



Economic Commission for Africa



Economic Policy Research Center

Pro-Poor Growth Strategies in Africa

**Prospects for 'Pro-Poor'
Growth in Africa**

**Expert Group Meeting
Munyonyo Speke Resort
Kampala, Uganda
23-24 June 2003**

**Arne Bigsten
Abebe Shimeles**

Prospects for ‘Pro-Poor’ Growth in Africa

by

Arne Bigsten
Abebe Shimeles
Department of Economics
Göteborg University

May 2003

Abstract

The United Nations has set several development goals in its Millennium Declaration. Halving poverty by 2015 is one of the most prominent ones. The implication of this goal to Africa has been the subject of recent empirical research. Generally the findings suggest that the slow growth that has characterized the African economy over the last decades makes it unlikely that a reduction in poverty of this order will materialize. This paper examines trends in income distribution and its linkages with economic growth and poverty reduction in order to understand the prospect for a pro-poor growth pattern in Africa.

The paper first examines the level and trends in income distribution in Africa using available data sets for individual countries. It reviews the current methods to measure pro-poor growth and highlights their conceptual and empirical limitations using regional and country-specific experiences. Finally, the paper examines the prospects for ‘pro-poor’ growth strategies using the definitional relationship between poverty, economic growth and income distribution. It concludes by looking into the challenges within the confines of structural rigidities that give rise to poverty traps in most African economies.

0. Introduction

In recent decades, Africa has been the world's worst performing region in terms of poverty reduction (Ravallion and Chen, 2000). Between 1987 and 1998 poverty incidence remained at 46%, while the number of poor people increased from 217 million to 290 million¹. Per capita incomes in Sub-Sahara Africa (SSA) fell by 20% between the peak of 1974 and the bottom of 1994 (World Bank, 2002). The 1990s have witnessed some recovery in terms of improved macroeconomic management, growth and poverty reduction for selected countries in SSA (Christiaensen, Demery, and Paternostro, 2002), and there was a modest 4% increase of SSA per capita incomes between 1994 and 2000. Still, the issue now is whether African economies can really achieve the goals of poverty reduction and improvements in human development set out in the Poverty Reduction Strategy Papers (PRSPs) and the Millennium Development Goals (MDGs).

The 1990s have witnessed diverse and interesting experiences across Africa in terms of growth and poverty reduction that deserve closer analysis.² There is an increasing policy and research interest in the scope for poverty reduction through pro-poor growth. This paper is a contribution to this literature and it is organized as follows: Section 1 looks at state of income distribution and poverty in Africa, while section 2 reviews measures of pro-poor growth indices. Section 3 presents measures of estimates of pro-poor growth for selected African countries and looks at the implication for poverty reduction in Ethiopia, Uganda, and Mozambique of some pro-poor growth patterns. Section 4 discusses some policy challenges for pro-poor growth in Africa, and Section 5 summarizes and concludes our discussion.

1. Trends in Income Distribution and Poverty in Africa

The Deininger-Squire³ data set on income distribution shows that Africa is one of the most unequal regions in the world, second only to South-America (Table 1).

Table 1: Median values of Gini coefficient by region

Region	1960s	1970s	1980s	1990s
Eastern Europe	22,76	21,77	24,93	28,60
South Asia	31,67	32,32	32,22	31,59
OECD and High income	32,86	33,04	32,20	33,20
East Asia and the Pacific	34,57	34,40	34,42	34,80
Middle East and North Africa	41,88	43,63	40,80	39,72
Sub-Saharan Africa	49,90	48,50	39,63	42,30
Latin America	53,00	49,86	51,00	50,00

Source: Deininger and Squire (1998)

¹ Most people are concerned on the ambiguity created in the measurement of poverty. While we say poverty declined, on the one hand, we see on the other hand, the number of poor people increasing as is the case here. The root of this ambiguity lies with the absolute versus relative definition of poverty (see Chakravarty, 1983 and Foster and Shorrocks, 1991). One of the key properties of a poverty index is the axiom of fixed population. In this case, nearly all popular additive measures of poverty meet most of the desirable properties, such as monotonicity, transfer sensitivity, sub-group consistency, additivity, continuity, focus and many other desirable ones. In a situation where population changes, few poverty measures none of the poverty indices meet most of the properties (see Kundu, 1983). Thus, it is important to revisit the apparently confusing features in poverty measurement.

