WHY DOES POVERTY PERSIST
IN RURAL ETHIOPIA?

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Abstract

This paper seeks to address the question: why does poverty persist in rural Ethiopia? We argue that it is largely a lack of entitlements to fundamental livelihood assets which urges poor rural farmers into livelihood diversification to make a living. We base our findings on empirical work, which is based on information gathered from a three-round survey of 149 rural households in Ethiopia during 1999/2000 cropping season. The FGT poverty index is employed to examine the extent and severity of rural poverty and reveals that nearly 40% of the sample households live below poverty line with average poverty gap of 0.047. The binary logit estimates shed light on factors behind the persistence of poverty and indicates that rural poverty is strongly linked to entitlement failures to crucial assets such as land, human capital and oxen. The study also reveals that poor households attempt to smooth their consumption and income through livelihood diversification, among which petty trading, charcoal making and fuelwood gathering for sale, brewing and craftsmanship are the significant ones.

Key words: rural poverty, livelihoods, diversification, Ethiopia

1. Background

By any standard, the majority of people in Ethiopia are among the poorest in the world (Dercon and Krishnan, 1998; IMF, 1999; Rahmato and Kidanu, 1999; World Band, 2001). In order to combat such debilitating poverty in view of very scarce resource available to be allocated for the purpose, the poor must be properly identified and an index that takes in to account the intensity of poverty suffered by the poor should be constructed.

The Ethiopian Poverty Reduction Strategy Paper (PRSP) identifies four building blocks for its realization, namely: the strategy of Agricultural Development-led Industrialization (ADLI), judiciary

and civil service reform, decentralization and empowerment, and capacity building in the public and private sectors. Even though the PRSP recognises that poverty is multidimensional and multi-causal, it pays not enough attention to sustainable livelihood strategies or to social dimensions of anti-poverty strategies. If the 'rural sector' is to be seen as a priority with the main emphasis on increased agricultural productivity as the central plank in national poverty reduction strategy, it will be necessary for PRSP to analyse the sustainability of anticipated improvements in rural livelihoods. Sustainability analysis could be strengthened by identification of pathways towards diversification, risk analysis, environmental assessment, formal and informal social protection, and recognition of the role of savings in livelihood security.

2. Poverty in Ethiopia: Recent Studies

Analytical works that scrutinise poverty profile in Ethiopia is at best scanty. Even the available ones are mostly descriptive, focus on explaining the extent of poverty and most are associated with studies that relate to food entitlement failures (see Webb et al., 1992; Webb and Von Braun, 1994). Dercon and Krishnan (1996) examines the income portfolios of households in rural Ethiopia and Tanzania. Their findings point out that rural households facing very risky environment have good reasons to diversify their income sources.

Bevon and Joireman (1997) adopt a sociological approach towards measurement of poverty, with a focus on the meaning and use of different measurements, rather than on the real poverty, which they are claiming to measure. They emphasize that in rural Ethiopia non-economic forms of capital, such as social and human capital, are extremely important in determining life chances. More over, entitlement norms which include things as right to access to productive resources, political voice, right to leisure, inheritance rules and access to community support are crucial in determining household poverty.

Dercon and Krishnan (1998) assess changes in poverty levels between 1989 and 1995 and tested the robustness of measured changes to the problems of choice of poverty lines and impact

of uncertainty in measured inflation rates. They found that poverty declined between 1989 and 1994 but remained virtually unchanged between 1994 and 1995 and that households with substantial human and physical capital, and better access to roads and towns have both lower poverty levels and are more likely to get better off overtime. They have also observed that human capital and access to roads and towns reduce the fluctuations in poverty across the seasons.

Using micro-level panel data from villages in rural Ethiopia, Dercon (2001) analyses the determinants of growth and changes in poverty during the initial phases of the economic reform (1989-1995) making use of a standard decomposition of income and poverty changes. Even though he observed that the reforms do not deliver similar benefits to all the poor, overall, consumption grew and poverty fell substantially during the period under consideration. He further found that the main factors driving income changes are relative price changes, resulting in changes in the returns to land, labour, human capital and location. Empirical results also indicate that the poor have benefited on average more from the reforms than the non-poor households.

