## African Economic Conference 2009

Fostering Development in an Era of Financial and Economic Crises

11 – 13 November 2009 • United Nations Conference Centre • Addis Ababa, Ethiopia

# GROWTH, POVERTY AND INEQUALITY IN ETHIOPIA: WHICH WAY FOR PRO-POOR GROWTH?

ALEMAYEHU GEDA
ABEBE SHIMELES
JOHN WEEKS

African Development Bank Group

Economic Commission for Africa

# GROWTH, POVERTY AND INEQUALITY IN ETHIOPIA: WHICH WAY FOR PRO-POOR GROWTH?

ALEMAYEHU GEDA[1,2]*, ABEBE SHIMELES[2,3] and JOHN WEEKS[4]
[1]*Department of Economics, Addis Ababa University, Addis Ababa, Ethiopia*
[2]*Economic Commission for Africa (ECA), Addis Ababa, Ethiopia*
[3]*Gothenburg University, Gothenburg, Sweden*
[4]*University of London, London, UK*

**Abstract:** The paper examines the pattern of poverty, growth and inequality in Ethiopia in the recent decade. The result shows that growth, to a large extent depends on structural factors such as initial conditions, vagaries of nature, external shocks and peace and stability both in Ethiopia and in the region. Using a rich household panel data, the paper also shows that there is a strong correlation between growth and inequality. In such set up, the effect of implementing a pro-poor growth strategy, compared to allowing the *status quo* to prevail, can be quite dramatic. On the basis of realistic assumptions, the paper shows that from a baseline in 2000 of a 30 per cent poverty share, over 10 years at growth of 4 per cent per capita, poverty would decline from 44 to 26 per cent for distribution neutral growth (DNG) (i.e. no change in the aggregate income distribution). In contrast, were the growth increment distributed equally across percentiles (equally distributed gains of growth, EDG), the poverty would decline by over half, to 15 per cent, a difference of almost eleven percentage points. Thus, 'distribution matters', even, or especially in a poor country like Ethiopia. On the basis of these results the paper outlines policies that could help to design a sustainable pro-poor growth strategy. Copyright © 2008 John Wiley & Sons, Ltd.

**Keywords:** poverty; growth; inequality; distribution of income; pro-poor growth; Ethiopia; Africa
**JEL classification:** O40, O55, O11, O12 and P46

## 1 INTRODUCTION

Poverty reduction is the core objective of the Ethiopian government. Economic growth is the principal, but not the only means to this objective. This policy approach raises

*Correspondence to: Alemayehu Geda, Department of Economics, Addis Ababa University, P.O. Box 1176, Addis Ababa, Ethiopia. E-mail: ag@ethionet.et

fundamental questions: (1) what are the mechanisms and conditions by which economic growth translates into poverty reduction? (2) How do initial poverty and inequality affect the prospect for sustained and rapid economic growth? And (3) what are the links among economic growth, income distribution and poverty in the short and long term? This paper is aimed at addressing these questions.

The pattern of growth in Ethiopia, based on data for the last four decade, can be characterised as erratic. This is greatly related to the vagaries of nature (which affects the performance in the agricultural sectors) and other external shocks. The sectoral growth performance reported in Table 1 below shows this point vividly. The table shows that: (a) sectoral growth trends, in particular, in industrial and agricultural sectors are quite erratic and (b) the trend of sectoral composition of the source of growth is also quite erratic. These two points are shown, rather dramatically, in the first four columns of Table 1, where we purposely picked typical high and low growth years. These unusual years show that the source of erratic growth rates (the positive growth in 1982/1983 and 1995/1996 and the negative growth in 1997/1998) could be traced mainly to the performance in the agricultural sector.

This reading from the trend in Table 1 can further be examined by a more rigorous exercise, such as determinants of growth and growth accounting exercise using standard economic models in Section 2. These models demonstrate this same conclusion (see Alemayehu *et al.*, 2002 for details).

The rest of the paper is organised as follows. Section 2 explores the source of growth in Ethiopia by specifying a Cobb–Douglas (CD) production function and estimating it using both macro and micro data. The result of the estimations is used to conduct a growth accounting exercise. This is followed by Section 3 which lays the analytical framework used to examine the growth, poverty and inequality nexus in Ethiopia. The framework is illustrated using macro level data. The same issue is further explored, in Section 4 using household survey/micro data. Section 5 concludes the paper by forwarding the implication of the study.

## 2  SOURCE OF GROWTH IN ETHIOPIA

In this study, we have carried out a growth accounting exercise with a model estimated using time series data for Ethiopia.

### 2.1  The Model

We have used a typical CD production function of the following generic form:

$$Y = F(K, L, A) \tag{1}$$

where: *Y*, *K*, *L* and *A* are, respectively, output, capital, labour and efficiency indicators.

This model is estimated using both macro and micro (household survey) data. The arguments in the micro version of the model are modified to take the following specific form:

$$Y = f(\mathbf{X}, \mathbf{Z}) \text{ and in a log form} \tag{1a}$$

$$\mathrm{Ln}Y_i = \Sigma \beta_j \ln \mathbf{X}_{ij} + \Sigma \alpha_j \ln \mathbf{Z}_{ij} + \gamma + \mu_i \tag{1b}$$

Table 1.   Growth performance of the Ethiopian economy: 1981–2007.

| Gregorian calendar | Typical year | | | | Half-decade average | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1981/1982 | 1982/1983 | 1995/1996 | 1997/1898 | 1982/1983 1986/1987 | 1987/1988 1991/1992 | 1992/1993 1996/1997 | 1997/1998 1999/2000 | 2000/2001 2005/2006 | 2000/2001 2006/2007* |
| Agriculture and allied activities | −3.6 | 13.6 | 14.7 | −10.8 | 1.9 | 1.2 | 4.8 | −1.7 | 6.5 | 13.2 |
| Industry | 8.5 | 5.9 | 5.4 | 2.3 | 6.5 | −8.3 | 11.2 | 5.6 | 6.8 | 9.0 |
| Mining and quarrying | 19.4 | 2 | 13.1 | 10.1 | 10.5 | 28.1 | 12 | 9.7 | 7.1 | 8.2 |
| Large and medium scale manufacturing | 6.3 | 2.6 | 7.8 | −3.5 | 5.8 | −10 | 17 | 7.1 | 3.8 | 7.0 |
| Small scale industry and handicrafts | 6.3 | 11.1 | 7.1 | 4.5 | 4.7 | −4.1 | 7.8 | 3.8 | 6.5 | 11.0 |
| Electricity and water | 6.5 | 4.7 | −7.3 | 3.7 | 4.9 | 3.9 | 3 | 4.2 | 7.2 | 9.0 |
| Construction | 13.5 | 7.6 | 7.4 | 8.6 | 9.7 | −14.7 | 12 | 4.9 | 9.7 | 9.6 |
| Distributive services (a) | 4.4 | 2.8 | 9 | 5.6 | 4.5 | −4.7 | 10.3 | 5.5 | 6.8 | 8.7 |
| Trade, hotels and restaurants | 4.6 | 1 | 8.5 | 4.5 | 4 | −9.5 | 13.8 | 4.9 | 5.0 | 8.1 |
| Transport and communications | 3.8 | 7.2 | 9.5 | 7.2 | 6.1 | 3.3 | 6.5 | 6.5 | 8.7 | 9.2 |
| Other services (b) | 6.3 | 7.8 | 5.9 | 13.4 | 5.5 | 1.8 | 8.8 | 11.2 | 8.4 | 11.7 |
| Banking, insurance and real state | 4.6 | 12.7 | 8.6 | 5 | 4.7 | −0.6 | 9 | 6.2 | 13.1 | 19.2 |
| Public administration and defence | 9.5 | 6.3 | 4.8 | 24.6 | 7.4 | 0.5 | 12.3 | 18.3 | 3.6 | 7.8 |
| Education | 3 | 3.4 | 3.5 | 5.1 | 2.1 | 4.8 | 2.3 | 6 | 11.0 | 11.8 |
| Health | 4.6 | 5 | 5.1 | 9.9 | 4.8 | 2.9 | 10 | 5.3 | 9.9 | 13.3 |
| Domestic and other services | 5.8 | 5.9 | 5.8 | 5.3 | 6 | 6.8 | 5.9 | 5.1 | 4.4 | 6.5 |
| Total service (simple mean of a and b) | 5.4 | 5.3 | 7.4 | 9.5 | 5 | −1.5 | 9.6 | 8.4 | 7.6 | 10.2 |
| Real GDP growth | 0.5 | 10.1 | 10.6 | −1.2 | 3.2 | −0.7 | 7 | 3.5 | 6.2 | 10.6 |

*Source*: computed from MOFED (2002 and 2007)—GDP at constant factor cost data.
*Includes the MOFD macro model forecast for the year 2007.

where $Y$ is the quantity of output (cereal production); $\mathbf{X}$ a vector of physical inputs including labour, land, oxen and fertilizer used in the production process. $\mathbf{Z}$ is a vector of other factors that affect the operation of rural agents such as availability of credit, land quality and risk factors. $\gamma$ and $\mu$ are constant and error terms, respectively.

