DETERMINANTS AND DYNAMICS OF URBAN POVERTY IN ETHIOPIA*

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Abstract

This paper investigates the determinants and dynamics of poverty in urban areas in Ethiopia. The results show that urban poverty is quite high in Ethiopia, indicating the seriousness of the problem. We observed high fluctuations in living standards mainly driven by fluctuations in food prices, particularly those of cereals. Thus, price stabilisation policies form important ingredients for fighting poverty. Factors that affect the dynamics of poverty are mainly education of head of the household and size of the household. Policies that promote human capital and control of population growth reduce greatly the probability of falling into poverty.

1. INTRODUCTION

For the last few decades, rural poverty has been a major concern in Ethiopia for quite understandable reasons. The bulk of the poor in the country resides in rural areas and the intensity of poverty is so rampant that, during and lean harvest years, millions are in danger of death from starvation. Even during relatively better years, incomes are very low to go round the year and as a result households usually suffer from malnutrition, particularly in pre-harvest seasons.

By rural standards, urban areas may be considered to have better living standards. Trends in recent years, however, indicate that poverty in most urban centres has been rising rapidly and building up fast to crisis proportions. The major reason for this is the economic decline in general and the stagnation in the rural economy in particular, the country experienced in the eighties. Most urban centres have also undergone rapid population growth due to the influx of migrants from rural areas affected by drought, famine and civil conflict. Most of these migrants are destitute and better opportunities do not await them in towns. The influx rather creates strain on the labour market and urban social service provisions and is likely to raise the cost of living, thereby affecting adversely the welfare of long-time urban residents.

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Current economic reform programmes are more likely to adversely affect urban rather than rural areas. The lifting of subsidies on basic goods and services, public expenditure cuts, streamlining of the civil service, tax reform measures, monetary contraction, and depreciation of the exchange rate are likely to have stronger repercussions on urban life, at least in the medium run.

Changes in urban poverty may therefore be due to the rural destitute joining the ranks of the urban poor. It could also be the net result of a dynamic process of some urban households moving into and others out of poverty. Understanding this dynamic process is of crucial importance in formulating poverty reduction programmes. Moreover, policy formulation benefit a lot if the characteristics of households vulnerable to welfare decline and households that are likely to improve their living standards are known at each stage of the reform process. This study tries to shed some light on the dynamics of urban poverty based on a panel data for 1994, 1995 and 1997 collected from a sample of households in seven major urban centres of the country.

2. THE DATA

The study uses data on a panel of households drawn from the Ethiopia Urban Socio-economic Survey conducted in three successive rounds in 1994, 1995 and 1997 by the Department of Economics of Addis Ababa University, the first and third rounds in collaboration with the Department of Economics of Goteberg University and the second with the Department of Agricultural Economics at Michigan State University. The surveys covered 1500 households in seven major urban centres – Addis Ababa, Awassa, Bahr Dar, Dessie, Dire Dawa, Jimma and Mekele-selected to represent the major urban socio-economic settings in the country. Addis Ababa, of course, is by far the largest city and domicile to diverse socio-economic groups. Awassa and Jimma were included in the sample to represent the mainly coffee-producing areas and, in the former case, to capture the socio-economic characteristics of the predominantly enset culture as well as the different socio-economic groups in southern Ethiopia. While Bahr Dar is located in the richer cereal producing areas in the north, Dessie and Mekele represent towns in poorer cereal-producing areas and catchments that are drought-prone and often affected by famine. Dire Dawa is mainly a trading centre on the route to Djibouti and is located in chat and coffee producing eastern part of the country.

Samples from each of these urban centres were selected by allocating the predetermined sample size of 1500 households in proportion to the total population of the selected urban centres in 1992 as estimated by the Central Statistical Authority. Accordingly, 900 households in Addis Ababa, 126 in Dire Dawa, 73 in Awassa, 101 in Dessie and 00 in each of the rest of the towns were sampled. These were further allocated proportionally at wereda (district) level and subsequently to 50% of kebeles (lowest administrative units) drawn randomly which served as primary sampling units.

Households were then selected from each of these primary units based on sampling frames prepared from the housing registry available at the kebele administrative offices. The sampling frames are obviously far from complete; in particular they miss an important social group from the point of view of poverty assessment, the homeless whose ranks are rapidly swelling in most large urban centres of the country.

All three rounds tried to cover the same households and to maintain the same sample size. Some households, however, had to be replaced in the second and third rounds because they either refused to participate or have moved from their previous addresses. In constructing the panel data, we also encountered problems in matching the households due to errors in recording household identification codes. These reduced the panel used in this study to 1249 households.

The survey generated comparable data sets on the demographic characteristics of households, the educational level of members of households and their health status (including anthropometric measurements), employment, credit, income, and consumption and expenditure. Attempt was made to solicit data on incomes of all members and from all possible sources: wage and salaries, business income, in kind payments, and remittances. The consumption data included both food and non-food consumption. Under the former, the survey recorded purchased food consumed at home and outdoors as well as consumption from own harvest, payments in kind, loan or food aid during a week. Quarterly and monthly recall was used to collect the non-food consumption data (for more details on the sampling procedure and data, see DE AAU&GU 1995).

In this study we preferred to use the consumption rather the income data to measure and construct the profile of urban poverty. Apart from the conceptual problems that arise in using income as a measure of living standards (for detailed discussion on this, see, for example, Lipton and Ravallion 1995), measurement error is bound to be serious, particularly in countries like ours. Indeed, in our data income is substantially understated compared with consumption expenditure. Households, particularly the poor, obtain incomes from multiple sources, some of which are non-regular. While income from regular sources are reported relatively more accurately, non-regular income is either not reported at all or understated which could lead to undue overestimation of poverty.