The most recent study carried out by Ministry of Finance and Economic Development (MoFED) is primarily based on the 1999/2000 Household Income and Consumption Expenditure (HICE) and Welfare Monitoring Survey results. Empirical results indicate that incidence of poverty is higher in rural than in urban areas with poverty head count ratio of 45.4 and 36.9 percent, respectively (MoFED, 2002). However, as compared to the 1995/96 level, poverty incidence increased by 11.4% in urban areas and declined by 4.42% in rural areas in 1999/2000 even though the overall poverty incidence decreased by 2.86% during the same period.

Essentially what distinguishes the current study from previous ones is the recognition that people, including the poor, are resourceful and have their own forms of assets and strategies. The underlying assumption behind many poverty reduction schemes is that people need something to do that is more productive in order to bring them out of poverty. The livelihood approach employed here assumes that people are already doing a number of creative and productive activities. They have, over generations, developed strategies, including livelihood diversification,

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appropriate to their context. The problem is that structural causes of poverty such as unfavourable property right regimes, unequal power relations, racial and ethnic conflicts (to mention only a few) have eroded indigenous resourcefulness, assets and resilience to shocks. The goal of a sustainable livelihood study is, therefore, to build on existing assets and resourcefulness in order to expand people's choices and capabilities and their potential to make choices. The results provide meaningful insight about various poverty-generating factors and the relevance of various policies, such as the feasibility of using targeting devices.

3. Methodology

3.1. Data Source

The data examined in this paper came from a one-year rural household survey conducted in three districts of Ethiopia during the 1999/2000 cropping season (Bogale, 2002). The study has adopted a stratified random sampling procedure with rural household as an ultimate unit for acquiring first hand information. Three administrative districts, namely Alemaya, Hitosa and Merhabete, were selected purposively to represent major farming systems in Ethiopia. A structured survey questionnaire was designed to collect relevant information. A total of 149 households have provided complete information for the three-round survey, from which data on demographic characteristics, crop and livestock production, household income, household consumption, and land use and management were gathered. Data on farming activities as well as returns from a total of 540 plots owned by sample households were collected. The visits were executed following a cropping calendar for the major crops in each district.

3.2. The Empirical Model

3.2.1. Measurement and Decomposition of Poverty

With the increased awareness and availability of data, various measures of poverty have been developed overtime, among which the Foster, Greer and Thorbecke (1984), FGT, class of poverty index is the most commonly applied. Given a vector of suitable measure of well-being, *Y,* in increasing order, $Y_1, Y_2, Y_3,...,Yn$, where *n* represents the number of households under consideration, the FGT poverty index (P_α) can be expressed as (Baffoe, 1992):

(1)

$$P_\alpha = \frac{1}{n} \sum_{i=1}^{q} (g_i / z)^\alpha$$

Where z is poverty line, q is the number of the poor, g_i is shortfall in chosen indicator of well-being. If, for instance, x_i denote the per capita calorie intake of household i, then $g_i = z_i - x_i$ if $x_i < z$; $g_i = 0$ if $x_i \geq z$, and α is the poverty aversion parameter ($\alpha \geq 0$).

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

3.2.2. The Probability of Being Poor

To characterise the poor in the study areas, a probability model is used in which the chances of falling below the poverty line are linked to household and geographical characteristics, which may at the same time be poverty generating factors.

Given the dependent variable of main interest that a household may be classified as poor or non-poor, a binary logit model can be used for the analysis of the data. Consider that a household is poor (Y=1) if per capita household food consumption is less than 2300 kcal per day or non-poor (Y=0) if the food consumption shortfall is less than or equal to zero. A set of factors, mentioned elsewhere, gathered in a vector X, could explain the response so that:

$$Y_i^* = X'_i\beta + u_i \qquad (2)$$

where Y_i^* is the underlying latent variable that indexes the measure of poverty, u_i is the stochastic error term, and β is a column vector of parameters to be estimated. Following Greene (1993) and

$$\mathrm{Prob}(Y_i = 1) = \frac{\exp(X'_i\beta)}{1 + \exp(X'_i\beta)}$$

assuming that the cumulative distribution of u_i is logistic, a logit model is employed. In this case, the probability of being poor can be given by: $\qquad (3)$

Then, the marginal effect of a particular independent variable, X_i, on the probability of the occurrence of the response is given by (Maddala, 1993):

$$\frac{\partial P(Y = 1)}{\partial X_i} = \left[\frac{\exp(X'_i\beta)}{[1 + \exp(X'_i\beta)]}\right]\beta_k \qquad (4)$$

Unlike linear models in which the marginal effects are constant, in the case of logit models, we need to calculate them at different levels of the explanatory variables to get an idea of the range of variation of the resulting changes in the probabilities.