Assuming a logarithmic form for Equation (1) and its estimation using an error correction model (ECM), we have carried out a growth accounting exercises using

$$\frac{\Delta Y}{Y} = \beta \left( \frac{\Delta K}{K} \right) + (1 - \beta) \left( \frac{\Delta L}{L} \right) + \frac{\Delta A}{A} \tag{2}$$

where $\beta$ is the capital share and $(1 - \beta)$ the labour share in total output.

Given the actual growth rate, the *Solow residual/total factor productivity* ($\Delta A/A$) can be derived as residual. We have estimated Equation (2) using the logs of real GDP, capital stock and labour (economically active population). The growth accounting with the three measures of source of growth for two (short and long run) versions of the above model, using data for 36 years (1960–2001)[1] are given in Table 3.

## 3   DATA AND ESTIMATED RESULTS

### 3.1   The Macro Version

Table 2 shows two versions of an ECM based estimated results of the aggregate CD production function model specified as Equation (1) above.[2] In both version of the model (columns 1 and 2) labour has strong contribution (with a growth elasticity coefficient that ranges from 0.73 to 0.91) in the short run. This result is statistically significant only in second version of the model (column 2 in Table 2) and in another version of the same model estimated with rainfall data as additional variable (not reported[3]). On the other hand, although its potency is low (with growth elasticity of 0.30), the contribution of capital to growth is found to be statistically significant in the short run.

In the long run, however, the contribution of capital is not only economically insignificant but also statistically not different from zero. The contribution of labour, however, comes to be statistically significant. Its potency being as strong as in the short run (with a long run growth elasticity of about 0.93[4]). The models also show quite fast adjustment coefficients, where more than half of the deviation from the equilibrium growth in the previous period being made up in the current period. The major conclusion that could be made from Tables 2 and 3 is that growth in Ethiopian is predominantly explained by labour—this is a result that stands in sharp contrast to the cross-country findings (see Alemayehu *et al.*, 2002). This apparent contradiction in the two approaches may be better

---

[1]The description of the data and diagnostic tests of the model are given in Alemayehu *et al.*, 2002.
[2]All appropriate time-series analysis of the models (unit-root and co-integration tests) as well as an experimental estimation using different datasets (as well as including and excluding rainfall data) are explored at estimation stage. We reported here the preferred model details of which are given in Alemayehu *et al.* (2002).
[3]Over 24 models (including and excluding rainfall as explanatory variable; with adjusted and unadjusted GDP growth data for the 1973 data revision; as well as with dummies for regime shifts) are estimated. To save space, these results are not reported here and could be obtained from the authors.
[4]This is obtained by dividing the coefficient of labour in column 2 (0.29) by the error-correction term (0.31)—the coefficient of the lag-dependent in column 2).

Table 2. Error correction model (ECM) based estimation of CD-production function: dependent variable is change in logarithm of output (1962–1998)

| Regressors | Column 1 compact ECM | | Column 2 scattered ECM | |
|---|---|---|---|---|
| | Coefficient | *t*-value | Coefficient | *t*-values |
| Constant | −0.005 | −0.27 | 1.87 | 2.80* |
| Log of capital ($\Delta K$) | 0.30 | 3.44* | 0.29 | 3.50* |
| Log of labour ($\Delta L$) | 0.73 | 1.23 | 0.91 | 1.67** |
| ECM$_{(t-1)}$ | −0.89 | −2.48* | | |
| Log of capital$_{t-1}$ ($K_{t-1}$) | | | 0.01 | 0.30 |
| Log of labour$_{t-1}$ ($L_{t-1}$) | | | 0.29 | 2.58* |
| Log of ouput$_{t-1}$ ($Y_{t-1}$) | | | −0.31 | −2.87* |
| | $R^2 = 0.38$ | | $R^2 = 0.41$ | |
| | $F = 4.8$ | | $F = 4.2$ | |
| | DW = 1.65 | | DW = 1.69 | |

*Significant at 1(10) per cent (see also Alemayehu *et al.*, 2002 for details).
**Significant at 1(10) per cent (see also Alemayehu *et al.*, 2002 for details).
*Source*: authors' computation based on MOFED data.

understood by estimating production function using micro (household level data). This is done in the next section.

## 4 GROWTH ACCOUNTING FOR ETHIOPIA

The growth accounting exercise in Table 3 is based on a CD production function estimated and reported in Table 2 above. A number of conclusions can be drawn from the results reported in the Table. First, both the short and long run models show the dominant role of

Table 3. Source of growth for Ethiopia: time series-based model

| EFY | Output growth | Source of growth | | |
|---|---|---|---|---|
| | | Capital | Labour | Total factor productivity |
| Long run model | | | | |
| 1953–1959 | 4.7 | −0.1 | 1.8 | 3.0 |
| 1960–1969 | 2.7 | −0.1 | 2.3 | 0.5 |
| 1970–1979 | 3.0 | 0.0 | 2.4 | 0.6 |
| 1980–1989 | 3.1 | 0.1 | 2.3 | 0.7 |
| 1990–1993 | 3.5 | 0.4 | 1.7 | 1.4 |
| 1953–1993 | 3.2 | 0.0 | 2.2 | 1.0 |
| Short run model | | | | |
| 1953–1960 | 4.7 | −0.4 | 1.4 | 3.8 |
| 1960–1970 | 2.7 | −0.7 | 1.7 | 1.6 |
| 1970–1980 | 3.0 | 0.0 | 1.8 | 1.2 |
| 1980–1990 | 3.1 | 0.3 | 1.7 | 1.1 |
| 1990–1993 | 3.5 | 2.0 | 1.2 | 0.2 |
| 1953–1993 | 3.2 | 0.0 | 1.7 | 1.5 |

*Source*: Owen computation (see details of the model in Alemayehu *et al.*, 2002).

labour in accounting for the positive growth in the period under analysis. Although direct comparison is a bit problematic, this is in sharp contrast to the cross-country results reported for Ethiopia (see Alemayehu and Befekadu, 2005). Second, both the short and long run models depict a similar pattern about the contribution of factor inputs to growth. Third, the contribution of capital, although disappointing in the first two periods, seems to pick up in the 1990s. Fourth, over the entire period, the average contribution of capital is negligible while that of labour and factor productivity is positive and significant. Finally, the contribution of factor productivity, although not impressive, is in general positive.

## 4.1   The Micro Version

To investigate the issue of growth from the micro perspective the CD production function specified in Equations (1a) and (1b) is estimated using micro data of 1500 rural households collected by the department of Economics of Addis Ababa University (AAU) using stratified sampling (see details about the data and this model in Alemayehu *et al.*, 2002). Ideally, this should have been approached by estimating the micro-based production function using nation-wide household survey. However, the two nation-wide household surveys of 1996 and 2000 do not have the data required. We have used, hence, the Department of Economics data for the year 2000 and 2004 (the latest available).

   We have hypothesized that economic agents in Ethiopia are constrained by economic, political and environmental factors. Partly because of available data and partly by sheer magnitude of the rural economic agents, the focus is on these economic agents. Economic factors (factor inputs including credit availability) accompanied by environmental/natural factors like distribution and availability of rainfall, prevalence of frost and flood, do affect the operation of these agents. Political economic factors such as land redistribution are also very important in rural Ethiopia. We have explored this by estimating a model that attempts to capture these issues. Specifically, we focused on cereal producers since cereal production accounts for more than 80 per cent of the total agricultural production (CSA, 1999). The model is estimated using Tobit regression method because of the truncation of the data used.

   In the simplest CD production function, as is done in the macro version above, the physical inputs are labour and capital. But for a typical rural economy, it is hard to measure capital stock used in the production process. Thus, the land under cultivation by the household and ox/oxen used in the production process are used as a proxy for capital stock. Two risk factors are also considered. The first one relates to environmental risk: availability of rainfall and its distribution, prevalence of storm, hail, frost and floods. The second risk factor is a political one and relates to the periodic distribution of land—this has been and still is the policy both in the *Derg* and post-*Derg* period. This indicator is believed to show the disincentive effect of such periodic land redistribution. The estimated results of this model are reported in Tables Table 4 and Table 5, for the years 2000 and 2004, respectively.

   The estimated results for oxen, land and labour in the micro version of the model worths further examination. If oxen are a good proxy for capital, the micro model result tallies both with the time series result reported above and cross-country data based study of Alemayehu and Befekadu (2005) where the capital share coefficient ($\beta$) is about 0.28–0.36 in the year 2000 and about 0.17–0.23 in 2004. Thus, the weakness of both the cross-country and time-series model lies in their failure to take the size of land holding as a regressor.[5] The

---

[5]These are data, than a technical problem, however.

