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FERTILITY LEVELS, TRENDS, PATTERNS AND DIFFERENTIAL  
IN ETHIOPIA

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*Resume for the Dissemination Seminar  
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## 1. Introduction

Since the 1970's Ethiopia has experienced a very high rate of population growth with important repercussions on the development of the country. In rural areas, rapid population growth has started a process of increasing pressure on the land with consequent diminishing marginal returns to labour on given technology. The agricultural and grazing lands are at risk of over-exploitation. The population carrying capacity is decreasing. On the other side, urban areas are facing economic problems which could be sharpened by, or even at least partially ascribed to, the ongoing process of urbanisation. In general, important national goals such as food self sufficiency, universal primary education and accessibility of health services, increasing employment opportunities and reducing underemployment are proving very difficult to achieve in conditions of continuing high fertility. This makes the study on fertility levels and trends very relevant. Information on current levels and trends of fertility and an investigation on the factors that trigger off the onset of fertility decline are essential in order to guarantee the success of the population policies and the adequate provision of family planning services.

Establishing the levels, trends and the differential characteristics of fertility in Ethiopia is possible, due to the wealth of existing information. The sensitivity to the issue of fertility is now widespread in the country at the policy makers level and this has made possible to collect and analyse data on fertility. However, the data collected present problems of quality common in countries where data gathering is relatively recent. Therefore, the data must be treated with appropriate adjustment procedures and analysed with particular interpretative caution. Also as a consequence of this, the available statistical material especially from censuses has been only partially exploited and this has left uncertainties on important aspects of the question under study. Above all socio-economic, cultural and institutional factors regarding fertility deserve clarification and further study and this is what the present work is specially aiming at. Such factors modify the levels of fertility through their effects on the so called 'proximate determinants' (breast-feeding, contraception, abortion, age at first marriage, proportion married, infant and child mortality, ...etc.). But, since the Project into which this study is inserted is aimed at the intensive exploitation of data of the 1994 Population and Housing Census, these aspects which can be studied only on the basis of ad hoc surveys, were not taken into consideration.

Thus, this study sets out in order the following objectives:

- i To verify if and in what ways and with what characteristics a fertility transition process has begun in Ethiopia. Investigation on this point is indeed rather delicate. It requires, as already

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said, recourse to suitable indirect methods and specific adjustment techniques, to overcome the errors present in the data.

- ii To analyse the interrelationship between socio-economic variables and fertility indicators in a multivariate approach, to provide information and explanations for the changes in reproductive behaviour and, in particular, to establish whether a possible reduction in urban fertility is due to the 'modernising' effect of the urban lifestyle or is a response to the difficult economic situation. The classical demographic transition theory considers improved socio-economic conditions to be the principal underlying force that brings about initial fertility transition. Development increases the costs of children and decreases their benefits, thereby reducing the demand for them. In the economic interpretation of the decision-making of fertility - as formulated by Becker - the cost of children rises with the household income and the explanation of this is specially to be found in the key role assigned to the 'quality' of children. Moreover, the developmental process involves changing ideas and values, leading to a preference for smaller family size. Once these new preferences have been quite well affirmed among the population, it is possible that conditions of economic crisis and widespread unemployment as found in Ethiopian cities can then bring about a new attitude toward fertility. In this case two opposite phenomena, the process of modernisation on one side and the economic crisis that retards it on the other side, both produces a drive towards fertility decline. It seemed useful to try and understand if similar mechanisms are affirmed in Ethiopian urban areas.
- iii To identify and describe family systems prevalent in Ethiopia on which almost no previous information exists, and analyse the possible interrelations with reproductive behaviour. Some theorists have stressed the role of cultural and institutional factors in speeding up or hampering the onset and the course of fertility transition. The organisation of the family system is surely to be included among these factors. According to a recurring hypothesis, the process of family "nuclearization" is linked to fertility transition. In nuclear family systems the spouses - in the belief that they constitute with their children an independent unit - are expected to adopt more easily an attitude that is favourable to family planning, as a consequence of their independence from the kinship network, as much in terms of family goals as of livelihood. On the contrary, extended family systems - produced by cultural contexts that attribute great importance to high fertility - are thought to be organised in such a way as to maximise reproduction, reducing the economic and non-economic costs of child rearing. Previous analysis and research has, however, raised doubts about such simplistic relationships. The societal and cultural contexts of family and fertility behaviour, historically shaped by complex economic and political forces, are so varied and multi-faceted as to cause a multitude of different evolutions in the relationships under study. We therefore considered it useful to investigate these issues, also in view of the possible implications for social policies.

## 2. Data and methods

In accordance with the general objectives of the Project, the data of the 1994 Population and Housing Census were at the centre of the fertility study. However, in order to better highlight the temporal evolution of the phenomena, the analysis described in points 1 and 2 of the preceding paragraph were also taken from other sources: the 1984 National Population and Housing Census, the 1990 National Family and Fertility Survey and the 1998 Health and Nutrition Survey.

The estimates of fertility levels utilised information on children ever born and on the births during the twelve months before the date of the interview, both classified by age of the mother. A reciprocal cross-check of the two series of data permits, by means of appropriate adjustment methods, the correction of the errors that affect each of them. For reasons linked to the validity of assumptions in the estimation procedures in different contexts, the Brass P/F ratio method was applied to estimate fertility levels in rural areas and the whole country, while the Relational

Gompertz Model was used to estimate fertility in urban Ethiopia.

In order to evaluate at a micro level the effects of socio-economic variables on fertility, a logistic regression model was used and applied separately to rural and urban areas of the country in three different years (1990, 1994 and 1998). The dependent variable (a fertility indicator) was constructed comparing the number of children ever born to each married woman – that is strongly dependent on age of the woman- to a standard value at the corresponding age. As a standard distribution the smoothed pattern of ASFRs in 1990 was used (1990 is the year in which fertility seems to have reached its maximum levels). In this way an age independent indicator of fertility was obtained for each woman. The indicator assumes values of around 1: less than 1 values should be considered an indication of “transitional” behaviour, while equal to or higher than 1 values presuppose a traditional behaviour. Regarding the independent variables of a socio-economic nature, we were limited to taking into consideration the relevant ones reported in a similar way in all the datasets utilised: these are urban/rural residence, ethnic group, religion, work status, educational level. An indicator of social and economic status (SES) which combines all the census variables on the economic conditions of the families, above all housing characteristics, was constructed for urban areas only.

In order to identify, on the basis of the 1994 Census data, the possible relationships between family systems and fertility, a cross sectional perspective was adopted, shifting the analysis from the individual level to that of the ethnic groups in which the Ethiopian population is subdivided. The reason for this lies in the fact that the ethnic group is by definition a culturally homogeneous group, having developed in the course of time its own outlook on life and on the world, and its own social organisation and family system. For each ethnic group 32 indicators were developed, 7 of which characterise socio-economic conditions, 9 describe the demographic system and 16 the family system. Only the 60 ethnic groups of more than 10,000 individuals were considered, in order to avoid giving too much weight to data that have limited number of observations. The statistical tool employed is the Principal Component Analysis, whose results constituted the basis for a Cluster Analysis, so as to observe how the ethnic groups are classified on the basis of similarity with respect to the indicators used to describe them.

### **3. Main results**

#### *3.1 Levels, trends and patterns of fertility*

The adjusted total fertility rate (TFR) for the whole country is equal, according to the calculations of the authors of this report, to more than 7 children per woman in her reproductive life span: this is a very high level even by Sub-Saharan Africa standards (Table 1). These estimates are higher than the figures given by the Central Statistical Authority both for the 1994 Population and Housing Census and the 1998 Health and Nutrition Survey. However a decreasing trend seems to have started in the 1990's. A decline is uncertain or barely perceptible rural areas (TFR=7.7 in 1998), but appears well established in urban areas where it began earlier (initial phase in the second half of the 1980's) and where it is proceeding at a rapid pace (TFR=4.2 in 1998).

Regarding the modifications of the age pattern of current fertility, it is difficult to draw firm conclusions due to the inconsistencies that were observed between surveys and censuses data. The age specific fertility rate (ASFR) values for older women were found to be lower in the 1990 and 1998 surveys when compared to the 1984 and the 1994 censuses respectively. It is the opposite for the younger age groups. Similar trends could hardly be attributed to the well-known phenomenon of better reporting of data in sample surveys, that would, if anything, determine higher fertility rates at all ages. However, the data shown in Table 2 suggests the existence, at least in the urban areas, of a process of concentration of fertility in the central ages (and particularly between 25-35 years). The decrease of fertility in the younger ages (under 20) could be attributed, more than to a growing

willingness and capacity for control, to later marriages, that preclude procreation in a part of fertile life. But the decrease in older ages (over 40) can only be due to the under reporting of children ever born alive as a result of memory lapse and/or omission of dead children at infancy or those children who left parental home.

### *3.2 Socio-economic factors of fertility*

Investigations into the interrelationship between socio-economic variables and fertility offer a further confirmation of the classical propositions of the demographic transition theory. The forces typically associated with developmental processes, which this theory considers the main agents of fertility decline, are at work in Ethiopia. Urban residence and higher educational and employment status are factors with a strong impact on reproductive behaviour, able to bring about fertility transition. Instead our results do not seem to confirm that situations of economic crisis may in some cases have an effect of reinforcing an attitude of fertility control. In this regard, further analyses specially focussed on fertility data of Addis Ababa, the Capital city, where a less traditional attitude on fertility and family planning is widespread, could contribute to a better clarification of this issue.

### *3.3 The Ethiopian family: structures and relationships with fertility behaviour*

In the 1994 Census, Nuclear family households constitute the majority (70%) of the total households in Ethiopia, while extended family households represent 19% and non-nuclear units 11% (Tab.3). Rural/urban differences are very marked. The predominance of nuclear families is far less pronounced in urban communities (only 50%), which instead are characterised by the spread of both extended (26%) and non-nuclear households (24%). The urban-rural gap is large also in other respects, among which: the percentage of female headed households (36% and 20% respectively in urban and rural environments), of one parent families (26 and 16), of solitary persons (15 and 5) and the presence of non relatives (14 and 3) (Tab.4).

Since only the 1994 Census data has been processed so far, it was not possible to carry out a true diachronic analysis, following the temporal evolution of the family. It remain an open question whether the observed family patterns still reflect the traditional organization of the society or rather represent a phase in an ongoing transformation process. In this study, the 1994 census data could enable us to argue that Ethiopian society, in its numerous ethnic groups, is not for the most part organized on the basis of extended households, in which more than one family nucleus and other relatives external to the nucleus live together collaborating in a single family. It seems, however, to be established that there is the custom of hospitality towards relatives, and this hospitality may, indeed perhaps must, be offered by the better off families. For this reason the process of urbanization leads to an increase and not the disappearance of the extended families. This situation, that prevails also in other African countries, leads generally to the conclusion that the system of extended families is flourishing and that it plays a role of primary importance in determining the forms of adjustment to the social modifications produced by the process of modernization. It is a proper conclusion, but its value is possibly transitory. It should, in fact, be observed that the census data cannot directly cast light on the interpersonal relations linking the members of the household and the kinship network. It is not impossible that the relationships with the extended family are experiencing an evolution which, being at the beginning, appear only among the élites and do not produce statistically visible results on the family structures at the aggregate level.

The observed high proportion of extended families in urban areas of Ethiopia is accompanied by a relatively high proportion of single-person, non-nuclear and single-parent households. This induces us to speak of the "individualization", rather than of "nuclearization of the family". On the other hand, also in this case it can be emphasised that, if there is not nuclearization in the sense of a progressive reduction of the household to its central and essential core, it is not to be excluded that there may in any case be an evolution in the sense of an intensification of the personal relations between the spouses and a gradual detachment from the wishes expressed by the enlarged family with regard to its general objectives. It is this type of evolution, rather than the nuclearization

process in the structural sense, that would probably tend to produce effects on fertility.

One element that to some extent contrasts this hypothesis, however, is the idea that the evolution in progress may tend to increase the frequency of households headed by women, prevalently assuming the form of non-nuclear or single-person groups and of single-parent families. Yet it cannot be ignored that this evolution is linked to specific cultural characteristics of the population, as the attribution of family responsibility to women and their 'isolation' in the case of widowhood or divorce, in some cases frequent also in rural areas, seem to be strongly differentiated according to ethnic group. The high presence of such a type of family seems to have a limited, but nonetheless negative, influence on fertility.

The observations made in the course of this study contradict, within the limits deriving from the definitions adopted and the type and quality of data available, the supposed links between the nuclearization of the family and the decline of fertility. At present, a process of nuclearization of the family is not visible in Ethiopia, nor, on the other hand does the nuclearity of the family seem to be a condition determining the control of fertility. Fertility in fact reaches the highest levels in those ethnic groups where this type of family organization is most widespread, and this organization seems to be associated with the conditions of rurality, traditionalism and difficult economic conditions.

It is, therefore, the significance of the contrast between nuclear and extended families that is questioned by this type of results. The household that we have defined as nuclear is not the site of independence from the enlarged family, with which links and dependence may exist apart from common residence and shared cooking arrangements. It is only an organizational cell within the kinship network, which remains small since the economic conditions do not permit the useful inclusion of isolated members of the network itself, neither to provide them with assistance, nor to employ their capacities and abilities. At the same time, the family considered as extended due to the inclusion of members external to the family nucleus represents the solution to certain particular needs, rather than a basic structure of the social group. However, these considerations should not lead to exclude definitively the hypotheses formulated by classical theory. A general appraisal of the whole kinship network and the links between its members - which is certainly not possible on the basis of census data and on a vast scale - could be the right way for a deeper insight into and a better understanding of the relationships between family systems and fertility behaviour.

#### **4. Concluding remarks and recommendations**

Following J.C. Chesnais's criteria [1986], we can assert that the second phase of the demographic transition has really started if the decline in fertility occurs within and because of the modernization of society. On the basis of this definition it can be affirmed that fertility transition is ongoing in Ethiopia, even though it is at the beginning and concerns for now only urban areas and the socio-cultural elites, just because the changes that have come about are the consequences of modernization factors. On the contrary, it was not possible to detect a role of economic difficulties in fertility decline. However it is still possible that some individuals aware of cost consideration in making reproductive choices may be influenced by intervening economic problems, especially in urban context.

