidently related to its standard of living are, household size, its composition by age and sex, and the age and sex of the head of the household.

These demographic characters are expected to be associated with standard of living because they embody the income generating potential and also consumption capacity of the household as a whole, as the members of the household are both the producers and also consumers.

Behind the above mentioned household demographic characters, there are known demographic events experienced by household members. These are fertility, mortality, migration, and marriage (as affecting exposure to fertility). These demographic events independently or through their interaction influence directly household size and composition

(Rogers, 1984, Lipton, 1995), and the standard of living indirectly. These demographic events can also be considered as background variables.

The direct and immediate effects of these components are straight forward. Fertility and marriage increase household size, whereas mortality and migration have decreasing effect. It would be important to consider their interaction. For instance the effect of mortality as a decreasing factor is not the whole story. High infant and child mortality are known to induce more births as insurance or replacement to the lost ones resulting in 'hoarding' of children. (Schulth 1981, Lipton 1995). Therefore the net effect would be increased family size if surviving births outweigh the deaths. The net effect of the independent and joint influence of these variables on household size depends on the force of each component case.

On the other hand, some of these demographic events could be expressions, or outcomes of low standard of living or poverty. (Rogers, 1984). Low standard of living is manifested by mortality (say, deaths due to curable diseases and malnutrition), migration as a means of escaping from poverty, fertility as a response to high infant and child mortality.

3-3-2 HOUSEHOLD SIZE AND STANDARD OF LIVING.

Conceptually, in a given material resources level (endowments like land, cattle and wage), larger household size means smaller income or consumption per person, meaning lower standard of living, i.e. implying negative association between standard of living and household size). But the important question is as household size increases, can income or resource increase proportionately, (or possibly more than proportionately), to the increase in size, so that, consumption per person (standard of living) also increases or at least does not decline?

This depends on three conditions. First, the availability of enough, productive material resource (say fertile land), which is expandable. Second the producer's productivity. Third, the increase in family size bringing more producers (not only consumers) i.e. adults. If one or more of this conditions exist to the extent that increased production (income) is possible, so as to support the additional members, then standard of living will not be affected negatively. But this may not be the case mostly. Taking a possible scenario in a developing (less developed) country rural area. for a household with poor land area, which applies backward methods of farming and with limited ways of increasing land productivity, increase in family size by having more children could mean more dependents and less income per person. Even if the land resource is fertile and expandable, and if the capacity to employ better methods of farming is limited similar outcome may result.

The bulk of evidences available based on facts from developing countries support the negative association of standard of living and household size. Lipton (1983) has revised the works made by many researchers in this area and summarized that "recent evidence showed that big households tend to be poor".⁹ He based this summary on data from Asian countries as well as some African countries, which showed that poverty and average household size increase together. For instance from the works of Visaria (1980), for several rural and urban South Asian populations, there was an inverse relationship between mean household size and expenditure per person deciles (standard of living), which is conformed by strong negative rank correlation coefficient (Lipton 1983, page 8 and 85). Some evidence on African data also showed similar pattern of association. For instance Lipton (1980) by referring to works by

⁹ Though he also observed that historical data for the now developed countries (NDC) in their pre-industrial era showed that 'poor households tend to be small', while wealth and affluence goes with large household size. (Lipton 1983, pp 7-8)

Normal et.al (1976) and Rouis (1980), indicated that there was a positive relationship between household size and poverty for some Nigerian villages and urban towns (p.9).¹⁰ /

To add to these, Visaria (1981), in his work on Peninsular Malaysian data of 1973, showed similar negative association between household size and per capita expenditure (PCE) and Per capita Income (PCY) (p.21).

A recent study on data from Ethiopian urban town, Dire Dawa (Yohannes, 1995) showed that there is significant difference in mean household size when households are grouped as having 'poor', 'moderate' and 'sufficient' welfare status, their mean household sizes being 6.34, 5.9 and 5.1 respectively (Yohannes, 1995, Table 3).

Therefore, the wide collection of evidences indicate the negative association between standard of living and household size in today's developing world. But it would be difficult to put this association in terms of cause-and-effect kind from one to the other. Because it is possible for the two to influence each other in a two way direction. For instance, poverty or low standard of living through mortality (infant and child mortality) may trigger high fertility which may outweigh the loss in mortality and may result in increase in household size. On the other hand, large household size for a given resource of the household may result in less consumption per person and low standard of living.

9. In a recent work (Lipton 1995 p.11) work in referring a household surveys in Ghana, Ivory coast and Mauritania showed the strength of relationship between household size and PCP where PCP is Consumption Poverty- monthly consumption per person on adult equivalent below the poverty line.

3-3-3 HOUSEHOLD COMPOSITION BY AGE AND STANDARD OF LIVING

The age composition of household members has an important role on their standard of living. The young, aged 0-14 years, and the old who are in the age group 65 and above are referred to as dependents. If the ratio of the number of dependents to producers, (those in the age group 15-64), which is known as dependency ratio is high in a household, then one can logically expect a lower standard of living at a given income level.

In developing countries where fertility level is known to be high, the young dependents of a household would exceedingly outnumber the other members. This composition can be described also by child/adult ratio as an alternative to dependency ratio (which also includes older dependents). High child/adult ratio indicates again heavy dependency burden for households, affecting the standard of living negatively.

The inverse relationship between dependency ratio or child/adult ratio and standard of living of households is supported by evidence from different developing countries. For instance, Visaria (1980) showed, for some Asian countries in the early 1970s', based on ten data sets, that the dependency ratio of households increase as 'household expenditure per person' (as indicator of standard of living) decreases (Visaria 1980, Table 4).

The 1994 data on sample households in Dire Dawa, Ethiopia, also indicated statistically significant negative association between child/adult ratio and household welfare status. The child/adult ratio decreased from 1.13 to 1.04 to 0.89 for the household groups based on welfare status as 'poor', 'moderate' and sufficient respectively (Yohannes, 1995, Table 3).

Generally the inverse association of standard of living to dependency burden, especially due to young dependents imply two things. First the poor working population have heavier burden of supporting dependents as compared to the better-off. Secondly, children constitute the greater part of the poor population.

3-3-4 AGE AND SEX OF THE HEAD OF THE HOUSEHOLD AND STANDARD OF LIVING

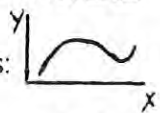
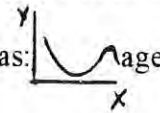
The head of a household, usually is the main or sole bread-winner of the family and the determining member of the household size. Both roles of the head which have direct association with standard of living of the household make it worthwhile to examine other demographic characteristics of the head, like age and sex.

The age of the head of the household could be related to standard of living mainly through its effect on the household size and composition (as life cycle effects).¹¹ Secondly, through the income generating capacity of the head (by enriching experience, skill and education, opportunity to save earnings or accumulate wealth) as age increases. But the increase in income or welfare with rising age may only apply to a fraction of the population, for instance white-collar workers (Rogers, 1984) who have the opportunity to self development (unskilled workers for instance, their incomes typically change little over time (Rogers, 1984).

* Generally age of the head of households and household size are related- having an inverted u-shaped relationship (Visaria, 1980 note 5) i.e. at young and old age with low household size and at middle age with high household size.

Therefore the more useful factor in explaining the relationship between age of the head of the household and standard of living is through its effect on household size and composition as discussed by Lipton (1983, pp 46-47).

The pattern of relationship between age of head-household size- standard of living can be described as follows. Other factors controlled, at young age of the head of the household, at the time of family formation, the household size is small (single or just couple) and the poverty risk is low and better standard of living. As age of the head increases to middle age, small children arrive, resulting in increased family size with more dependents, cutting per capita income or consumption by sharing what the household received thus higher poverty risk (lower standard of living). Beyond middle age of the head, the children reach earnings-age group i.e. more producers in the household which mean lower poverty risk and higher standard of living. At old age of the head, as the earning children leave home, household size decreases but the older parents may not be productive (due to age and illness), so poverty risk increases, and standard of living declines. This pattern of association is described by Lipton (1983, p.46), taking an average couple in LIC (Low Income Country) by also considering additional factors like work status of the wife at young age, remittance from married children at old age of head, etc.

This association of age of head and poverty risk through household size will form an inverted U-shaped relationship which has a slight upward turn at the right-end as:  (as age on (x) and poverty on (y)) or alternatively, considering age of head and standard of living, a U-shaped curve having a slight down-turn at the end as:  age (x) and standard of living (y).

Almost exactly this curve is found in 1974 Malaysian sample by Datta and Meerman, 1980, as referred by Lipton (1983, p.46).

Clearly, there can be other confounding factors affecting this relationship like work status of the spouse, remittance from married children, age at marriage of the head, main occupation, access to education etc. which will make the relationship more complicated. But controlling for this variables somehow can reveal the relationship between age of head and standard of living.

Some evidences show this relationship. For instance based on Peninsular Malaysian data of 1973, Visaria (1981) observed that; percentage of young heads of households (below 30 years of age) is much higher in the top expenditure decile group as compared to that of the bottom expenditure decile group (28% compared to only 9.5% respectively) (Visaria, 1981, p.22). Also in the same study the MCA (Multiple Classification Analysis) result showed that the relationship between age of head and standard of living is significant at 5% level given in terms of B^2 values (Ibid p.60 Table 2).

In another study on data for some Asian countries, it was found that, "with per capita expenditure ranking of households, the bottom decile (lower standard of living groups) includes a higher than average proportion of middle aged heads of households whereas the top decile include a high proportion of young heads of households" (Visaria, 1980 p.198).

From the above observations and evidences one can see possible association between age of head and standard of living, though complex. Specially if the main confounding factor is family size, the indication is, households headed by middle aged persons (with large family

size and many young dependants) are poorer. One important implication of this is that young children of these poor households are the ones most suffering from poverty.

Considering sex of head of the household and standard of living, different studies based on different countries indicated that they have no significant association. Lipton (1983) by referring to works of different researchers (that of Dada and Mermen, 1980; Visaria, 1981 and others') observed this fact.

Nevertheless female-headed families in most cases are considered to be worse-off in standard of living in contrast to that of male-headed due to factors like lack of access to education, good jobs, land and resources or other factors. In the rural Ethiopian context, where marriage is considered to be universal and early, female-heads mostly are widowed, separated, divorced or in the cases of polygamous marriages, those wives who are not living with their husbands in the same house but still married. In some cases the female-heads with no husbands (widowed, separated or divorced) usually rely on others to farm their lands based on some harvest-sharing arrangements which decreases the income (see Dessalegne (1992) for an example from a district in Southern Ethiopia). Also it is observed that women-heads in polygamous marriages are as a rule poorer than women in single marriages as the husband's income is shared with several co-wives. (Dessalegne (1992)).

In the MOPED report (MOPED, 1994) also, the poor rural female-headed households are identified as one of the groups which are socio-economically marginalized.

In rural Arssi also (the study area for this paper) according to the 1984 population and housing census the proportion of female-headed household was 23% and from this half of them

were married and about 47% were either widowed, separated or divorced (Population and Housing Census, 1984). In the Census analytical report, the incidence of relatively high proportion of married female-heads was explained by presence of polygamous marriages.

Therefore, the association between female headedness and standard of living of households should be examined cautiously in consideration of different economic, social and cultural factors which may influence the relationship in a given society.