Table 4.  Tobit estimates: dependent variable: output (year 2000)

| | Column 1 | | Column 2 | | Column 3 | |
|---|---|---|---|---|---|---|
| | Coefficients | *t*-value | Coefficients | *t*-values | Coefficient | *t*-values |
| Constant | 4.29 | 49.5 | 4.19 | 50.3 | 4.05 | 44.6 |
| Ln (labour) | 0.21 | 9.0 | 0.15 | 6.54 | 0.15 | 6.61 |
| Ln (land) | 1.51 | 17.0 | 1.38 | 16.16 | 1.11 | 11.54 |
| Ln (oxen) | 0.36 | 5.44 | 0.33 | 5.25 | 0.28 | 4.52 |
| Credit | | | 0.14 | 2.0 | 0.11 | 1.5* |
| Fertilizer use | | | 0.63 | 10.9 | 0.58 | 10.1 |
| Land quality | | | 0.04 | 50.0 | 0.014 | 0.70* |
| Redistribution | | | | | −0.08 | 1.65 |
| Climate | | | | | 0.01 | 5.8 |
| | LR $\chi^2(3) = 770.54$ | | LR $\chi^2(6) = 917.39$ | | LR $\chi^2(8) = 928.27$ | |
| | Log likelihood $= -1678.4$ | | Log likelihood $= -1757.29$ | | Loglikelihood $= -1683.9$ | |
| | Pseido $R^2 = 0.2141$ | | Pseudo $R^2 = 0.2166$ | | Pseudo $R^2 = 0.1798$ | |

Number of obs $= 1291$, 11 left-censored observations at ln(output) $\leq 0$ 1280 uncensored observation.
*Not significant; others being significant.

Table 5.  Tobit estimates: dependent variable: output (year 2004)

| | Column 1 | | Column 2 | | Column 3 | |
|---|---|---|---|---|---|---|
| | Coefficients | *t*-value | Coefficients | *t*-values | Coefficient | *t*-values |
| Constant | 6.063 | 65.65 | 5.761 | 50.57 | 4.747 | 9.83 |
| Ln (labour) | 0.127 | 1.71** | 0.103 | 1.41 | 0.113 | 1.52** |
| Ln (land) | 0.503 | 12.23 | 0.355 | 6.10 | 0.336 | 5.63 |
| Ln (oxen) | 0.23 | 8.14 | 0.177 | 6.07 | 0.168 | 5.63 |
| Credit | | | 0.213 | 2.66 | 0.247 | 3.01 |
| Fertilizer use | | | 0.04 | 2.65 | 0.041 | 2.66 |
| Land quality | | | 0.349 | 4.34 | 0.332 | 4.11 |
| Redistribution | | | | | −0.109 | −0.85 |
| Climate | | | | | 0.034 | 2.21* |
| | LR $\chi^2(3) = 286.89$* | | LR $\chi^2(6) = 323.5$* | | LR $\chi^2(8) = 301.8$* | |
| | Log likelihood $= -1416.25$ | | Log likelihood $= -1521.2$ | | Loglikelihood $= 1502.87$ | |
| | Pseido $R^2 = 0.10$ | | Pseudo $R^2 = 0.10$ | | Pseudo $R^2 = 0.09$ | |

Number of obs $= 1008$ for columns 1 and 2 and 955 for column 3. Fourteen left-censored observations at ln(output) $\leq 0$.
*Significant at about 5 and 10 per cent level; and the rest significant at 1 per cent or less.
**Significant at about 5 and 10 per cent level; and the rest significant at 1 per cent or less.

micro-data-based model, by controlling for the effect of land, thus, helped us to unpack the term 'capital' which admittedly is quite elusive in rural setting. The implication of the micro-data-based finding for the time series-based model is that the 'dominant' contribution of labour observed in the latter (or that of capital in the cross-country model) might have resulted from the omission of the land variable in the model (see also Alemayehu and Befekadu, 2005; Alemayehu, 2007).

Alemayehu (2008) conducted a source of growth exercise based on a model fairly close to the recent 'endogenous growth' models whose parameters are derived from cross-country regression. The result shows, rather dramatically, how far below the average

performance of a sample of about 80 developing countries' record is Ethiopia's growth performance. The study examined the contribution of *base variables* (which include initial income/endowment, life expectancy, age dependency ratio, terms of trade shocks, trading partner growth rate and landlocked ness), *political stability index* (an index constructed from the average number of assassinations, revolutions and strikes) and *policy indicator* (high inflation rate, public spending and parallel market premium) variables contribution to the predicted deviation across the three regimes prevailed in the last four decades in Ethiopia. The base variables had the highest contribution. Since the base variables are basically structural in nature and difficult to address in the short to medium term, attaining sustainable growth performance with out addressing such structural problems is a daunting task (Alemayehu, 2008).

Since the cross-country-based model in Alemayehu (2008) used education per worker (a sort of human capital indicator), the effect of omitting land might have resulted in an inflated contribution of capital. To check this anomaly, we have estimated the production function using only labour and oxen (not reported). This has resulted in a very high coefficient (0.83) for oxen, the labour coefficient being 0.39—thus supporting our hypothesis about the importance of land as omitted variable in the time series-based model. At this point of the study we could not make firm conclusion about the role of each factor in the time series- and cross-country-based models more than what is said above. This needs further study using nation-wide household survey and sectoral production functions.[6] Finally, Tables 4 and 5 also show some change in the importance of factors of production over time. For instance the importance of chemical fertilizer has drastically declined between 2000 and 2004 while that of land quality show the reverse of this trend in the two periods. Credit is found to be more important in 2004 compared to that of 2000. The threat of re-distribution of land is found to be negative but less potent.

## 5   THE GROWTH, POVERTY AND INEQUALITY NEXUS IN ETHIOPIA

### 5.1   The Conceptual Framework

Given the picture of growth pattern depict above, it is interesting to ask how that is related to poverty and inequality. Any target growth rate, in this case for poverty reduction, has an opportunity cost in foregone consumption compared to lower rates. This real resource cost can be compared to the cost of achieving the same poverty reduction at a lower growth rate. Economic growth is a means, and raising the rate of economic growth without considering the opportunity cost would be the domestic equivalent of mercantilism. One way of looking at this issue is to investigate the poverty, growth and inequality nexus.

We employ a simple model to generate our empirical calculations. We define the income distribution of a country over the adult population, which we divide into percentiles ($h_i$), and the mean income of each percentile is $Y_i$. The distribution of current income conforms

---

[6]In any case, notwithstanding the importance of cross-country growth studies in providing vital information in the light of lack of long run data and sufficient variation, they are not adequate to depict the condition of a specific country in question. Many analysts are, thus, unease with cross-country studies. Thus, some of the findings in this section may not be directly comparable with cross-country results reported for Ethiopia, primarily due to differences in definition of variables (see Alemayehu and Befekadu, 2005).

to the following two-parameter function:

$$Y_i = A h_i^a \tag{3}$$

While this function will tend to be inaccurate at the ends of the distribution, its simplicity allows for a straight-forward demonstration of the interaction between distribution and growth. A country's distribution is described by the degree of inequality (the parameter $\alpha$) and the scalar $A$, which is determined by overall *per capita* income. Thus

$$A = \beta Y_{pc} \tag{4}$$

and

$$Y_i = \beta Y_{pc} h_i^a \tag{5}$$

Total income is, by definition

$$Z = m \sum \beta Y_{pc} h_i^a \tag{6}$$

for $i = 1,2,\ldots,100$ and $m$ is the number of people in each percentile.

If the poverty line is $Y_p = P$, we can solve for the percentile in which it falls, which is also the percentage in poverty ($N$) from Equation (6)[7]

$$h_p = N = [P/\beta Y_{pc}](1/\alpha) \tag{7}$$

If we differentiate $N$ with respect to *per capita* income, we can express the proportional change in the percentage of the population in poverty in terms of the growth rate of GDP and the distributional parameters:[8]

$$\frac{dN}{N} = n = -y[1/\alpha]$$
$$\text{where } y = \frac{dY_{pc}}{Y_{pc}} \tag{8}$$

Equation (5) can be used to generate a family of iso-poverty curves, of decreasing level as they shift to the right, shown in Figure 1, on the assumption that $\alpha$ is constant. The diagram clarifies the policy alternatives: redistribution of current income (RCY) involves a vertical (downward) movement, distribution neutral growth (DNG) a horizontal (rightward) shift and redistribution with growth (RWG) is represented by a vector lying between the two. The diagram also shows the case of increasing inequality growth (IIG), in which the growth of *per capita* income so worsens the distribution of income that it leaves poverty unchanged (movement along the constant poverty level curve for $p = 40$ per cent).