Certainly, accepting the conclusion that fertility transition has begun does not improve the possibility to predict future trends that appear for now most uncertain and are subordinate to the transformation processes of a largely traditional society. It is here that is seen the importance of population policies that must support the way to development and promote the conditions in which fertility control behaviour can become widespread. As indicated in this paper:

- i. Fertility is still high in rural Ethiopia with a very slight decline. Contraceptive prevalence rate and age at first marriage are still very low compared to the level in other developed countries

and urban areas of Ethiopia. Thus:

- ◆ Well designed and culturally sensitive IEC is required on,
    - Use of family planning and related services, and
    - Increasing age of entry into first marital life.
  - ◆ Efforts should also be made to improve availability and accessibility of family planning in rural Ethiopia.
- ii. Similar studies of this type but with detailed data like in the DHS should also be undertaken continuously. The detailed study shall, however, consider the qualitative aspects of fertility determinants as statistical figures does not tell more than its levels, patterns, trends and determinants. In-depth studies that involve focus group discussion (FGD) and case studies through anthropological techniques could fill in the gaps for policy implementation and program revision.
- iii. Education and work status of women is found to have strong link with fertility reduction in urban Ethiopia. The prevailing affirmative and gender sensitive educational and employment opportunities should be encouraged and implemented accordingly.

**Tab.1 - Fertility Levels and Trends in Ethiopia by Place of Residence: 1970 – 2000.**

YEAR	Total Fertility Rate		
	National	Rural	Urban
1970 <sup>a</sup>	5.2	5.8	4.7
1978 <sup>a</sup>	---	6.8	6.3
1981 <sup>a</sup>	7.5	7.7	---
1984 <sup>b</sup>	7.5	8.1	6.2
1990 <sup>b</sup>	7.7	8.0	5.3
1994 <sup>b</sup>	7.6	7.9	5.3
1998 <sup>b</sup>	7.2	7.7	4.2

Source: <sup>a</sup>CSO, 1974; CSO, 1984; <sup>b</sup> Computed by authors

**Table 2 - Adjusted Age Specific Fertility Rate, National and Urban Ethiopia: 1984 - 1998**

Age Group	ASFR							
	National				Urban			
	1984	1990	1994	1998	1984	1990	1994	1998
15-19	0.1232	0.1373	0.0988	0.1237	0.0533	0.0424	0.0413	0.0428
20-24	0.2875	0.3412	0.2899	0.3112	0.2071	0.2427	0.1802	0.1663
25-29	0.3123	0.3455	0.3379	0.3388	0.2815	0.3042	0.2576	0.2125
30-34	0.2833	0.3022	0.3042	0.3053	0.2641	0.2184	0.2502	0.2260
35-39	0.2437	0.2303	0.2515	0.2143	0.2244	0.1367	0.1844	0.1067
40-44	0.1403	0.1156	0.1249	0.1031	0.1302	0.0975	0.0869	0.0512
45-59	0.1002	0.0578	0.1034	0.0423	0.0794	0.0180	0.0594	0.0344
TFR	7.5	7.7	7.6	7.2	6.2	5.3	5.3	4.2

**Table 3 - Distribution of household by family type and rural/urban residence**

<i>HOUSEHOLD TYPE</i>	<i>RURAL Col %</i>	<i>URBAN Col %</i>	<i>TOTAL Col %</i>
<i>NO-NUCLEUS</i>	9.5	23.6	11.4
<i>Solitaires</i>	5.4	15.1	7.7
<i>Other</i>	4.1	8.5	4.7
<i>NUCLEAR</i>	73.2	50.5	70.1
<i>Mother or Father with Child(ren)</i>	13.0	16.6	13.6
<i>Couple alone</i>	6.6	4.7	6.3
<i>Couple with Child(ren)</i>	53.6	29.1	50.2
<i>EXTENDED</i>	17.3	25.9	18.5
<i>Mother or Father with Child(ren)+OR</i>	3.5	9.2	4.3
<i>Couple+OR</i>	2.5	2.4	2.5
<i>Couple with Child(ren)+OR</i>	11.3	14.4	11.7
<b>TOTAL</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

**Table 4 - Selected household structure features, by rural/ urban residence**

	<i>RURAL</i>	<i>URBAN</i>	<i>TOTAL</i>
% Households with female head	20.3	35.7	22.6
% One Parent Families	16.5	25.8	17.9
% Household with OR of the head	21.4	34.4	23.3
% Household with NR of the head	4.1	13.5	5.5

## 1. Introduction

Infant and child mortality rates are in Ethiopia still amongst the highest in the world. Economic and health indicators are also in the lowest. This indicates the overall level of development. To improve the situation, the government has considered two high priority areas: infant mortality in the rural areas where the mortality was 110 deaths per 1000 live births in 1994. The major direct causes of high infant and child mortality. The main aim of the present study is to shed some light onto the underlying causes of the persistent high levels of infant and child mortality.

Ethiopia is one of the least urbanized African countries. Therefore, it might seem reasonable that the present report puts its focus on the urban population, but as it is well known, socio-economic characteristics and the amenities and infrastructures of households show great variations in rural parts of Ethiopia. The population is mainly illiterate, building materials are traditional local materials, bathing and toilet facilities are normally non-existing and water comes mostly from rivers or unprotected wells. In contrast the population in urban areas is more heterogeneous and might give indications on possible future developments. Therefore this report concentrates on the urban setting, even if the authors report rural information wherever useful or interesting.

The main aim of the study is to inform about the trends and patterns of infant and child mortality by using readily available information and to shed some light onto the underlying causes of the persistent high levels of infant and child mortality in Ethiopia based on the 1994 census. The study group considered its main task to identify regions and groups of women with children at risk of higher mortality during their first years of life. In identifying the children most vulnerable, the authors hope to be able to make a small contribution to the solution of a great problem and to the improvement of child survival programmes.

The report discusses the determinants of infant and child mortality. Much valuable information is undertaken so far in Ethiopia regarding infant and child mortality are reported. The scope and quality of available data for a study on infant and child mortality in Ethiopia are discussed and the procedures to estimate infant and child mortality rates are described. The empirical part of the report follows two lines: (1) an analysis of the socio-economic, natural and cultural factors that lead

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INFANT AND CHILD MORTALITY  
IN URBAN ETHIOPIA

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*Resume for the Dissemination Seminar  
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**1. Introduction**

Infant and child mortality rates are in their own right important indices to measure the socio-economic and health conditions of the youngest members of a society. The levels of infant and child mortality are also important indicators to measure health conditions of the society at large and to indicate the overall social and economic development of a country. Despite the efforts undertaken to improve the situation, overall levels of infant and child mortality in Ethiopia are still to be considered too high. Available evidence shows, that there has been up and downs in the level of infant mortality in the country since the 1950s. According to the 1984 Census the level of infant mortality was 110 deaths in the first year of life per 1,000 live births, while the 1994 Census estimates the rate at 116. As in other developing countries, malnutrition, infections and parasitic diseases are the major direct causes of high infant and child mortality. The main aim of the present study is to shed some light onto the underlying causes of the persistent high levels of infant and child mortality.

Ethiopia is one of the least urbanised African countries. Therefore, it might seem inappropriate that the present report puts its focus on the urban population, but as it is well known, socio-economic characteristics and the amenities and infrastructures of households show small variations in rural parts of Ethiopia. The population is mainly illiterate, building materials are following local traditions, bathing and toilet facilities are normally non-existing and water comes mostly from rivers or unprotected wells. In contrast the population in urban areas is more heterogeneous and might give indications on possible future developments. Therefore this report concentrates on the urban setting, even if the authors report rural information wherever useful or interesting.

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to geographic differences in infant and child mortality at the zone level. This analysis is based on the estimates of infant and child mortality rates published in the CSA census reports; (2) an analysis of the differences in infant and child mortality according to individual and household characteristics, based on individual census records.

## **2. Data and methods**

The results presented in this paper are based on data from the 1994 Population and Housing Census. In the long questionnaire form of the 1994 Ethiopian Census, which was administered to 1/5 of the total households the following questions were asked to each women aged 10 years and over included: (1) Children living in the household by sex of the child, (2) Children living elsewhere by sex of the child, and (3) Children dead by sex of the child. Since in many developing countries the only source of demographic information is the population census, demographers have been studying for a long time techniques to estimate demographic parameters indirectly, using information collected in censuses or which can be collected adding to the census forms specific questions.

One of the most known application of these techniques is the indirect estimate of the levels of infant and child mortality using data on children ever born and children surviving classified by age of the mother or by duration of marriage (Brass method). The technique allows to estimate the probability of dying before a certain childhood age from the proportion of dead children among those ever born to women in different age groups (respectively 15-19, 20-24, 25-29 and 30-34 years) by applying specific multipliers which depend on the pattern of fertility. Among the improvements to the Brass method proposed in the UN Manual X, one allows estimating the time to which the estimates refer. The proportion of dead children to young women depend on the mortality prevailing in the years immediately preceding the census; on the contrary, the proportion of dead children to older women depend on the mortality prevailing several years before the census.

The study employs descriptive and multivariate statistical analysis. In the descriptive part infant and child mortality rates are estimated according to the socio-economic characteristics of the women and the characteristics of the household in which the women live. Infant and child mortality rates are estimated using Brass technique. The type and quality of available data influence the choice of the type of multivariate method. Hazard models, which are the preferred method in studies of infant and child mortality, are not considered, since the available data seemed not suitable to the authors. Instead, preference was given to an unbeaten path by identifying vulnerable and less vulnerable groups with high and, respectively, low infant and child mortality rates. Based on the results of a multiple correspondence analysis women are grouped according to some selected socio-economic and housing characteristics.

## **3. Main results**

Infant mortality rates are estimated at the beginning of the 1980s, based on the 1984 census, at 110 per 1,000 live births and at 116 at the beginning of the 1990s. Based on the 1994 census the average infant mortality rates for rural areas is 121 (178 the child mortality rate), whereas 98 (140) in the case of urban areas. Since the regional patterns of infant and child mortality rates are very similar, the following discussion focuses on the results regarding infant mortality. The estimates of the infant mortality rates refer in general to information reported by 20 to 34 years old women. Consequently results refer to the years 1990-92 and they might still be affected by the difficult social, economic and sanitary conditions due to the war.

The regional patterns of overall infant mortality rates are to a large degree influenced by the geographic pattern observed for the rural population, since 86.3% of the Ethiopian population lives in rural areas. As a consequence, no important differences in the regional patterns of overall infant

mortality rates and infant mortality rates of rural areas are observed. The only areas with a predominantly urban population are Addis Ababa, Bahir Dar and Dire Dawa. The highest infant mortality rates of urban areas are observed in the peripheral zones of north-eastern and northern Ethiopia, Benishangul-Gumuz and Gambella, Northern and Southern Omo, Western Harerge and Dire Dawa. Several of these zones are located in the lowlands or in remote areas of the country or areas affected by draughts.

The education of the population and especially of women has a predominant effect on the level of infant mortality. The percentage of women 20-34 years old with at least a primary education, or a minimum of six years of schooling, depends to a large degree on the settlement type. In most rural areas the educational attainment of the population in general and of women in particular is very low. On the contrary, in some urban areas the percentages of women 20 to 34 years old with primary education reach considerably higher levels: 70.0 % in Harari and 65.5 % in Addis Ababa. In urban areas the educational attainment of women seems to be a good predictor of the level of infant mortality. In rural areas illiteracy is so common that educational attainment cannot be expected to correlate with regional variations of infant mortality rates.

Infant mortality rates show considerable variations between zones. The education of mothers, the average household size, the availability of a protected source of water and the improved sanitary conditions of households lead to lower levels of infant mortality rates. Temperature, persons per room and the level of fertility, measured by the total fertility rate, are positively correlated with infant mortality rate. A multivariate analysis of infant mortality rates in urban areas by zone show that the educational level of women and average temperature 'determine' the regional pattern of infant mortality rates.

The analysis of individual data was conducted for Addis Ababa, major urban centres and small towns, separately. The results reveal that the level of infant mortality is about 98 deaths per 1,000 live births in the urban areas of Ethiopia, with rates of 108 in urban areas with less than 20,000 inhabitants, 95 in urban areas with 20,000 and more inhabitants and 76 deaths per 1,000 live births in Addis Ababa. Significant gender differences in infant and child mortality do exist. The socio-demographic and socio-economic variables included in the analysis are marital status, ethnicity, religion, migration status and educational attainment. The study of the impact of variables regarding the socio-demographic and socio-economic situation of the mothers shows that education of women has the most significant impact on infant mortality rates. The rates vary in urban areas of Ethiopia from 124 infant deaths per 1,000 live births for the illiterate to 48 for the educational level 'secondary and above'. Other socio-economic variables have a more modest impact on infant mortality rates. Ethnic origin gives no consistent indication regarding its relation with infant mortality. Religious affiliations did produce differences in infant mortality rates at the country level but the difference appears to diminish for Addis Ababa.

The housing environment in which children are living and growing up has a significant impact on their health. The housing variables included in the analysis are: materials used for the construction of the floor, sources of drinking water, types of kitchen, type of bath, type of toilet, the density of occupation (persons per room) and the economic status of the household. The effects of housing characteristics on infant and child mortality are linked to some extent to the economic status and to some extent to the sanitary conditions. These two effects are usually intertwined and any attempt to separate them seems difficult.

Regarding the building materials used in the construction of the floor of the house, the results show that infants in the mud floor houses are the most disadvantaged with 106 infant deaths for all urban areas and 90 infant deaths per 1,000 live births in Addis Ababa. The corresponding infant mortality rates in the case of homes with tiles or cement floor are 70 and 58 infant deaths per 1,000 live birth.

The source of drinking water is linked to the cleanliness of the water, which has a direct bearing upon the health of the child. Specifically, in a situation where sanitary conditions of the housing

unit and the surrounding environment are poorly maintained, drinking water fetched from some distance outside the compound is likely to be exposed to agents of contamination. As expected the level of infant mortality is highest in the households whose source of water is a well or a river, something very rare in the case of Addis Ababa, but still fairly common in other urban areas. Evidently the lowest infant mortality rates can be observed for women in households with water from tap located inside the home or inside the compound: 90 infant deaths per 1,000 live births in small urban areas, 68 in large urban areas and 61 infant deaths per 1,000 live births in the capital city.

The type of bathing facilities and the type of toilet indicates the sanitary conditions of a household. The results show a marked difference in the level of infant mortality between housing units that have a bath or shower (66 per 1,000 at the national level and 45 per 1,000 in Addis Ababa) and without a bath or shower (100 per 1,000 nationally and 79 per 1,000 in Addis Ababa). The level of infant mortality observed for women in households with no toilet reaches 119 deaths per 1,000 live births for all urban areas and is still 98 in the case of the capital city. Instead the corresponding infant mortality rates for women in households with a private toilet are respectively 78 and 53 deaths per 1,000 live births.

Regarding the relationship between economic status of the household and infant mortality, in the absence of direct indicators of the households' economic status, for the present study an indicator has been specifically calculated, based on the availability of TV and radio in the household. The results obtained conform to the general expectation. Infant mortality declines sharply as the economic status of the household increases. Thus, women who enjoy relatively high economic status have an infant mortality rate, which is – for all urban areas and for the capital city - about half of that of women who live in households with a low economic status.