CHAPTER IV

DATA AND METHODS

4.1 DATA SOURCE AND METHODS OF COLLECTION

4.1.1 The Survey

The study is based on the 1981/82 Rural Household Income Consumption and Expenditure Survey (RHICES) data. The survey was one component of the bigger Rural Integrated Household Survey Programme conducted by CSO, which also comprised among others, the Rural Labour force survey, the Agricultural survey and the Demographic survey. The RHICES was conducted at national level in rural areas, excluding Tigray and Eritrea covering the rest 12 ex-administrative regions.

4.1.2 Sampling Procedure

According to the methodological report of the survey (CSO (1983), Statistical bulletin No. 34), at the national level, in the 12 administrative regions covered a total of 12,000 agricultural households were sampled from 500 sample farmers associations (FAs here after).

A two stage stratified random sampling technique was applied for this purpose. The first level of stratification was using the Awrajas as strata in each region. Consequently 77 strata (Awrajas) were formed in the 12 regions. Within each stratum the FAs were used as primary sampling units (PSUs). It was decided to select 500 PSUs from all of the regions. The allocation of the 500 FAs to the covered 12 regions took into account the size of the regions,

with additional restriction of selecting at least 34 PSUs (or FAs) from any region. This is to ensure meaningful estimates at regional level. Within each administrative region, the allocation of the number of FAs to be selected from each Awraja (stratum) was determined in such a way that it would be proportional to the number of FAs it had. FAs were then selected without replacement with probability proportional to size, size being the number of members of the FAs. The final sampling units, households, were then selected from the sampled FAs by first getting the list of agricultural households and then selecting 24 households randomly from that list.

For Arssi region the allocated number of FAs to be selected was 34. Arssi's three Awrajas formed the strata. The allocated 34 FAs then were distributed to the 3 Awrajas based on the procedure described above. Consequently 32 FAs were actually covered, 9 in Arbagugu Awraja, 15 in Chilalo and 8 in Ticho. From each selected FA a sample of 24 households was planned to be selected randomly making the planned sample size to be 768 households. 758 households were actually covered but finally complete data were obtained on the main study variables for 705 households, which served as the sample for this study. The summary of the sample size by awraja is presented below.

Table 4-1-1:- Distribution of sampled households by Awraja.

Sampled	Awraja			Arssi Region
	Arbabgugu	Chilalo	Ticho	
Number of FAs	9	15	8	32
Number of HHS	204	323	178	705

4.1.3 Data Collection procedure

Both interview and objective measurement techniques were applied to collect information from the sampled households. Data collection was carried out in four rounds distributed over the year, a round covering 3 months. This is to account for seasonality in production and consumption pattern. In each round every sampled household was visited for one month, twice weekly to get information on the household's consumption, expenditure, income and other relevant data. These were then weighted to get annual data.

4.1.4 Variables in the Source data

The main variables on which data were collected and used in this study were:

i) Household demographic and economic characteristics such as:

- household size,
- For each member of the household (including the head of the household)
- relation to the head of the household, age, sex,
- work status in the year, type of occupation, industry, employment condition, and reason for unemployment (if not working).¹²

ii) Household domestic consumption and expenditure on food, drinks and tobacco; clothing and foot wear; housing and maintenance; fuel energy and water; household equipments, sanitary items and other services.¹³

¹² For those members aged 10 and above

¹³ No data were collected on household assets like land.

In addition to the above, data were collected on household income, receipts and payments.¹⁴

Twelve schedules were used for the data collection.

The collected data were edited and compiled by the CSO and saved using computer tapes. The final edited data are used for this study.

4.2 METHODS OF ANALYSIS

4.2.1 Generating the study variables

Generating the operational variables to be used in the study from the source data is the first step in data analysis.

The main variable of the study is household standard of living. In measuring standard of living, annual household expenditure in birr is used. This is generated from the sum of expenditures of a household on food, drinks, tobacco, clothing, footwear, housing and maintenance, water, energy, health care, education, communication and for other domestic consumption items. Income is not considered as a measure of standard of living because of the fact that usually it tends to be understated in such surveys (CSA, 1988). More over as discussed in the preceding chapter, it may not show the actual capacity of a person to satisfy his/her consumption needs.

¹⁴ Refer the Advance report on the survey (CSA, 1988) for the specific items included .

However, it is known that households at the same expenditure levels but with different sizes and/or age and sex compositions of members could not have the same level of welfare. Hence the total expenditure of a household should be adjusted for the difference in household size and composition. To account for effect of household size, per capita expenditure will be considered. Further more in order to take into consideration the difference in level of consumption requirements of children and adults and also male and female members, the per capita values are to be computed on per adult equivalent basis (where adult refers to adult-male person in this instance).

For such purposes, there are different equivalence scale relatives, which are proposed and used by different writers. (see for instance, Deaton & Muellbaure (1980), Macunovich and Easterline (1990), Asmerom (1991)). Generally the selection of equivalence scales has some degree of arbitrariness and it is difficult to determine an 'appropriate' scale in a given case. Using an accepted set of equivalence-scales possible which were applied by other studies made on Ethiopian data is preferred. Accordingly those proposed by WHO. and used by different researchers in Ethiopia are used. They show different relative levels of consumption by age and sex for thirteen age groups.

Thus, first household sizes are changed to adult-equivalent sizes using the equivalent scales. Then household expenditure is divided by the adult-equivalent sizes in order to get the final measure of standard of living, which is household consumption expenditure per adult equivalent (EPA).

The demographic variables considered are:

- household size
- age of the head of the household
- sex of the head of the household and
- age composition of members of the household.

(particularly, the proportion of dependents to those in the working age-group is considered.)

While the first three are directly taken from the questionnaire, the last one is computed for each household from the age distribution of the members. Specifically,

- dependency ratio as number of members aged below 15 and above 64 to members in age group 15 to 64,¹⁵
- young dependency ratio as number of members aged below 15 to those in 15 to 64 age group, and
- aged dependency ratio as number of members aged 65 and above to those in 15 to 64 age group were determined and examined separately as different variables.

Other relevant demographic variables like those showing fertility and mortality levels are not covered in the survey and therefore not considered in this study.

The socio-economic variables in the study are (these are again only those supplied by the survey data):

¹⁵In Ethiopia children aged 10-15 are considered to be productive especially in rural areas but the conventional definition of dependency ratio, which considers all children below 15 as dependents, is followed here for reasons of comparability with other studies.

- Labour force participation rate for those household members in the 10+ age group, i.e., proportion of economically active members of the household in this group.
- School participation rate based on those members in the age group 10 to 14 and 15 to 19.

Concerning the last variable, data on education is not given directly. It is to be obtained for the age group stated as those who give the reason 'being a student' for not working.

Other variable which was to be considered in this study was occupation of the head of the household. But the households sampled were deliberately from the agricultural sedentary population (i.e. where the head of the household's main occupation is agriculture). Therefore as the non-agricultural households are not represented in the sample, the variable on occupation is dropped from the study.

4.2.2 Methods of analysis

i) Descriptive Methods

Descriptive statistical methods, - frequency tables, cross tabulations and graphs are used to describe the sampled households' characters with respect to each and a combination of variables. These descriptive techniques can also indicate possible associations between the different variables.

ii) Describing and Measuring Associations

To explore the relationship between standard of living as measured by household expenditure per adult and the demographic and other variables stated above, both bivariate and multivariate techniques are applied. Specifically,

In the bivariate analysis:-

- first order correlation is computed for continuous variables and checked for direction of association and significance.
- one way analysis of variance is carried out.
- χ^2 test of independence is applied to check association between variables, particularly when they take categorical classification.

For the χ^2 test and for some of the descriptive summary tables, standard of living (in terms of expenditure per adult) is classified and ranked from 'poor' to 'rich' in ten (decile) or five (quintile) groups to get categories of relative standard of living. Nine percentile¹⁶ values, the 10th, 20th, 30th, ..., 90th percentiles in the case of decile grouping and 4 percentiles, the 20th, 40th, 60th and 80th percentiles, in the case of quintile grouping are used to demarcate the groups.

In the multivariate analysis:-

to check the relative importance or influence of each of the explanatory variables and also their collective explanatory power in the variation of standard of living, Multiple Classification Analysis (MCA) is applied. The model is chosen mainly because it can accommodate both linear and non linear

¹⁶Where i^{th} percentile value is the expenditure per adult value below which $i\%$ of the households are found; ($i = 1, 2, 3, \dots, 99$)

relationships and it can supply different measures of relative contribution of the explanatory variables. The general model and main properties are described in Annex 1.

iii) Measuring and comparing levels of poverty

This part gives the opportunity to see relationship between standard of living and demographic variables from the point of view of absolute poverty. Based on the concept of absolute poverty, the incidence, depth and intensity of poverty or lower standard of living are measured for the whole Arssi and important subgroups of households that are to be compared. For this purpose the Foster-Greer-Thorbeck (FGT) measures of poverty (Foster, Greer and Thorbecke, 1984) are used.

The general formula of the summary measure of poverty, P_{α} (as described by Foster, Greer and Thorbeck, 1984) using the variables of the present study is shown below.

$$P_{\alpha} = \frac{1}{n} \cdot \sum_{i=1}^q \left\{ \frac{Z - Y_i}{Z} \right\}^{\alpha}$$

$$\alpha = 0, 1, 2$$

where Z = the poverty line (based on expenditure/adult value in this case) below which a household is considered to be poor.

q = the number of poor households in the considered sample.

n = the number of all households in the sample.

$Y_i = Y_1, Y_2, \dots, Y_q$ are expenditure per adult values of the poor households i.e. for those falling below the poverty line.

Thus $Z - Y_i$ is the gap between the poverty line and the expenditure per adult of the i^{th} poor household.

Based on the values of α three measures are generated P_0 , P_1 and P_2 .

$$\text{For } \alpha = 0$$

$$P_0 = \frac{1}{n} \sum_{i=1}^q \left\{ \frac{Z - Y_i}{Z} \right\}^0 = \frac{q}{n}$$

which is the proportion of poor households in the group known as the head-count-index denoted by H which measures the incidence of poverty.

$$\text{For } \alpha = 1$$

$$P_1 = \frac{1}{n} \sum_{i=1}^q \frac{Z - Y_i}{Z}$$

is the poverty gap index which is the mean distance below the poverty line expressed as a proportion of that line, where the mean is formed over the entire population (or the sample considered) with the non-poor counted as having a zero poverty gap. P_1 is a measure of the depth of poverty.

For $\alpha=2$

$$P_2 = \frac{1}{n} \sum_{i=1}^q \left\{ \frac{(Z - Y_i)}{Z} \right\}^2$$

which is interpreted as "the mean of the squared proportionate poverty gaps. Again the mean is formed over the entire group with the non-poor counted as having a zero poverty gap." (Ravalion and Bidani (1994) p.89).

P_2 known as the Foster-Greer-Thorbeck Index measures the intensity of poverty, i.e, it is an indicator of the status of the lowest poor giving more weight to larger poverty gaps. The whole data analysis is carried out using SPSS software using PC.

CHAPTER V

FINDINGS

5.1 CHARACTERISTICS OF SAMPLE HOUSEHOLDS WITH RESPECT TO THE STUDY VARIABLES

The distribution of the 705 households of the sample by the main variables of the study is summarized using frequencies, cross tabulations and graphs.