Using consumption expenditure as an indicator of welfare also has its own problems (see Lipton and Ravallion 1995 for detailed discussion on this). In relation to the data used in this study, three problems are worth noting. First, consumption includes, though accounting only 3.5%, own produced food items which raise the problem of valuation. This is handled by valuing all such non-marketed consumption at prices collected at the time of the household survey. More serious is the problem of how to include the benefits derived from own housing and the use of durable goods. While we have included rent paid by tenant households, we have not accounted for house ownership thereby underestimating the welfare levels of households living in their own

houses. Secondly, there is the problem of the intra-household distribution of consumption and differences in needs and tastes among members. A common practice is to make adjustments by deflating consumption expenditure by endogenously derived or exogenously determined adult equivalent units. Apart from the computational complexities involved in estimating equivalent scales from observed household data, it is not clear how well they reflect the needs and the intra-household distribution of consumption and there are theoretical problems in interpreting the estimates (Ravallion 1992). In view of these and unavailability of adult equivalent scales estimated for Ethiopia previously, we have used the WHO Conversion factors developed for Africa. Thirdly, food sharing with non-members, it is observed in the survey, is quite a common practice and is likely to have implications on household welfare. The survey has collected information on this and it is used to make appropriate adjustments.

The survey also collected data on other welfare indicators such as housing including type of tenancy, type of housing and availability of associated services; ownership of consumer durables–type, number and estimated value–as well as depletion and acquisition of such goods.

3. POVERTY MEASUREMENT AND PROFILE

3.1. Setting the Poverty Lines

Poverty is a multi-dimensional concept and can be defined in several ways. This is concerned with measuring absolute poverty in urban Ethiopia This concept abstracts from non-material factors that influence human satisfaction and limit poverty only to material deprivation, the inability to attain an income or consumption level considered to be minimal to lead a normal life by the standards of a given society. Within this domain, the exercise is to classify a population into the poor, those who fall below what is regarded as an absolute minimal standard of living, and the non-poor. This requires setting what constitutes an absolute minimal standard of living, the poverty line.

The most commonly used procedures for setting the poverty line are the food energy intake (FEI) method and the cost of basic needs (CBN) approach. The FEI method located the poverty line as the income or consumption expenditure level just adequate to meet a predetermined food energy requirement. The usual practice is to derive the poverty line from the regression estimates of a cost-of-calories function which specifies expenditure as a function of calorie consumption (Greer and Thorbecke 1986) or its inverse (Kyreme and Thorbecke 1987). This method is computationally very simple and requires data only on quantities of food items consumed and food or total expenditure. While the method could provide a robust single national poverty line, it may result in inconsistent estimates when the aim is to make poverty comparisons among different sub-groups of a population or over time. This is

because the stipulated relationship between food energy intake and consumption expenditure will not be the same across sub-groups or over time, and will tend to shift due to difference in tastes, relative prices, activity levels, and provision of public goods (see Ravallion 1992; Lipton and Ravallion 1995; Ravallion and Bidani 1994).

The CBN method defines the poverty line as the cost of a bundle of goods considered to be sufficient to meet basic consumption needs. In implementing this definition, the CBN approach usually proceeds in two stages: first is to determine the food consumption bundle just adequate to meet a stipulated food energy requirement and then to give an allowance for basic nonfood consumption. The basic food basket is derived from the consumption of a reference household deemed to be typically poor. The food basket is then valued at regional prices to obtain the food poverty line. The allowance for basic nonfood consumption is again anchored on the consumption patterns of the poor. One approach based on this principle is to divide the food poverty line by average food share of households deemed to biases in the poverty profile (Ravallion and Bidani 1994) . An alternative approach, suggested by Ravallion (1993), is to scale up the food poverty line by the nonfood budget share estimated at the food poverty line from the regression parameters of a Working-Leser type Engel curve (see also Ravallion and Bidani 1994).[1]

Both the FEL and the CBN methods are anchored on an exogenously determined minimum energy requirement. The CBN method is now widely regarded as theoretically sound and empirically robust (for more details on this, see Ravallion and Bidani 1994).

In this study, we follow the CBN method to construct the food poverty line. In implementing this, we first derived the average quantities of food items that are most frequently consumed by households falling in the lower half of the expenditure distribution in 1994[2]. This is then converted into calorie consumption and scaled up to provide 2,200 kgcal per adult per day assumed to be the minimum energy requirement to perform normal physical activities. This bundle is held constant over the study period which amounts to assuming that the consumption pattern and behavior of the poor have remained unchanged. The food poverty lines are then estimated by valuing the bundle at prices that prevailed in each urban centre at the time of expenditure surveys collected by the Central Statistical Authority.

The basic food basket derived using the above procedure is reported in Table 1. The table shows that the diet of the poor is heavily dominated by cereals and pulses. Of 21 food items in the basket, 12 are cereals, pulses or their products. More importantly, cereals and cereal products alone account for 81% of calorie consumption and 61% of food expenditure of households who managed to attain a consumption level at the food poverty line. Inclusion of pulses and pulse products in the diet raises the proportions to 90% and 70%, respectively (see Table 2).

In giving allowance to basic nonfood consumption, we adopted the Orshansky method rather than the method suggested by Ravallion. The application of various specifications of the Engel curve resulted in much higher food share at the poverty line than is warranted by the data and subsequently in underestimation of the total poverty line and hence of total poverty. This procedure is anchored on the assumption that households are willing to forgo some basic food need in order to obtain a minimal nonfood consumption. Probably this is not a valid assumption in describing the observed consumption behaviour of our sample households. It may be that households follow a two-stage budgeting strategy, i.e. households would first allocate their budget to food consumption and then to nonfood items. While the Orshansky method also rests essentially on the same assumption as the one suggested by Ravallion, it follows a different procedure. The total poverty line is obtained by dividing the food poverty lines by average food budget share of households that are in the neighbourhood of the food poverty line.

The poverty lines estimated using the procedures described above are reported in Table 3. The poverty lines can be interpreted as a kind of price index reflecting the cost of living in the different urban centres. The estimates indicate that, of the seven urban centres covered in the study, Addis Ababa, Dire Dawa and Mekele are relatively more expensive to acquire basic needs while Bahr Dar is the cheapest. Both the food and total poverty lines rose substantially in 1995 as compared with the 1994 levels and then declined in 1997 reflecting the general price trend during the period.