4. Empirical Results and Discussion

4.1. Poverty Profile

This section examines the extent of poverty across the districts under consideration employing the three most common indices, namely: the incidence of poverty, the depth of poverty and severity of poverty (FGT(2)). The incidence of poverty using both per capita household calorie

consumption and per capita household expenditure to meet the cost of basic needs criteria is presented in Table 1. The results indicate that 38% and 43% of the sample households are deemed poor using the former and the alternative criteria, respectively. Regional comparison of incidence of poverty employing the former criteria shows that the proportion of households living in poverty is markedly the highest in Merhabete. Applying the alternative criteria, though it shows a varying impact on the head count index, it did not reveal any change in ranking of districts.

Table 1. Poverty incidence and severity

District	Head count index		Poverty deficit		FGT(2) index	
	Food energy consumption	Cost of basic needs	Food energy consumption	Cost of basic needs	Food energy consumption	Cost of basic needs
Alemaya	0.30	0.35	0.0305	0.0353	0.0086	0.0074
Hitosa	0.12	0.24	0.0127	0.0352	0.0027	0.0098
Merhabete	0.68	0.66	0.0891	0.1368	0.0148	0.0340
Overall	0.38	0.43	0.0466	0.0734	0.0089	0.0182

The poverty deficit reflects the total deficit of all the poor households relative to the poverty line (Ravallion and Bidani, 1994). It is, therefore, a much more powerful measure than the head count ratio because it takes in to account the distribution of the poor below the poverty line. It also reflects the per capita cost of eliminating poverty. The results from the survey reveal that, using both criteria, the depth of poverty is higher in Merhabete, followed by Alemaya and Hitosa, implying that more resource is required to bring the poor households out of poverty in Merhabete than Alemaya and Hitosa. An overall poverty depth of 0.0466 means that if the country could mobilise resources equal to the 4.66% of the poverty line for every individual and distributes these resources to the poor in the amount needed so as to bring each individual up to the poverty line, then at least in theory, poverty could be eliminated.

Among the advantages of FGT poverty index is its decomposability property which makes it possible to investigate the severity of poverty in more detail. From Table 2, we can deduce that if appropriate measures are undertaken to fight and ultimately eliminate poverty in Alemaya, Hitosa

and Merhabete districts, then poverty severity would be reduced by 27.74, 9.98 and 62.25%, respectively. The results also show that poverty is not only most severe in Merhabete district, but there is also a very high geographical concentration of the poor in the district as 65.5% of the poor households in the sample reside there.

Table 2: Geographical concentration and average consumption shortfall of the poor

District	Contribution to poverty (%)	Consumption shortfall (%)	Concentration of the poor
Alemaya	27.74	10.01	24.14
Hitosa	9.98	10.60	10.34
Merhabete	62.25	13.13	65.51
All households	---	12.17	----

The FGT index also allows us to decompose severity of poverty among the poorest of the poor, results having important policy implications. The results suggest that the severity of poverty is more intense at the lowest decile. More precisely, if the bottom 30% of the poor households were correctly identified and made non-poor, then poverty severity would decrease by 78.65%, while severity of poverty will decline only by 1% if the top 30% of the poor is to benefit from poverty reduction programmes. Therefore, poverty has become sever for the poorest of the poor and appropriate targeting of a specific segment of the poor households will have its own payoff.

4.2. The Determinants of Poverty

Table 3 regresses the binary response variable, being poor (Prob(P=1). A glance at the results verifies that most of the explanatory variables in the model have the signs that conform to our prior expectations. It is also evident that most of the variables are statistically significant at 10% or lower level. Employing both criteria, the results from the pooled data across regions highlights the importance of household resource endowment in determining poverty. Land holding per adult equivalent and ownership of oxen are both significant in determining the probability of a household to be poor. Household characteristics such as household size and composition have the

desired signs but their effect is not found to be statistically significant. This weak association reflects the fact that in rural Ethiopia children, even at the age of six years, contribute to the household labour force and so to its production capacity. Looking after livestock and participating in weeding are among the prime activities of boys; where as fetching water and fuel wood gathering are among the traditional responsibilities of girls.