Accordingly, household size ranges from 1 to 14 (table A.2-1 in Annex 2) with mean size of 5.7. The summary by broader household size groups is shown below.

Table 5.1.1:-Distribution of sample households by their size: Arssi (1981/82)

Household size	Number of Households	Percent from total
1-3	136	19
4-5	242	34
6-7	195	28
8 and above	132	19
Total	705	100

Characteristics of Household Heads:

The sex and age distribution by conventional 5 year age groups (Table A.2-2 in Annex 2) shows that 13% of the households are female headed (88 households in the sample). The greatest number of heads of the households is in the age group 40-44 for the whole and also

for male heads. For the female heads the concentration is to the higher age groups; the greatest number is in 65 and above followed by 50-54 age groups. The mean age is 43.7 for the whole, 43.01 for male and 48.65 for female showing that generally the female heads are older than the male heads. This is probably because of widowhood at older ages. Since the average age difference at marriage between male and female is about six years,¹⁷ the male mortality is expected to be higher than the female in married couples. A shorter summary table of the age and sex distribution of heads of households is shown below.

Table 5.1.2:-Distribution of households by age and sex of the head of the household: Arssi (1981/82).

Age of head	Male	Female	Total
15-24	54 (8.8 %)	6 (6.8%)	60 (8.5%)
25-34	135 (21.9%)	13 (14.8%)	148 (21%)
35-44	180 (29.2%)	15 (17.0%)	195 (27.7%)
45-59	151 (24.5%)	27 (30.7%)	178 (25.2%)
60 and above	97 (15.7%)	27 (30.7%)	124 (17.6%)
Total	617 (100%)	88 (100%)	705 (100%)

94% of the heads (660 heads) of the households are actively working.¹⁸ Higher percentage of male headed households are working compared to those headed by females. The distribution of the work status of the heads by sex is shown below.(Table 5.1.3)

¹⁷ According to the 1984 census result, the singulate mean ages at marriage were 23.3 and 17.4 years for male and female respectively in Arssi.

¹⁸ The rest 4% (45 heads) were not working due to old age, disability or simply doing domestic work.

Table 5.1.3:-Distribution of households by work status and sex of the head of the household: Arssi (1981/82).

Work status	Male	Female	Total
Working	601 (97%)	59 (67%)	660 (94%)
Not Working	16 (3%)	29 (33%)	45 (6%)
Total	617 (100%)	88 (100%)	705 (100%)

Of those working heads of households almost all (98.8%) are in the farming and animal husbandry occupation. This is expected because the survey itself considered the rural sedentary population i.e. agricultural households only. Regarding employment condition 95% are self employed (or private farmers) while 4% are employers and 1% unpaid family workers.

Finally, when households are classified by their annual Expenditure per Adult (EPA here after) groups the concentration is to the lower side (See Table 5.1.4 below). 67% fall below 500 birr of EPA. The minimum and maximum EPA values are 71 birr and 3536 birr respectively. The median EPA is 372 birr.

Table 5.1.4:-Distribution of households by Expenditure Per Adult, (EPA) groups: Arssi (1981/82).

EPA per year	Number of Households	Percent
Below 100	2	0.3%
100-299	212	34.9%
300-499	194	31.9%
500-699	105	17.3%
700-899	39	6.4%
900-1099	18	3.0%
1100 and above	38	6.3%
Total	608 *	100%

* Households with complete data on expenditure are found to be 608.

The age and sex distribution of the members of the households display a typical age distribution pattern of a developing country where the proportion of young population is very high. 54% are below age 15 and are considered as young dependents, and 3.6% are aged above 65, the old dependents.

Table A.2-3 in Annex 2 shows the age and sex distribution of the members in the conventional 5-year age groups. The distribution by broader age groups is shown below.

Table 5.1.5:-Age and sex distribution of household members: Arssi (1981/82).

Age group	Male	Female	Total
Below 15	1075 (54.3%)	1040 (54.6%)	2115 (54.4%)
15-64	829 (41.9%)	801 (42.0%)	1630 (42%)
65 and above	76 (3.8%)	64 (3.4%)	140 (3.6%)
Total	1980 (100%)	1905 (100%)	3885 (100%)
Mean Age	20.35	19.7	20.03

The age dependency burden of the sampled population which is the ratio of dependents (aged below 15 and above 64 years) to those in the working age (between 15 to 64 years of age) is 138 % i.e. a person in the working age group has on average 1.38 dependents to support. The young and old age dependency ratios separately are 130% and 8% respectively indicating that mostly the dependents are young. When sampled households are distributed by their dependency burden ratios¹⁹, most households are observed as having high dependency burden. Table 5.1.6 shows this.

¹⁹For each household, based on its age composition of members, dependency ratio is computed and a summary is drawn.

Table 5.1.6.-Distribution of households by dependency ratio levels: Arssi (1981/82)

Dependency ratio (for one working age member)	Number of households	Percent
< 1	176	25%
1 and below 2	288	42%
2 and above	225	33%
Total	689 ²⁰	100%

If children aged 10-15 are considered as productive, the young dependents can be considered to be those below age 10. The dependency ratio computed on this basis will be much lower (81%). The young and old age dependency burdens respectively would be 74.4% and 6.5%.

Regarding economic activity, from the 3885 members of the sampled households 2297 (59%) were aged 10 years and above, for whom information on economic activity was collected.²¹

From this eligible group 69% were actually economically active. The labour force participation rates,²² when the group is classified by age and sex are as shown below (also refer to Table A.2.4 in Annex 2 for the actual numbers and rates).

²⁰ 16 households from the sample have no member in the working age group (15-64) thus the dependency burden couldn't be computed for these.

²¹ For rural areas starting from age 10 individuals are presumed to participate in production activities or are economically active.

²² The percentage of persons economically active(productively working) from a given group.

Table 5.1.7:-Labour force participation rates of household members by age and sex: Arssi (1981/82).

Age group	Male	Female	Total
10-14	80%	43%	63%
15-19	79%	44%	64%
20 and above	94%	49%	72%
Total	89%	47%	69%

As shown in the table the participation rate is much higher for male members as compared to that of female members for each age group and, as a whole for all ages. The reason for this could be as rural women's main activity is domestic it might not have been reported as productive work. Also the rate increases as age increases.

Though information in school participation (education) was not directly collected, indirectly school participation of household members in the age groups 10 to 19 was obtained from those members who gave the reason being a student for not working. Accordingly from those in the age group 10 to 19, 13% were students. The age and sex classification of the participation rates is as shown below.

Table 5.1.8:-School participation rates of household members aged 10-19 by sex and age group: Arssi (1981/82).

Age group	Male	Female	Total
10-14	15%	9%	12.6%
15-19	17%	7.5%	12.9%
All	16%	8.7%	12.7%

The summary shows that in both age groups and as a whole school participation rate is higher for males than for females whereas the two age groups do not show that much difference. (Refer table A-2-5 in Annex 2, for the actual numbers and percentage calculations.)

5-2 BIVARIATE ANALYSIS ON THE RELATIONSHIP BETWEEN STANDARD OF LIVING AND ITS DEMOGRAPHIC AND OTHER CORRELATES.

As described in chapter 4, the indicator of standard of living to be used is household expenditure per adult (EPA). Its association with different demographic and other correlates is examined in this section.

a) Expenditure per adult and household size

To observe possible relationship between household expenditure per adult and household size, first the percentage distribution of households in different size-groups cross classified by EPA quintile groups is constructed as shown below. The limits of the five EPA quintile groups and their means are shown in table A.2-6 in Annex 2.

Table 5.2.1:-Percentage distribution of households by their size and EPA quintile groups:
Arssi (1981/82)

EPA Quintile group	Household Size			
	1-3	4-5	6-7	8 +
1	12.9%	15.0%	29.2%	22.1%
2	19.8%	16.0%	19.7%	26.2%
3	13.9%	23.2%	17.4%	23.8%
4	20.8%	22.7%	19.7%	17.2%
5	32.7%	23.2%	7.1%	10.7%
Total	100%	100%	100%	100%
	(101)	(207)	(178)	(122)

(Numbers in brackets are the number of cases in each group.
Pearson's Chi-Square=40.54. P value= 0.00006)

It is possible to observe from the table that small-sized households tend to concentrate in the higher quintiles of EPA and large-sized households, in the lower quintiles indicating inverse association between them. The Chi-Square value for the cross-classification of EPA by household size as in the above table is 40.54 and is found highly significant. (P value=0.00006)

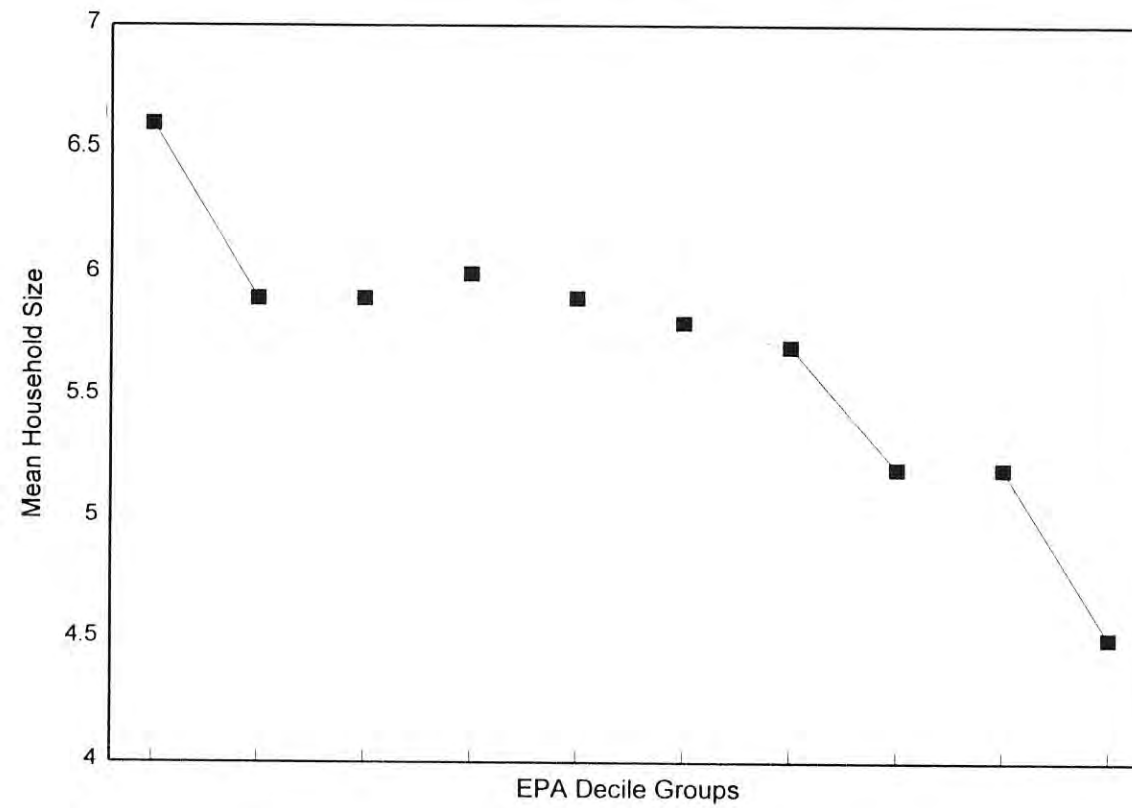
To get a wider descriptive picture of the relationship, the mean household sizes of households in 10 decile EPA groups are shown by a line graph (Figure 5.2.1 below). The mean household sizes decrease as one moves from lower to higher decile groups.