The growth-distribution interaction on poverty reduction can also be shown for growth rates, using Equation (8). In Figure 2, the percentage reduction in poverty is on the vertical axis and growth rates on the horizontal. Three lines are shown, for increasing degrees of inequality as they rotate clockwise (increasing values of $\alpha$ holding initial *per capita* income

---

[7]A characteristic of this distribution function is that the two parameters, $\alpha$ and $\beta$, are not independent of each other. This characteristic does not affect our calculations in the next section, because we use the function only for the initial period's income (see Alemayehu *et al.*, 2002 for the literature on this issue).

[8]Ravallion (2001, p. 19) proposes that this relationship can be estimated with the simple formula, $n = \beta(1 - G)y$. With $\beta$ an unspecified parameter and G the Gini coefficient of distribution. For a number of countries, he calculates the value of $\beta$, which he calls 'the elasticity of poverty to growth'. On this basis he obtains a cross-country average for $\beta$ of $-3.74$. Since the formula does not specify on what distribution function it is based, it is not clear how one should interpret this so-called elasticity. At most the formula could be considered a rough algorithm for the appropriate relationship among the variables.

Iso-Poverty Lines: Inequality and Per Capita Income
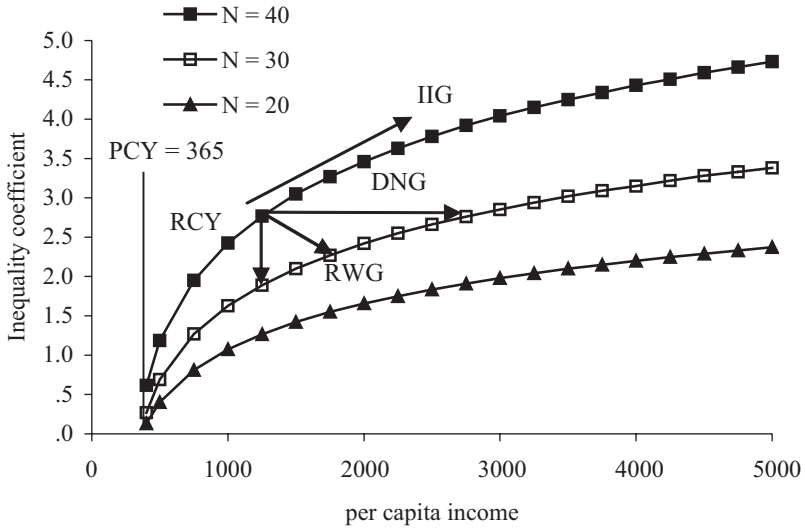for Constant Levels of Headcount Poverty (N)



Figure 1.   Iso-poverty lines: inequality and per capita income for constant levels of headcount poverty (*N*)

Poverty Reduction and GDP Growth
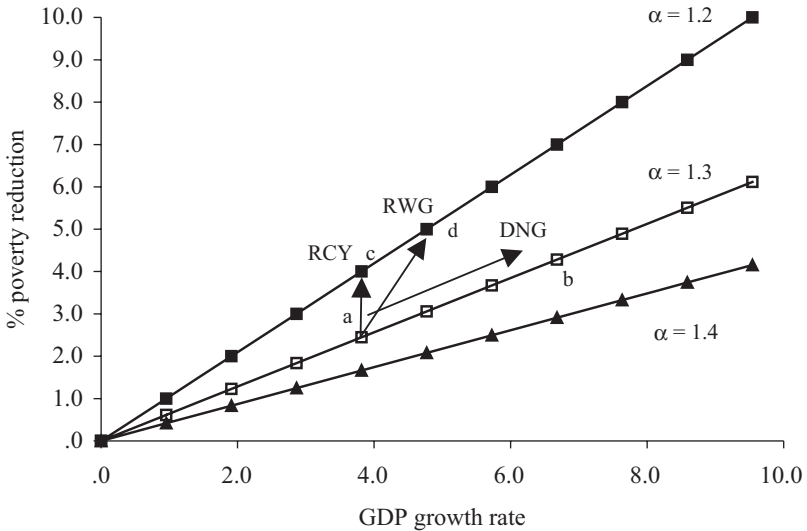for Degrees of Inequality



Figure 2.   Poverty reduction and GDP growth for degrees of inequality

constant). The figure shows that for any initial *per capita* income, growth reduces poverty more, the less the inequality of initial income distribution. From the initial position at point *a*, DNG increases the rate of poverty reduction along the schedule $\alpha = 1.3$ to point *b* (an increase in the growth rate with distribution unchanged), RCY involves a vertical movement to point *c* and a shift from *a* to *d* is a case of RWG.

In anticipation of applying our analysis to Ethiopia, one can note that using a head count measure of absolute poverty has an inherent bias towards the effectiveness of growth alone (DNG). Assuming the income distribution to be relatively continuous,[9] any DNG in *per capita* income, no matter how low, will reduce the intensity of poverty. However, redistribution reduces poverty only to the extent that it moves a person above a *per capita* income of US$ 365. To put the point another way, redistributions that reduce the degree of income poverty for those below the absolute poverty standard do not qualify as poverty reducing.[10] Given Ethiopia's low *per capita* income, US$ 112 at the current exchange rate and US$ 628 in purchasing power parity in 1999, the one dollar a day poverty line may not be the relevant one. Even confronted with this strong condition, we show that simple redistribution rules result in powerful outcomes for poverty reduction. The rule we propose in order to demonstrate the interaction between growth and redistribution, following the Chenery *et al.* (1974) approach[11] is equal to absolute increments across all percentiles, top to bottom. This could be viewed as relatively minimalist, with alternative redistribution rules considerably more progressive. This, a special case of the RWG strategy, we call equal distribution growth (EDG).

Assuming that the absence of a distribution policy implies DNG, the proposed EDG implies income transfers, or an implicit policy-generated tax. Let aggregate income in the base period be $Z_0$ and in the next period $Z_1$, and assume the latter is unchanged by how $(Z_1 - Z_0)$ is distributed across percentiles. With DNG the income in each percentile $(Y_i)$ increases by $(Y_{0,i}[1 + y^*])$, where $y^*$ is the rate of *per capita* income growth (by definition the same across the distribution). Under EDG, each percentile receives an income increment of $(Z_1 - Z_0)/100$. This post-transfer or *secondary distribution of income* by percentile is noted as $Y_{1,i}^e$, for period 1. Using the redistribution rule and our symbols

$$Z_1 = (1 + y^*)Z_0 = \sum \left[ Y_{1,i} \right] \tag{9}$$

by definition, and

$$Y_{1,i}^e = Y_{0,i} + \left\{ \frac{[y^* Z_0]}{100} \right\} = Y_{0,i} + E_1$$

where $\sum \left[ Y_{1,i} \right] = \sum \left[ Y_{1,i}^e \right]$ by definition.

Defining $T_i$ as the implicit redistribution tax for each percentile

$$T_i = \frac{(Y_{1,i} - Y_{1,i}^e)}{(Y_{1,i} - Y_{0,i})} \tag{10}$$

---

[9]That is, we assume there are no 'gaps' in the distribution below and near the poverty line.

[10]A redistribution of one percentage point of GDP from the richest 10 per cent of the population to the poorest 10 per cent, equally distributed among the latter, would improve the incomes of all those in the lowest decile, but might shift none of them above the poverty line.

[11]This volume was path breaking, in that it focused World Bank policy on strategies of poverty reduction. Particularly important were two papers by Ahluwalia (1974a,b), and by Ahluwalia and Chenery (1974a,b). A good review of the distribution literature of the 1960s and 1970s is found in Fields (1980).

The redistribution tax is negative up to the point of mean income (positive income transfer), then positive above (negative income transfer). If income were normally distributed, the tax would be negative through the 50th percentile. It is obvious that the more skewed the distribution, the higher is the percentile associated with average *per capita* income (the 50th percentile being the lower bound). Calculated by percentiles, we find that the redistribution tax is not out of line with rates that have applied in many developed countries. For example, an extremely unequal distribution, say a Gini coefficient of 0.60, implies a *marginal* tax rate on the hundredth percentile of slightly more than 80 per cent. Further, if the redistribution is affected through growth policies rather than direct transfers, the so-called redistribution tax is implicit rather than levied.

The proposed marginal redistribution has characteristics that derive automatically from the nature of income distributions. First, and most obvious, the relative benefits of the equal absolute additions to each income percentile increase as one move down the income distribution. Second, and as a result of the first, for any *per capita* income, the lower the poverty line, the greater will be the poverty reduction. As a corollary, when a policy distinction is made between degrees of poverty, with different poverty lines, the marginal redistribution will reduce 'severe' poverty more than it reduces less 'severe' poverty. Third, the more unequal the distribution of income below the poverty line, the less is the reduction in poverty for any increase in *per capita* income or redistribution of that increase.