3.2. Poverty Measures

Poverty measurement requires using a summary measure that aggregates over individuals or households. The most widely accepted measures and with important desirable properties for poverty comparisons are the family of P_α indexes suggested by Foster, et al.. (1984). Among these, the most commonly
applied measures in empirical studies are defined as

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\frac{(z - x_i)^\alpha}{z}, \quad \alpha = 0,\ 1,\ 2 \qquad [1]$$

where x_i is income or consumption expenditure of household I, z is the poverty line, n is size of population and q is the number of the poor. P_0 measures the incidence of poverty and tells us only the proportion of the population that are poor. P_1 helps us to capture this; it measures the depth of poverty, how much on the average the poor fall below the poverty line. P_2 is a measure of poverty by weighing the situation of the poor by the square of the shortfall of their income or expenditure from the poverty line.

The estimated poverty measures for the period 1994-97, reported in Tables 4-6, show that the overall incidences of urban poverty are quite very high, on average about 46 percent. The incidence of poverty rose sharply in 1995 to 51.6% from 46.7% in 1994 largely as a result of higher prices (the rate of inflation as measured by the Addis Ababa CPI was about 12% for food and 10% overall) and fell back in 1997 to almost its 1994 level again essentially in response to price changes, this time due to general price decline recorded in the first half of 1997. The decline in food prices was quite pronounced, at about 8%, between November 1995 and February 1997, months corresponding to our expenditure survey. Most marked was the decline in prices of cereals and pulses which constitute a substantial proportion of the consumption of the poor. This suggests that fluctuations in food prices and in particular of cereals (to a much lesser extent of pulses) could heavily impact on the welfare of the poor.

This trend is also reflected in the poverty situation in some of the urban centres. The trend is highly pronounced in Addis Ababa, from which about 60% of our sample is drawn. The incidence of poverty rose to nearly 61% in 1995 but dropped in 1997 even to a lower level than that of 1994. Some towns - Awassa, Jimma annd Mekele - however, enjoyed more or less a consistent decline in poverty - from 46 to 36%, from 44 to 36% in the first two towns and from about 37 to 30% in the latter case. Awassa and Jimma may have benefited from expanding coffee trade and incomes in Mekele may have risen due to reconstruction programmes. While poverty remained unchanged in Bahr Dar, Dessie and Dire Dawa experienced a sharp increase in poverty (from 40 to nearly 55 % in the former case and from 21 to 45% in the latter) during the three years. Dire Dawa may have suffered from a decline in the once booming contraband trade and in Dessie it may have to do with the 'hangover' effects of the influx of migrants into the town at the end of the civil war.

Examination of the estimates of the depth and severity of poverty (P_1 and P_2) also indicate the seriousness of the problem. The overall figures stand at 19 and 10 percent respectively in 1997. As monotonic transformations of P_0, they followed the pattern described above, rising in 1995 and falling in 1997. While the poverty-gap index (P_1) shows the average shortfall of the poor from the poverty line, the interpretation of index of severity (P_2) is not straightforward. Comparing the trends in the two measures and P_0 however, can give an indication on whether the distribution among the poor has worsened or not (Grootaert 1995). Between 1994 and 1997, P_0 declined marginally by less than 1% but P_1 and P_2 increased by 5.6 and 4.1%, respectively indicating that the poor became poorer during the three years. A look at Table 7, which presents the distribution of consumption expenditure, shows this more clearly. The share of the poorest 10% households in total expenditure shows this more clearly. This share of the poorest 10% households in total expenditure declined by about 18%. Actually the shares of all deciles, but the tenth, underwent a decline but the decline is more pronounced for households falling below the median of the distribution (the upper cut-off point of the fifth decile is very close to the estimated poverty lines). The share of the top 10% of the sample households, however, rose

substantially from 32% to 40%, indicating a sharp increase in inequality. Thus while the conditions of the urban poor worsened, the rich got much richer.

The poverty-gap index has also an important application. It can be used to estimate the size of resource transfer needed to eradicate poverty. Under the assumption of perfect targeting, the minimum cost of raising the expenditure levels of all poor up to the poverty line would be the sum of expenditure gaps of all poor, i.e.

$$RC = \sum (z - x_i) \qquad [2]$$

The estimate of this resource cost for the sample comes to 16% of the total consumption expenditure of the non-poor. If a redistributive measure is to be taken through the introduction of a tax system, this would presuppose imposing, on average, a 16% tax on the incomes of the nonpoor on top of the existing rate. With the imposition of this rate, the required resource transfer could be raised from the top three deciles alone without putting any of the nonpoor at the risk of falling into poverty. Such a high increase in income tax may be undesirable from the efficiency point of view. Its effect could, however, be substantially reduced with the implementation of a progressive tax system. In broad terms, what this suggests is that redistributive measures within the urban sector itself cannot be ruled out as possible means of reducing poverty.

3.3. Poverty Profile

A poverty profile shows how a poverty measure varies across sub-groups of a population such as regions of residence, sectors of employment, educational status or other characteristics of households. It helps to inform policy by bringing out how sectoral or regional economic changes could affect the aggregate poverty measure (for more details see Ravallion, 1992; Lipton and Ravallion 1995). Suppose, for instance, a poverty profile shows that region A has a higher incidence of poverty, P_1, than region B and it is intended to reduce this through resource transfer by imposing a lump-sum tax on each household in B and distributing the proceeds equally to each household in A. This will reduce the aggregate depth of poverty, P_2. Thus, in general, to reduce P_a, through a transfer that increases incomes in a recipient sub-group by the same amount, the relevant poverty indicator is P_{a-1} (Lipton and Ravallion 1995:2580).