The inverse association is confirmed by the first order correlation coefficient, r , between the variables which is found to be negative and significant at 0.001 level ($r = -0.2126$).

Figure 5.2.1

Mean Household size by EPA decile groups

EPA Decile Groups	Mean Household Size
1	6.6
2	5.9
3	5.9
4	6
5	5.9
6	5.8
7	5.7
8	5.2
9	5.2
10	4.5



Alternatively, taking EPA values as dependent variable and household size groups as explanatory, the mean expenditure per adult values for each of the household size groups are computed as shown below.

Table 5.2.2:- Mean EPA in household size groups:
Arssi (1981/82).

Household size	Mean EPA in birr
1-3	636.0
4-5	512.9
6-7	421.7
8 and above	383.9
All	480.8

ANOVA result: $F=10.45$ $P\text{ value}=0.0000$

The one way ANOVA to test difference in means of EPA values of the four household size groups gives an F value (10.45) which is highly significant (at $P\text{ value}=0.0000$).

Therefore, as the different descriptive methods and tests of significance applied show there is strong negative association between standard of living and household size, which is in confirmation with the stated hypothesis.

b) Expenditure Per Adult and Age Composition of Members of the Household

The age composition of households, particularly the proportion of dependents to those in the working age is expected to be associated to standard of living. Specifically households with high dependency burdens are expected to be relatively poor.

To examine this, the table below shows the distribution of households based on EPA quintile groups by dependency ratio levels.

Table 5.2.3:-Percentage Distribution of Households by Their EPA Quintile Groups and Dependency Ratio Levels: Arssi (1981/82)

EPA Quintile Group	Dependency Ratio Level		
	Below 1	1-1.99	2 and above
1	19.9%	16.1%	26.1%
2	14.4%	20.1%	22.1%
3	22.6%	19.3%	19.1%
4	18.5%	23.2%	18.1%
5	24.7%	21.3%	14.6%
Total	100%	100%	100%
	(146)	(254)	(199)

(Numbers in brackets are number of cases considered)
Pearson's Chi-Square = 15.3623, P value=0.052

The summary shows that households with high dependency ratios (2 and above) tend to concentrate to the lower quintiles of EPA whereas for those with lower dependency ratio (below 1), the highest percentage of households is in the upper most quintile of EPA group. The distribution indicates possible negative association; but the Chi-Square value for this cross classification is 15.36 with p value of 0.052 and is not significant at 0.05 level.

To explore this further, the mean dependency ratios of households in EPA decile groups are obtained and shown by a line graph (see figure 5.2.2 below). The mean dependency ratios decrease over the decile ranking of EPA from the lowest to the highest. Taking EPA values as dependent, the mean EPA values for households in the three dependency ratio levels are computed and tested for significant difference using ANOVA procedures. The result is as follows.

EPA Decile Groups	Mean Dependency Ratio	Mean Young Dependency Ratio
1	183	165
2	162	150
3	176	167
4	166	160
5	162	154
6	133	127
7	136	130
8	155	148
9	140	131
10	119	115

Figure 5.2.2

Mean Dependency ratio per 100 persons of working age by EPA Decile Group

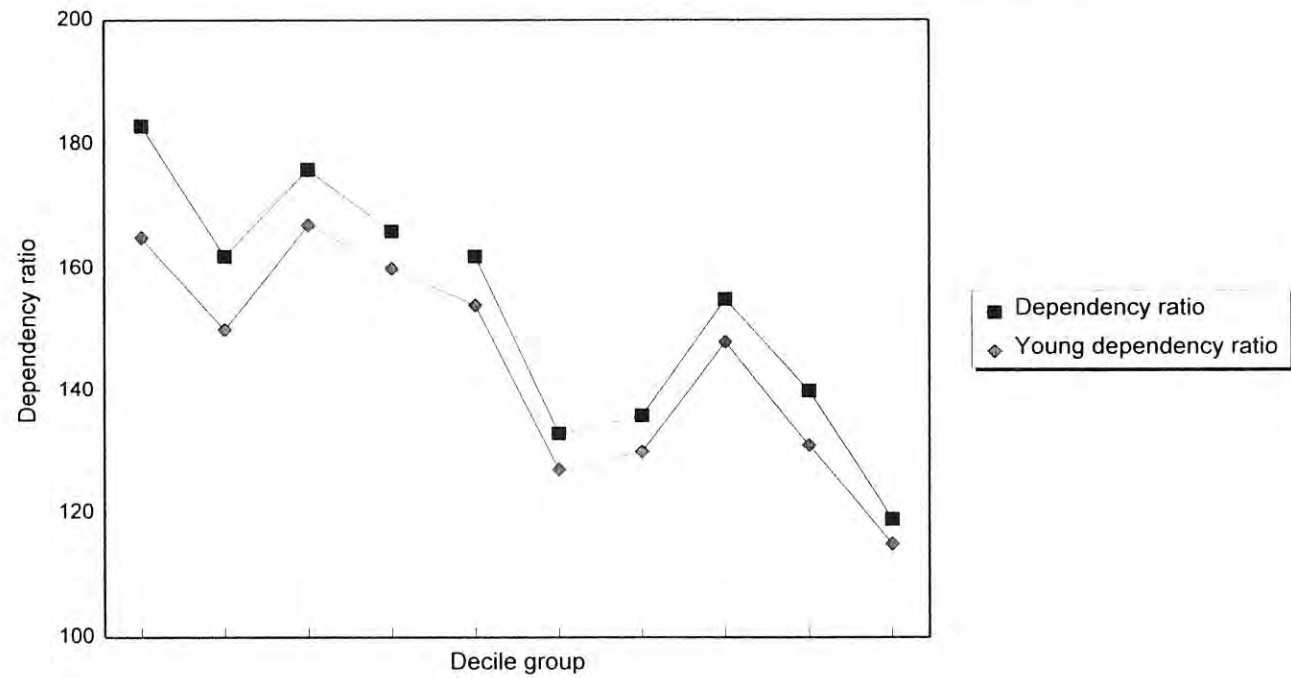


Table 5.2.4:-Mean EPA in Dependency Ratio Levels: Arssi (1981/82).

Dependency Ratio Level	Mean EPA Values
Below 1	555.2
1 and below 2	483.5
2 and above	429.5
All	483.04

Between groups F value = 4.52 P value=0.0112

The ANOVA result for testing difference of means shows significant difference in means of EPA for the three dependency ratio levels at 0.05 significance level ($p=0.0112$). The 1st order correlation coefficient r is found negative and significant at the same level ($r=-0.1472$). The result therefore is in agreement with the stated hypothesis i.e. the higher the proportion of dependents to working age members, the lower is the standard of living.

When the dependency burden is considered for the young (age below 15) and old age (age 65 & above) dependents separately, similar result is observed for young dependency ratio. Based on similar cross classification as in table 5.2.3, the Chi-Square value determined is 13.2 with a p value of 0.105 which is not significant. The first order correlation coefficient r is found negative and significant at 1% level ($r=-0.1369$). But the F statistics in the ANOVA test for difference of mean EPA values in three young dependency ratio levels is significant at 0.05 level. ($F=4.07$, p value= 0.017) The table below shows this.

Table 5.2.5:-Mean EPA in Young Dependency Ratio Levels:
Arssi (1981/82)

Young Dependency Ratio Level	Mean EPA
Below 1	546.5
1 and below 2	481.1
2 and above	430.4
All	483.5

Between groups F value=4.07 p value=0.017

The old age dependency burden is generally low for the whole group as persons aged 65+ are few in the population. Consequently, cases falling in the highest old-age-dependency ratio level (above 2) are very few (only 3 households), which makes both the Chi-square and F-tests unreliable. Nevertheless, when the mean values of aged dependency ratios for the EPA decile values are considered, as one moves from lower to higher EPA deciles the aged-dependency ratio declines, which shows negative association (See figure 5.2.3 below)

c) Expenditure per adult and Age of Head of Household.

The age of the head of the household is expected to have non-linear association with standard of living as discussed in chapter 1 and 3. To examine this, following similar procedures as above, the cross classification of EPA quintile groups by five age groups of the head of the household is constructed as shown below.

Figure 5.2.3

EPA Decile Groups	Mean aged dependency ratio (%)
1	17.5
2	12.8
3	8.9
4	5.2
5	8.7
6	6.5
7	6
8	7
9	9.4
10	4.2

Mean aged dependency ratio per 100 persons of working age
by EPA decile groups

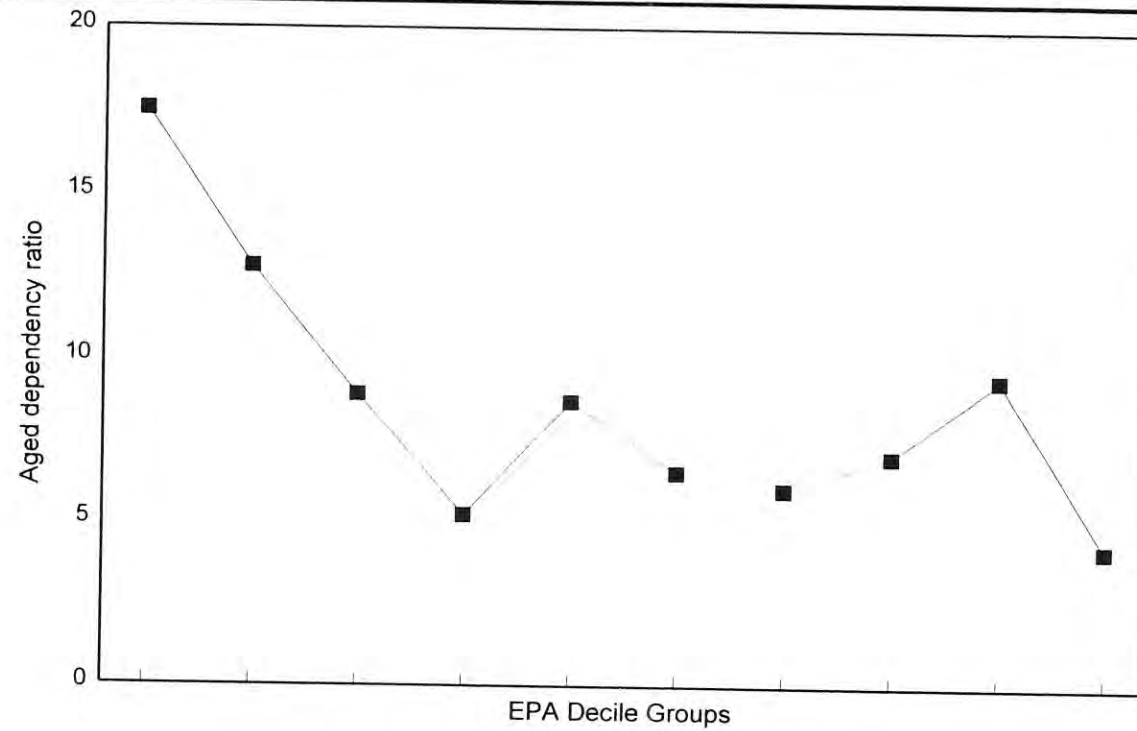


Table 5.2.6:-Percentage Distribution of Households by EPA Quintile Groups and Age of The Heads of The Households: Arssi (1981/82).