## 5.2    Growth and Distribution in Ethiopia: Aggregate Level Analysis

DNG and EDG as defined in the previous section can be used to demonstrate the effect of pro-poor growth policies in Ethiopia. For simplicity, we assume that in the absence of pro-poor growth policies, the distribution of income remains unchanged. This is probably an optimistic assumption, because the process of further opening the Ethiopian economy to trade and capital flows is likely to increase inequalities of both income and wealth and we have some supporting evidence for this (see Section 4 below). We further assume that there is a set of pro-poor growth policies that would result in EDG. We base the simulation on realised *per capita* GDP growth during 2000–2006.

Since there is a unique relationship between the parameters in our Pareto distribution model, we can calculate the two growth paths for Ethiopia over a 6-year period with two statistics, initial *per capita* income and the initial Gini coefficient. An initial *per capita* income of US\$ 815 in 2000, at purchasing power parity, is assumed, which is the World Bank statistic for 2000. Based on Ethiopian household data, the initial degree of inequality in 2000 was shown by the Gini coefficient of 0.28.

The results of the calculations are shown in Table 6 and Figure 3. From a baseline in 2000 of a 44 per cent poverty share, over 6 years at growth of 4 per cent *per capita* (an average growth rate that prevailed between 2000–2006[12]), our method of calculation yields poverty reduction from 42 to 26 per cent for DNG (i.e. no change in the income distribution). Were the growth increment distributed equally across percentiles (EDG), the poverty would decline by over half, to 15 per cent, a difference of almost 11 percentage points. The two calculations are shown in Figure 3, along with the difference between them. If one assumes a lower initial *per capita* income the initial poverty level is increased,

---

[12]See World Bank, Africa Development Indicators CDROM (2007a) for the per capita growth figure.

Table 6.   Simulation of the impact of pattern of growth on poverty in Ethiopia

| Year | Real per capita GDP in PPP (1996 prices) | Distributional neutral growth (DNG or $\phi = 1$) | | Equally distributed growth (EDG) | |
|---|---|---|---|---|---|
| | | Headcount ration ($P_0$) | Gini | Headcount ratio ($P_0$) | Gini |
| 2000 | 815 | 44.0 | 28.0 | 44.0 | 28.0 |
| 2001 | 858 | 39.7 | 28.0 | 38.2 | 27.4 |
| 2002 | 850 | 40.5 | 28.0 | 39.3 | 27.7 |
| 2003 | 803 | 45.3 | 28.0 | 45.7 | 30.4 |
| 2004 | 891 | 36.6 | 28.0 | 33.6 | 27.4 |
| 2005 | 965 | 30.2 | 28.0 | 23.6 | 25.3 |
| 2006 | 1030 | 25.7 | 28.0 | 15.4 | 23.7 |

*Source*: authors' calculation based on the World Bank's WDI (2007b).
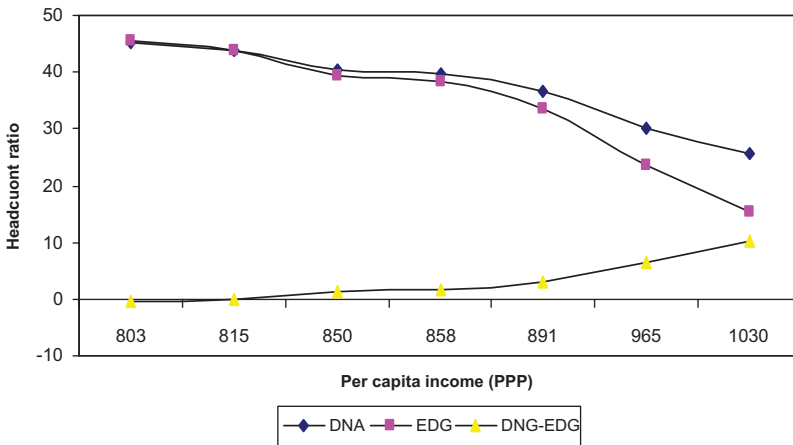


Figure 3.   Ethiopia: calculation of poverty reduction for DNG and EDG (over 5 years). This figure is available in colour online at www.interscience.wiley.com/journal/jid

but the relative difference between the two calculations is not increased.[13] If a higher level of initial inequality is assumed, the relative difference between the two calculations increases.

Thus, we can conclude form the above analysis that growth combined with redistribution, as proposed in the Ethiopian PRSP, would be substantially more poverty reducing than growth alone.[14] This could be a relevant pro-poor growth strategy for Ethiopia. This requires understanding the pattern of both growth and poverty in Ethiopia in more detail to which the next section is devoted.

---

[13]If the lower per capita income falls below the poverty line selected for the head count estimation, poverty reduction is affected, in that there is no reduction until poor households are moved above the poverty line, even though their incomes rise.
[14]We present a supporting empirical evidence for this proposition using household data of Ethiopia in Section 4.

Table 7.    Trends in poverty and inequality in Ethiopia: 1994–2004

| Region | National data | | | | Panel Data | | | |
|---|---|---|---|---|---|---|---|---|
| | 1995/1996 | 1999/2000 | 2004/2005 | 1994 | 1995 | 1997 | 2000 | 2004 |
| Headcount ratio | | | | | | | | |
|   Rural | 48 | 45 | 39 | 48 | 40 | 29 | 41 | 32 |
|   Urban | 33 | 37 | 35 | 33 | 32 | 27 | 39 | 37 |
|   National | 46 | 44 | 39 | 46 | 39 | 29 | 41 | 33 |
| Gini coefficient | | | | | | | | |
|   Rural | 27 | 26 | 26 | 49 | 49 | 41 | 51 | 45 |
|   Urban | 34 | 38 | 44 | 43 | 42 | 46 | 49 | 46 |
|   National | 29 | 28 | 30 | 48 | 48 | 42 | 51 | 45 |

*Source*: ministry of finance and economic development for national-sample and Bigsten and Shimeles (2007) for the panel data.

## 6   THE GROWTH POVERTY AND INEQUALITY NEXUS: HOUSEHOLD LEVEL ANALYSIS

### 6.1   Poverty, Growth and Inequality

Despite the recent empirical evidence (e.g. Anand and Kanbur, 1993, Bruno *et al.*, 1996; Fields, 1980) on the absence of any systematic relationship between income inequality and economic growth, interest on the inter-linkage has resurfaced due mainly to the following factors. One is the growing empirical evidence that explored the relationship between high initial income inequality and subsequent economic growth (see Kanbur, 1999, 2000 for review) using the new endogenous growth theory and insights from political economy. In this connection Chen and Ravallion's (1997) finding states that at any level of economic growth, the higher is income inequality, the lower income-poverty falls; moreover, it is possible for income inequality to be sufficiently high to lead to higher poverty. The other main factor is the sharp increase in income inequality that is observed in many developing countries following a growth episode and liberalisation (see for instance, Li *et al.*, 1998 and Kanbur, 1999; Alemayehu and Shimeles, 2007). In the context of Ethiopia, the evidence on the state and path of inequality over the decade obtained from the national household income and consumption surveys, as well as the panel data, indicate that it has been clearly rising in urban areas, and remained more or less at its initial level in rural areas though it exhibited considerable variation across time according to the panel data (Table 7).

   To get a perspective on the possible link between income distribution, growth and poverty, we examine further how initial inequality and subsequent growth are linked in the Ethiopian context. For the purpose, we use the panel data which tracks growth in the same villages for 10 years. Our graphical fits (quadratic for rural and Lowess for urban) indicate that higher initial inequality are correlated with lower subsequent growth with nonlinearity emphasised in both cases (Figures 4 and 5). This is consistent with the general empirical regularity stated in the preceding paragraphs. Areas with high initial inequality experience lower long-term growth, emphasising the fact that inequality could be harmful to growth.

   The evidence on the correlation between growth in consumption expenditure and the Gini coefficient at village or city level for Ethiopia is mixed. As shown in Figure 4 for rural areas generally growth in real consumption expenditure was correlated with falling Gini
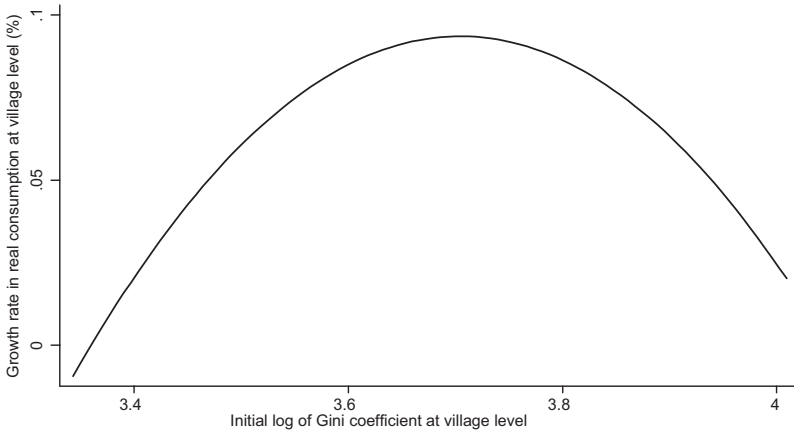
Figure 4.   Initial inequality and real consumption growth at village level in rural areas: 1994–2004 (quadratic fit)

coefficient (Figure 6). As such therefore, poverty reduction was facilitated by expanding *per capita* consumption as well as declining income inequality. On the other hand, the evidence for urban areas is a clear positive association between growth and change in the Gini coefficient (Figure 7). That is, in places where real consumption grew rapidly, so did the Gini coefficient, which means, as depicted in Table 7, poverty overall increased during the decade in urban areas.