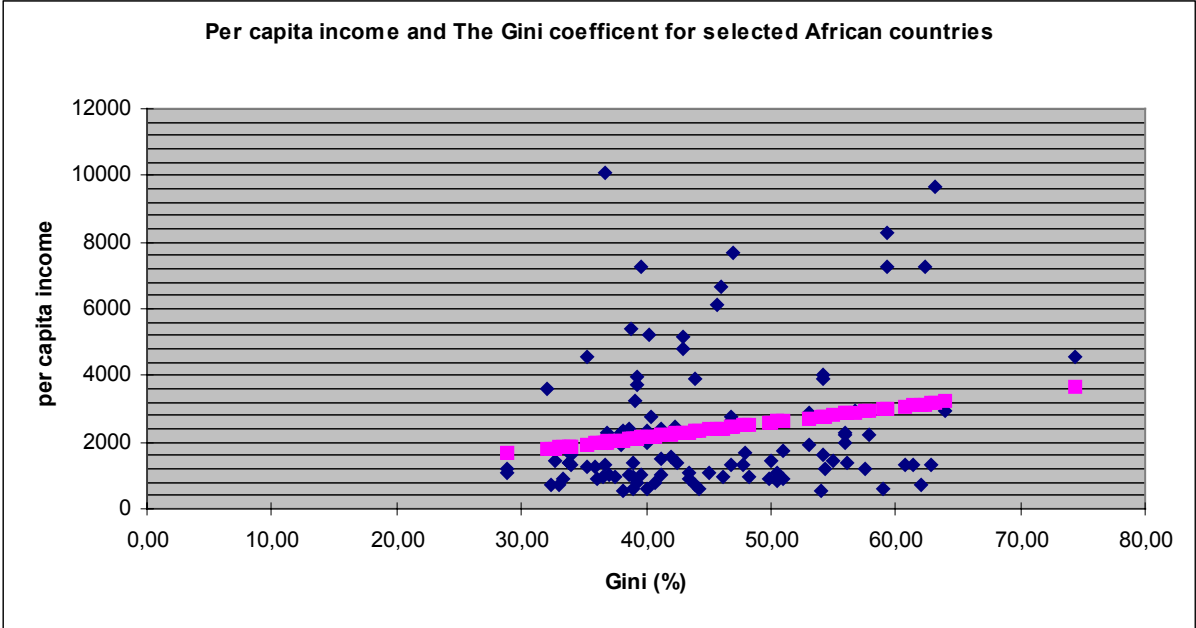
² On the positive side, Mozambique stood out as one of the fastest growing economies in the world in the 1990s, Uganda registered a strong reduction in poverty that if sustained for another couple of years would meet the target of reducing poverty incidence by half.

³ See Deininger and Squire (1998) for details on the construction of the income distribution data sets.

In addition, the Gini-coefficient has varied considerably in short periods of time for most countries in Africa. To some extent this is due to data problems (Deaton, 2003), but there are also real factors that make income distributions unstable in many African countries. Income distributions tend to be strongly affected by for example policy shocks (Easterly, 2000), political transitions, and post-conflict reconstruction.

Figure 1 shows that the Gini coefficients in Africa are concentrated in the 40-55% range.⁴ Out of the total sample of 37 countries, close to half has had a Gini coefficient greater than 50% at least once in the past. This indicates that income distribution is a serious concern in Africa that needs to be understood to facilitate growth strategies that benefit the poor population.