EPA Quintile Group	Age Group				
	15-24	25-34	35-44	45-59	60 & above
1	16.3%	20.8%	17.7%	20.9%	25.3%
2	12.2%	20%	21%	24.1%	13.7%
3	22.4%	13.6%	26%	20.3%	15.8%
4	12.2%	27.2%	17.1%	19.6%	23.2%
5	36.7%	18.4%	18.2%	15.8%	22.1%
Total	100% (49)	100% (125)	100% (181)	100% (158)	100% (95)

(Numbers in brackets are number of cases)

Pearson's Chi-Square value=29.02 P value=0.024

Though there is no clear pattern of association in the percentage distribution above, the Chi-Square value is found significant at 0.05 level (P value= .024). On the other hand the first order correlation coefficient $r=-0.0625$ is not significant i.e. there is no linear association between EPA and age of head values. Further examination of the relationship using ANOVA test for the difference in mean EPA values for the five age groups also shows insignificant difference (with $F=1.598$, p value= 0.173).

Table 5.2.7:-Mean EPA Values by Age Group of the Head: Arssi (1981/82).

Age Group	Mean EPA
15-24	610.2
25-34	473.9
35-44	459.7
45-59	480.9
60 and above	463.1
All	480.8

Between groups F value=1.598 p value=0.173

However, the pattern in the mean EPA values over the five age groups, interestingly, is as expected. At young age of the head (15-24), high mean EPA (better standard of living) is observed, then as age increases to middle age (35-44) mean EPA declines to 459.7. Beyond middle age of the head, in the interval 45-59, the mean EPA rises to 480.9 and declines at old age, after 60. The overall shape is as described in chapter 3 section 3.3.4.

d) Expenditure per adult and Sex of Head of the Household

The association expected between standard of living and households being headed by male or female is that female headed households are generally poorer. The analyses made on the data, however do not show significant association. The Chi-Square value computed for the cross classification of EPA quintile groups by sex of head is 3.1598 with a p value of 0.5315.

Table 5.2.8:-Percentage Distribution of Households by EPA Quintile Groups and Sex of Head: Arssi (1981/82)

EPA Quintile Groups	Male Headed	Female Headed
1	20.9%	14.7%
2	19.1%	25.0%
3	20.2%	19.1%
4	20.7%	17.6%
5	19.1%	23.5%
Total	100% (540)	100% (68)

Pearson's Chi-Square=3.1598 p value=0.5315

The mean expenditure per adult values for the male headed and female headed households are 476.3 and 516.1 birr respectively. It is actually higher for female headed

households, though the difference between the mean EPAs is not found significant by the F test of ANOVA (F value= 0.6499 with P value=0.4205).

e) Expenditure Per Adult and Labour Force Participation of Household Members

Labour force participation level for each household is obtained by taking the ratio of members productively working to those in the eligible age group (10 years and above) as a whole. After determining the values for each household, to compare its relationship with the household's standard of living, first it is classified by EPA quintile groups. Table 5.2.9 shows the result.

Table 5.2.9:-Percentage Distribution of Households by Labour Force Participation Level and EPA Groups: Arssi (1981/82).

EPA Quintile Group	Labour Force Participation Level		
	Upto 50%	51-75%	Above 75%
1	21.2%	15.9%	23.7%
2	14.1%	18.0%	23.0%
3	30.6%	17.6%	19.1%
4	24.7%	26.5%	13.7%
5	9.4%	22.0%	20.5%
Total	100% (85)	100% (245)	100% (278)

(Numbers in brackets are number of cases.)

The distribution doesn't show clear direction of association. Nevertheless, the Chi-Square test of independence between EPA quintile groups and level of labour force participation using the same cross classification of households as above indicates significant association (Chi-Square= 29.6887, P Value = 0.0002).

To explore the relationship further the labour force participation rates for the ten EPA decile groups are obtained and depicted by line graph in Figure 5.2.4, below. The rates of participation seem to be almost constant over the EPA decile groups, for male and female members as well as both sexes together.

A further investigation by applying ANOVA procedure, taking the EPA as dependent variable shows that there is no significant difference between the mean EPA values for the three levels of labour force participation. The result is shown in the table below.

Table 5.2.10:-Mean EPA in the Three Levels of Labour Force Participation: Arssi (1981/82).

Levels of Labour Force Participation	Mean EPA
Up to 50%	440.8
51-75%	508.2
Above 75%	468.8
All	480.8

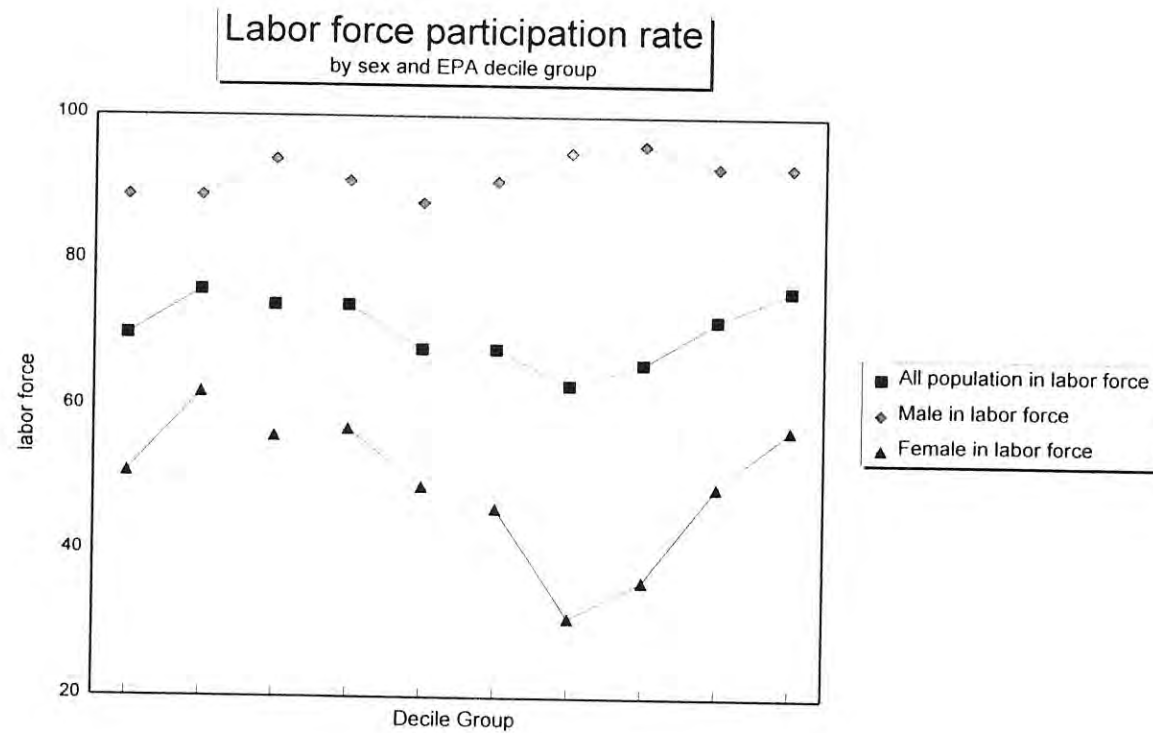
F- value from ANOVA= 1.2246

Significance, P value= 0.2946

Therefore, labour force participation rate of members doesn't seem to be associated to standard of living of the household.

EPA Decile Groups	% of Population in labor force	% of Male in labor force	% of Female in labor force
1	70	89	51
2	76	89	62
3	74	94	56
4	74	91	57
5	68	88	49
6	68	91	46
7	63	95	31
8	66	96	36
9	72	93	49
10	76	93	57

Figure 5.2.4



f) Expenditure Per Adult and School Participation of School- age Members of the Household

The aim here is to investigate whether the opportunity to go to school for school-age members of a household is better or no different if a household's standard of living is relatively higher. As stated earlier information on education is not directly collected. School participation is to be addressed here, for those members who were in the age group 10 and above (supposedly in the labour force) but who are not working due to being a student. Consequently from this group, those in the age group 10 to 14 and 15 to 19 taken as school-age members. The eligible households (those having members in these age groups) are identified and then further classified into two, as those having at least one member going to school and those having no member going to school. The following table shows distribution of eligible households based on this.

Table 5.2.11:-Distribution of Households by School Participation Opportunity:
Arssi (1981/82).

School Participation	Households having members in age groups	
	10-14 years	15-19 years
No member going to school (no schooling)	267 (82.4%)	169 (82.4%)
Atleast one member going to school (some schooling)	57 (17.6%)	36 (17.6%)
Total	324 (100%)	205 (100%)

Clearly percentage of households with no schooling opportunity for their school-age members is quite high (82.4%).

To examine whether a household's standard of living is related to school participation opportunity of its members the mean EPA values for the two groups (with no schooling opportunity and some schooling opportunity) are computed and tested for significant difference by ANOVA procedure. The result is as shown below in tables 5.2.12 and 5.2.13.

Table 5.2.12:-Mean EPA of Households Which Have Members Aged 10-14 by School Opportunity: Arssi (1981/82).

Schooling Opportunity	Mean EPA	Cases
No schooling	462.05	267
Some schooling	413.93	57
All	453.6	324

ANOVA test for difference of means: F value= 0.8374
P value=0.3608

Table 5.2.13 Mean EPA of Households With Members Aged 15-19 Years by Schooling Opportunity: Arssi (1981/82).

Schooling Opportunity	Mean EPA	Cases
No Schooling	491.6	169
Some Schooling	395.9	36
All	474.8	205

ANOVA test for difference of means: F value=1.5588
P value = 0.2133

The test shows that, for members aged 10-14, the mean EPA values of households with no schooling opportunity and some schooling opportunity are not significantly different (F value= 0.8374 with P value =0.3608) (Table 5.2.12). The same is true for members aged 15-19, Shown by table 5.2.13. (F value= 1.5588 and P value= .2133).

Therefore, it can be concluded that schooling opportunity or school participation of school age members is not significantly related to standard of living of the household.

g) Standard of Living and Awrajas.

Examination is carried out to check whether or not the three Awraja's of Arssi show difference in the standard of living of their households.

The mean EPA values in the three Awrajas and the corresponding F statistics in the ANOVA test for difference of means are shown below.

Table 5.2.14:-Mean EPA by Awraja: Arssi (1981/82).

Awraja	Mean EPA.
Arbagugu	572.0
Chilalo	438.5
Ticho	451.3
All	480.8

Between groups F value in ANOVA =7.2667, P value=.0008.

The test shows that there is high significant difference in the mean EPA values (i.e. standard of living) between the three Awrajas. Arbagugu is the highest in standard of living followed by Ticho and Chilalo respectively.