We can use the decomposability poverty of the P_a indexes used above to construct poverty profiles. An index P_a is said to be additively decomposable across sub-groups of a population if, for mutually exclusive sub-groups with a population share of k_i, it can be expressed as the weighted sum of the corresponding index in each sub-group, i.e.

$$P_a = K_j P_{aj} \qquad [3]$$

Based on this, it is possible to compute the contribution, say, C_j of each sub-group to total poverty as

$$C_j = \frac{K_j P_{aj}}{P_a} \qquad [4]$$

Using this result, we constructed two sets of decompositions of the aggregate incidence of poverty: by urban centre and household socio-economic characteristics presented in tables 8 and 9, respectively. The decomposition by urban centre shows that Addis Ababa has proportionately the highest concentration of the poor accounting for about 71% of aggregate poverty incidence in 1994 and 1995 and declining to 67%, but remained much higher than its sampling fraction of 60%. The shares of Awassa, Jimma and Mekele declined by nearly 50%, while those of Dessie and Dire Dawa rose sharply, more than doubling in the later case, probably for the same reasons discussed above.

The decompositions by household characteristics can be classified broadly into two: demographic characteristics such as household size, age, sex and marital status of the household head; and socio-economic characteristics including religion and ethnic background, educational status, sector of employment of the head and dependency rates defined here as household size divided by the number of members engaged in income earning activities.

Comparing the conditions of male and female-headed households, we see that poverty is much higher among the latter, about 52% as against 43% in the former case. The contribution of male-headed households is however greater due to their larger representation in the sample. Most of the female heads, we observe from the data, are widowed (54%), divorced (20%) or separated (8%). In the case of male-headed households the three categories put together account for less than 6%. Apart from suggesting that it is usually much harder for females to reconstruct a family once it breaks down, it also indicates that the household is left with much less income-earning opportunities when a male head is not there. Moreover, we found out that most of the female heads are either housewives or engaged in low-income earning activities, such as female household business activities (making and selling local drinks and food, for example) and other informal sector activities (these account for nearly 7%) but very few in public sector or formal private sector employment.

Marital status also has important implications for poverty. Households whose heads are widowed, divorced or separated experience high poverty incidence (50% or

substantially from 32% to 40%, indicating a sharp increase in inequality. Thus while the conditions of the urban poor worsened, the rich got much richer.

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above) and account close to 40% of aggregate poverty. The condition is not much better for households with married heads; poverty incidence is about 45% but their share in total poverty is much higher (nearly 60%). Single household heads, however, have a much lower but rising (during the three years) incidence of poverty consistent with the finding below on the relationship between poverty and household size.

The decomposition by age of the household head shows that the incidence of poverty consistently rises as the head gets older. The share in aggregate poverty also increases up to 60 years. This contrasts with what is usually hypothesized: the household income and hence welfare increases up to a certain age and then declines. Our finding may have to do with the relationship between age and household size. Older household heads have larger families and poverty rises sharply with size. If having more people in the household meant greater income-earning opportunities, things would have improved as the household got larger. This is not the case in our sample; more people meant higher dependency rates and we found out, not surprisingly, poverty sharply increases with this ratio.

Examination of the poverty situation by educational level of the household head reveals that higher-level education is correlated with lower poverty. The poverty incidence is below 15% for households whose heads have college education, 28% for heads with secondary education and about 46% for those with primary education only. The poverty incidence as well as the contribution to aggregate poverty are not only lower for better educated household heads but they have also been declining overtime. Household heads with no schooling, on the other hand, experienced rising and high poverty incidence (above 60%); their situation also worsened over time. This finding suggests that investments in human resource development could have important bearings on poverty reduction.

From the decomposition by occupation of the head, it can be observed that poverty conditions are in certain types of employment than in others. Poverty incidence among casual and own account workers is not only high (65-70% and 42-50%, respectively) but has also been rising during the three years; and they have a proportionately higher contribution to aggregate poverty. In the latter case this might be due to the unsteady nature of employment and hence of income while the latter group is most likely employed in the informal sector whose income-generating capacity is usually very low. Poverty is very low among public sector and formal private sector employees and their situation does not seem to have worsened over time. Not surprising, poverty is very high and worsening among the unemployed and pensioners.

The religion and ethnic dimensions of poverty has also been examined. Orthodox Christians have a stable poverty incidence of about 47% and account for nearly 85% of aggregate poverty. Households affiliated to other Christian sects have lower and rapidly declining poverty incidence and share in aggregate poverty. Among Muslims,

poverty incidence rose from 42% and their contribution to aggregate poverty increased from 11% to 12%.

The three major ethnic groups–the Amhara, Oromo and Tigre-account for about 75% of aggregate poverty. Poverty increased from 43 to 46% among the first group, but declined marginally among the second (from about 55% to 53%) and the third (from 34.8 to 28.4%) during the three years. The situation among the second (from about 55% to 53%) and the third (from 34.8% to 28.4%) during the three years. The situation among the Gurage also improved.

4. POVERTY DYNAMICS AND DETERMINANTS

4.1. Movements In and Out of Poverty

In section 3.1 above we showed that poverty increased in 1995 and fell back in 1997 back to almost its initial level in 1994. A change in poverty could be due to some nonpoor households joining the existing poor or some of the poor escaping poverty. It could as well be the net outcome of some people moving into poverty and others moving out of poverty. It is important from the point of view of poverty reduction policy to distinguish households that are permanently poor from those that are temporarily poor. In the former case, long-term poverty reduction measures, such as permanent transfers, may be required while in the case of the latter, programmes that complement their incomes during the period that they are poor might only be needed (Grootaert et al., 1995). It is also crucial for policy formulation to identify the characteristics of households that are temporarily or permanently poor.

The fluctuations observed during the three-year period of this study is the net result of a dynamic process of some households escaping poverty and some nonpoor households becoming poor. Between 1994 and 1997, 14.8% of the sample households slipped into poverty while 15.2% moved out of poverty, thereby giving a 0.4% decline in the incidence of poverty (see Table 10). The increase in poverty in 1995 is due to more households becoming poor (16.6%) than the poor escaping poverty (11.5%) while the decline in 1997 from the 1995 level is the result of more households escaping poverty than those slipping into it.