Figure 1



Source: WIDER data set

Tables 2 and 3 report changes in average per capita income and their distributional consequences for selected African countries. We have assembled data on growth and distributional changes for 17 African countries covering mainly the 1990s. Out of the 23 spells, we see a decline in the income share of the poorest quantile in 8 cases only (Table 3). In 13 cases, the share of income of the poorest quantile increased, while it remained unchanged in two cases. There is thus no clear trend in inequality in this African data set during this period. In 15 of the 23 cases there was a decline in average real per capita income, while per capita incomes increased in only 8 cases. The poorest quantile did rather well in maintaining or even improving their income share, but it did still not do well in absolute terms in the face of falling per capita incomes. In half of the 23 cases absolute income of the poorest quantile actually increased. So while Africa’s growth performance has been extremely erratic and often negative, its impact on the well-being of the poor has not been dramatic. This finding is consistent with the recent work on the dynamics of poverty in Africa (Demery, Christiaensen and Paternostro, 2002). On the other hand, we do not see any general reduction in poverty that suggests that Africa is on track towards the Millennium Goal in terms of poverty reduction.

⁴ The solid points are linear regression fits.

Table 2. Average Annual Percentage Change of the Income Share of the Quintiles and Gini Coefficient.

Country	Year	Poorest quintile	2 nd quintile	3rd quintile	4th quintile	Richest quintile	Computed Gini coefficient
Gambia	1991 V 1992	113,59	39,10	12,31	-0,92	-10,47	-15,10
Ghana	1992 v 1997	1,23	0,33	-0,38	0,09	-0,24	-0,56
Ghana	1993 v 1997	1,39	0,46	-0,50	0,08	-0,25	-0,49
Guinea	1991 V 1994	28,73	7,81	0,45	-3,92	-2,03	-4,82
Kenya	1992 v 1994	21,45	20,14	15,04	9,85	-9,90	-11,82
Mauritania	1993 v 1995	9,62	12,19	12,31	10,58	-9,81	-11,57
Niger	1992 v 1995	0,00	0,00	0,00	0,00	0,00	0,00
Nigeria	1991 V 1997	1,45	-1,44	-2,32	-3,15	2,04	2,01
Nigeria	1992 V 1997	-7,96	-4,50	-2,76	-1,14	2,88	4,21
Nigeria	1993 V 1997	2,24	-2,23	-3,41	-4,70	3,08	3,02
Senegal	1991 v 1994	22,48	14,00	7,65	2,13	-6,32	-8,63
Tanzania	1991 v 1993	66,94	38,55	20,90	7,47	-14,88	-19,38
Uganda	1992 v 1993	-2,65	5,72	5,85	4,31	-4,43	-4,32
Zambia	1991 V 1997	-5,49	-3,06	-2,00	-0,85	1,93	2,67
Zambia	1993 V 1997	2,50	0,83	-2,48	-5,48	2,70	2,54
Ethiopia	1981 V 1995	-1,33	-1,07	-0,86	-0,45	1,03	1,51
Lesotho	1986 V 1993	-1,35	-2,12	-1,40	0,01	0,51	0,49
Lesotho	1987 V 1993	-1,57	-2,46	-1,64	0,02	0,60	0,57
Madagascar	1960 V 1993	1,24	0,69	0,68	0,38	-0,51	-0,67
Madagascar	1980 V 1993	1,28	0,84	0,44	0,00	-0,40	-0,60
Mali	1989 v 1994	-8,13	-6,72	-5,46	-2,50	5,03	6,78
Rwanda	1983 v 1984	0,00	0,84	-0,90	-0,18	0,21	0,17
Tunisia	1965 v 1971	-2,16	-8,94	-6,33	-5,72	4,80	5,35

Source: Authors' computations

Table 3. Average Annual Growth of National Per Capita Income and Per Capita Income of the Quintiles