To be able to identify the most vulnerable children a classification of young women was attempted. A multiple correspondence analysis based on selected individual and housing characteristics and the size of the urban areas forms the base for a subsequent cluster analysis of the female population in age of childbearing. Ten relatively homogenous groups were formed and estimates of infant and child mortality rates for these groups open a wide array of values.

The two groups characterised by the highest infant mortality rates, which are in the context of this report the most vulnerable groups, have infant mortality rates of 120 infant deaths per 1,000 live births. Together these two groups comprise about 17 % of the female population. Both cases are predominantly Muslim. The single most important characteristic, which distinguishes the groups ordered according to their estimated infant and child mortality rates, is educational attainment or the mean number of years of schooling received. The women of the first three groups with an average of 2.3, 1.0 and 2.2 years of schooling, respectively, are to be considered illiterate. The household variables included in the multiple correspondence analysis contribute to the explanation of the differences in infant mortality between the groups. The first groups with the highest infant mortality rates have a high proportion of mud floors and are characterised through the absence of tap water, kitchen and toilet. The groups with moderate mortality indices take an intermediate position regarding the housing conditions. Women in the three groups with low infant mortality enjoy more favourable housing conditions. It seems that cultural and geographic influences, as expressed by religion and ethnic group, can have an effect on the infant and child mortality. But education and the well being, in an economic and sanitary perspective, of the household are the key variables found in this analysis.

#### **4. Conclusions and recommendations**

In summary, the single most important variable to 'explain' the level of infant and child mortality seems to be education of women and education in general. Other socio-demographic and socio-

economic characteristics, as well as housing conditions, are often directly related to the educational attainment of the head of the household or the one of the mothers. To assure the success of a technical policies approach the educational level of the Ethiopian population in general and of women in particular have to be improved. Thus, the improvement in education and providing –at least– elementary level education would have a marked role in reducing infant and child mortality. The lack of education especially in rural areas and smaller urban areas is an important obstacle in lowering further infant and child mortality.

The study revealed that better housing conditions improve the chance of surviving of new-borns and infants. The creation, maintenance and improvement of public infrastructure –water supply and wastewater management– and of private housing conditions is another precondition of further improvements in child survival.

From the statistical side the most important goal must be to improve the measurement of infant mortality through direct measures and refined indirect methods. The authors hope that the results of the recently conducted Ethiopian Demographic and Health Survey and the planned 2004 census will be thoroughly analysed to confirm – or refute – the results of the present report.

In the past decades Ethiopia suffered wars, famines, droughts and environmental degradation that are all-important factors in explaining the high levels of infant and child mortality. Policy makers should direct their efforts towards a peaceful development of Ethiopian society and economy. The problem of environmental degradation has to be tackled more forcefully. And the effects of possible droughts have to be contained as much and as early as possible.

Special attention has to be given to the HIV/Aids crisis, since children are suffering twofold from it: directly due to higher mortality and indirectly due to the loss of one or both parents. Orphaned children are certainly taken care of by the traditional extended family, but the sheer numbers indicate a rising problem, which will put additional stress on the social fabric of the Ethiopian society.

**Table - Infant mortality rates by selected characteristics, urban Ethiopia 1994**

<i>Socio-demographic, socio-economic and housing characteristics of women</i>	<i>Total urban areas</i>	<i>Urban areas with less than 20,000 inhabitants</i>	<i>Urban areas with 20,000 inhabitants or more</i>	<i>Addis Ababa</i>
<i>Religion</i>				
Orthodox	94	107	88	77
Other Christians	83	89	78	66
Muslim	113	114	117	82
<i>Ethnic Group</i>				
Amhara	89	106	80	68
Guraghe	91	105	89	82
Oromo	99	100	99	93
Tigreway	106	128	96	70
Others	116	115	119	94
<i>Marital status</i>				
Never married	98	120	112	83
Currently married	84	94	81	64
Divorced	121	137	109	91
Widowed	109	129	101	85
<i>Educational Attainment</i>				
Illiterate	124	127	123	110
Primary	90	94	91	80
Junior secondary	72	75	76	67
Secondary and above	48	52	49	41
<i>Material of floor</i>				
Mud	106	111	103	90
Tiles or cement	70	82	72	58
Others	73	76	64	81
<i>Type of water supply</i>				
Tap inside or compound	70	90	68	61
Tap outside of compound	103	108	105	90
Well or river	109	112	102	87
<i>Type of toilet</i>				
Private toilet	78	86	79	53
Shared toilet	84	90	89	76
No toilet	119	125	113	98
<i>Economic Status</i>				
High	65	89	72	53
Medium	81	86	81	72
Low	117	123	111	98
<b>Total</b>	<b>98</b>	<b>108</b>	<b>95</b>	<b>76</b>

Source: Authors' calculations on 1994 Census data, made available by CSA

Notes: The rates are calculated using Coale-Demeny West Model (Trusell equations) and refer to average rates corresponding to the age groups 20-24, 25-29 and 30-34. This implicates that they refer to the years 1990-92.

**MIGRATION AND URBANIZATION IN ETHIOPIA,  
With special reference to Addis Ababa**

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*Resume for the Dissemination Seminar  
Addis Ababa, 10 July 2001 – ECA Palace*

**1. Introduction**

**a. Rationale**

Internal migration and urbanization in Developing Countries are among the clearest evidences of the occurring changes, either as the modernization or collapse of the previous socio-economic pattern. Urbanization plays an important role in the development and modernization of a society. In short, the process of urbanization is not only desirable, but also essential for generating economic growth and social change. However, it should be borne in mind that while some benefits may flow from the urban centers functioning as a catalytic agents for economic progress, they may also present certain social, cultural, as well as economic problems deserving to be handled in a different way.

In Ethiopia, urbanization has become one of the major demographic events currently taking place. However, the level of urbanization indicates that the Ethiopian population is still prevalently rural. Addis Ababa has recently suffered an important population growth (about +70 thousand between 1984 and 1994 censuses) and the widening of its urban tissue (some urban *weredas* were added at 1994 census). Large part of the settlements in the city results from the massive dropping out from rural areas and small urban centers. There exist severe problems in city management (e.g. sewer system, water pipe system, roads, transport system, etc.) coupled with a more general problem of widespread indigence and unemployment. Therefore, the results of this research might be very useful in directing political and administrative actions in these matters.

Data from the 1994 Census and 1999 Labor Force Survey allow interesting studies both on the current situation of population and housing in urban areas and, at some extent, on the processes which contributed to the present situation. Population structure and housing condition can here be studied as characterizing different parts of the city, so that slums and deprived areas are singled out as opposed to medium and "high" level areas.

**b. Precedents in the main literature**

Ethiopia is largely under-urbanized, even considering Africa standards. Around 1975, only 9.5 percent of the population lived in urban areas of at least 2,000 people (UN). For the whole of Africa, the percentage was 25.1. In the year 2000, the two proportions were respectively 17.6 and 37.9. In Ethiopia, one can find hundreds of communities with 2,000 to 5,000 people, but in the majority of cases these are just an extension of rural villages without urban administrative functions. Even though, during the last decades and very likely in the next ones, the urbanization rate was and would be faster in Ethiopia than in Africa, in 2030 the proportion of urban population in the country would be largely lower than in the Continent (35.3 versus 54.5 percent). Still in 2030, the rural population (83 millions) could be almost twice as the urban one (45 millions). The

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population of Addis Ababa grew from 0.730 million in 1970 to 2.639 in 2000. On an average, 64 thousand additional persons were added a year, i. e. in absolute terms much less than other African urban agglomerations, but at a comparable rate (4.4 percent versus 6.2 for Lagos, 2.3 for Cairo, and 4.5 for Kinshasa).

According to the economic history of the developed world, the rise in urbanization was induced by vigorous economic expansion. But, as in most developing countries, in Ethiopia, the stimulus for accelerated urbanization is mostly not the economic development. It is, rather, the high rate of population growth, especially in the rural areas, which increased the pressure on the land and the inability of the traditional modes of agriculture to support the growing population. Moreover, instability and crop failure have tended to drive many villagers to the city in search of employment. Thus, rural-urban migration is the main reason for the more rapid growth of the urban population.

### *c. Objectives*

- To assess levels, patterns and determinants of internal migration and urbanization in Ethiopia
- Delimitation of homogeneous zones with respect to population and migrants characteristics
- To estimate active factors in the attraction areas and links with internal mobility characteristics
- To map main results in appropriate cartography
- To draw some indicators about the nature of recent growth of Addis Ababa and probably extended to almost all the present and near-future urbanization in Ethiopia
- To make recommendations concerning the future development of migration and urbanization

### *d. Structure of the study*

The first chapter is devoted to the rationale, objectives of the study and sources of data on migration and urbanisation in Ethiopia. The second chapter deals with the geographical distribution of urban and rural population, considering the demographic, socioeconomic and housing characteristics of the general population and of the migrant component. The chapter also identifies cluster of territorial zones using various indicators. The third chapter is dedicated to the analysis of internal migration (considering spatial and professional mobility) in Ethiopia. The fourth chapter is concerned with urbanisation and urban population (with specific reference to Addis Ababa and the structure of main Ethiopian cities) in Ethiopia. Chapter five, which is the Conclusion and Recommendation part, completes the report.

## **2. Data and methods**

### *a. Data Source*

Main sources of the data used in the Report are the 1994 Population and Housing Census of Ethiopia and the 1999 Labour Force Survey. The 1994 census collected migration information using "short" and "long" questionnaires. The short questionnaire contained limited information while the long questionnaire contained more detailed information. In the Somali and Affar regions, it was applied to a much lesser proportion of households and no migration information was collected.

To make the analysis of the results of the census easier, a sub-sampled data set was created. This data set permits reliable estimates for each administrative Zone, by rural and urban areas. For urban areas, all the long questionnaires from all regions were included in the sub-sample. For rural areas of the small regions (Affar, Somali, Gambella, Harari and Dire Dawa), all the long questionnaires were included in the sub-sample. For the rural areas of the other regions, the sampling rates ranged from 10% to 70% of the long questionnaires.

The information on migration was obtained by asking questions on "area of previous residence" (to identify the migration status) and "duration of continuous residence". The 1999 Labour Force Survey (LFS) also used "place of previous residence" question in association with "duration of continuous residence" and the question on the "reason" for migration. The main aim of this survey

was to provide information on economic characteristics (activity status, employment, unemployment and underemployment situation) of the population aged 10 years and over.

### **b. Definitions**

In the Census, an urban area was defined as a locality with 2,000 or more inhabitants, wereda, zone and regional capitals, localities with 1,000 or more inhabitants, which primarily are engaged in non-agricultural activities.

In urban areas, a person is a migrant if he or she has lived in another urban or rural areas, which are located in the same or different wereda, zone or region. Similarly, in rural areas, a person is a migrant if he or she has lived in a different wereda or in an urban area. Thus, in the rural areas movers within the same wereda are not considered as migrants. Similarly, in the urban areas, movers in the same urban centre are not considered as migrants.

'*Duration of continuous residence*' refers to the number of years a migrant has lived continuously in the area of enumeration and '*Place of previous residence*' refers to the *usual place of residence* of the migrant before migrating to the area of enumeration

- The "*usual place of residence*" that place in which an individual had resided six months or more, or less than six months but intended to stay there permanently, or had been away from that place for more than six months but intended to return, or had been away for less than six months but intend not to return

In the LFS, similar definitions concerning migrants and non-migrants were used.

### **Problems**

**Census.** The main problems working on migration analysis in Ethiopia is data availability, quality and coverage. The 1994 Census has got no information on out-migrations and, hence, no net migration can be calculated and origin destination matrix of flows at zone level cannot be created. Because of the semi nomadic nature of most of inhabitants in Affar and Somali regions, the census questionnaires used in these regions do not contain information on migration status. Due to the changes in the administrative borders, the 1984, the 1994 census data are not comparable. Moreover, the migration status of the population in the two censuses is obtained in a different way. While in 1984, "*place of birth and duration of continuous residence*" was asked, in 1994 the question has been on "*duration of continuous residence and area of previous residence*".

The questions on "*duration of continuous residence and area of previous residence*" caused other problems. Old migrants did not always remember the number of years of continuous residence and the area of previous residence. Furthermore, inhabitants are not always aware of changes administrative structure.

Finally, The sub-sampled data do not enable analysis below zone level (at wereda level, for instance).

**Labour Force Survey.** The 1999 LFS data has information on "*duration of continuous residence and area of previous residence*", but the sample allows analysis only at zone level, except for few big regions. In the LFS, migrant's flows are considered for those who have resided for the last 5 years and no information on previous flows is available. Hence migrants are divided as old migrants and new migrants (, if they have resided for less than 5 years). The sample used in the LFS doesn't have total coverage since, Affar and Somali were only partly sampled. Moreover, the survey is limited to the conventional population, the one living in more stable housing, but most of the inhabitants of these regions have semi nomadic nature. So, it has not been possible to analyse migration flows in those two regions.

### **Methods**

First, a set of indicators of socioeconomic, demographic and housing characteristics was developed for every zone for the analysis of the characteristics of inhabitants and migrants at zone level.

Then, a Principal Component Analysis (PCA) (Factorial Analysis) has been made taking factors, which synthesize the population and migrant characteristics to identify a set of homogeneous groups of zone based on indicators developed in step one. Next, a synthetic cluster using factorial scores, originated from PCA analysis of the indicator's matrix, is used.

A set of migration rates, in or out migration rate by rural or urban areas, is built to assess the pattern of migration. The PCA has been run on in-migration indicators of each zone to point out the effects of main attraction factors differentiated by observed areas. At last, linear regression has been used to run a confirmative analysis in which the objective variable used has been the in-migration rate separated by rural and urban areas and the independent variables are the factorial scores originated from PCA.

### 3. Main results

3.1. The analysis of the characteristics of the general population and of migrants in Ethiopia reveals enormous divergences within the country. The first major gap is naturally between the rural and urban areas. On a closer inspection, it appears that even within each area, be it urban or rural, the factors producing different demographic, ethnic, religious, socio-economic and housing characteristics operate in different ways. The variety of situations that are characteristic of Ethiopia in the mid-'90s have been identified in the light of three factors. A *ruralization/non attraction* factor, expressing the characteristics of the urban-rural dichotomy and those linked to the role of urban areas in attracting migratory flows in the previous five years. An *axis of the population age structure*, which contains sub-regions with higher average ages and those demographically younger sub-regions. An *axis of the selection of migratory attraction*, interpreted in terms of the capacity to isolate the sub-regions that have a specific attraction for the rural world. There appears to be little real contrast between the rural areas, which are grouped into very numerous categories, confirming the very homogeneous nature of the agricultural world in Ethiopia. Ethiopian territorial differences emerged in a system of six geographical groups. Two rural clusters (the *Lowland and Highland Rural Cluster*), a mixed *cluster*, with high attraction from rural areas, two big urban *clusters* (*Northern and Southern Urban Cluster*) and the *cluster* of the *Main Cities*, isolating the urban areas of Addis Ababa, Dire Dawa and Harar.