Examination of the characteristics of households that move in and out of poverty (presented in Table 11) demonstrates that certain social groups are more vulnerable than others. Female-headed households have a higher probability of slipping into poverty than male-headed households. Similarly, the chance of falling into poverty rises with household size and the elderly are more likely to move into than move out of poverty. In line with the findings of the poverty profile presented in the previous section, widowed and divorced households have a very high and rising probability of suffering from a decline in standard of living leading to poverty. Again consistent with the decomposition results, the probability of escaping poverty generally declines with

higher educational level of the head of household. Looking at the picture by sector of employment, we see that casual workers, pensioners, and private sector employees have a higher chance of falling into than making it out of poverty.

4.2. Modeling the Determinants and Dynamics of Poverty

A host of factors affect living standards and poverty of households. In this paper we concentrate on some of the major household socio-economic characteristics that are correlated with living standards and hence poverty. Following Coulombe and McKay (1996) and Grootaert et al. (1995) the determinants of living standards are broadly classified into two: those that reflect household needs which include household size and composition; and those that determine the income-generating opportunities available to the household such as education, employment and ownership of assets.

In assessing the importance of the determinants of poverty most studies use probit or logit models (for example, Sahn and Ninno 1994; del Ninno 1994) and some a multi-nominal logit selection model (Coloumbe and McKay 1996). The application of these models entails loss of information because they focus on the poor and not on household welfare in general. Multivariate regression models on the other hand allow making the best use of available data (examples of applications are Kyreme and Thorbecke 1991; Ninno 1994). All these studies are, however, based on cross-section data and do not capture the dynamic aspects of poverty. Grootaert et al. (1995) use a dynamic model to capture the factors that determine changes in standard of living and the mobility of households in and out of poverty from panel data. This study adopted this last procedure. The model is derived from the standard utility maximization assumptions and uses real household expenditure per capita as money-metric measure of utility which takes into account differences in household size and relative prices. For lack of regional price deflators, we used here total household expenditure per adult equivalent as the dependent variable in the model with the exogenously predetermined household characteristics as the explanatory variables. The model in reduced form can be written as:

$$X_i = f(A_i, R_i) \qquad [5]$$

Where X_i =Consumption expenditure of household I per adult equivalent; A_i =Assets of household I and R_i= A set of characteristics which represent the economic environment in which the household operates.

For application on panel data, taking the first difference of equation [5] we have

$$\Delta X_i = f(\Delta A_i) \qquad [6]$$

R_i drops out of equation 6 because it is the same for all households and constant over time. Equation 2 expresses changes in standard of living a function only of household endowment and assumes that initial conditions do not matter. But Grootaert et

al.(1995) rightly argue that they do matter and must be incorporated into the equation. Thus the model can be written as

$$\Delta X_i = f(A_i, \Delta A_i, R_i) \qquad [7]$$

We estimated two sets of regressions for equations 6 and 7 by OLS method, one for the period 1994-95 and another one for 1995-97 using variables that account for the household's endowments of human and physical capital as explanatory variables. The human capital variables include household size, age and sex composition, dummies for educational level of the head of the household and sector of employment, and number of employed members in the household. Age and squared age of the household head were also incorporated as explanatory variables to capture work experience and the stage in the life cycle of the household. The inclusion of consumption expenditure substantially improves the fit; and hence the 1994 and the 1995 consumptions per adult were used as initial conditions for the first and second set of regressions, respectively.

The household physical capital constitutes the physical assets which indicate the income-earning potential of the household such as ownership of productive equipment. For lack of sufficient information on other variables we included only ownership of housing and the number and value of consumer durables as regressors. While these do not contribute to income creation directly, they do so indirectly, for instance, by serving as collateral for borrowing. More importantly, such goods serve households for income smoothing as they can be sold to cover consumption at times of economic distress.

The different variables include changes in household composition, number of employed members, and ownership of durables.

The results are reported in tables 12a and 12b. The first columns of these tables present the estimates when consumption expenditure alone is used as a regressor. The slope coefficients are –0.54 and –0.73, suggesting that an increase/decrease in expenditure per adult is associated with a negative/positive change in household welfare as measured by the change in expenditure. Grootaert et al. (1995) argue that such a result implies that there are large transitory components in the expenditure of most households. This is also consistent with fluctuations in poverty discussed in section 3 and the high mobility into and out of poverty presented in section 4.1 above.

With regard to the human and physical capital of the household, we observe that their inclusion demonstrates a better fit of the regression. Among the human capital variables, household composition and education significantly affect changes in welfare. Households with more children, male adults and the elderly are more likely to suffer from welfare losses. Higher levels of education are associated with increase in welfare; households with secondary or tertiary education are more likely to enjoy welfare improvements while households with no schooling largely suffer from welfare

decline. Consistent with the findings discussed in section 3.3, age has a negative association with welfare changes. Among employment groups, only households whose heads are private business employer have a fairly high chance of improving their welfare.

Among the physical capital variables, ownership of housing does not have a strong impact as its coefficient is insignificant in all equations. The reason for this could be the fact that most households in our sample lives in government-owned housing paying only nominal rent as compared to the going market rate. Ownership of consumer durables, however, has significant effect on welfare changes.

In short, our findings indicate that households with many children and elderly and whose heads are old, and have little or no education, are more likely to suffer from welfare losses and hence slip into poverty. On the other hand, households with better educated heads or with fewer children and elderly have higher chances of improving their welfare and hence of escaping erosion into poverty.

5. CONCLUSIONS

The results of the poverty estimates in this study clearly indicate that, overall, urban poverty is quite high (about 46%) and worthy of serious attention. Moreover, households experience short-term fluctuations in standard of living primarily due to price movements. In particular, low-income households are severely affected by changes in food prices. Food accounts for a substantial proportion (about 65%) of the consumption expenditure of the poor and dominates the estimated poverty lines. In fact, few food items, specifically cereals (and to a lesser extent pulses), are most important both in terms of providing essential nutrients as well as budget share. Observed changes in poverty largely correspond to grain price movements. This suggests that grain price stabilization policies could have a strong impact in protecting the welfare of the poor. The observed annual fluctuations in poverty also suggest the need for monitoring welfare changes regularly at reasonably short time intervals.