   While the discussion so far focused on the empirical correlation or association between growth and income distribution, it does not say much about the determinants of income distribution. Previous work (e.g. Bigsten and Shimeles, 2006) attempted to decompose the determinants of income inequality in Ethiopia using a regression model of consumption expenditure at the household level. The result indicated that in rural areas a large part of the
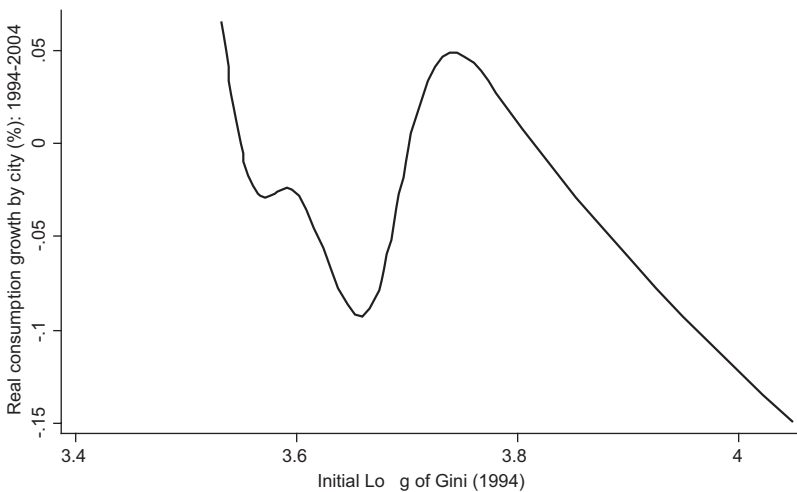


Figure 5.   Initial inequality and real consumption growth in urban areas: 1994–2004 (Lowess fit)
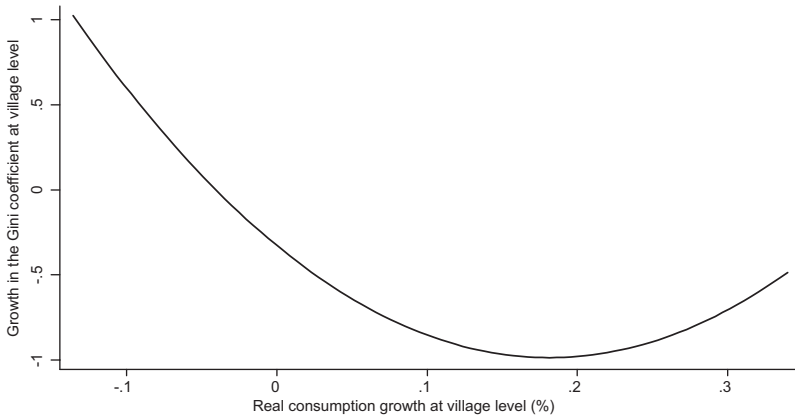
Figure 6.    Growth in real consumption and Gini coefficient at village level in rural Ethiopia: 1994–2004 (quadratic fit)



Figure 7.    Growth in real consumption and Gini coefficient at city level in urban Ethiopia: 1994–2004 (quadratic fit)

variation in income inequality could be captured by differences in village level characteristics and other unobserved factors. For urban areas, significant factor that played a role in determining the Gini coefficient were household characteristics such as occupation of the head of the household, educational level of the head of the household and other unobserved characteristics. We complement this discussion by reporting a regression result based on the Gini-coefficient and other characteristics constructed at village level for rural areas during the period 1994–2004. The result as reported in Table 8 is revealing. After controlling for village level differences (through village dummies), average land holding and its variance and education of the key members of the household (the head and the wife) seem to be a very important factor driving the Gini coefficient in rural areas. Rural areas with relatively high average land size tend to have lower consumption inequality, though higher land inequality translates directly into higher consumption inequality. Access to education, particularly, plays an important role in driving the Gini coefficient upwards in rural areas. Villages with high concentration of educated family heads tend to

Table 8.  Determinants of Gini coefficient in rural Ethiopia-random-effects model: 1994–2004

| | |
|---|---|
| Average land size holding at village level | −0.054 (14.42)[**] |
| Standard deviation of land size at village level | 0.01 (11.75)[**] |
| Percentage of household head with primary education at village level | 0.625 (6.65)[**] |
| Percentage of wives that completed primary education at village level | 0.5 (4.19)[**] |
| Hausman specification test between random and fixed effects model (*p*-value) | 0.3197 |
| Number of observations | 75 |

Source: authors' computation from panel data.
[*]Significant at 5 per cent.
[**]Significant at 1 per cent, 14 village dummies are included in the regression to control for other village characteristics.

be associated with high level of the Gini coefficient, which partly may explain higher degree of differentiation in earning potential as well as consumption preferences.

The link between poverty and economic growth can take a slightly different twist if we take a discrete case of change in poverty between two periods. This is mainly due to Kakwani (1990) and later to Datt and Ravallion (1992) where the change in poverty is attributed to changes in economic growth and income distribution.

Following Datt and Ravallion (1992) the total change in poverty for two periods, $t$ and $t + n$ (such as $t + 1$) and a reference period $r$, can be written as

$$P_{t+n} - P_t = G(t, t+1, r) + D(t, t+1, r) + R(t, t+1, r) \qquad (11)$$

Total change = growth component (g) + redistribution component (D) + residual (r). The growth and redistribution components are given by

$$G(t, t+n, r) \equiv P(Z|\mu_{t+n}, L_r) - P(Z|\mu_t, L_r) \qquad (12a)$$

$$D(t, t+n, r) \equiv P(Z|\mu_r, L_{t+n}) - P(Z|\mu_r, L_t) \qquad (12b)$$

The residual exists whenever the particular index is not additively separable between $\mu$ (mean *per capita* income) and L (the Lorenz curve); in other words, whenever the mean and the Lorenz curve jointly determine the change in poverty then the residual will not vanish. The way the residual is treated in the decomposition exercise raises some differences in interpretation. Datt and Ravallion (1992) interpret the residual as the difference between the growth (redistribution) components evaluated at the terminal and initial Lorenz curves (mean incomes), respectively. In computing the poverty decomposition we take averages at the initial and terminal Lorenz curve so that the 'residual' or as sometimes also called 'interaction term' disappears from the decomposition exercise. This methodology is applied on the panel data collected by the department of Economics of Addis Ababa University, in collaboration with Universities of Oxford and Gothenburg (see Bigsten and Shimeles, 2007 on the nature of the data and other useful features). Accordingly, between 1994 and 2004 headcount poverty on the basis of an absolute poverty line declined by 15.3 percentage points in rural areas and increased by about 4 percentage points in urban areas (see also Table 7) despite an increase in *per capita* consumption (Table 9). The main message of Table 9 is that the reduction in poverty would have been substantial had income inequality remained unchanged. Thus, there is a good case for looking at distributional consequences of economic growth in Ethiopia. This point is made much clearer in the discussions below.

Table 9.    Growth and redistribution components of the change in poverty: 1994–2004

|  | Total change in headcount poverty | Change due to economic growth | Change due to re-distribution |
|---|---|---|---|
| Rural | −15.296 | −8.223 | −7.073 |
| Urban | 4.016 | −1.671 | 5.687 |

*Source*: authors' computation from panel data.