On the other hand, it is known that, owing to the rural development activities carried out in Chilalo by CADU (Chilalo Agricultural Development Unit) in the sixties and latter by

ARDU (Arssi Agricultural Development Unit) in the seventies, Chilalo awraja is expected to be better in standard of living.

Although Chilalo could be relatively more developed in terms of infrastructure and other social services, the standard of living measured by household expenditure in this study indicated Arbagugu awraja to be the better off. One reason for this could be due to the higher population density in Chilalo as compared to the other awrajas, which might have resulted in lesser land holding per household. However, this requires further study and analysis with additional data.

5.3 MULTIVARIATE ANALYSIS OF STANDARD OF LIVING AND ITS CORRELATES

In this section standard of living in terms of EPA values is taken as the dependent variable and demographic and other characters of households as explanatory variables. Particularly, the influence, the relative importance and explanatory power of the explanatory variables separately and jointly on the EPA values are examined by Multiple Classification Analysis (MCA).

The results of the MCA for seven explanatory variables namely, household size, sex of head, age of head, work status of head, dependency ratio, labour force participation rate of members and Awraja are shown in table 5.3.1.

The overall explanatory power of the model given by R^2 is 9.1% and is significant with an F value of 6.33 and P value=0.000. Considering the explanatory variables, household size and Awraja are found to be highly significant as in the case of one way ANOVA.

Table 5.3.1:-Results of the Multiple Classification Analysis on Expenditure per adult (EPA) and its explanatory variables

Explanatory variables and categories	Number of cases Total	Unadjusted		Adjusted for independents		significance (P value)
		dev'n	Eta	dev'n	Beta	
Household size	599					
1 - 3	94	175.74		195.02		
4 - 5	205	31.65		30.66		
6 - 7	178	-61.30		-62.48		
8 and above	122	-99.16		-110.63		
			.24		.26	.000*
Age of the head	599					
15-24	49	127.19		63.53		
25-34	125	-9.15		-39.61		
35-44	181	-23.39		-9.45		
45-59	158	-2.18		27.03		
60 and above	86	-5.94		-8.38		
			.10		.08	.461
Sex of Head	599					
Male	537	-6.11		-2.83		
Female	62	52.91		24.49		
			.05		.02	.631
Dependency Ratio level	599					
below 1	146	72.16		-30.99		
1 and below 2	254	.48		11.61		
2 and above	199	-53.56		7.91		
			.12		.05	.657
Work status of the head	599					
- Working	572	-2.00		1.28		
- Not Working	27	42.42		-27.07		
			.02		.02	.741
Labor force participation rate of members	599					
below 25%	11	22.78		34.17		
25% - 50%	69	-48.04		-18.37		
50% - 75%	243	27.77		24.87		
75% - 100%	276	-13.35		-18.67		
			.07		.06	.590
Awraja	599					
Arbabgugu	176	90.11		99.62		
Chilalo	266	-42.92		-35.66		
Ticho	157	-28.30		-51.26		
			.15		.17	.000*

Grand Mean = 483.042 birr of EPA

Multiple R² = 0.091 Multiple R = .301 P value = .000*

* Highly significant at 1% level

The explained variation in the EPA values due to household size, adjusted for the other independent variables is expressed by Beta-squared value is 6.8%, while Awraja explains 2.9% of the variation in EPA, again after adjusting for others. The adjusted deviations from the grand mean of EPA value, (483.04) for the household size categories, shows that the lower household size groups have positive deviation (above average EPA) while the higher size groups have negative deviation (below average EPA). It shows negative association between EPA and household size. Considering the three Awrajas, the adjusted deviation from the grand mean of EPA values is positive for Arbagugu (above average EPA) and negative for Chilalo and Ticho (below average EPA), i.e better standard of living in Arbagugu as compared to the others as in the one way ANOVA result.

The other explanatory variables included are not found to be significantly associated with EPA. Dependency ratio which was found to be significant factor associated to EPA value in the one way ANOVA of bivariate analysis, is not found so after adjusting for the influence of other explanatory variables. Its explanatory power after adjusting for others given by Beta- squared is .25%. Age and sex of the head of the household, like in the case of one way ANOVA are not found to be significant correlates of EPA.

The economic activity variables, the work status of head of the household and labour force participation rate of members are also found to be not significant. School participation rate of school-age members of the household is not included in the MCA analysis due to small number of cases falling in its categories and considerable number of households in the sample do not have eligible members (aged 10-19).

To refine the estimation of the relationship explained by the model, MCA is also applied for weighted data (as MCA requires large data set for better estimation). Household size in this case treated as covariate variable (non categorical). The result is presented using Table 5.3.2.

Table 5.3.2 Result of the Multiple Classification Analysis on Expenditure Per Adult (EPA) and Its Explanatory Variables.

Explanatory variables & categories (categorical)	Number of cases (weighted) N all	Unadjusted dev'n	Eta	Adjusted for independents & covariates Beta	Significance p value
Age of the head 15-24 25-34 35-44 45-59 60 and above	7205 635 1470 2134 1967 999	151.35 -12.56 -31.44 7.20 -24.66	.12	106.03 -44.25 -22.50 36.54 -26.13	.11 0.000*
Sex of head Male Female	7205 6431 774	-4.68 38.93	.03	-0.72 5.95	.01 0.693
Dependency ratio level Below 1 1 & below 2 2 & above	7205 1806 3117 2282	52.38 -0.57 -40.71	.09	-17.95 0.76 13.17	.03 0.090
Work status of the head Working Not Working	7205 6892 313	-2.72 60.08	.03	-0.82 18.03	.01 0.472
Labour force participation rate of members Less than 50% 50-74% 75% & above	7205 916 2885 3404	-6.77 18.44 -13.80	.04	11.04 21.33 -21.05	.05 0.000*
Awraja Arbagugu Chilalo Ticho	7205 1726 3120 2359	53.07 -3.99 -33.54	.08	61.09 5.42 -51.86	.10 0.000*
Household size (as covariate or continuous variable)	7205				0.000*

Grand mean = 497.8 birr

Multiple R squared = 0.062, Multiple R = 0.248, P value=.000*

* Highly significant at 1% level

The overall explanatory power of the model given by Multiple R^2 is 6.2% and is significant with p value of 0.000. In this analysis also, household size and awraja are found highly significant with P-value of 0.000 after controlling the effect of other explanatory variables. The additional achievement in this analysis, using weighted data is that two more explanatory factors, age of the head and labour force participation rate of members are found significant correlates of EPA. But dependency ratio is not found significant.

The explained variation in EPA values due to age of the head, controlling for others, is 1.2%; while it is only 0.25% for labour force participation rate (which are the respective Beta squared values).

For the age of head variable, the adjusted deviations from the grand mean of EPA, 497.8 birr, for the five age groups of the head show the following pattern. Households with heads in the age groups 25-34, 35-44 and, 60 and above have below average mean EPA (i.e. negative deviation from the grand mean of EPA). Those households with heads in the age groups below 25 (young) and 45-59 (beyond middle age) have above average mean EPA (i.e. positive deviation).

This pattern is what was observed in the bivariate analysis of EPA and age of head using ANOVA procedure. The results are indicative of the possible pattern of association described in chapter 3 section 3.3.4. For households in the age bracket 15-24, the family size is relatively lower, therefore, higher or above average EPA results. When the head is in age group 25-44 the family size is bigger with many young non-producing dependents, thus, lower or below average EPA. At old age of the head, 60 years and above, older children leave home and the parents being at old age will not be that productive, therefore lower EPA results.

In summary, the variables which are found significantly associated with standard of living are household size, awraja, age of the head of the household and labour force participation rate of members. It is necessary to state here, that, even though the explanatory power of the overall model of MCA is found significant, the percentage of variation in the dependent variable explained by the model is rather small (6.2%). This is because of the fact that important explanatory variables to standard of living, like land size and other assets of households, were not included because they were not available in the survey data.

5.4 LEVELS OF POVERTY AND DIFFERENTIALS BY SUBREGIONS AND DEMOGRAPHIC CHARACTERISTICS OF HOUSEHOLDS

In this section low standard of living is expressed from the point of view of absolute poverty, i.e. absolute deprivation of basic needs. Households are classified as poor and non-poor based on an absolute poverty line. The poverty indices then are computed for the whole region and subgroups of households.

The poverty line

In determining the poverty line for this study, a suitable method would be that which is based on household consumption expenditure, since the measure of standard of living used in this paper is also household expenditure (adjusted for size, age and sex composition in the household). Specifically the approach followed by Ravallion and Bidani (1994) which is discussed in chapter 3 section 3-2-3 of this paper could be a suitable procedure. Nevertheless the edited and reliably usable data obtained from CSA and used in this study are on money values of household consumption expenditure and not on the actual itemized food and non-food consumption. This deters the application of the above cited method to determine the

poverty line based on the data on hand (as the method requires actual itemized food consumption data). Because of this the author of this paper decided to look for an already determined, consumption-based poverty line which can be used for this study.

The study made on rural poverty in Ethiopia by Dercon and Krishnan (1994) supplies a possible poverty line. They determined poverty lines for several selected rural sites in Ethiopia (including a site in Arssi region, Karoo Degaga) based on household consumption expenditure data for 1994 by following the method of Ravallion and Bidani (1994). The procedure they followed is described below.

In their study, Dercon and Krishnan set 2200 Kcal. per adult per day to be the minimum needed caloric intake for an adult to perform normal daily duties as suggested by WHO. Based on the average consumption pattern amongst the lower half of the consumption distribution in their sample, they derived a representative diet for a poor household and calculated the relative contribution of each item in terms of calories. The quantities of the food items which can give the minimum required caloric intake (2200 Kcal) plus few additional items which are essential and could not be easily foregone by the poor form the minimum consumption basket. The cost of this basket was then determined using market prices to give the 'food consumption poverty line'. After finding the food poverty line, the minimum non-food expenditure was estimated following the procedure described in section 3-2-3. This is added on the cost of the minimum food consumption basket to obtain the total poverty line (Dercon and Krishnan, 1994).

The poverty line so estimated for the site in Arssi region, Karoo Degaga, is to be used for this present study after adjusting for the change in cost of living between the years 1981/82 and 1994. As there is no other consumption-based poverty line determined for rural Ethiopia for the year 1981/82 the poverty line of 1994 for Karoo Degaga seems to be a better option

from the choice of other poverty lines available (for instance the poverty line suggested by the world bank for poor countries which is 275 USD per person per year (World Bank, 1990) which doesn't consider regional differences in consumption pattern, culture, perception of poverty, etc.).

The poverty line for the site mentioned in the year 1994 was given to be 49 birr per month per adult (Dercon and Krishinan, 1994) which will be 588 birr per year per adult. To adjust for the change in cost of living between the years 1981/82 and 1994 and get an estimate poverty line for 1981/82, the value of the poverty line of 1994 is deflated using cost of living index given for 1994. The cost of living index of the year 1994 for rural Ethiopia is given to be 285, taking 1981/82 as base year at 100 (obtained from CSA, (CSA, 1996)). Consequently the deflated value which is to be used as the poverty line for rural Arssi for the year 1981/82 is 206 birr per adult per year (as $588 \times (100/285)$).