Decompositions of poverty both by urban centre and household characteristics and the assessment of the dynamics and determinants of poverty reveal important results for poverty reduction policies. The poor are concentrated in major urban centres in particular in the capital, Addis Ababa. Changes in the estimated poverty measures are the net outcome of household mobility into and out of poverty. Examination of the socio-economic characteristics of the poor and the dynamic process of movements into and out of poverty indicates that certain groups are more likely to suffer welfare losses and hence fall into poverty than others. Better educated households have better chances of improving their welfare, pointing to the importance of human resource development programmes to poverty reduction. Large households with many elderly members and children have higher chances of falling into poverty than moving

out of it. This suggests that expansion of family planning programmes could play a significant role in reducing poverty in the long run.

Table 1: Basic Food Basket Giving 2,200 kgcal (per adult per month)

Food Item	Quantity (kg)	Food item	Quantity (kg or l)
Cereals		Other food	
Teff	8.82	Milk	0.39
Barley	0.39	Bread	0.94
Wheat	2.42	Oil	0.47
Maize	2.5	Injera	1.64
Sorghum	2.5	Sugar	0.23
		Coffee	0.23
Pulses			
Lentils	0.39	Tels	0.39
Horse beans	0.23	Berbere	0.32
Horse beans	0.23	Salt	0.62
Cow Peas	0.23		
Shiro	0.94		
Vegetables			
Gomen	0.39		
Potatoes	0.94		
Onions	0.94		

Table 2: Calorie Contribution and Expenditure Share of Major Food Items at the Food Poverty Line

	Calorie Contribution(%)	Expenditure Share (%)
Cereals & Cereal products	81	61
Pulses & Pulse products	9	9
Other food	10	20
Total	100	100

Table 3: Food and Total Poverty Lines (Birr per adult per month)

	1994		1995		1997		Sample
Urban center	Food	Total	Food	Total	Food	Total	Size
Addis Ababa	67.30	90.95	70.61	112.08	58.61	96.08	753
Awassa	57.03	79.21	56.14	86.37	48.66	73.73	56
Bahiar Dar	54.40	72.50	54.92	85.81	45.48	64.06	86
Dessie	57.13	82.75	60.97	83.52	50.70	79.22	77
Dire Dawa	70.37	90.22	70.09	103.07	61.88	99.80	107
Jimma	55.40	79.95	53.75	85.32	45.45	61.42	91
Mekele	62.77	96.98	66.81	102.79	63.80	96.68	79
Weighted Average	**64.73**	**88.17**	**66.77**	**104.05**	**56.42**	**89.67**	**1249**

Table 4: Estimates of the Incidence of Poverty (P_0) 1994-97

	1994		1995		1997	
Urban centre	Food	Total	Food	Total	Food	Total
Addis Ababa	0.525	0.546	0.614	0.608	0.495	0.514
Awassa	0.464	0.464	0.339	0.339	0.339	0.357
Bahr Dar	0.279	0.279	0.302	0.337	0.291	0.279
Dessie	0.351	0.403	0.481	0.442	0.546	0.546
Dire Dawa	0.178	0.206	0.336	0.346	0.355	0.449
Jima	0.363	0.440	0.440	0.407	0.341	0.363
Mekele	0.342	0.367	0.346	0.397	0.354	0.304
All	0.441	0.467	0.519	0.516	0.445	0.463

Table 5: Estimates of the Depth of Poverty (P_1) 1994-97

	1994		1995		1997	
Urban centre	Food	Total	Food	Total	Food	Total
Addis Ababa	0.22	0.221	0.271	0.273	0.210	0.212
Awassa	0.218	0.206	0.148	0.159	0.167	0.162
BahrDar	0.085	0.91	0.131	0.135	0.127	0.117
Dessie	0.134	0.160	0.189	0.190	0.226	0.22
Dire Dawa	0.045	0.049	0.116	0.120	0.154	0.178
Jimma	0.14	0.161	0.171	0.166	0.119	0.119
Mekele	0.127	0.128	0.225	0.221	0.135	0.135
All	**0.179**	**0.183**	**0.227**	**0.229**	**0.187**	**0.189**

Table 6: Estimates of the Severity of Poverty (P_2) 1994-97

Urban	1994		1995		1997	
Centre	Food	Total	Food	Total	Food	Total
Addis Ababa	0.122	0.121	0.153	0.153	0.115	0.115
Awassa	0.125	0.125	0.087	0.091	0.098	0.099
Bahr Dar	0.043	0.047	0.074	0.074	0.073	0.059
Dessie	0.07	0.084	0.097	0.099	0.129	0.122
Dire Dawa	0.019	0.020	0.054	0.056	0.095	0.098
Jimma	0.075	0.079	0.09	0.092	0.056	0.056
Mekele	0.066	0.067	0.171	0.156	0.072	0.076
All	**0.098**	**0.098**	**0.129**	**0.129**	**0.103**	**0.102**

Table 7: Distribution of Monthly Per Adult Equivalent Consumption Expenditure 1994-97

	1994		1995		1997	
Decile	Mean	% share	Mean	%share	Mean	%share
1	23.64	1.77	23.64	1.57	23.77	1.45
2	41.15	3.23	42.15	2.81	41.34	2.57
3	56.29	4.28	56.29	3.81	55.72	3.44
4	71.67	5.45	71.67	4.84	71.41	4.37
5	86.05	6.56	86.05	5.93	88.05	5.43
6	103.20	7.92	103.20	7.24	112.48	6.93
7	127.01	9.59	127.01	8.92	142.92	8.88
8	163.96	12.56	163.96	11.61	183.84	11.33
9	218.50	16.62	218.50	15.95	252.63	15.45
10	423.82	31.99	423.82	37.33	651.44	40.16

Table 8: Decomposition of Poverty by Urban Centre

	Contribution to Po			
Urban Centre	1994	1995	1997	Sampling Fraction
Addis Ababa	70.5	71.0	67.0	60.3
Awassa	4.5	3.0	3.5	4.5
Bahr Dar	4.1	4.5	4.2	6.9
Dessie	5.3	5.3	7.3	6.2
Dire Dawa	3.8	5.7	8.3	8.6
Jimma	6.9	5.7	5.7	7.3
Mekele	5.0	4.8	4.2	6.3