Table 3. Binary logit coefficient estimates for determinants of Poverty

Variable	Food calorie intake		Costs of basic needs	
	Parameter Estimate	Standard Error	Parameter Estimate	Standard Error
Age of household head (Age)	-0.1257*	0.0750	0.0209	0.0335
Dummy for Alemaya	-9.4884**	4.8556	-7.459***	1.7646
Dummy for Hitosa	-7.7750**	3.5351	-3.169***	1.0559
Dependent ratio (Dep)	0.3416	0.7315	0.5770	0.4834
Education of head (Educ)	-2.6397*	1.4379	-1.55***	0.4854
Per capita expenditure (Exp)	-0.0075	0.0076	---	---
Dummy for sex (Male=1)	2.378***	0.7603	-1.334	1.0009
Household size (HHS)	0.4577	0.3397	0.3583*	0.1845
Per capita income (PCI)	-0.0163**	0.0067	-0.015***	0.0058
Land holding per AE (LMR)	-22.1213**	9.3990	-8.714**	4.2748
Number of oxen owned (Ox)	-1.8778*	1.1196	-1.841***	0.6065
Constant	34.3309***	13.5500	6.738***	2.8269
-2 log Likelihood	128.415		60.728	
Percent correctly predicted	95.30%		91.95	

Note: *, ** and *** indicate that the coefficients are statistically significant at 0.1, 0.05 and 0.01 level.

The probability of a household being poor tends to diminish as age of the household head increases using per capita household calorie consumption. This can be explained by firstly, asset ownership tends to increase with age; and secondly, the composition of the family changes in time, as those children grow up and either can contribute labour force to various farm activities or leave the household. But note that the sign of the coefficient corresponding to age of household changes when per capita household expenditure is considered to define the poverty line and used as a response variable in the logit model implying that aged household heads have less to spend on household consumption.

The coefficient associated with gender of the household head, apparent in Table 3, could be worth mentioning, given the standard presumptions. While the probability of being poor for

male-headed households is higher than the female-headed households employing the per capita food energy consumption, female-headed households have higher incidence of poverty if household consumption expenditure is considered as a criteria, although the coefficient is not statistically significant (P > 0.10) in the latter case. That means, male-headed households have better capacity to comply with the minimum consumption expenditure required to meet the requirements, but fail to realise it in terms of actual food consumption.

The coefficient on education reflects the prime role that human capital plays in determining poverty. In fact, education is an important dimension of poverty itself, when poverty is broadly defined to include shortage of capabilities and knowledge deprivation. It has important effect on the poor children's chance to escape from poverty in their adult age and plays a catalytic role for those who are most likely to be poor, particularly those households living in rural communities. Education is expected to lead to increased earning potential and improve occupational and geographic mobility of labour. Therefore, it deserves an important place in formulating poverty reduction strategy.

Table 4. The probability of being poor, marginal effect in percent

Explanatory variables	Marginal Effect
Age of household head in years (Age)	-0.28
Dependent ratio (Dep)	0.76
Education of household head (Educ)	-5.89
Dummy for sex of household head (Male=1)	5.32
Household size in number (HHS)	1.02
Land holding per adult equivalent (LMR)	-49.43
Number of oxen owned (Ox)	-4.19

A more appealing interpretation of parameter estimates in a logit model is explaining the marginal effect of each exogenous variable. A possible interpretation of the results presented in Table 4 is that, for instance, it is expected that an additional year for the head of household (as a proxy for experience in farming), all other variables held at their mean values, decreases the

probability of a household to be poor by about 0.28%. Similarly, promoting the household head by one level of education will reduce the risk of poverty by nearly 6%.