Country	Year	Percentage change in GDP per capita in 1996 PPP \$	Percentage change in mean income of the quintiles in 1996 PPP \$				
		μ	μ of Q1	μ of Q2	μ of Q3	μ of Q4	μ of Q5
Gambia	1991 V 1992	-3,53	106,05	34,19	8,35	-4,42	-13,63
Ghana	1992 v 1997	0,93	2,18	1,26	0,55	1,02	0,69
Ghana	1993 v 1997	0,72	2,11	1,18	0,22	0,80	0,47
Guinea	1991 V 1994	0,93	29,93	8,81	1,39	-3,02	-1,12
Kenya	1992 v 1994	-0,25	21,15	19,85	14,76	9,58	-10,12
Mauritania	1993 v 1995	-1,12	8,38	10,93	11,04	9,34	-10,82
Niger	1992 v 1995	-0,86	-0,86	-0,86	-0,86	-0,86	-0,86
Nigeria	1991 V 1997	-0,38	1,06	-1,81	-2,69	-3,52	1,65
Nigeria	1992 V 1997	0,88	-7,15	-3,65	-1,90	-0,27	3,79
Nigeria	1993 V 1997	3,37	5,68	1,06	-0,15	-1,49	6,55
Senegal	1991 v 1994	-2,11	19,89	11,59	5,38	-0,03	-8,29
Tanzania	1991 v 1993	-1,76	64,00	36,11	18,77	5,58	-16,38
Uganda	1992 v 1993	3,96	1,20	9,91	10,04	8,44	-0,64
Zambia	1991 V 1997	-4,62	-9,86	-7,55	-6,53	-5,44	-2,78
Zambia	1993 V 1997	-2,84	-0,41	-2,03	-5,24	-8,16	-0,21
Ethiopia	1981 V 1995	-1,29	-2,60	-2,34	-2,14	-1,74	-0,27
Lesotho	1986 V 1993	-0,10	-1,45	-2,22	-1,51	-0,09	0,41
Lesotho	1987 V 1993	-0,45	-2,01	-2,91	-2,08	-0,43	0,14
Madagascar	1960 V 1993	-2,34	-1,13	-1,66	-1,68	-1,97	-2,84
Madagascar	1980 V 1993	-2,93	-1,69	-2,11	-2,50	-2,93	-3,32
Mali	1989 v 1994	-1,90	-9,88	-8,50	-7,26	-4,36	3,03
Rwanda	1983 v 1984	-9,70	-9,70	-8,94	-10,51	-9,87	-9,51
Tunisia	1965 v 1971	2,84	0,62	-6,36	-3,66	-3,04	7,77

Source: Authors' Computations

This brief description of the state of income distribution in Africa, and the distributional consequences of changes in per capita GDP, motivate the need to investigate the concept and measurement of pro-poor growth in Africa and to examine its implications as a development strategy.

2. Measures of 'Pro-Poor' Growth

The importance of the pattern of growth for poverty reduction was discussed within the 'redistribution with growth' paradigm in the 1970s (Chenery et al, 1974). The recent resurgence of interest in the issue is largely due to the failure to achieve poverty reduction in Africa under the Structural Adjustment Programmes. There has been an outpouring of empirical research on the link between growth and poverty (see among others Demery and Squire, 1996, Ali, 1996, Ravallion and Chen, 1997, 2000, Fields, 1998, Collier and Dollar, 2000, Easterly, 2000, Dollar and Kraay, 2000, World Bank, 2000). The advent of the MDGs and the PRSPs has underlined the need to explore the interconnections among growth, poverty and income distribution.

The discussion of pro-poor growth started with a focus on evaluating the percentage change in the income of ‘poor’ people in the course of economic growth (Dollar and Kraay, 2000, Eastwood and Lipton, 2001). The statistical exercises to evaluate the elasticities that connect poverty changes with growth are sensitive to functional specification and also data source used for the purpose.⁵ Besides, one needs some degree of conceptualisation of what it means that a growth process is pro-poor. Recent literature has suggested different ways of measuring pro-poor growth.