Table 9: Decomposition by Household Characteristics

Household Characteristics	1994		1995		1997	
	% Poor	% Non Poor	% Poor	% Non-poor	% Poor	%Non Poor
Household Age Structure						
15-29	28.6	3.1	31.7	3.6	30.2	3.3
30-39	42.6	19.4	38.9	18.2	40.3	18.5
40.59	49.0	52.8	46.9	52.2	48.2	52.3
60 and above	50.0	24.7	50.9	25.9	52.1	26.0
Sex of Household Head						
Male	43.5	58.0	42.3	58.3	43.6	58.5
Female	52.5	42.0	50.4	41.7	51.4	41.5
Household Size						
1	33.9	3.3	27.3	2.3	21.4	2.1
2.5	38.6	37.7	44.7	39.6	37.9	37.4
6.9	53.6	47.7	58.1	46.7	54.9	49.3
10	63.5	11.3	70.2	11.3	62.5	11.2
Education of Household Head						
No schooling	59.5	24.2	61.4	25.7	64.1	26.3
Religious/tradition/	52.6	12.3	51.8	12.6	61.3	14.5
Primary (incomplete)	58.5	24.2	49.6	21.1	49.0	20.4
Primary (complete)	46.3	13.9	44.0	13.6	46.9	14.2
Secondary	28.4	10.8	28.4	11.2	28.4	10.9
Vocational/Technical	-	-	-	-	-	-
College and above	14.6	2.4	12.5	2.1	11.5	1.9
Occupation of/head of Households***						
Private business employer	16.0	0.7	24.0	0.9	12.0	0.5
Public sector employee	33.9	16.8	25.7	13.1	32.9	16.4
Private sector employee	30.0	3.1	40.0	4.2	36.7	3.8
Casual worker	65.1	9.3	61.4	9.0	69.9	10.0
Pensioner	52.5	16.0	53.7	16.8	52.5	16.1
Own account worker	41.2	15.2	50.2	17.2	42.1	16.1
Unemployed	60.5	11.8	61.1	12.2	57.9	11.4
Female Business activity	65.9	14.6	64.3	12.9	61.2	13.7
Marital Status by Head of Household						
Single	15.0	1.6	26.7	2.9	28.3	3.0
Married	46.1	59.9	44.3	59.4	45.3	59.2
Widowed	54.1	25.1	50.2	24.0	52.2	24.4
Divorced	49.5	9.2	44.7	9.1	46.7	8.7
Separated	52.1	4.3	54.2	4.7	56.3	4.7
Religion of Head of Household						
Orthodox Christian	47.7	84.8	52.8	84.9	47.1	84.5
Catholic	45.5	0.9	36.4	0.6	27.3	0.5
Protestant	46.4	2.2	50.0	2.2	39.3	1.9
Other Christian	40.0	0.3	60.0	0.5	20.0	0.2
Muslim	41.7	10.9	46.3	10.8	45.0	11.9
Ethnic Background of Head of Household	42.9	46.5	42.9	48.0	46.0	50.2
Amhara	42.9	46.5	42.9	48.0	46.0	50.2
Oromo	54.8	20.4	51.2	19.6	53.0	19.9
Tigre	34.8	8.4	32.9	8.1	28.4	6.9
Harari	33.3	0.3	16.7	0.2	16.7	0.2
Gurage	60.4	14.9	61.7	15.6	53.5	13.3

Table 10: Movements In and Out of Poverty

	1994-95		1995-97		1994-97	
	Count	%	Count	%	Count	%
Moved In	26/7	16.6	126	10.1	185	14.8
Moved Out	14/4	11.5	193	15.5	190	15.2
Net change	63	5.1	-67	-67	-5	-0.4

Table 11: Characteristics of Households that Move In and Out of Poverty

	1994 to 1995		1995 to 1997		1997 to 1997	
Household Characteristics	% Poor to Nonpoor	% Nonpoor to Poor	% Poor to Nonpoor	% Nonpoor to Poor	% Poor to Nonpoor	% Nonpoor to Poor
Household Age Structure						
15-29	11.1	22.2	17.5	7.9	12.7	14.3
30-39	11.5	13.7	15.3	10.7	14.8	12.5
40-59	11.9	16.1	14.6	9.6	15.0	14.1
60 and above	10.9	18.6	16.8	11.6	16.4	18.5
Sex of Household Head						
Male	11.6	16.6	13.9	9.0	14.0	14.1
Female	11.5	16.2	18.0	12.3	17.1	16.0
Household Size						
1	3.1	12.5	7.3	4.9	21.4	8.9
2-5	11.4	16.8	16.4	10.9	15.3	14.6
6-9	11.3	15.8	15.3	9.6	14.1	15.4
10	15.3	12.9	15.2	10.6	17.3	16.3
Education of Household Head						
No schooling	9.7	17.8	16.1	13.1	14.8	19.4
Religious/traditional	10.9	16.1	10.2	13.9	10.9	19.7
Primary (incomplete	19.2	15.8	17.1	10.8	23.2	13.7
Primary (complete)	12.0	19.4	17.7	10.9	14.3	14.9
Secondary	9.9	17.6	14.4	6.6	14.0	14.0
Vocational/technical	-	-	-	-	-	-
College and above	4.2	5.2	8.3	4.2	8.3	5.2
Occupation of/head of Households***	16.0	8.0	8.0	4.0	16.0	4.0
Private business	11.8	11.5	9.0	8.3	12.5	11.4
employer	11.7	23.3	13.3	8.3	16.7	23.3
Public sector employee	13.3	16.9	10.8	12.0	12.0	16.9
Private sector employee						
Casual worker	11.9	20.9	19.2	10.2	16.4	16.4
Pensioner						
Own account Worker	9.5	18.6	14.9	15.8	18.6	10.4
Unemployed	12.4	13.3	14.2	11.5	16.7	14.0
Others Female Business activity	15.5	14.0	19.4	14.7	19.4	16.3
Marital Status by Head of Household						
Single	6.7	21.7	11.7	10.0	5.0	16.3
Married	11.1	16.7	14.8	8.4	14.8	14.0
Widowed	14.2	16.1	19.5	16.1	18.3	16.4
Divorced	13.1	15.0	15.0	10.3	16.7	15.9
Separated	6.3	12.5	8.3	6.3	8.3	12.5
Religion of Head of Household						
None	11.1	11.1	11.1	11.1	-	-
Orthodox Christian	11.5	16.5	15.8	10.2	15.0	15.4
Catholic	18.2	9.1	18.2	9.1	18.2	-
Protestant	7.1	10.7	14.3	3.6	10.7	3.6
Other Christian	-	20.0	40.0	-	20.0	-
Muslim	12.8	18.1	12.8	11.4	11.3	14.6
Other	-	50.0	-	-	-	50.0
Ethnic Background of Head of Household						
Amhara	11.4	17.4	15.2	12.2	14.3	17.3
Oromo	11.5	14.3	13.8	9.2	15.7	13.8
Tigre	12.9	18.6	18.6	7.1	17.7	11.3
Harari	16.7	-	16.7	16.7	16.7	-
Gurage	11.2	17.5	20.3	7.0	18.8	11.8