Poverty Measures

Households with annual expenditure per adult (EPA) values below 206 birr are categorized as poor. Based on this, as a measure of poverty level the Foster-Greer-Thorbeck (FGT) poverty measures, P_0 (the head-count index - measuring incidence of poverty), P_1 (the poverty-gap index - measuring depth of poverty) and P_2 (the FGT index of poverty measuring intensity of poverty) which are described in chapter 4 are computed.

The table below, Table 5.4.1, shows the values of the three indices in percent for the whole region, Arssi, its three Awrajas and subgroups of households formed by demographic characters.

For all the indices the higher the percentage the greater is the poverty level.

Table 5.4.1. Poverty Indices: Arssi, (1981/82).

Household group	Poverty Indices in percent			Number of households	
	P ₀	P ₁	P ₂	Number poor	all cases
Arssi Region	14.3%	2.9%	.9%	87	608
Awraja					608
- Arbagugu	10.2%	1.9%	.6%	18	177
- Chilalo	16.7%	3.4%	1.0%	45	270
- Ticho	14.9%	3.3%	1.1%	24	161
Sex of Head					608
- Male	14.8%	2.9%	.9%	80	540
- Female	10.3%	2.6%	.9%	7	68
Household Size					608
- 1-3 persons	5.9%	1.4%	0.5%	16	101
- 4-5 persons	11.1%	2.2%	0.7%	23	207
- 6-7 persons	19.7%	4.0%	1.3%	35	178
- 8+ persons	18.9%	3.8%	1.0%	23	122
Age of Head					608
- 15-24	10.2%	1.7%	.4%	5	49
- 25-34	12.8%	2.6%	1.0%	16	125
- 35-44	12.7%	2.5%	0.7%	23	181
- 45-59	15.8	3.0%	0.8%	25	158
- 60+	18.9%	4.6%	1.5%	18	95
Dependency ratio level per working age person					
- below 1					599*
1 and below 2	14.4%	2.8%	0.8%	21	146
2 and above	11.0%	1.9%	0.6%	28	254
	18.6%	4.2%	1.3%	37	199

*The number of households considered for the 'dependency ratio' variable is 599 which is less by 9 from that considered in the other variables. The nine households do not have members in the working age group hence their dependency ratio can not be computed.

The proportion poor, shown by P₀ is found to be 14.3% for Arssi region, which can be considered to be not that big. From the head count ratio (P₀) shown for other groups it can be observed that:

- Arbabgugu awraja has less proportion poor (10.2%) as compared to that of Arssi while Chilalo has the greatest proportion poor from the Awrajas followed by Ticho. This is similar to the observation made in the previous section.

- The male-headed households, have high proportion poor (14.8%) as compared to their female counter parts (10.3%).

The expectation in the hypothesis was the opposite. One reason for this could be, generally household sizes of female headed households are relatively smaller. For the sampled households 41% of female headed households are of size not more than 3 whereas for the male headed households 16.2% are in this size group. Therefore, due to small household size the per person consumption could be higher for female headed households. Another reason could be male headed families may have more dependents. The data shows the percentage of members aged below 10 years in male headed households is 42% whereas it is 37% for female headed households.

- For household size groups, the percentage poor, generally rises as household size increases.

- When households by their head's age group are considered, the proportion poor rises as the head's age increases.

- Considering dependency ratio level, proportion poor is the highest (18.6%) for the higher dependency ratio group (2 and above).

Regarding the depth of poverty indicated by P_1 , the same pattern discussed for P_0 is observed. For the whole region the average proportionate gap of the poor's EPA from the poverty line (P_1) = 2.9%. Household groups which have the poverty gap above this are, for Chilalo (3.4) and Ticho (3.3), households with size 6-7 persons (4.0) and size 8 and above persons (3.8%). Households with heads aged 45-59 (3.0%) and aged 60+ (4.6%) and households having dependency burden ratio of 2 and above (4.2).

The intensity of poverty, measured by P_2 which reflects the relative status of the poorest in the poor group is high as compared to the value of the region (0.9%) for the same groups of households, i.e, those in Chilalo and Ticho Awrajas; in higher family size groups in 60+ and 25-34 age group of the head and in the households with high dependency ratios.

Sensitivity of Measures of Poverty to Alternative Poverty Lines

Change in poverty line will change the poor group thus affects all the three indices P_0 , P_1 , and P_2 . To show this two other poverty lines are used. One is taking the world bank's lower poverty line suggested for developing countries which is 275 dollar per year per person at 1985 prices (World Bank, 1990). This when changed to Ethiopian birr at the price of the reference year (1981/82) gives a poverty line of 351 birr per month per year.²³ Additionally a relative poverty line which is at two-third the value of mean EPA (mean EPA is 480.8 birr) is applied. The resulting poverty line is 320 birr. Finally using the three lines the indices are computed and

²³For 1985, 275 USD changed to Ethiopian birr at a conversion rate of 2.07 birr for 1 USD, gives 569.25 birr. To get an estimate poverty line for 1981/82, 569.25 birr is deflated using the cost of living index of 1985 which is 162 (given in (CSA, 1996) pp 3) taking 1981/82 as base year. The resulting value is 351 birr (as $569.25 \times (100/162)$).

shown for Arssi region and the three Awrajas, for the benefit of comparison using table 5.4.2 below.

Table 5.4.2 The Poverty Indices using different Poverty Lines

	Indices (in %)		
	P ₀	P ₁	P ₂
Arssi			
Poverty line			
- Z ₁ * = 206	14.3%	2.9%	.9%
- Z ₂ * = 320	39.8%	11.3%	5%
- Z ₃ * = 351	46.7%	14.1%	6%
Household by Awraja			
Arbagugu			
Z ₁ = 206	10.2%	1.9%	.6%
Z ₂ = 320	27.1%	7.3%	3%
Z ₃ = 351	30.5%	9.2%	4%
Chilalo			
Z ₁ = 206	16.7%	3.4%	1%
Z ₂ = 320	47%	13.5%	5%
Z ₃ = 351	55.9%	16.8%	7%
Ticho			
Z ₁ = 206	14.9%	3.3%	1.1%
Z ₂ = 320	42.1%	17%	5%
Z ₃ = 351	49.1%	15%	6%

* Z₁ = The poverty line estimated based on Dercon and Krishnan (1994) estimate for an Arssi site.

Z₂ = The poverty line determined by taking 2/3 of the mean EPA (480.8 birr) for the data of this study.

Z₃ = The poverty line based on World Bank's suggestion, which is 275 USD for developing countries (at 1985 prices).

It can be observed from the table that as the value of the poverty line increases the poverty indices, showing incidence (P₀), depth (P₁) and intensity (P₂) of poverty, all indicate higher levels of poverty. Nevertheless, comparison between groups (say Awrajas) will not be affected by the change in poverty line.

CHAPTER VI

SUMMARY AND CONCLUSION

In this paper the main objective was to explore the possible associations between standard of living and some demographic characteristics of rural households by taking the case of Arssi region. Because of non-availability of recent data released for public use, the study is based on the 1981/82 Rural Household Income, Consumption and Expenditure Survey data. As far as the available data allow, some socio-economic characteristics of households were also included.

As the data are long dated, the results may not be expected to have direct policy implications useable for present time. However, they may contribute to the knowledge with regard to the interaction between standard of living and demographic characteristics of households. Moreover they can be compared with findings from studies made based on recent data to show temporal change.

Based on the available literature, and studies made on other developing countries, as well as that of Ethiopia a number of hypotheses were set and tested using various statistical methods.

Considering the variables under study: standard of living of households, the main variable in this study, is operationally measured by expenditure on household consumption items adjusted for household size and age-sex composition. The adjusted variable gives household expenditure per adult equivalent (EPA). The demographic characteristics of households used in the study are household size, the age composition of household members

(expressed as dependency ratio) and the age and sex of head of the household. The socio-economic characters considered are labour force participation or work status of household members (including the head) and school participation rate of school-age household members.

The survey was very much restricted to collecting consumption and income data, other relevant demographic characteristics of households (such as fertility, mortality, marriage) or socio-economic characters (like land, assets, educational attainment, ethnicity, religion, etc.) were not collected. Therefore, this study is limited on the listed variables given above.

In exploring the relationships between standard of living and household demographic characters, both relative and absolute concepts of poverty were applied. In the relative poverty approach, the relative position a household, as compared to others in standard of living is examined against demographic and other characters. In this part, relative standard of living is indicated by ranking households by the decile or quintile EPA groups. Then whether the households' demographic characteristics (say size) vary systematically over this ranking are examined. Additionally bivariate and multivariate analyses were applied to test the significance of the relationships (section 5.2 and 5.3). At the bivariate stage Chi-square tests and one way ANOVA were applied, whereas at multivariate stage multiple classification analysis was used.

In the 'absolute poverty' approach, after determining an absolute poverty line (which is the expenditure value needed to cover the minimum required food and non-food consumption) the poor and non-poor were identified. By using summary measures of levels of poverty (FGT indices), the levels of poverty prevailing were indicated for different subgroups of households, classified by their demographic characteristics, say household size groups, from which it is possible to observe relationship between poverty level and

demographic characteristics (section 5.4). The following main findings resulted from the analysis.

1. Demographic characters and standard of living

The prominent finding in this study is that, household size is strongly and negatively associated with standard of living, i.e., lower standard of living is associated with large household size. This is observed from the results of all the methods applied. The bivariate techniques used, the chi-square test and one way ANOVA show significant association at 1% level. In the multivariate analysis also the MCA results showed that household size is the main contributing factor to the variation in household expenditure per adult (EPA), as compared to the others considered in the model. The proportion of variation in EPA explained by household size is 6.8% (Beta-squared value) is found significant. The direction of association which can be observed from the adjusted deviations from the grand mean of EPA in MCA table confirms the inverse association, i.e, the deviations are negative (below average EPA) for large sized households and positive (above average) for small sized households. Considering the incidence of absolute poverty, the percentage of poor households is higher for large sized households as compared to that of small sized households. Households having size not more than 3 had 5.9% poor, whereas those having size 6-7 and 8 and above had 19.7% and 18.9% poor in their groups respectively.

In summary, confirming the hypothesis stated at the beginning, household size and standard of living are inversely related. The larger the household size the lower is the standard of living.

Considering the age composition of household members, dependency ratio is found to be significantly and negatively related to standard of living in the bivariate analysis. Both chi-square and one way ANOVA procedures show this association. The negative association is indicated by the declining trend in the line graph drawn for dependency ratio against EPA decile groups, and confirmed by negative value of the correlation coefficient ($r = -.1472$). The incidence of absolute poverty measured by P_0 , is also the highest for households with high dependency burden.

These suggest, therefore, that households with high dependency ratio are relatively in lower standard of living.

When the young and aged dependents are taken separately, the young dependency ratio is also negatively and significantly related to standard of living. This is indicated by the declining trend shown by the line graph for young dependency ratio and EPA decile groups, the significant results of one way ANOVA and the correlation coefficient, r .

Aged dependency ratio also, showed a suggestive negative association with standard of living, which is observed from the line graph with EPA decile ranking. No statistical significance testing is applied though, as the number of cases involved in aged dependency ratio were few.

On the other hand, in the multivariate analysis using MCA, dependency ratio is not found to be a significant factor in explaining the variation in standard of living (EPA), after controlling the effect of other variables. This is observed from both unweighted and weighted MCA results. This is mainly because of the fact that dependency ratio is associated with

household size and also age of the head of the household. In MCA, controlling for the effects of these latter variables lowers the influence of dependency ratio on standard of living.