3.2. Analysis of internal mobility in Ethiopia focuses on the delimitation of the main factors active in the attraction areas and the determination of the links among structural indicators and internal mobility characteristics. The specific analysis on the reasons of labour flows permits a delimitation of 7 homogeneous sub-areas, considering characteristics of mobility (attraction capacity, differentiating rural/urban origin, dependence on Addis Ababa, etc.).

3.3. A consolidated-analytical strategy was followed to link the indicators of population with the ones used to summarise the characteristics of migration in the areas, with reference to the origin/destination flows. A set of factors emerged from the analysis that characterized the territorial units called sub-regions chosen. The migration attraction, the degree of urbanisation, ageing and several factors related to the ethnic/religious composition of the population or of the migrants flowing to the sub-regions (i.e. ethnic concentration, prevalence of Amhara or Oromo ethnic group) are used. In general, the results could be summarised as follow. All the factors considered seem to favour the capacity of attraction of an area, except for the factor of ethnic concentration, which act as an inhibitor of incoming mobility. The religious factor, the Orthodox (in the positive part) and Muslims (in the negative part) behaves differently according to the model. The areas (sub-regions) characterised by a mainly Orthodox population are characterised by a greater migration attraction, except in the case of the flows coming from urban areas where the factor acts in an opposite manner. The model seems to work better in the case of migrations from the more advanced areas of the country, the urban areas and less in the other areas, whether considering the general flows or migrations specific for work reasons. The model better represents the capacity of attraction of the urban areas.

3.4. Ethiopia is largely under-urbanized, even considering in an Africa standard. According to the very recent estimates and projections of the Population Division of the United Nations, around 1975, only 9.5 percent of the population lived in urban areas of at least 2,000 people. For the whole Africa, the percentage was 25.1. During the last decades and very likely in the next ones, the urbanization rate was and would be faster in Ethiopia than in Africa. However, still in 2030, the proportion of urban population in the country would be largely lower than in the Continent (35.3 versus 54.5 percent) and the rural population (83 millions) would almost double the urban one (45 millions).

Urban growth was especially evident in the northern half of Ethiopia, where most of the major towns are located. The period 1967-1975 witnessed a rapid growth of relatively new urban centers. As a result of the intense and rapid growth of many cities, the weight of Addis Ababa as home of the country's urban population largely declined starting from 1950. In the middle of the last century, the capital was home for a little less than half of the urban population and at the end it was home to about 24 percent. Indeed, between 1975 and 1984 the speed of growth of cities and towns was reduced and became rapid again between 1984 and 1994 at rates largely smaller than those of the first period. As a result, a new kind of urban system has developed around the largest city, where a dense network of smaller cities develop and proved to be more dynamic than the large city itself.

Looking at the map of Ethiopian, one might observe six "clusters" of cities and towns developed along historical areas, principal communication roads and the most important infrastructure. These clusters form the backbone of the Ethiopian urban network, a weak backbone, which stretches out to cover hundreds and hundreds of small and tiny towns. It can be affirmed that apart from Addis Ababa, Dire Dawa and Harar, on the one hand, and the cluster of cities on the other, Ethiopia is generally speaking a vast "urban desert", that can only be partially overcome by the steep urban population increase estimated by the United Nations for the next thirty years (34 million people, at a rate of 4.7 percent a year, one of the highest in the world).

3.5. Strong differentials in demographic, social, economic, ethnical, can be observed among the characteristics of the main 18 cities of Ethiopia. Even, within Addis Ababa, one can observe strong differentials among the administrative and territorial subdivisions. However, the demographic situation of Addis Ababa is certainly destined to be considerably altered in the period from 2000 to 2015, both considering the forecast of the Population Division of the UN (an increment of 2.5 million inhabitants) and that of the CSA (an increment of 1.3 million inhabitants). In both cases the expected population increase is very high.

#### 4. Conclusions and Recommendations

1. Between 2000 and 2030, the increase of Ethiopian population is expected to be very large, both for urban areas (from 11 to 45 millions, at a rate of 4.7 percent a year) and rural areas (from 52 to 83 millions, at a rate of 1.6 percent a year). It is very unlikely that available land can assure even the presently low living standards, unless a sustained rise in farm productivity is reached. To escape from the limitations of peasant agriculture, there should be incentives to push poor farmers to make technical advances.
2. The problem is to avoid rural poverty and the inadequacies in the provision of services in rural areas, including water supply and sanitation. Following adequate policies, rural-urban linkages can be positive and bring about a rise in rural prosperity and a more decentralized pattern of urban development. Since, the agricultural sector is so central to the economy; the Government may support rural development through road construction, provision of education and health facilities and in the funding and dissemination of agricultural research.
3. One can expect a huge fall in the agricultural labor force and a parallel strong increase in migration pressure both due to internal rural-to-urban and international migration, also due to the rise of the education level, especially for women. So, during the demographic transition and

economic transformations, as already happened in almost all countries, these factors would lead to a very massive and huge increase in the propensity to move. For international migrations, it could be useful to sign bi-lateral agreements with individual countries and the European Union.

4. From an urban point of view, among the 8 proper regions (excluding therefore the two chartered cities, Addis Ababa and Dire Dawa, and Harar region) and 55 zones, one can find very different situations, which, obviously, require different urban approaches, evaluations, and policies. Without an adequate, physiological management and urban development, it is uneasy to have a rapid economic and social development, which is necessary for the additional 65 million inhabitants expected during the next thirty years period. Rural-urban interactions in terms of “physiological” migration, exchanges and distribution of commodities and services, growth of communication infrastructures should be one of the highest priorities;
5. Reduction in the social and ethnic exclusion should be one of the major targets to be reached.
6. Programs of Integrated Rural Urban development should be encouraged
7. Efforts should be addressed:
  - To manage variability, which represents a further element of complexity in the urban network;
  - To monitor accurately and regularly trends of urban population;
  - To assure consistent and continuous investment in education;
  - To giving due consideration, particularly, to the age composition of Addis Ababa population, with a reduced number of young and elderly people in relation to the population of working age;
  - To make large and prolonged building investments, which, among others, involve good management and town planning.

## References

- Bariagaber H., 1996, “Urban demographic growth in Ethiopia with reference to Addis Ababa city”, in Diamantini C., Patassini D. (editors), *Urban Ethiopia: evidences of the 1980s*, Venezia, Istituto Universitario di Architettura.
- Bhakta Gubhaju (1997), “Ethiopia in a troubled time” in *La population du monde: enjeux et problèmes* (ed. by J. C. Chasteland, J. C. Chesnais), INED, Paris.
- Central Statistical Authority, 1998, *The 1994 Population and Housing Census of Ethiopia. Results at Country Level. Volume I Statistical Report*, Addis Ababa.
- Ethiopia, Central Statistical Authority (1999), *The 1994 Population and Housing Census of Ethiopia. Results at Country Level, Vol. II Analytical Report*, Addis Ababa.
- Central Statistical Authority (1999), *Statistical Report on the 1999 National Labor Force Survey – March 1999*, Addis Ababa, Statistical Bulletin, 225, November.
- Demographic Training and Research Center, Institute of Development Research, Addis Ababa University, October 25-27, 2000, *Labor Migration and Urban Employment in Ethiopia: Case of Addis Ababa and Other Towns*, Brown University.
- Hasen Abdulahi, 2000, *Demographic Situations in Ethiopia*, Addis Ababa University.
- Population Division, 2000, *World Urbanization Prospects. The 1999 Revision*, New York, United Nations.
- United Nations Development Program, 2000, *Human Development Report 2000*, Oxford, Oxford University Press.

**HOUSING CONDITIONS AND DEMAND  
FOR HOUSING IN URBAN ETHIOPIA**

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*Resume for the Dissemination Seminar*  
Addis Ababa 10 July 2001 - ECA Building

**1. Introduction**

**1.1 Back Ground**

Urbanization being twentieth century demographic phenomena, more and more people are changing residence from rural to urban areas. Studies have shown that an increasing proportion of the population prefer large cities, big towns and a near by administrative capitals. The growth of an urban center can take place in different forms: by growth of the existing urban localities, by classification of cities (from rural to urban) and annexations of new territory to existing cities. The other main factor, which determines the growth of an urban center, is the demographic change i.e. natural increase (difference between crude birth rate and crude death rate) and migration effect.. In one of the world watch publications: *Beyond Malthus* it is clearly stated the "During the early stages of industrialization, urbanization was largely in response to the pull of employment opportunities in cities. More recently, however, the movement from countryside to city has been more the result of rural push than of urban pull. It is a reflection of the lack of opportunity in the countryside as already small plots of land are divided and then divided again with each passing generation, until they become so small that people can no longer make a living from them" (Brown, et al, 1998). The urban centers in Ethiopia faced and will face one of these types of growth or a combination of them. In 1984 the urban population of Ethiopia contributed 11.2 percent to the total population of the country (CSA, 1984). In 1994 this proportion has grown to 13.7 percent (CSA, 1999).

Ethiopia is exercising an agrarian economy in which over 90 percent of its population make their living on agriculture. The farming system is backward and labor intensive. Because of this and the above-mentioned reasons like any developing country it is expected that faster urbanization will be witnessed in Ethiopia; in the years to come. In fact, according to the United Nations projection the proportions of urban population will be 26 percent by the year 2015 and 34 percent by 2025 (UN, 1987). This too fast urbanization, which is unparalleled with the growth of the economy, needs some intervention to harmonize the difference. Be it through natural increase or migration effect or area expansion growth of an urban center definitely demands infrastructural developments. This includes roads, schools, hospitals, health centers, housing, water supply, sanitation, waste disposal, light. etc. Without major improvements in housing markets and in the expansion and improved provision of infrastructure and service, the number of people living in housing of poor quality and inadequate provision for water, sanitation and drainage etc. will expand very rapidly (Engelman lovert, 1997). To bring about a major improvement an appropriate intervention plan is indispensable. This plan obviously requires a reliable statistics on housing and housing facilities.

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## 1.2 Objectives

The study was made targeting the following specific objectives:-

1. To make a descriptive analysis of residential houses at national regional and selected Towns level.
2. To review the structural characteristics and availability of housing facilities.
3. To obtain indicators of housing conditions in which the population live.
4. To project future requirement for housing based on households.
5. To draw an appropriate recommendation that could contribute towards the solution of housing problem.

## 2.Data And Methods

### 2.1 Source of Data

The core source of data for the study is the 1994 population and housing census. However, for comparison purposes the results of the 1984 census at country level and Addis Ababa are utilized. In both the censuses a detailed data on population characteristics such as age, sex, marital status educational attainment, etc. were collected. Similarly, housing conditions such as type of building, material used in the construction of the wall, the roof and the floor of the housing unit; source of drinking water, availability of toilet and light were also addressed to the respondents. The source of data has limitation such that comparison of regional findings with the 1984 data was not possible because the country had undergone reclassification of regional boundaries after the first census. The specific data source for this study is the data of the total urban Ethiopia, regional urban totals and thirteen selected towns.

### 2.2 Definitions

In order to have a correct approach to the housing question, we should first solve a knotty problem: the definition of housing need and housing demand. The concept of housing demand stems from economics, and it concerns not only the wish to own a good, but also the capacity to pay the price. The concept of needs is a social concept that refers to the inherent duality of a dwelling, that is, both an economic good, subject to the market laws, as well as a good or social service whose fulfillment depends on the support of the public operator and his resources. In this second meaning it seems plausible to reason in terms of need.

The type of housing units of interest was grouped according to whether they are permanent, improvised, or mobile or any other. Consistent with the definitions of the United Nations Principles and Recommendations (UN 1969) these terms were defined in the census as follows:-

Permanent housing unit as “a structure that may be expected to maintain its stability for ten years or more and have been constructed with materials such as cement, blockets and bricks or any other building materials”. Improvised housing unit as “an independent makeshift shelter or structure built of waste materials and being utilized as living quarter at the time of the census”. And Mobile housing unit as “any type of living accommodation which has been made to be transported and occupied as living quarter at the time of census.”

In the census a Room was defined as “a space enclosed by walls reaching from the floor to the ceiling or roof at least to a height of two meters and has a size large enough to hold a bed for an adult. Except for bathrooms, toilets and passage ways, other rooms found in the housing unit were considered as rooms.” An Urban center was defined as a locality with 2000 or more inhabitants or administration capital (region,

zone or wereda) and localities in which urban dweller's associations are established irrespective of the population size.

### 2.3 Methodology

In this study the analysis is made for total urban areas at national and regional level and for 13 specific towns. The selection of the towns was based on two criteria: Towns with a population over 55 thousand in 1994 and towns, which serve as regional capitals. Towns like Addis Ababa, Awassa, Bahir Dar, Dire Dawa, Harar, Jijiga, Mekelle and Nazareth are not only regional capitals but also have a population well above 55 thousand. The other towns: Debrezeit, Dessies, Gondar and Jimma are selected because of their population size. Gambella town is selected because it is the capital of Gambella region (population is 18,263). Assosa town, though it is the capital of Benishangul Gumuz, region is not selected for analysis because the data collected for this town was not adequate for analytical purpose. Based on the data for the above stated towns and the total urban centers for the country as a whole and regional urban totals, a descriptive analysis on the stock of housing and access to housing amenities is carried out. Cross-sectional comparison using among regions and towns and time series comparison at country level and Addis Ababa (1984 and 1994) makes the major part of the study. The future housing needs are estimated based on the changes that occurred between 1984 and 1994 to household formation.

### 3. Main Results

#### 3.1 Housing Condition

According to the 1994 census the total number of housing units in urban Ethiopia, was estimated to be 1,482,950. Out of these housings units 96 percent were identified to be permanent and nearly three percent improvised. Mobile and other types of housing units contributed for less than one percent of the total housing units

Except for Somali (78 per cent) and Gambella (88.3 per cent) regions over 90 per cent housing units in all regions urban are permanent. In Gambella Region 10.2 per cent and in Somali 7.7 per cent housing units were improvised types. In Somali 13.1 per cent of the total housing units are mobile. The census revealed that, 98.34 per cent of Ethiopia's urban housing stock consists of non storied buildings, and only 1.6 per cent is made of multi-storied buildings. Of the non-storied buildings 55 per cent were of a detached type, while nearly 44 per cent are attached type.