### 6.2    Was Growth Pro-poor in Ethiopia: Measuring Pro-poor Growth

The measure of pro-poor growth proposed by Ravallion and Chen (2003) is based on changes in the income of individual poor people using the cumulative distribution function of income, $F(y)$. By definition, if we invert $F(Y)$ at the $p$th quintile, we get the income of that quintile:

$$y(p) = L'(p)\mu \tag{13}$$

Indexing over time and evaluating the growth rate of income of the $p$th quintile, and using the above expression we get

$$g_t(p) = \frac{L'_t(p)}{L'_{t-1}(p)}(\gamma_t + 1) - 1 \tag{14}$$

where $g(p)$ is growth rate in the income of the $p$th quintile and $\gamma_t$ is the ratio of mean *per capita* income in period t to that in period $t - 1$. In other words, the changes in the income of an individual in the $p$th quintile are weighted by the shift parameter in the slope of the Lorenz curve.[15] Cumulating Equation (14) up to the proportion of the poor $(H_t)$ gives an equivalent expression for a change in the Watt's index of poverty:

$$-\frac{dW_t}{dt} = \int_0^{H_t} g(p)dp \tag{15}$$

Normalising Equation (15) by the number of poor people we get what Chen and Ravallion (2000) define as their measure of pro-poor growth.[16]

Kakwani *et al.* (2003) suggest a poverty equivalent growth rate (PEGR) as an index of pro-poor growth as follows:

$$\gamma^* = \frac{\int_0^H \frac{\partial P}{\partial x}x(p)g(p)dp}{\int_0^H \frac{\partial P}{\partial x}x(p)dp} \tag{16}$$

---

[15]In fact, if we simplify Equation (3) we get $g(p) = y_t(p)/y_{t-1}(p) - 1$.

[16]This expression is seen to be different from changes in the mean income of the poor. This is made clearer if one looks at discrete changes in income of individuals who were poor in period 1. $\sum_{i=1}^{q} g_t(i)/H_t - 1$ this obviously is different from changes in the mean income of the poor.
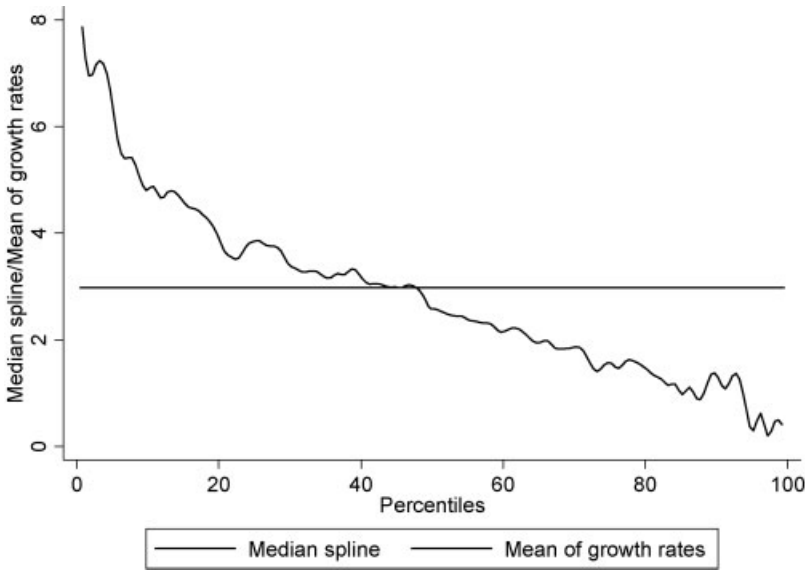
Figure 8.   Growth incidence curve for rural Ethiopia: 1994–2004

where $\gamma^*$ is the PGER and the expressions on the RHS are as follows: The numerator is cumulative change in the income of the poor weighted by changes in a specific measure of poverty, and the denominator is a normalising factor representing total income of the $p$th percentile weighted by changes in a specific measure of poverty. Kakwani, Kanderk and Son claim that this measure of pro-poor growth is a generalisation of the Ravallion and Chen measure of pro-poor growth that can be applied to well-known measures of poverty.

The Ravallion and Chen measure of pro-poor growth essentially cumulates the rate of change in the income of the population identified as poor before growth occurs and takes the average using the number of the poor population. This is different from the rate of change in the mean income of the poor. The two coincide if each poor person's income grows at an equal rate. An application of the Ravallion and Chen measure of pro-poor growth using the growth incidence curve is demonstrated in Figure 8 for rural areas and Figure 9 for urban areas using the decadal panel data.

The result, as alluded to briefly in the preceding sections indicate clearly that growth has been strongly pro-poor in rural areas while it was against the moderately poor in urban areas. Table 10 captures the degree of pro-poor growth much clearly. We report for both rural and urban areas the index of pro-poor growth for 6 percentile groups, including those at the headcount ratio.

As can be seen, in rural areas, real consumption growth for the bottom percentiles up to the absolute poverty level has been higher than the average and median growth during the decade 1994–2004. As a result, poverty has declined significantly. In urban areas, first mean growth rate was anaemic (0.28 per cent) and much of the growth occurred among the poorest of the poor who did not cross the poverty line and the non-poor. As a result, absolute poverty has increased during the decade. The experience of urban households raises an important normative issue when growth episode can be considered really 'pro-poor'. What weight should one assign to the growth experiences of households belonging
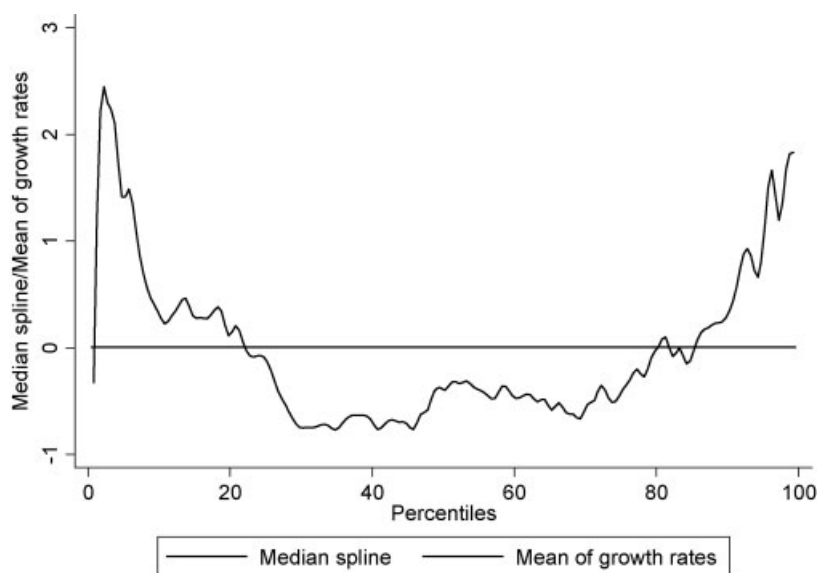
Figure 9.   Growth incidence curve for urban Ethiopia: 1994–2004

Table 10.   Pro-poor growth indices for rural and urban Ethiopia: 1994–2004

| Percentile | Rate of pro-poor growth | |
|---|---|---|
| | Rural areas | Urban areas |
| 10 | 6.23 | 1.18 |
| 15 | 5.73 | 0.90 |
| 20 | 5.37 | 0.74 |
| 25 | 5.03 | 0.59 |
| 30 | 4.81 | 0.41 |
| Headcount | 4.19 | 0.32 |
| Growth rate in mean consumption expenditure | 1.79 | 0.28 |
| Growth rate in median consumption expenditure | 2.49 | −0.40 |
| Growth rate in mean percentile | 2.98 | 0.00 |

to different quintiles? This divergent experience over a decade between rural and urban areas can be a good starting point to devise an effective pro-poor growth policy for Ethiopia.

## 7   CONCLUSION: PRO-POOR GROWTH AND POLICY IMPLICATIONS

Ethiopia seeks growth that is poverty reducing, and substantial poverty reduction requires substantial increase in growth. Any increase in the growth rate, especially for the fundamental goal of poverty reduction, has opportunity cost in foregone consumption. This real resource cost can be compared to the cost of achieving the same poverty reduction at a

lower growth rate. Economic growth is a means, and raising the rate of economic growth without considering the opportunity cost would be the domestic equivalent of mercantilism. It is for this reason, if for no other, that the Ethiopian government need to endorse a pro-poor growth strategy.

At the most general level, pro-poor growth can be defined as a strategy which (1) rejects a 'growth is sufficient' approach in which all emphasis is placed on economic growth, and poverty addressed through so-called safety nets (if at all) and (2) replaces this with a strategy explicitly designed to change the distribution of the gains from growth. Growth with redistribution is the optimal strategy for Ethiopia, and this is revealed by examination of episodes of growth across the three regimes of recent history and the wealth of household data examined in this paper.

The source of growth and growth accounting exercise points to the paramount importance of land and labour. Micro level determinants of poverty analysis support the importance of labour in helping to move out of poverty. Although this finding needs further study at sectoral level, the policy implication is obvious. The government needs to invest in raising the productivity of labour, in general, rural labour, in particular (through investing on education and health), and land. Tenure security, supply of fertilizer and credit provision to rural economic agents might also be an important policy direction for raising land productivity. In general, a comprehensive approach, in the context of the government's rural-based development program, to enhance these sources of growth is the way foreword. The conclusions from these techniques are complemented by a descriptive analysis of sectoral growth trends and changes in the structure of the economy. To increase economic growth in a pro-poor manner, it is necessary to inspect the sources of growth as well as historical changes. The conclusions emerging from the analysis of sources of growth analysis are mixed. However, two types of factors that directly affect growth can be identified: structural influences and policy related factors.