5.   Building on Capabilities Against Pervasive Poverty: Livelihood Diversification

The contribution made by livelihood diversification to rural livelihoods is growing in significance through out sub-Saharan Africa due to the importance of earning from non-farm activities. Given the uncertainties surrounding crop production and the inadequacy of the returns to maintain the household for the entire year, many rural households in the study areas are engaged in undertaking diverse activities in seeking additional income from sources other than agriculture. These non-farm activities, especially during the dry season, include petty-trade, bee-keeping, liquor brewing and selling and craftsmanship. These activities, which are not related directly to farming, are reported to contribute for 57% and 71% of total net income of the non-poor and poor household, respectively in Ethiopia (Webb and von Braun, 1994).

In Alemaya district, both men and women are actively involved in petty trading. Trading items such as *t'chat*, potato, carrot, onion, various spices and others, are mainly bought from smallholder farmers, and transported to the market centres either by vehicle or donkey back, in order to make a margin of profit. Farmers, particularly female-headed households, also engage in retail trade of non-farm and/or non-agricultural items such as coffee, soap, sugar, salt, tobacco, etc. These items are bought from wholesalers in Alemaya, Harar or Dire Dawa and sold to rural households at rural villages in the smallest units possible.

Charcoal making and fuelwood selling subsidize farming households in all the three districts, at varying degree. 18.6 %, 12.4% and 23.2% of sample households in Alemaya, Hitosa and Merhabete, respectively, have involved in such activities during the survey year. Even though its contribution to overall average household income is found to be very small, less than 2%, farmers skilled in charcoal production are making attractive income from it. These farmers are, however, blamed and considered to be the primary causes for ever declining forest and bush land in rural

areas. Scarcities of appropriate wood species and the control by ministry of agriculture regional and district offices have made the preparation and sale of charcoal more difficult. However, these control measures are not constantly observed and can also be by-passed through minor corruption. Sale of construction poles from eucalyptus plantation planted around the homestead, grazing land and along borders also account for income of households in Hitosa and Merhabete.

Distilling local alcoholic drinks (*araki*) and brewing *tella* for sale constitute the main income generating activities mainly for female-headed households in Merhabete. One of the sample households reported to generate up to 63% of the total household income from these activities. Their contribution in Hitosa and Alemaya is constrained by religious convictions, as large majority of the households there are followers of Islam. It is also possible to observe significant seasonal variations in the income generated from these activities. The activities approaches their maximum level just after harvest period when the purchasing power of rural households also attains its maximum, and then subsides attaining minimum during sawing period, when farmers have both little time to spend on leisure and little, if any, money left at their disposal.

Handicrafts are another major sideline activity performed by farmers with the necessary background skills. Traditional smiths produce various farm implements and household equipment such as plough tips, axes, sickles, knifes, etc. Weavers are mainly active in Merhabete producing various sorts of cloths from cotton spun prepared by a housewife suitable for all members of the household; for female or male, girls or boys, children or elders, appropriate for day or night. In return they will receive money or in kind payment for their labour. The introduction of modern textile products at relative low prices has resulted in the confinement of these activities in the hands of few individuals. Basket and rope making for sale are among the subsidiary activities reported in Alemaya. In general handicrafts contributed only 6% of the overall average income of the sample households. However, for those households who possess the appropriate skills and largely depend on them, they accounted up to a maximum of 53% of the household income.

Livelihood analysis, using an assets framework could help foster appreciation of the way that combinations of these assets are vital to secure livelihoods. Assets are not simply resources that simply people use in building livelihoods; they give people the capacity to be and to act. Clearer identification of livelihood strategies would provide a clearer base on which to focus practical poverty reduction interventions and to assess outcomes. The sustainable livelihoods approach (Sen, 1999; Carney, 1998; Chambers and Convey, 1992) seeks to develop an understanding of the factors that lie behind people's choices of livelihood strategies and then reinforce factors, which promote choice and flexibility. Because the more choice and flexibility people have in their livelihood strategies through livelihood diversification, the greater their ability to withstand the external shocks and stresses.

The results furthermore imply that poverty is to some extent explained by disparities among regions in terms of lack of adequate infrastructure and resource degradation. It is evident from the results that reducing poverty the regions through geographical targeting would have larger impact. This can help improve the design of poverty alleviation programs and determine the ways in which a budget can be distributed so as to maximise poverty reduction. Therefore, poverty alleviating programmes should rely on geographic targeting as a crucial device to guide resource allocation.

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