55.7 per cent of urban Ethiopia's residential housing were less than 20 years old of which 20.5 per cent were built during 1990-94. The remaining 42.6 percent were built before 1994. Altogether residential houses are very new. The overwhelming majority (77.9 per cent) of housing units in Jijiga were less than ten years old in 1994. More over, 48.5 percent were built between 1990 and 1994. In general of the 55.7 per cent (804,915) non-storied detached housing units nearly one third (32.9) per cent were built before 1975 while one quarter (26.5 per cent) were less than five years old by 1994. Over 75 percent of the housing units in urban Gambella and Benishangul Gumuz and 67 per cent of the Somali urban housing were built during 1985-94, In Tigray over a quarter of the urban housing units were constructed between 1990 and 1994. On the contrary over 60 percent of housing in urban Harar and Addis Ababa were built well before 1974.

However, this does not necessarily imply that all are of good quality and up to standard. For instance, at country level, out of 1,482,590 urban housing units, almost 90 per cent ( 89.3 per cent) have walls made up of wood and mud ( locally known as chika house). Only 6.6 per cent have walls made up stone and cement, blocks/ bricks and cement.

Over 90 per cent of walls in the SNNP, Amhara, Oromiya and Benishangul-Gumuz are made up of mud and wood bamboo or others. Housing units in Dire Dawa (48.2 per cent) showed a relatively high proportion of walls built from block bricks and cement Addis Ababa with 11.3 per cent and Harari with 10.3 per cent follow at a distance. A negligible percentage of modern material is used in the construction of walls of housing units in the larger regions: in Oromiya (3.2 per cent), in Amhara (2.9 per cent) and in SNNP (1.97 per cent). Among the towns in Awassa, Bahir Dar, Debrezeit and Dessie town, where over 91 per cent of housing units have walls built from traditional materials i.e. wood and mud.

In general 82.9 per cent of the housing units in the total urban areas of the country are roofed by corrugated iron. Thatch follows at a wider gap (10.5 per cent). Wood and mud constituted 2.4 per cent, while concrete 0.9 per cent and bamboo a very negligible percentage (0.4 per cent). Associating housing age with major material used for the construction of housing units revealed the stagnation of the process of modernisation. It is amazing to observe that in the twenty years preceding the census use of corrugated iron for roof consistently decreased. It dropped from 93.9 per cent in older housing units (20+ years) to 64.3 per cent for the housing units built during the period 1990-94. On the other hand the use of thatch material for roof has increased significantly from 1.27 per cent for older housing units to 25.9 per cent for those built in the period 1990-94.

At a country level 88.9 per cent of the housing units have a floor made up of traditional materials of which 72.6 per cent is mud floor. Only 9.4 per cent of the total housing units enjoyed modern floor i.e. wood floor or plastic tiles. In Tigray, Affar, Amhara, Somali, Benishangul and Gambella over 80 per cent of housing units have mud floor. On the other hand Addis Ababa, which accounts 25 per cent of all the housing units in Urban Ethiopia has a significantly high proportion of floors with either wood or plastic tiles (24.4 per cent) followed by Debrezeit (16.3 per cent), Dessie (14.8 per cent) and Awassa (10.8 per cent).

Only 73 per cent of the housing units in total urban housing units have access to piped tap water, irrespective of the place where the tap is located. Housing units that obtained drinking water from protected well/spring amount 8.2 per cent, and those who obtained from unprotected well/river/lake/pond are 18.3 per cent. The proportion of housing units with tap piped water supply varied among regions. It ranges from 97.8 per cent in Addis Ababa to 38.4 per cent in Somali. On the other hand, 25.6 per cent households in Jijiga and 24 per cent households in Jimma drink water exposed to water borne diseases i.e. unprotected well or rivers. A sizeable proportion 10 and 11 per cent household in Bahir Dar and Mekele, respectively, are obliged to drink from open well or river.

Overall in urban Ethiopia 42.3 per cent of the housing units did not have any type of toilet in 1994. On the other hand only 5.5 per cent of the housing units enjoyed a flush toilet of which 3.5 per cent were private. A little more than half (51.1 per cent) of the housing units in all urban centers of the country have a dry pit (private or shared toilet). Among the towns 70 per cent housing units in Tigray 67 per cent Gambella and, 61.5 per cent Amhara suffer from not having any type of toilets

In general 65.4 per cent of the total all of Urban Ethiopian housing units have electricity powered lighting of which 40 per cent use a common electric meter. More than one quarter (25.8 per cent) of the housing units uses kerosene lamps. Over 95 per cent housing units in Addis Ababa and Harari have electric light. In Somali, only 20.2 per cent of housing units have electric light. On the other hand, nearly 60 per cent of households in Somali region get light from lantern and the same proportion in Gambella region get light from kerosene lamp. Similarly, over 40 per cent of housing units in Tigray, Amhara and SNNP regions suffer from the smokes that come out of the kerosene lamp. A sizeable proportion (30 per cent) of the housing units in Oromiya region share the same problem.

Jijiga town leads the kerosene lamp users (53.3 per cent), followed by Jimma (18.9 per cent), Bahir Dar (15.1 per cent) and Gambella (14 per cent). Mekele and Gondarn have a sizable proportion 12.8 and 10.3 per cent respectively.

One of the most common indicators used to describe living conditions is the matrix of crowding, which compares housing units divided into number of rooms, and households according to number of members. In order to evaluate the level of acceptability of housing density we have established thresholds, which divide the housing units according to whether they are adequately occupied, under-occupied and overcrowded. At country level, over 72% of housing stock in Urban Ethiopia do not have more than 2 rooms. The under-occupied housing units amount to 6.7% of the total, which corresponds to slightly less than 100,000 housing units. Adequately occupied housing units amount to 50.7% of the total according to variant 1 (one or more rooms occupied on the average by one to three persons per room), which corresponds to 752,382 housing units. If however, we apply variant 2 (one or more rooms occupied on the average by one to 2 persons per room), the adequately occupied housing units fall to 29.8% of the total, which corresponds to 441,699 housing units. And lastly, if we apply variant 1, the overcrowded housing units amount to 42.5% of the total, which corresponds to 630,709 housing units, whereas applying variant 2, the overcrowded housing units amount to 63.5% of the total, which corresponds to 941,392 housing units.

### **3.2 Demand For Housing**

The housing need assessment is the result of the combination of previously unmet housing needs and future housing needs. In Urban Ethiopia, 1,482,592 housing units and 1,771,911 households were registered, which is a surplus of 289,319 household units, equal to 16.3%. This figure reveals the dimensions of cohabitation.

Another measure of unmet needs arises from the evaluation of overcrowding. In that case we referred to two variants in variant 1 we have considered all the housing units with at least three inhabitants per room as overcrowded while variant 2 represents all housing units with at least two inhabitants per rooms as over crowded. At country level, variant 1 produces over 630,000 overcrowded housing units, equal to 42.5% of all urban Ethiopian housing units. If we apply variant 2, over 941,000 overcrowded housing units result, which corresponds to 63.5% of all in Urban Ethiopia.

If having a toilet is a prior necessity all the housing units without a toilet, given equal overcrowding, need to add a room to meet this requirement. Altogether, this means 657,592 rooms, which correspond to 42.3% of the total housing units. The decision to consider all housing units with walls made of traditional materials (that is, all except concrete, bricks and blockets) as under standard, and therefore to be substituted, dramatically increases the previous unmet need. In fact, almost 90% of all housing units, which corresponds to over 1,300,000 housing units, have been constructed with traditional materials (wood and mud, wood and thatch, reed and bamboo, stone and mud, stone and cement).

Future need is determined by the population increase with regards to rooms and by the increase in families with regards to housing units. Urban Ethiopia registered a population increase equal to almost 2.5 million between 1994 and 2000 (3.5%). Between 2000 and 2005 the increase, at Urban Ethiopian level, goes down to just over 2.2 million, equal to +23.2% (but this is relative to 5 years, not 6).

### **3.3 The Supply Side.**

Unfortunately, reliable appraisals of the construction industry's capacity do not exist. Up to now, no data has been collected to provide information on this sector in terms of dwellings and rooms, labor force employed, and its contribution to the national income. We can draw useful information from the census

about the age of the existing residential stock. The rate of increase of the housing units whose walls have been built with modern materials during the period 1980-84 and 1985-89, are quite high (60.6% and 51% respectively). In this case the data, even though they do not include demolitions, are a valid indicator of the building capacity/housing output, because they have been erected with much longer lasting materials. Nevertheless, during the last 5-year period (1990-94), there is an unexpected drop (-2.7%) in the level of construction, compared to the previous five-year period.

#### **4. Conclusions and Recommendations**

The descriptions and analyses have brought to light a general situation characterized by substantial qualitative and quantitative shortcomings. A preliminary question that must be taken into consideration is that of setting up an adequate system of statistical data on construction, in particular regarding house building. Currently, the data regarding housing supply, with its related characteristics such as size, services, ownership, age, etc., are only gathered during the demographic census, which is not done frequently enough to provide thorough and timely information, on which to base planning projects.

A large part of the population of Urban Ethiopia lives in housing conditions which are below the internationally set or suggested standards. Most of the housing units have poor type of walls (roof) and floor. Access to necessary housing facilities like water, toilet and light are in most regions and towns well below satisfactory. More over, the distribution of these scarce services is uneven.

A first indicator of the hardship of living conditions is obtained from the comparison of the number of housing units with the number of households. It shows that 16.3% of all resident households in Urban Ethiopia, equal to approximately 290,000 households, cohabit. The objective to pursue is to reach a ratio of one housing unit per household, without cohabitation or other forms of interference in the fundamental right to privacy.

The crowding matrix provides a second indicator of the hardship of living conditions. It shows that, at Urban Ethiopian level, the overcrowding index - calculated by comparing households, divided according to size, and housing units, divided according to number of rooms - is equal to 2.3. There are over 630,000 (equivalent to 43% of the total) housing units with an overcrowding index equal to 3 or more inhabitants per room, while over 941,000 (equal to 63% of the total) have two or more inhabitants per room.

The accepted international standard is of one person per room. Given the current conditions, it would be absolutely unrealistic to aim for this. What can reasonably be aimed at is to eliminate overcrowding consisting of three or more inhabitants per room.

If we turn our attention to the living conditions with regard to essential services (toilet, tap water, electricity etc.,) the data of the 1994 census describe a general situation of deficiency. For example, only the housing units without an internal toilet amount to almost 630,000 units. In order to achieve the objective of providing all housing units with this service (overcrowding index being equal) it would be necessary to construct the same number of rooms.

Over 1,300,000 housing units, out of a total of less than 1,500,000 (89%), have walls, which are constructed with traditional materials. In a prospect of modernization, which pursues housing policies, which aim to achieve international quality standards, the entire traditional housing stock would have to be substituted by constructions built with modern materials (bricks and cement).

According to the population projections, Urban Ethiopia will register the formation of approximately 75,000 new households per year. This is also the total amount of the demand for new housing, irrespective of the need to meet past requirements quantitatively (cohabitation and overcrowding) and qualitatively (services).

Estimates of the building activity reveals that between 1990 and 1994, an average of about 60,000 housing units per year were constructed. A figure not far from the 75,000 requested. Actually, if the aim is to raise within reasonable terms the average level of living conditions in Ethiopia, the new housing units to be put on the market should be more than the number of newly formed households. This is in order to reduce the inadequate stock, with more houses built according to the canons of modern residential buildings. Unfortunately, the housing units built with concrete walls during the period 1990-1994 were an average of only 3,5000 per year, registering a decrease compared to the previous five-year period.

The effort to be made is enormous and will require huge investments. But if carried out well, this necessity can be transformed into an opportunity, which may accelerate the country's industrialization. One is the fact that it practically doesn't rely on imports for its raw materials and machinery. The other is it is labor-intensive, which means that it can create more jobs due to the possibility of setting up a vicious circle of investments-salaries-consumption-investments, which would in turn accelerate industrialization.

The crucial factor is the inflow of funds required by this process. Of course, the state has a fundamental role to play. Not only through direct intervention - which is essential and must be done on a large-scale but especially as a planner and regulator of the entire process. As a planner it must guide the intervention by realistically deciding whom, where, and when to build. As a regulator, it should on the one hand be responsible for coordinating procurement of building areas and the construction of primary and secondary infrastructures in them, and on the other hand for raising the necessary public and private capital through appropriate financial and credit maneuvers.

Part of this capital must come from the state budget (by means of direct intervention such as incentives and facilities for private investment). The other part by involving the workers in production projects, for whom the housing units are being built and making them pay a levy from their salaries. Other capital can be raised by attracting private capital - from large and medium sized real estate companies, as well as from the smaller savings of private citizens - to be invested in the residential housing market, through fiscal and credit incentives.

WORK STATUS AND UNEMPLOYMENT  
IN URBAN ETHIOPIA

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*Resume for the Dissemination Seminar*

**1. Introduction**

The modernisation of an economy implies paramount changes in its labour force. The size, location, and structure of the workforce progressively lose the indefinite status connected to the rural way of life, where biological and working life nearly coincide. In the modern sector, instead, people are either in or out of work. The study of working status and unemployment is hence meaningful only where the prevalent economic framework is not traditionally rural.

In developing countries, the combination of urbanisation and economic activity define a real labour market in their urban centres as opposed to the countryside. Variety, mobility, and uncertainty characterise the labour market in towns. Different occupations co-exist: jobs range from traditional activities, very often carried out on personal initiative following the market demand for commodities and services, to the professions in the civil service or the army, where a formal entrance, career and exit are provided. In between we find a variety of activities and jobs which entangle different kinds of labour relations and contracts. These activities often differ in regard to certainty and duration of work. The typical dynamism of a fast changing socio-economic environment induces a high variability in the quantity and quality of demand for work. This can also create pockets – even quite large ones – of unemployment, while people are waiting to find their first job, or to take up the positions desired, or because they have been made redundant, or while they are between jobs. The international literature often draws a sharp divide between a ‘formal’ and ‘informal’ sector, mainly referring to the ‘protection’ assured to the worker in what regards minimum wage, health, safety, and other benefits. Many of the informal jobs are casual, insecure and irregular, carried out as ‘marginal activities’ in the field of services to persons or properties. Employment, underemployment, and unemployment are work statuses which can overlap frequently in reality as well as in the worker’s perception.

The changing structure of households and families following urbanisation can also have important effects on behaviour in the labour market. Work decisions made by individuals and family nuclei imply a greater dose of risk since they are less protected by the reference community (extended family, clan, village, etc.). In compensation, income earned by work has a more limited distribution, almost entirely within the worker’s own family nucleus. It is therefore easier to perceive the connection between work done, income earned and the resultant individual and family well-being.