Growth in Ethiopia, as it has occurred and for a future pro-poor pattern, to a large extent depends on structural factors such as initial conditions (initial income, investment and level of education), vagaries of nature, external shocks (such as terms of trade deterioration) and peace and stability both in Ethiopia and in the region. Each of these problems need appropriate policies to address them. The following points stand as important policy areas aimed at achieving pro-poor growth:

a) *Addressing the dependence on rain-fed agriculture*. This may require studies on the feasibility of small-scale irrigation scheme, water harvesting and designing incentive schemes for the farmers. This policy action should overcome the negative factor productivity observed in periods of unfavourable weather.

b) *Developing a short-to-medium strategy to cope with periodic terms of trade shocks*. The long-term solution is diversification of exports and full exploitation of existing market opportunities in United States and the European Union. This may require creating a public–private sector partnership aimed at creating such local capacity.

c) *Enhancing the productivity of factors of production, in particular, labour and land*. This would have direct implications on raising the productivity of labour (through education) and the productivity of land (through supply of fertilizer and rural credit provision).

d) *Redistribution at the margin*. Although distributional neutral growth may reduce poverty (if inequality does not rise to negate the growth), the potency of poverty reduction will significantly increase if a strategy of growth with distribution is adopted.

There exist effective fiscal and monetary instruments that can be deployed in Ethiopia under present conditions.

e) *Sustainable peace and stability (both within the country and in the region).* Macroeconomic stability is not merely a technical exercise, but is strictly linked to political stability. This needs to be addressed squarely and cautiously, consistent with national interests so as to sustain growth.

f) *Structure of the economy.* A detailed analysis and policy aimed at changing the structure of the economy to high productivity sector is also imperative.

For pro-poor growth, macro polices are important for two reasons. First, the contribution of factor productive for growth performance is extremely important. A conducive macroeconomic environment aimed at enhancing factor accumulation (both capital and labour, through skill acquisition) and the efficiency of their use is a pre-requisite for enhancing growth. Second, macroeconomic discipline, although to a large extent dependent on the structural factors and external shocks, is critical for creating the necessary conditions for growth. Fiscal and monetary policy discipline, institutionalisation of policy implementation and gradualism (as opposed to overnight deregulation) in reform are the key considerations. Policy must avoid time inconsistency and incorrect sequencing of reforms and liberalisation without adequate regulatory mechanisms and capacity building to implement these mechanisms. The government's record in these areas is encouraging, although reform in some areas has still lagged behind. The unevenness in policy reform arises from a context of dramatic shifts in policy regimes. In the last four decades Ethiopia changed from a liberalised economy (till 1974) to a controlled one (1974–1989/1990) and again back to a liberalized one (after 1991). The post-*Derg* period witnessed a major policy shift from its immediate predecessor. It started liberalisation of the economy in a typical structural adjustment programme (SAPs) fashion, though this was to a large extent nationally designed and owned. Partly because of these policies, the growth performance was much better than the previous two regimes. The challenge is to make this growth pro-poor.

In sum, a pro-poor growth outcome for Ethiopia would not be achieved through a collection of ad hoc and targeted programmes of the 'safety net' variety, combined with pious policy rhetoric. A pro-poor outcome results from a pro-poor *strategy*, which consists of goals, targets, instruments and monitoring. This view of strategy bears no relation to the centrally planned, top-down control of the economy characterised by the *Derg* regime. Quite to the contrary, it involves policy that requires government leadership, to establish a set of incentives and interventions that consciously and purposefully alter the outcome of the current growth and distribution process, within an economy in which production and exchange overwhelmingly derive from the private sector. Further, the strategy needs to be based on the foundations of *decentralisation*, *participation* and *ownership*. Ownership means that the strategy is nationally designed, implemented and monitored. Deepening of ownership is achieved through the decentralisation of many policy functions to economically feasible provinces (regions), and by participatory consultation with civil society.

## REFERENCE

Ahluwalia MS. 1974a. Income inequality: some dimensions of the problem. In *Redistribution with Growth*, Chenery H, Ahluwalia MS, Bell CLG, Duloy JH, Jolly R (eds). Oxford University Press: Oxford; 3–27.

Ahluwalia MS. 1974b. The scope for policy intervention. In *Redistribution with Growth*, Chapter IV, Chenery H, Ahluwalia MS, Bell CLG, Duloy JH, Jolly R (eds). Oxford University Press: Oxford; 73–91.

Ahluwalia MS, Chenery H. 1974a. The economic framework. In *Redistribution with Growth*, Chapter II, Chenery H, Ahluwalia MS, Bell CLG, Duloy JH, Jolly R (eds). Oxford University Press: Oxford; pp. 38–51.

Ahluwalia MS, Chenery H. 1974b. A model of redistribution and growth. In *Redistribution with Growth*, Chenery H, Ahluwalia MS, Bell CLG, Duloy JH, Jolly R (eds). Oxford University Press: Oxford; pp. 209–235.

Alemayehu Geda. 2008. The political economy of growth in Ethiopia. In *The Political Economy of Economic Growth in Africa, 1960–2000*, Cambridge African Economic History Series, Ndulu B, O'Connell S, Bates R, Collier P, Soludo C (eds). Cambridge University Press: Cambridge; 116–143.

Alemayehu G. 2005. Macroeconomic performance in post-reform Ethiopia. *Journal of Northeast African Studies* **8**(1).

Alemayehu G, Shimeles A. 2007. Openness, inequality and poverty in Africa. In *Flat World and Big Gaps: Economic Liberalization, Globalization, Poverty and Inequality,* Jomo KS, Baudot J (eds). UN Development and Economic Social Division and Zed Books: London; 297–327.

Alemayehu G, Befekadu D. 2005. Explaining African Economic Growth: The Case of Ethiopia. *AERC Growht Working Pappers*, AERC, Nairobi, Kenya.

Alemayehu G, Abebe S, John W. 2002. The pattern of growth, poverty and inequality in Ethiopia: which way for a pro-poor growth? *Background Paper Prepared for Ministry of Finance and Economic Development*, Addis Ababa.

Anand S, Kanbur R. 1993. The Kuznets process and the inequality-development relationship. *Journal of Development Economics* **40**: 25–52.

Bigsten A, Shimeles A. 2006. Poverty and income distribution in Ethiopia: 1994–2000. In *Essays on Poverty, Risk and Consumption Dynamics in Ethiopia*, Economic Studies, no 5, Shimeles A (ed.). Department of Economics, University of Göteborg: Göteborg; 1–54.

Bruno M, Ravallion M, Squire L. 1996. Equity and growth in developing countries: old and new perspectives on the policy issues. *Policy Research Working Paper, No. 1563*, The World Bank, Washington, DC.

Central Statistics Authority, CSA. 1999. *Agricultural Sample Survey*. Addis Ababa: Ethiopia.

Chen S, Ravallion M. 1997. What can new survey data tell us about recent changes in distribution and poverty? *World Bank Economic Review* **11**: 357–382.

Chen S, Ravallion M. 2000. How did the world's poorest fare in the 1990s? *Policy Research Working Paper 2409*, Washington.

Chenery H, Ahluwalia MS, Bell CLG, Duloy JH, Jolly R. 1974. *Redistribution with Growth*. Oxford University Press: Oxford.

Datt G, Ravallion M. 1992. Growth and redistribution components of changes in poverty measures: a decomposition with applications to Brazil and India in the 1980s. *Journal of Development Economics* **47**: 403–428.

Fields G. 1980. *Poverty, Inequality and Development* Cambridge University Press: Cambridge.

Kakwani N. 1990. Poverty and economic growth with an application to Cote d'Ivoire. *LMS working paper no 63*, 1990.

Kanbur R. 2000. Income distribution and development. In *Handbook of Income Distribution*, Atkinson AB, Bourguignon F (eds). North-Holland: Amsterdam.

Kanbur R. 1999. Income distribution and growth. *World Bank Working Papers*, The World Bank, Washingtonpp; pp. 98–13.

Li H, Squire L, Zou HF. 1998. Explaining international inequality and intertemporal variations in income inequality. *Economic Journal* **108**: 26–43.

Ravallion M. 2001. Growth, inequality and poverty: looking beyond averages. *UNU/WIDER Development Conference on Growth and Poverty*, Helsinki, 25–26 May.

Ravallion M, Chen S. 2003. Measuring pro-poor growth. *Economics Letters* **78**(1): 93–99.

World Bank. 2007a. *Africa Development Indicators 2007*. World Bank: Washington DC. (CD-ROM).

World Bank. 2007b. *World Development Indicators 2007*. World Bank: Washington DC.