It can be summarized, therefore, that dependency ratio generally is associated with standard of living negatively and it is also a function of household size and age of the head of the household.

The age of the head of the household is found to be significantly associated with standard of living in the bivariate analysis using chi-square test and in the multivariate analysis of MCA using weighted data. The relationship is not linear; as the correlation coefficient r is small (-.0625) and not significant. The more interesting finding is that the pattern of association between standard of living and age of the household is similar to that suggested in the hypothesis and explained in chapter 3, i.e., the mean EPA values of households is high at young age of the head, declining at middle age of the head, increasing at late middle age and finally declining at older ages. This is observed from the adjusted deviations from the grand mean of EPA in the MCA result.

The sex of the head of the household is not found to be significantly related to standard of living in both bivariate and multivariate analyses. But the mean EPA values are higher for female headed households as compared to that of male headed. Further more, the incidence of absolute poverty measured by, P_0 , shows that the female headed households have lower percentage of poor households (10.3%) as compared to that of male headed (14.8%). The results suggest that female headed households are actually relatively better off than the male headed (though not found statistically significant). This could be because of the fact that the female headed households have relatively small household size and less dependents.

2. Socio-economic characters and standard of living.

Labour force participation rate of working-age members of households is not found to be significantly related to standard of living in the one way ANOVA. Also, the trend in the line graph drawn against EPA decile groups from 'poor' to 'rich' is almost constant indicating no association. Never the less the X^2 test showed significant association. In the multivariate analysis using weighted data, labour force participation rate is found to be a significant factor in explaining the variation in EPA, though the explained variation in EPA due to labour force participation is very small (.25%). More over the direction of association is not clear from the adjusted deviations from the grand mean in the MCA. Therefore, regarding labour force participation and standard of living it can be said that there is an indication of association the direction of which is unclear based on this study.

School participation opportunity of household members in the age groups 10-14 and 15-19 is found to be not significantly related to standard of living. The one way ANOVA procedures showed this result. The two age groups only are considered because of the fact that the variable is indirectly generated for members who were supposed to be in the labour force (aged 10 years and above) but not working due to schooling. Therefore other school age children in 7-10 age group couldn't be considered.

Finally, the three awrajas were also considered in the investigation. It is found that the Awrajas are significantly different in standard of living of their households. The one way ANOVA showed that the mean EPAs in the three Awrajas are significantly different. Arbagugu Awraja has the highest EPA and above the mean for Arssi region while Ticho and Chilalo have mean EPAs below that of Arssi region as a whole. The multivariate analysis also

identified the Awraja variable as a significant contributor to the variation in EPA. Here also the adjusted deviations from the grand mean of EPA indicate Arbagugu as better off than the other two (with positive deviation) while for Ticho and Chilalo show negative deviation is observed.

In terms of incidence of absolute poverty the same fact is obtained from the values of the head-count-ratio, P_0 . The percentages of poor household in Arbagugu, Chilalo and Ticho are 10.2%, 16.7% and 14.9% respectively.

In conclusion, from the considered correlates of standard of living, household size and Awraja classification are found to be consistently significant variables which are associated to standard of living based on both bivariate and multivariate analysis. Age of the head of the household is also found significantly associated to standard of living in a non linear pattern. Dependency ratio is negatively associated with standard of living but its independent influence on standard of living is low and insignificant when other factors are controlled. Sex of head is not a significant factor for standard of living, but there is an indication that female headed households are relatively better off than male headed contrary to the hypothesis. Labour force participation rate though found significant factor in explaining variation in standard of living its direction of association is found unclear. While school participation of household members is found to be not associated to standard of living.

The purpose of this paper as stated at the beginning is explaining possible associations between standard of living and some demographic and socio-economic variables. This is accomplished to the extent that the variables supplied by the source data allowed. A more

comprehensive exploratory study would have been possible if data on other relevant economic and demographic variables such as asset ownership, fertility and mortality were available.

Limitations of The Study

i. Because of non-availability of recent data released for public use, this study was based on the Rural Household Income Consumption and Expenditure Survey of 1981/82, which is more than a decade old. Therefore, from the results of this study it was not possible to derive direct policy implications that can be used for the present time.

ii. The survey mentioned didn't cover a number of relevant socio-economic and demographic variables on households which could have helped in describing determinants and correlates of level of living in a broader way. Data on such variables like, household assets (land holding, livestock owned) ; educational attainment of members ; ethnicity ; religion ; fertility, mortality and marriage experience were not collected in the survey. This limited the scope of the study to be on the relationship between level of living and **some** demographic and socio-economic variables.

iii. The measure of level of living used in the study which is household expenditure per adult is one of the most commonly applied, operationally suitable indicator of level of living. The main rationale in using household expenditure, as discussed in detail in chapter 3, is that it can reflect the extent to which a household can afford to satisfy its needs. The World Development Report of 1990 (World Bank, 1990) also pointed out that household expenditure per capita (including own production) to be an adequate yardstick for standard of living. Nevertheless it has some known limitations which should be pointed out. For one, it may not capture all the dimensions of welfare and show difference in quality of life across households.

For instance it can not show a household's access to clean drinking water, free education and health care, etc. Secondly it doesn't show intrahousehold differences in welfare. In other words it assumes the distribution of consumption within the household to be equal or according to the needs of each individual, which may not be the case in reality. However, because of non-availability of data on social dimensions of well being at household level and difficulty in measuring intrahousehold differences in welfare it is a common practice to use household consumption expenditure as a proxy measure of standard of living.

Recommendations

i. In addressing standard of living of people in any context the interest is finding ways of its promotion or in other words, the reduction of poverty. To make an impact on standard of living one way is working through its influential factors. But as all influential factors and main determinants of standard of living (described schematically in chapter 1) operate jointly and result in a particular state of welfare, influencing only some of the factors may not bring about the desired result. However, given the required assets (say land size, cattle) and other favourable environmental conditions, based on the results of this study one suggestion which can be made is that, controlling household size may result in better standard of living. This can be achieved through family planning programs.

ii. Further research on the topic based on recent data, and encompassing more determinant factors of standard of living (such as those identified in the conceptual framework, Fig. 1 in Chapter 1) is recommended. Such research can produce results which can better explain the association between standard of living and the important determinant factors, and other influential variables. It will also be possible to derive timely and relevant policy implications from the results of such research.

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ANNEX 1

DESCRIPTION OF THE MODELS

i) Multiple Classification Analysis (as described by Ogawa, (1980))

MCA is a technique used to show the relationship between one dependent and two or more independent (predictor) variables. In the model the overall mean of the dependent variable, $\bar{Y}$, is taken as the constant term and the main effects for the categories of the predictor variables are shown by a series of additive coefficients. The general equation of the model is:

$$Y_{ijk} = \bar{Y} + a_i + b_j + \dots + e_{ijk}$$

Where: Y_{ijk} = The score of an individual who falls into the i th category of predictor A,
j-th category of predictor B, etc;

$\bar{Y}$ = Grand mean of values of the dependent variable;

a_i = added effect of i -th category of predictor A; (difference between $\bar{Y}$ and the mean of its category of predictor A).

b_j = added effect of j -th category of predictor B and (difference between $\bar{Y}$ and mean of its category of predictor B)

e_{ijk} = random term.

In the model the predictor variables are expected not to have interactions, i.e, the model is an additive model. The method has statistical measures which show the relative contribution of the effects of each predictor as well as the goodness of fit of the overall model.

ANNEX 2

Table A 2-1

Distribution of Households By Their Size

Household Size	Number of Households	Percent
1	5	.7
2	44	6.2
3	87	12.3
4	125	17.7
5	117	16.6
6	104	14.8
7	91	12.9
8	62	8.8
9	36	5.1
10	22	3.1
11	6	.9
12	2	.3
13	1	.1
14	3	.4
Total	705	100.0

Table A 2-2

Distribution of Households by Age and Sex of the Head of The Household

Age of Head of the Household	Sex of Head				Total	
	Male		Female		No.	%
	No.	%	No.	%		
15-19	6	1.0%	1	1.1%	7	1.0%
20-24	48	7.8%	5	5.7%	53	7.5%
25-29	54	8.8%	5	5.7%	59	8.4%
30-34	81	13.1%	8	9.1%	89	12.6%
35-39	89	14.4%	6	6.8%	95	13.5%
40-44	91	14.7%	9	10.2%	100	14.2%
45-49	58	9.4%	8	9.1%	66	9.4%
50-54	60	9.7%	13	14.8%	73	10.4%
55-59	33	5.3%	6	6.8%	39	5.5%
60-64	35	5.7%	9	10.2%	44	6.2%
65 or more	62	10.0%	18	20.5%	80	11.3%
Total	617	100%	88	100%	705	100%

Table A 2-3
Distribution of Members of the Households
by Their Age and Sex

Age Group	Sex				Total	
	Male		Female		No.	%
	No.	%	No.	%		
0-4	400	20.2	403	21.2	803	20.7
5-9	393	19.8	402	21.1	795	20.5
10-14	282	14.2	235	12.3	517	13.3
15-19	169	8.5	123	6.5	292	7.5
20-24	111	5.6	101	5.3	212	5.5
25-29	67	3.4	115	6.0	182	4.7
30-34	100	5.1	112	5.9	212	5.5
35-39	92	4.6	108	5.7	200	5.1
40-44	92	4.6	83	4.4	175	4.5
45-49	63	3.2	46	2.4	109	2.8
50-54	62	3.1	35	1.8	97	2.5
55-59	36	1.8	30	1.6	66	1.7
60-64	37	1.9	48	2.5	85	2.2
65 or more	76	3.8	64	3.4	140	3.6
Total	1980	100%	1905	100%	3885	100%

Sex Ratio = 1.04:1

Table A 2-4
Household members by Work Status, Age and Sex

Age group	Male			Female			Total		
	All	Wk.	%wk.	all	wk.	%wk.	all	wk.	%wk.
10-14	282	226	80%	235	102	43%	517	328	63%
15-19	169	133	79%	133	59	44%	302	192	64%
20+	736	695	94%	742	364	49%	1478	1059	72%
Total	1187	1054	89%	1110	525	47%	2297	1579	69%

wk. = working

% wk. = percent working

Table A 2-5**Household Members Going to School by Sex and Age**

Age Group	Male			Female			Total		
	all	No.S	% S	all	No.S	% S	all	No.S	% S
10-14	282	43	15%	235	22	9%	517	65	12.6%
15-19	169	29	17%	133	10	7.5%	302	39	12.9%
Total	451	72	16%	362	32	8.7%	819	104	12.7%

No.S = number in school

% S = percent in school

Table A 2-6**Mean Expenditure Per Adult in the
Quintile Groups**

EPA Quintile Groups	Mean	Cases
below 235 birr	180.7730	123
235 - 320 birr	279.6748	120
321 - 451 birr	377.4318	122
452 - 629 birr	525.5282	124
630 - 3536 birr	1052.9381	119
All	480.7695	608

DECLARATION

The thesis is my original work, has not been presented for a degree in other university and that all sources of material used for the thesis have been duly acknowledged.

Name EMEBET MAHMOUD

Signature Emebet Mahmoud