The presence or absence of women in the labour market depends on a series of cultural, economic and social factors that vary according to origin, level of family objectives as well as on a series of objective surrounding factors. However, it is above all in regard to the children that choices have to be made between their early entry into the labour market and their deferred entry in order to attain a higher educational level and yearn for an upward mobility in the labour market.

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The qualitative diversification of supply through education could in theory better match demand by offering different levels and specialisations. Nevertheless, higher school enrolment can at least temporarily increase youth unemployment and its continuation into older age groups. There are various reasons for this: the inadequacy of school curricula in relation to the labour-market needs; the poor qualitative development of demand; and the possible dyscrasia between the jobs and working conditions on offer and those hoped for as a result of better educational qualifications. In a family context, job-seeking by educated sons and daughters could be prolonged over time and as they age in inverse function of their overall number and in direct function of family income.

The specific objectives of our study were:

- i) To describe the trends and changes which occurred in the working-age population, labour force, and employment;
- ii) To examine the socio-demographic factors that affect the participation of the urban population in the labour force, as well as those which contribute to the high level of unemployment;
- iii) To estimate the economic participation rates and reveal differences by sex in major urban centres, as well as to examine the extent and differentials of unemployment there;
- iv) To draw conclusions from the past and ongoing experience in order to make recommendations for programmes geared towards enhancing employment creation in the country.

## **2. Data and methods**

Focused on 1994 Census data, our report deals with work and unemployment in urban Ethiopia at that time. Comparisons between 1984 and 1994 censuses are made with caution because of the important changes in the economic and political pattern occurred in the decade. Wherever possible, data from the 1999 Labour Force Survey (LFS) are also used in order to update the report. In general, the censuses and labour force surveys conducted in Ethiopia were framed as much as possible to conform to the recommendations in the international standards. In particular, in the urban areas the 'current status' approach was used, while in the rural areas the 'usual status' approach was used; unemployment was taken to follow more or less the relaxed form of the definition of unemployment, since both the censuses and the data actually used from the 1999 LFS define unemployed people as those persons who were not working during the reference period, but were available for work.

For the study of work status and unemployment in urban Ethiopia, three categories of urban centres were formed. They are 'selected urban centres', 'Addis Ababa' and 'total urban centres'. The selected urban centres consists of 30 towns selected by considering a combination of criteria: size as of the 1994 census, and local importance, specifically for small regions. Among the 30 towns, 27 of them have 20,000 and more inhabitants, while the remaining 3 towns were selected to represent the small regions which do not have towns with at least 20,000 inhabitants. A number of towns over 20,000 were dropped not to over represent some parts of the country. For this study, Addis Ababa is treated separately, considering its dimension and diversity in many aspects as compared to the other urban centres.

## **3. Main results**

The comparisons between the 1984 and 1994 Censuses and the 1999 LFS are only partially useful in interpreting trends regarding work and work-related items. The profound changes in the economic and political background the country has undergone in this fifteen-year period are reflected in the changes of the relevant aggregates, but the 'statistical mirror' may have been warped by the milieu or the events so that data may not always describe the real situation.

The incidence of contingency is particularly evident on unemployment, both in its low rates at the 1984 Census and the dramatically high rates at the 1994 Census. The political and economic transition that Ethiopia and especially Addis Ababa have undergone in early '90s largely justify the latter ones, making any in-depth analysis too much specific to that period. Nonetheless, differences in time and space are identifiable in the following main facts:

- i) The working-age population (15-64) is increasing fast in towns and especially in Addis Ababa as a percentage of total population. We can look at this fact as the 'workforce bulge' mentioned by the UNFPA Report of 1998. Low levels in young dependency ratios as well as the younger age-structure of the working-age population confirm this interpretation showing the large labour-force potential available by the economy in the capital city and the rest of towns;
- ii) The labour-force participation rates are lower in urban areas and especially in Addis Ababa in comparison to the rest of the country. Differences are important by gender (lower participation of women living in towns, especially at earlier dates) and by age (lower participation both at entry and exit ages, with typical patterns by gender);
- iii) The labour-force participation of women living in urban areas is increasing, so that they are approaching men in levels and patterns. We wonder how much the 'masculinisation' of the female labour supply is due to their increase in education, in the acceptability, by the society, of women's economic activity, or in the income needs of the households;
- iv) Unemployment is concentrated in urban areas and especially in Addis Ababa, where real labour markets operate. The possible scaling of unemployment levels according to the demographic dimension or local importance of the urban centres might confirm the ongoing parallel process of urbanisation and modernisation of labour in Ethiopia;
- v) The first-job seekers contribute overwhelmingly to the total unemployment. The 'workforce bulge' made up by a very young labour supply finds difficulties in entering the labour market successfully either because of their characteristics (this fact might be especially true for young women) or the inadequacy of the demand from a quantitative and qualitative point of view. In the capital city a 'late' unemployment is also present, probably because of the undergoing changes in the private sector and the civil service;
- vi) The higher and increasing unemployment rates following the higher pressure of young and middle-aged women on the labour market in Addis Ababa. This fact suggests the interpretation that the increased labour-force participation of women is caused mainly by the households' necessity of earning more money because of either poverty or increasing consumption needs;
- vii) The employment crisis undergone in correspondence of the 1994 Census. The crisis was particularly strong in Addis Ababa where more than one third of the workforce was seeking work. The specific difficulties in that transition period can justify those values, but the following recovery seems not to be able to reduce unemployment in the capital city.

Possible connections between some demographic and socio-economic factors and either the labour-force participation or the unemployment were highlighted through an in-depth, one-by-one analysis of some socio-economic characteristics of the workers (marital status, relationship with the head of the household, ethnic group, religion, education, migration status, and household economic status) together with their demographic ones. The analysis was limited to urban areas at the 1994 Census.

Marital status plays an opposite role respectively in male and female labour-force participation rates, at least in central and older ages. Never-married men show a significantly lower labour-force participation, while this is striking different in levels and pattern for the unmarried women when compared to the much lower and relatively flat curve for the currently married women. Patterns and levels for the never-married men and women are similar in younger ages, showing a similar scheme of entrance of the young generations into the labour market.

The headship role in the household forces men and women to be economically active, as well as being economically active is a pre-condition to the family formation, at least for the great majority of men. Differences are remarkable especially for women, so sketching a twofold urban society, where wives are mainly housewives or, anyway, they are not formally engaged in labour activity, while the women who, married or unmarried, are head of a household work in a much larger proportion. The differentials in unemployment rates by the relationship with the head of the household confirm that youth unemployment is a matter of the members other than the head. This could partially alleviate the impact of such high unemployment rates in 1994 urban areas, since the burden was largely shared within households where at least their head actually worked.

Female labour-force participation rates in urban Ethiopia are inversely related with the number of children living in the household. Women with a highly controlled fertility show participation rates more similarly shaped as the male pattern: is this the hint of a new emerging urban class in which women have reproductive and work behaviours similar to the MDCs' women?

The differences in labour-force participation or unemployment by ethnicity or religion are not very important. Only a more marked division of gender roles seems to characterise Muslims and the ethnic groups where they prevail. Also typical trades or professions of some ethnic group seem to affect levels and shape of the labour-force participation and unemployment.

The labour-force participation patterns by education are almost obvious, but the entry pattern into the labour market is surprisingly similar for all the educational levels other than 'illiterate', at least for men, highlighting the not-negligible presence of idle young people neither enrolled in schools nor engaged in work: this makes us wonder if they actually worked, at least casually, in the informal sector. The youth unemployment rates by educational level induce us to hypothesise negative returns to education since unemployment rates in early ages are the higher the higher education men and especially women have.

Male recent migrants show higher labour-force participation rates at any age, especially at young and old ages. The corresponding women are more economically active only at young ages, probably because of the very poor qualification the older ones can offer on the labour market and the traditional role they have in their families. Non migrants, on the contrary, have a later entrance into the labour market. This proves their possibility to go on studying or, anyway, to wait for a suitable job. This is confirmed by their higher youth unemployment that they can bear because many of them still live at their parents' home, depending on the other household members' revenues.

For men in urban Ethiopia, a better well-being corresponds to a late entry into the labour market and an early exit from it. Women belonging to the better equipped households show a much higher labour-force participation rates in young and middle ages. The higher youth unemployment is borne more easily and longer by people belonging to better-off families.

Starting from this basis and using logit-regression models we 'weighted' the most important differential factors in the complex relation they keep with work condition and unemployment. We limited the analysis to the relationship in the household, age, and educational attainment, since various attempts with more complex models have not yielded more satisfactory results.

The previous descriptive analysis is confirmed. The position in the household plays a dominant role for both the economic activity and unemployment. Male household heads have a significantly higher labour force participation and a significantly lower risk of unemployment. Illiterate and higher educated persons have higher participation rates than persons with 1-8 years of schooling. The pattern of 'risk' differs only slightly in the different urban settings: in most cases a continuous change for the three urban categories can be observed. All age groups have a higher unemployment risk than the 25-34-years reference group. In the case of educational attainment, the risk is lower for illiterate persons and higher for both categories with more years of schooling than the reference category (1-6 years of schooling).

The household dimension is an important perspective to appreciate the familial and social impact of labour difficulties as well as the possibility of social change and mobility. For this reason we analysed activity and unemployment also at household level. We limited the analysis to Addis Ababa in 1994.

While participation rates decline with an increasing household size, the percentage of unemployed increases only slightly. For the age group entering the labour market (10-24 years) unemployment seems to be a constant threat in disregard of the size of the household. The student presence increases along with the increasing household size: permanence in the household allows a higher education and/or the education of a household member is regarded as an investment in human resources in the interest of the entire household.

Labour-force participation and unemployment was also analysed for a set of 30 towns chosen because their demographic dimension and/or their local importance. Some important differences emerged according to the role played by the town in the administrative system, as well as to the function the centres perform in their territory or in the national networks. However, local drifts seem to prevail, due to social and cultural specificities and, somewhere, to problems in data quality.

#### **4. Conclusions and recommendations**

Being Ethiopia among the countries with a rapidly growing population coupled with a still backward economy the proper management and efficient utilisation of its work force is essential. In this respect, the capacity of the economy in absorbing the potential labour force needs to be monitored regularly, and appropriate employment policies should be adopted consequently.

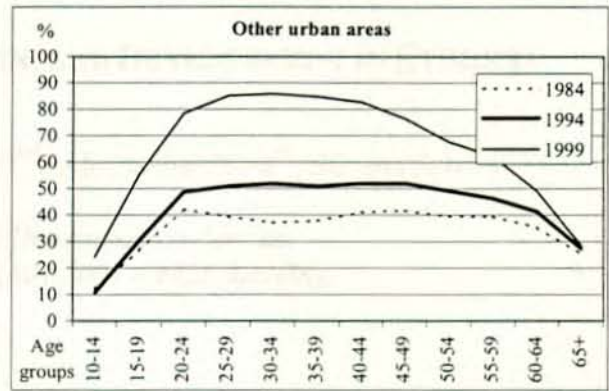
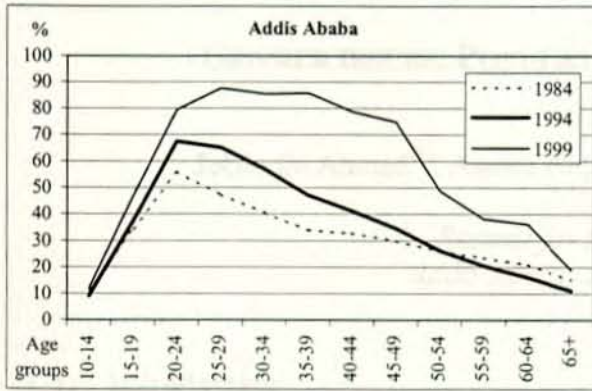
Levels of unemployment of a country are widely used as an overall indicator in evaluating the current performance of its economy. The problem of unemployment is a global issue: however, in developing nations it is getting worse mainly due to the unbalanced relationship between the rate of economic development and the rapid population growth. Ethiopia is no exception, and its recent urbanisation is aggravating the problem because of the urban migration of people with no real working prospects, who often slip into some form of underemployment or remain idle.

The evolution of work and employment between 1984 and 1999, especially in urban areas and the capital city must be connected to the important changes which occurred in the political and economic regimes during this period in Ethiopia. The troubled process which has driven the country from a state-controlled economy to a market economy brought to light the inconsistencies between labour demand and supply and made unemployment emerge. Apparently, the labour market moved from equilibrium to disequilibrium; actually, at least from the statistical point of view, it moved from a static and formal image to a dynamic, contrasted, and more realistic one.

The specificity of the historical period may partially justify some results of our research. The important changes in the economic structure and the reductions of the employees in the public sector, which occurred in the '90s, probably make the entry into the market worse for people seeking the kind of jobs traditionally carried out by educated workers. The transient situation, instead, with so many insecure and low level jobs, may have favoured the employment of illiterate people and of those with low educational levels.

The labour absorption capacity of the modern sector in Ethiopia is still very low, while the number of job seekers is growing higher each year. Currently, there is a high and ever growing demand for employment opportunities in the country that far exceeds the supply. Creating sufficient job opportunities to eliminate or mitigate the problem of unemployment in urban areas is becoming a formidable challenge to be faced by policy makers. In a prospect of globalisation, however, this cannot be considered as a local challenge, both because of the problems of underdevelopment and survival it involves for the population and the push to emigrate abroad it may arouse.