Table 12a: Determinants of Welfare Change 1994 to 1995

Constant	90.4(11.5)	283.24(3.92)	278.21(3.85)
Base condition			
Cons.exp.per adult (1994)	-0.54(-12.9)	-0.72(-15-24)	-72(-15-14)
Human Capital			
No. of children		16.70(-4.65)	.15.98(-4.4)
No. of male adults		-13.87(-2.84)	-16.45(-3.32)
No. of female adutls		1.81(.37)	1.30(.26)
No of elederly		-18.86(-1.60)	-24.07(-1.95)
Sex of head		3.25(.21)	-58(-037)
Age of head		-6.01(-2.14)	-5.78(-2.06))
Age of head squared		.049(1.76)	0.48(1.72)
No schooling		-	-
Religious/traditional		16.23(.76)	16.68(.78)
Primary incomplete		18.29(.97)	19.82(1.05)
Primary complete		32.79(1.51)	33.85(1.56))
Secondary		63.65(2.81)	63.76(2.82)
College		65.92(2.36)	62.72(2.24)
Other educ.		-6.54(-30)	-6.18(-29)
Physical Capital			
House ownership		2.07(.176)	.79(.067)
No of durables		.99(1.513)	.98(1.50)
Value of durables		8.68(.227)	1.47(.384)
Employment			
Number employed in hh		14.63(2.40)	7.05(.643)
Private business employer		66.84(1.53)	81.54(1.81)
Own account worker		6.12(.281)	9.67(.442)
Female business activity		-28.78(-1.23)	-26.07(-1.11)
Public sector employee		-17.63(.812)	18.75(.853)
Private sector employee		-10.26(-.338)	-10.40(-341)
Casual worker		-40.06(-1.45)	-35.29(-1.27)
Pensioner		-23.51(-1.07)	-29.69(-1.35)
Unemployed		-11.58(-.427)	-13.90(-.513)
Change variables			
change in no. of children			6.94
Change in no. of male adults			-22.49(-2.07)
Change in no. of female adults			-7.33(-.769)
Change in no. of elderly			-26.07(-1.51)
Change of value of durable			-.001(-.120)
Change of number of durable			18.01(3.06)
Change in no. employed			6.10(.621)
Adi. R^2	0.12	0.18	0.18
F-ration	165.2	11.08	9.36

Table 12b: Determinants of Welfare Change 1995 to 1997

Constant	121.8(16..3)	197.0(2.58)	203.27(2.67)
Base condition			
-Cons.exp.per adult (1995)	-0.73(-25.0)	-85(-28.11)	-85(-28.47)
Human Capital			
No. of children		-16.34(-4.34)	-16.97(-4.49)
No. of male adults		-12.65(-2.54)	-17.29(-3.32)
No. of female adults		-14.60(-2.94)	-19.01(-3.63)
No. of elderly		-21.74(-1.81)	-32.58(-.067)
Sex of head		-1.26(-.078)	1.30(.081)
Age of head		-1.53(-.522)	-1.72(-592)
Age of head squared		013(.450)	014(.506)
No schooling		-	-
Religious/traditional		29.96(1.31)	29.57(1.30)
Primary incomplete		49.35(2.45)	45.43(2.27)
Primary complete		7.16(.311)	9.47(.414)
Secondary		66.68(2.76)	60.19(2.51)
College		145.14(4.89)	121.74(4.08)
Other educ.		39.88(1.74)	41.56(.1.83)
Physical Capital			
House ownership		-6.10(-.491)	-8.50(-.688)
No of durables		2.04(2.99)	2.08(3.09)
Value of durables		9.99(2.48)	8.49(2.13)
Employment			
Number employed in hh *		9.87 (1.72)	-17.29(-3.32)
Private business employer		91.84(1.99)	72.45(1.59)
Own account worker		33.95(1.48)	30.68(1.35)
Female business activity		-36.33(.1.47)	-36.52(-1.49)
Public sector employee		-2.95(-,129)	1.22(.054)
Private sector employee		-13.30(-.414)	-11.45(-.359)
Casual worker		-48.60 (-1.67)	-45.92(-1.59)
Pensioner		-26.90(-1.16)	-24.93(-1.09)
Unemployed			-
Change variables			
Change in no of children			-24.54(-1.61)
Change in no of male adults			-41.63(-2.93)
Change in no of female adults			-32.29(-2.69)
Change in no of elderly			-55.98(-2.11)
Change of value of durables			-1.29(-.055)
Change of value of durables			-8.70 (1.40)
Change in no. of employed			18.75(1.42)
Adj. R^2	0.33	0.39	0.41
F-ratio	626.5	30.79	26.67

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