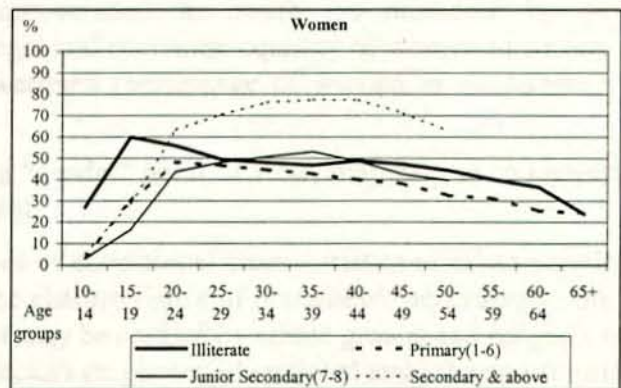
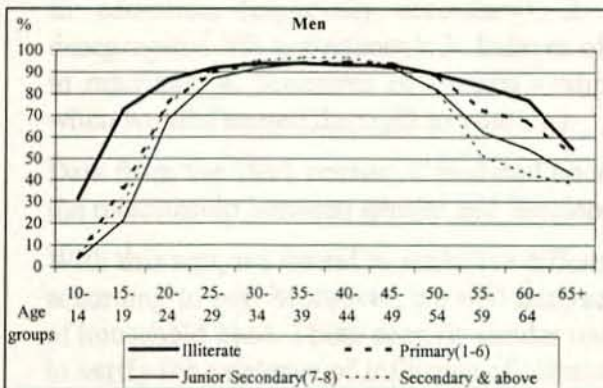
**Female Labour-Force Participation Rate by Residence: 1984, 1994, and 1999**



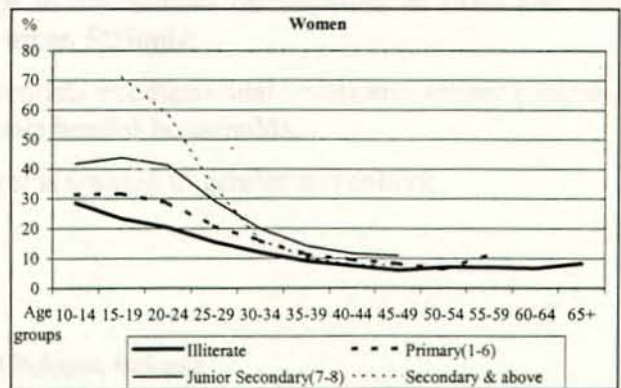
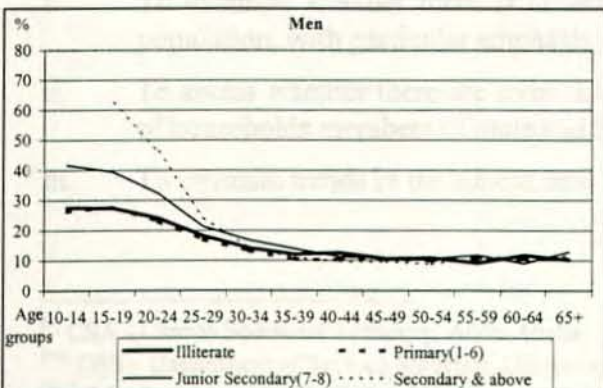
**Unemployment Rate and Percentage Seeking First Job by Sex and Residence: 1984, 1994, and 1999**

	Unemployment rate			% without work experience	
	1984 Census	1994 Census	1999 LFS	1984 Census	1994 Census
<b>Men</b>					
Addis Ababa	8.2	30.7	28.0	76.9	76.7
Other urban	6.1	15.5	13.6	66.7	74.8
Whole country	1.0	2.8	4.3	70.5	75.5
<b>Women</b>					
Addis Ababa	14.3	41.5	48.1	84.6	90.9
Other urban	7.3	15.9	27.6	73.8	83.4
Whole country	1.4	3.1	12.5	75.9	85.6

**Labour-Force Participation Rate by Educational Attainment: Urban Areas in Ethiopia, 1994**



**Unemployment Rate by Educational Attainment: Urban Areas in Ethiopia, 1994**



## GENDER ISSUES, POPULATION, AND DEVELOPMENT IN ETHIOPIA

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*Resume for the Dissemination Seminar  
Addis Ababa, 10 July 2001 – ECA Building*

### 1. Introduction

Gender is a social construction and codification of differences between the sexes and social relationships between women and men. Historical, ideological, cultural, religious, ethnic and economic factors - that can be changed largely in the course of time - influence the society's look at gender by political, economic or cultural influences.

It is well known that women's status – depending on many aspects and many female roles – is a multi-dimensional concept and has a complex influence on the demographic behaviour.

In fact, in many developing countries, and among those in Ethiopia, gender issue has become an important area of concern in national and sub-national economic development. Understanding the concept of gender is essential to our understanding of how development processes affect men and women, girls and boys, in different ways. It is not easy to outline the gender profile of a Country, since there are several aspects that compose the general framework of the relationships between socio-economic and cultural roles of men and women. There are different dimensions to gender inequality and it is possible to consider four different types of measures: 1. Access and achievement in education (especially secondary); 2. Improvement in health (as measured by gender desegregated life expectancy); 3. Indexes of legal and economic equality of women in society and in marriage; 4. Measures of women's empowerment (percentage of women in parliament, year when women earned the right to vote ....).

Data from the 1994 census, if analysed under a "gender" point of view, may help us to understand the relationship between gender and development.

With this aim, we intend to study the differences of educational characteristics of urban population according to sex. Moreover, we will analyse the characteristics of households according to the sex of household head. These specific gender issues may be studied by ethnic groups and religion, so as to verify the existence of influence of cultural factors on gender educational and job opportunities.

This study has the following specific objectives:

- i. To examine whether there is difference in educational participation of male and female population, with particular emphasis on urban Ethiopia;
- ii. To assess whether there are some differentials in educational levels and school progression of households members of male and female headed households;
- iii. To estimate trends in the educational level according to gender and cohort;

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- iv. To evaluate the possibility of analysing the labour force participation of the more educated women living in Addis Ababa, in order to understand whether job inequalities by gender persist or drop out through the diffusion of education.

It is then important to look at a broad range of indicators when considering the issue of women's status in society and gender differences. In the paper we describe a synthetic picture of the relative situation of the sexes in Ethiopia, starting from the current official position of Government (with a brief reference to the recent history) represented by laws; then we consider education, health and work, as indicators of the multidimensional concept of gender profile.

## **2. Data and methods**

First of all, we examine the "public and political" status of Ethiopian women to compose a detailed picture of the situation. To this aim, we consider information about the new constitution (1994), the contents of 1993 National policy on Ethiopian women and the Civil Code contents (Civil Code, 1960; Constitution of the F.D.R. of Ethiopia, 1995). Until 1993, when the National Policy on Ethiopian Women was introduced, a policy specifically related to the affairs of women had never been implemented.

However, the Civil Code articles are in some respects in contradiction with the Constitution in relation for example to marriage and succession rights.

After having introduced an examination of the trend of the gender differences according to secondary evidence, we analyse individual data deriving from the Census carried out in Ethiopia in 1994, using firstly descriptive methods and then regression models.

## **3. Main results**

### *Educational gender differences*

Education implies literacy, knowledge, and exposure to new ideas and can provide access to improved employment opportunities. It may have influence on the health of individuals and of their families and on their participation in community life.

The percentage distribution of the population aged 5 years and over who are attending school at the time of the census classified by single age reveals that the level of participation to school system at age seven (the age at which education officially begins) is only 9.1 percent, that is 90 percent of the children are out of the school system. In the urban and rural areas participation to school system at age seven is 52.3 percent and 3.3 percent, respectively. In general, enrolment is higher for males than for females in almost all ages. The difference between male and female enrolment is found to be more pronounced as age advances. The higher value of schooling participation proportion is found at age 11-14 in urban areas (over 70 percent) both for males and females. In the rural areas males present values reaching 15 percent at 11-12 years while females remain always under 10 percent.

### *Literacy*

Literacy is a vital skill by which individuals can expect to fulfil the social, economic and political demands of life and to cope with basic routines of mainstream contemporary society. It is a critical factor in improving conditions of life as it ensures access to knowledge.

As other indicators concerning education, the literacy rate in Ethiopia is very low. Close to one fourth (23.4 percent) of the country's population stated that they are literate. This rate is lower than values for some of the developing countries such as Mali (32 percent), Chad (29.8 percent) and the Sudan (27.1 percent) for 1990.

### *Economic activity*

This aspect of gender profile is the most difficult to define in the context of development, most of all because of the presence of women's unpaid work, common in rural areas throughout Africa, in particular in Ethiopia. Among the population aged 10 and over, more than 25 millions or 72.4 percent were reported to be economically active: males 81.9 percent and females 62.8. As in most of the African countries, however, employment may not necessarily lead to women's empowerment. Employment in the informal sector is often disregarded, and thus it does not contribute to women's power; the crucial issue for women's empowerment is the controls over the money she earns.

### *Health and nutrition*

Health outcomes in Ethiopia are poor but, according to United Nations and World Bank estimates, we can show that, at least by these indicators, females do not seem disadvantaged with respect to males. Infant mortality rates (1995-2000) rise to 109 and 121 for girls and boys respectively. In the period 1980-1995, the female probability of dying between the ages 15 and 60 has decreased from 401 to 352 ‰, while the male probability has reduced from 491 to 442. On the other side, Ethiopian women present one of the lowest proportion both of pregnant women receiving prenatal care and of deliveries attended by skilled health operators in the African context. Strictly correlated with the low status of women in Ethiopia is the very high level of estimated maternal mortality ratio, due in part to food taboos for pregnant women, early marriage, and birth complications.

### *Regional, ethnic and religious differences in gender indicators*

The data show a great heterogeneity among the regions in the main demographic indicators. Let's have a look at fertility level: a value of TFR at the generation replacement level, approaching towards the characteristic of the western societies, is found in Addis Ababa (2.09 in the urban context), while high levels of fertility, over 6.5 children per woman as the national average, are found in Tigray, Amahra, Oromiya, Somalia and Southern Nations. Most of these regions are also characterised by a higher mortality level measured by life expectancy at birth and infant mortality rates.

According to Census estimates, a great variability is also evident in the infant mortality levels both from a geographical point of view and from a gender perspective. In particular, we can note that nomadic people (Affar and Somali) present a marked female disadvantage in the survival status during the first period of life.

In the whole country, and also in the various regions, school attendance is higher for boys compared to girls, and the rural context is characterised systematically by a very high proportion of females that never attended school.

### *Urban context and gender differences: education and labour force participation in Addis Ababa*

The literacy rate in Addis Ababa is around 89.3 percent among males, and 76.5 percent among females. The proportion of the population who have attained educational levels of grade 9 and over constitute 39.8 percent among males, and 27.6 percent among females, while those who have educational levels of beyond grade 12 constitute 9.4 percent among males, and 4.5 percent among females.

As in the whole country, in Addis Ababa females are observed to have lower levels of educational attainment compared to the males. This difference is observed to increase at higher levels of education. For every 10 literate males there are 9 literate females, while for every 10 males with education of grade nine or higher there are only 7 females. Moreover, among those with education of beyond grade 12, there are only 5 females for every 10 such males.

The second dimension of gender differences and of status of women that we consider in this analysis is represented by work and by participation in the economic activity.

Among the population aged ten years and over, 53.1 percent were reported to be economically active and 46.9 percent economically inactive. The distribution of the economically active population by sex shows that among the male population aged ten years and over, 65.2 percent were economically active, while in the case of females it was 41.9 percent.

Economic activity rates of women and men by age group and sex in Addis Ababa show that the balance between the active and inactive females was reversed, and more inactive females were reported than active ones. This could happen because, unlike the rural areas, where the housewives are usually engaged in some form of agricultural activities during the years, in the urban part, apart from those engaged in some regular job, most wives stay at home.

In all age groups the activity rates for women are lower than the corresponding rates for men. We can find that the only exception is represented by age 10-14, where the rate for girls is higher, that is 9.4 percent for females against 9.2 percent for males. Overall activity rate for females reaches its peak at an early age (20 – 24 age group), compared to that of males (35 – 39 age group). The proportion of females engaged in the urban labour market probably declines in the higher ages due to the effect of marriage and motherhood.

#### *Schooling and working in Addis Ababa: the role of gender in the determinants of socio-economic behaviours*

To determine the factors that may influence school attendance and entry into the labour market in Ethiopia, we perform some models concerning individuals living in Addis-Ababa.

In particular, to study the determinants of school attendance, we have chosen people aged 10-24, while the reference group for outlining factors of work is represented by people aged 15-49.

As it concerns schooling, the hypothesis we want to verify (by logistic regression models) is that – net of influence of other individual characteristics – gender may still represent a factor that we can assume as discriminant of school attendance.

The results (reported in the following table) confirm our hypothesis, that is – all other things being equal – sex discriminates behaviour with respect to school attendance and females have a lower probability to go to school, in comparison with their male counterparts, of around 12-13%. (Table 3.1).

Referring to information on economic activity in relation to population aged 15-49, we want to verify our hypothesis, that being female depresses the propensity to work, or to participate in the economic activity. Sex is a very important determinant of economic activity (see the following table). Women have a lower “probability” (equal to 42% of men) to participate in the work market. Also marital status represents an influencing factor because never married people work, in average, 2 times than ever-married ones.

We have included in the model also a variable measuring literacy. We observe that even though literacy has a positive relationship with economic activity, it is not so important to determine the “risk” of working. (Table 3.2).

We have also constructed the model with a variable measuring the higher grade of schooling attained: a higher level, has a positively significant effect on economic activity, and does result important enough to determine the “risk” of working. (Table 3.3).

In conclusion, we report in the following table the results of the model where only female population living in Addis Ababa is considered. As dependent variable we consider economic activity while among the independent variables age is the control one and marital status, grade of schooling, religion and parity (children ever born) are the explanatory variables. (Table 3.4).

Marital status has the higher impact: never married women present a higher probability to participate in the work market. Religion is not significant even if not Islamic women show a higher propensity to work, all other variables included in the model being equal. What has also been observed is the negative relationship between work participation and fertility: the higher the number of children born, the lower the propensity to work. It is interesting also to observe the impact that the grade of education seems to affect work: all the categories considered have a positive effect compared with that of primary level: illiterate women have a risk of working 40% higher compared with that of women with a primary level of education; in the same way, a secondary level is associated with an odds ratio equal to 1.6; the risk of working in relation with the higher level of education is five times higher with respect to the reference category.

#### **4. Concluding remarks**

In our work we have analysed gender differences in education and, in some extent, in work market participation in Ethiopia. Obviously gender education and labour differences are interrelated. The lower level of female schooling enrolment causes the lower status of women in the labour market, reducing professional opportunities. Discrimination is most acute in rural areas, where 85 percent of the population lives. In urban areas, women have fewer employment opportunities than men do, and the jobs available do not provide equal pay for equal work.

In conclusion, the data confirm for Ethiopia that the more important question concerning population and development in developing countries by a gender point of view is summarized in this way: to what extent gender inequality, particularly gender inequality in education and employment, has a negative impact on demographic behavior, conditioning demographic transition from an old-type regime to a modernized one characterized by a low level of mortality and fertility and to what extent this relation affects growth and development. It appears that gender inequality in education does impede economic growth. It does so directly through distorting incentives and indirectly through its impact on investment and population growth.

Gender inequality in education has large and significant effects on fertility and child mortality. Since reduced fertility and child mortality (and, conversely, expanded longevity) are among the most important constituent elements of well-being, these findings may be at least as relevant for the well-being of people in developing countries as the findings regarding economic growth (which is just one means to generate greater well-being). In fact, it appears that promoting gender equity in education and employment may be one of those few policies that have been termed "win-win" strategies. Gender equity would further economic prosperity and efficiency, promote other critical human development goals such as lower mortality and fertility, and it would be intrinsically valuable as well.

From a principle point of view, in Ethiopian laws and in governmental socio-economic programs formal education is viewed as fundamental to individual modernity and to the psychological will to adopt contraceptives. Education is considered an important instrument to improve women's ability to resist subjugation and to acquire greater power in decision making. Education provides women with a wider array of general information and greater access to modern, effective contraceptive methods. Concomitantly, it reduces the potential gain in status and respect associated with high fertility throughout the society.

Women's employment is considered an important factor in enhancing their status. Working women, particularly who earn cash incomes, are presumed to have greater control over household decisions, increased awareness of the world outside the home, and, consequently, more control over reproductive decisions. Paid work also provides alternative satisfactions for women, which may compete with bearing and rearing children and may promote contraceptive use.

In front of the principles listed above, the Ethiopian situation is still at a very critical stage in the whole population and only in the younger generations Census data show an improvement in women status, improvement witnessed by a lower gap in schooling enrolment, even if the secondary level seem still precluded to most of the girls.

Regression models where the dependent variable measures the propensity to be enrolled in the highest levels of schooling, confirm that school is strongly influenced by sex and marital status; the socio-cultural context represented by Islamic religion confirms its important role in determining the “risk” not only to frequent the school, but also to attend a high grade of schooling.

**Table 3.1 - Logistic model of school attendance, people living in Addis Ababa and aged 10-24, 1994 Census**

Variable	Reference category	Beta Coefficients	Standard Error	Exp (Beta)
Marital Status	Ever married	1.2572	0.0132	3.5156
Sex	Male	-0.1331	0.052	0.8753
Religion	Islamic	0.7661	0.0076	2.1514
Age	Age at census	-0.3216	0.0008	0.7250
Intercept		3.9606	0.0206	

**Table 3.2 - Logistic model of economic activity, people living in Addis Ababa and aged 15-49, 1994 Census**

Variable	Beta Coefficients	Standard Error	Exp (Beta)
Age	0.0808	0.0007	1.0842
Sex °	-0.8632	0.0089	0.4218
Marital status °	0.7222	0.0126	2.0590
Education: Literacy*	0.0491	0.0133	1.0503
Intercept	-1.5780	0.0291	

° Reference categories: sex = male, marital status = ever married; \* Ref. category = Illiterate.

**Table 3.3 - Logistic model of economic activity, people living in Addis Ababa and aged 15-49, 1994 Census**

Variable	Beta Coefficients	Standard Error	Exp (Beta)
Age	0.0846	0.0008	1.0883
Sex °	-0.7975	0.0090	0.4504
Marital status °	0.6384	0.0130	1.8935
Education: Grade 9+*	0.3485	0.0090	1.4170
Intercept	-1.7479	0.0267	

°Reference categories: sex=male; marital status=ever married; \* Ref.category =grade 0-8.

**Table 3.4 - Logistic model of economic activity, women living in Addis Ababa and aged 15-49, 1994 Census.**

Variable	Beta Coefficients	Standard Error	Exp (Beta)
Age	0.0817	0.0012	1.0852
Marital status °	0.5883	0.0177	1.8010
Religion °	0.0022	0.0200	1.0022
Children ever born	-0.2739	0.0041	0.7604
Education: grade completed *			
Illiterate	0.3973	0.0168	1.4879
Secondary	0.4946	0.0139	1.6399
Higher	1.6008	0.0322	4.9569
Intercept	-2.2266	0.0370	

° Reference categories: sex = male, marital status = ever married; \* Reference category: primary.

***STUDIES IN DEPTH FROM THE 1994 POPULATION AND HOUSING CENSUS IN ETHIOPIA***

*Ethio-Italian Multi-Bi Research Project ETH/92P01*

**POPULATION AND ENVIRONMENT IN ETHIOPIA**

**By**

**Carla Bielli, Gezu Berhanu, Amare Isaias, Arianna Orasi**

*Resume for the Dissemination Seminar*

*Addis Ababa, 10 July 2001 - ECA Building*

**Introduction**

The United Nations two conferences, respectively: on Environment and Development, held in Rio De Janeiro in 1992 and on: Population and Development, held in Cairo, 1994, make the time to start when researchers must begin to explore systematically the linkages between population and environment through data collection. The statements and the exhortations coming from these important planetary meetings stress a revolutionary change in thinking about the world development. For the first time in history, the consciousness is taking place that almost all of the world's people are bound together in a global system.

A good point to start is that of sharing, between developed and underdeveloped countries, responsibilities and interests to improve and preserve the natural sources of welfare existing in the environment. This goal contains both the symbolic and the pragmatic values of the challenge: the symbolic one consists in the emphasizing the convergence of interests, the pragmatic one consists in the indirect suggesting to go beyond the traditional market-oriented economic dualism. Special attention must be spent in order to preserve the specificity of underdeveloped countries, poor in terms of economic performance, but rich in terms of natural resources in spite of their being wildly pillaged. Often people living in underdeveloped countries constitute important qualification of mankind-diversity, an heritage worthy to be respected not less than the bio-diversity, basic to the planet survival. Current researches concerning population-environment relationships in Sub-Saharan Africa are various and present a relevant convergence of opinions:

The population living in the subcontinent do not need massive quantity of food coming from charity of rich developed countries. The urgent need is the constant transfer of technology as well as development of its human resource. People could develop mechanisms by which they can manage to live on their own natural resources and cope up with situation of ecological degradation which are becoming permanent features in many underdeveloped regions. It is only then that the problem of population could be solved. If for each person in a large population it would be invested in order to

make it a resource, a faster growing population could necessarily become a faster growing human capital. Indeed, considering population growth merely as an oversized reproduction of present pressure of poverty, it's quite normal to forecast only continental or sub-continental potential crisis.

These subjects are deeply and largely discussed in the recent literature. The results, coming from national or case studies, pointed out the themes of ecological degradation, food insecurity, demographic response as the basic concepts of this field of studies. Very interesting researches concern the theme of population response to environmental stress in Ethiopia. The literature concerning this aspect of the country takes in to account weredas and zones after punctual ecological disasters. The emerging results, mainly obtained by field surveys, seem to suggest the existence of a Malthusian-kind of population response in many cases. The effects of exceptional drought, famine and other stressing events have been of severe demographic impact: increase in infant and general mortality, decrease in nuptiality and natality have been, at some extent, registered and pointed out.

## **Objectives**

The aim of this study is to build some scenarios of reference for different kind of relationships existing between population and environment in the country, obtaining a classification of the degrees and kinds of environmentally stressing situations, within which the common people carry out their every-day lives.

## **Specific Objectives**

- (i) to examine the relationship between population variables and environmental conditions at zone level;
- (ii) to identify areas (zones) which exhibit similar features in their characteristics with respect to the prevailing interrelationship between population variables and environmental conditions.
- (iii) suggest possible recommendations giving attention particularly to priority areas for action to mitigate the adverse impacts of population factors on environmental conditions and vice versa;

## **Sources and Limitations of Data**

The basic data to be used in this study was expected to be obtained from the 1994 population and housing census of Ethiopia. Every effort has been put to utilize the 1994 census results. However, environmental statistics covers natural as well as the man-made environment including a wide range of human activities, natural events and environmental impacts, and comprises social, demographic and economic data. Due to this, in addition to the census, data from other sources are also included. Thus data for this paper are obtained from various independent data sets. Moreover, due to the variation in the nature and extent of environmental problems by ecological regions, it

becomes unrealistic to put all the regions and zones together in the analysis. For this reason most of the analysis will pertain to zones wherever data is available and if it becomes impossible to obtain data for each zone, analysis will be done by combining zones and also at regional level. In general the units of analysis for this study are both the zones and regions.

The data sets used in this study include:

- a) Population size, literacy, mortality, school enrollment, fuel for cooking and lighting are compiled from the 1994 census (CSA, 1997).
- b) Data related to crop production, livestock, land use and related variables are obtained mainly from the 1994/95 agricultural sample surveys (CSA, 1995).
- c) Climatic variables are obtained from the National Meteorological Services Agency and they represent the average values for the periods 1993, 1994, and 1995 (unpublished data).
- d) Geographic coordinates are taken from Atlas of Ethiopia (EMA, 1988).

Data obtained from surveys and census in developing countries are usually subject to sampling and non-sampling errors plus content and coverage errors. Data utilized in this research analysis face these errors mentioned. The data used for Affar and Somalie regions have even more critical errors. The population data of these two regions are from the 1996 and 1997 censuses for Affar and Somalie respectively, which are part of the 1994 Population and Housing Census of the country. Not only are the data from different sources but are also collected in different years. Despite these limitations, it is believed that available data are useful to suggest results which may contribute valuable information in this difficult and unexplored field "Population and Environment".

## Methodology

Two preliminary choices have been done: the first concerning the administrative zones as geographical point of reference. This choice has been forced by the lack of more detailed information. The second choice concerning the nature of figures to employ: they are all of a quantitative nature and concern both the population and the environment. They refer mainly to the 1994 date.

The first step done to treat the data has been the calculation of bivariate and multivariate correlation's. This process allows to extract from the original set of about 40 variables, the final employed, of 19 variables. The choice also depends from precious information, emerging during the discussion between Ethiopian and Italian experts, The following table, reports the complete list of the variables utilized in the analysis.

**Table 1****List of Selected Variables**

<b>Labels</b>	<b>Rate</b>	<b>Year</b>
<b>Popu14</b>	% of population under 14 years	1994
<b>Popo64</b>	% of population over 64 years	1994
<b>Density</b>	Inhabitants per square meter	1994
<b>Iln</b>	Prevalence of ILLness	1998
<b>U5MR</b>	under five mortality rate	1994
<b>Lit</b>	Literacy rate	1994
<b>Woodhe</b>	% of households using wood for cooking	1994
<b>Elechl</b>	% of households using elec. For lighting	1994
<b>Kerohl</b>	% of households using kerosine for lighting	1994
<b>Liv</b>	Pressure of the livestock	1994
<b>Cereals</b>	Qt of cereals per hectare	1994
<b>Pulses</b>	Qt of pulses per hectare	1994
<b>Temp</b>	Area of land employed for temporary crops	1994
<b>Perm</b>	Area of land employed for permanent crops	1994
<b>Graz</b>	Area of land employed for grazing	1994
<b>Wood</b>	Area of land reserved for forest	1994
<b>Rain</b>	Annual average rainfall	1994
<b>Maxtemp</b>	Annual average Max. Temp.	1994
<b>Mintemp</b>	Annual average min. temp.	1994

All critical observations concerning the expressive extent of each figure are presented in the main report. These variables have been treated by the method of Principal Components Analysis. A new "artificial" variable has been built, as a linear combination of original variables, maintaining however a relevant informative value. This process allows to study the subject employing fewer variables and also to discover hidden suggestions not directly emerging.

The results are expressed in the first five principal components, which all together explain the 70% of the variability. The first component only explains 30% of the variability while the contribution of the second one is of 12% more; the final cumulative 70% consists of the contribution of each principal component which is subsequently decreasing as one goes to the third, fourth and fifth component.

**Main results**

The first and strongest component describing the relationship between population and environment consists on the opposition of two environmental-demographic variables groups.

The first variables group corresponds to the colors green and blue in the map:

- environmental variables: the max. and min. Temperatures;
- energy sources: firewood and kerosine for cooking;
- socio-demographic variables: illness, comparatively higher fertility.

The second variables group corresponds to the colors yellow and orange in the map:

- environmental variables: the rainfall, the existence of forests, all those linked to agricultural practice, which means, livestock, temporary crops, cereals, pulses, grazing, but also permanent crops;
- energy sources: electricity is disposable;
- socio-demographic variables: density of inhabitants, a first level of literacy.

Although it is evident that most Ethiopian People live in a hard condition of life-style, the study carried out on variables describing the environment-population nexus, reveals that there are some differences in living conditions, among the zones. Some zones are some what better than others. This can be easily argued watching the map, for example, the zones in green and blue are the most critical from the strictly climatic point of view and those where no alternative seems to exist to the soil erosion and to the prevalence of the nature elements on the efforts of the peasants or the pastorists. Instead, more favorable life conditions seem to be disposable in the orange and yellow colored zones. The map one is the most important: from both the statistical and the general point of view. Interesting results may be argued by the study of the remaining components and watching the relative maps. For synthesis reasons, this subject is not treated in the present paper.

It could be very interesting to make a rigorous research, aggregating zones of the same colors and, taking into account the different life-styles (the prevalent source of energy, the level of literacy, the degree of illness, the kind of agricultural practice), be able to advance any hypothesis concerning the scenarios in the future. Particularly useful could be to take into consideration the orange zones in the first map, because they seem to be the actual existing alternative for the development of a less traditional and better conditions compared to very hard life-style observed in the areas colored green and blue, as it concerns the environment-population nexus.

## **Conclusion and Recommendations**

This paper is a modest attempt to explore the population-environment nexus. The principal component method was applied to examine the relationship between the two. Originally 40 variables were employed to find out the relationship, however, after calculating bivariate and multivariate correlation's, variables which are thought to be highly correlated and redundant were eliminated and only 19 variables were utilized in the principal component analysis. The first five principal components explain 70 percent of the variability. In fact the first component explains 30 percent of the variability, while the other four components explain the remaining 40 percent. The explaining variables have two contrasting effects as is shown in the eigen vector table which are indicated by positive and negative signs.

Climatic factors have been found to be dominant and some times antagonistic to any possible interrelationship with population. Two types of settlement scenarios are distinguished. That is a west-east direction of the of the population-environment rural pattern and a north-south direction of

the population-environment urban pattern. As is shown in the map of Ethiopia some interesting relationships are discernible that call for further analysis grouping the zones by the colors.

According to the findings obtained from the analysis of principal components, the different groupings of zones show that the central part of the country appear to be relatively convenient to human settlements. One factor related with these central parts is their characteristic of either urban or semi-urban features. The group of zones identified in these categories have shown high level of literacy, high population density and low prevalence of illness. The dominant sources of energy in these areas are revealed to be electricity for lighting and kerosine for cooking purposes. Areas with some degree of urbanization are characterized by high population density and availability of modern infrastructures such as health and educational facilities. Another factor to be the considered is the climatic conditions. In the central parts of the country climatic conditions are more favorable for human settlements than those prevailing around the border areas.

Overall, factors that have been identified to influence the human environment are socio-economic development which can be derived from the aspect of urbanization and the natural climate (minimum and maximum temperature, amount of rainfall) of the areas. The socio-economic development aspect should consider the energy sector and the educational and health aspects of the population. The energy sector strategy should be directed towards the exploitation of hydro power energy and also to the promotion of other alternative sources of energy to substitute the traditional forms of energy. Another important measure could be the promotion of educational and health facilities to improve the human environment.

MAP 1

1° Component