2.1. Measures of Pro-Poor Growth: A review

White and Anderson (2000) suggest three measures on pro-poor growth using incremental income shares of the poor normalized by their base-year shares, population share, or some international norm. The first measure implies that the income share of the poor population should increase for the growth pattern to be regarded as pro-poor.⁶ Or equivalently, the rate of growth of the mean income of the poor should be greater than the rate of growth of mean income for the whole population. The second measure says that the share of the poor in the income increase should be greater than the headcount ratio itself. This implies that the poor should get a share of the income increase that is at least as large as their population share for the process to be characterised as pro-poor. The third measure says that the incremental income share of the poor should be measured against some international norm, such as the median income shares of the bottom 20 or 40 percent.⁷ This measure appears to use some convergence rule in the incidence of inequality across the globe. That is, in a growth episode pro-poor growth in this case means that the share of the poorest quantile in the growing income at least equals that of the median of share of the poorest quantile around the world. This particular measure assumes that most income shares for the poorest quantiles in poor countries are lower than the median share of the poor in the world income distribution.

What we note from these measures is that the focus is the relative change in the income of the poor, not on what happens to poverty as a result. That is, it does not matter whether poor people escape poverty as a result of growth. We can see this clearly if we write the income share of the poor at time period t fully as:

$$\varphi_t = \frac{\sum_{i=1}^q y_{it}}{\sum_{i=1}^n y_{it}} \dots\dots\dots(1)$$

⁵ The elasticity estimates may be affected by variations in the sources of underlying variables. Some use distribution data from household surveys and growth data from national accounts, e.g. Bhalla, 2002, Karshenas, 2001, 2002, Sala-i-Martin, 2002).

⁶ Let income share of the poor at time t and t-1 respectively be φ_t and φ_{t-1} . The pro-poor measure can be written as: $\frac{\varphi_t}{\varphi_{t-1}} > 1$ if the LHS is less than 1, then growth is said to be anti-poor. Or in other words, this is a requirement

that the rate of growth in the share of the income of the poor be greater than zero:

$$\frac{\varphi_t - \varphi_{t-1}}{\varphi_{t-1}} > 0$$

⁷ The median income share of the bottom 20 and 40 per cent according to White and Anderson is 5.6 per cent and 16.7 per cent respectively.

where the numerator on the right-hand side is total income of the poor population in period t and the denominator is the total income of society (GDP). Rewriting (1) in terms of means, we get:

$$\phi_t = \frac{q\mu_{p_t}}{n\mu_t} = \frac{H\mu_{p_t}}{\mu_t} \dots (2)$$

Equation (2) simply states that the share of the income of the poor is a ratio of mean income of the poor (μ_p) to per capita income of society, μ_t , weighted by the proportion of poor people (H_t). Now, it can easily be shown that the rate of growth in the income share of the poor will be equal to:

$$\dot{\phi} = \dot{H} + \dot{\mu}_p - \dot{\mu} \dots (3)$$

where all the variables are in terms of rates of growth. It is clear from equation (3) that the share of the income of the poor moves *positively* with the rate of change in the headcount ratio. The implication is that growth could be pro-poor, while the proportion of poor people increased. Ravallion and Chen (2003) argue that such a measure of pro-poor growth is counterintuitive. In addition, if incremental income is equally distributed, then, equation (3) suggests that the rate of change in the income share of the poor population will be equal to the rate of change in the headcount ratio.

The second definition of pro-poor growth by White and Anderson implies an equal distribution of the income increase. This is an extremely stringent condition and thereby not very useful as a guide for policy makers who are intent in monitoring the progress of pro-poor growth in their economies. In the following paragraphs we review some pro-poor growth measures that have closer connection with poverty measures and satisfy desirable axioms.

Kakwani and Pernia (2000) propose a measure of pro-poor growth that is derived from poverty elasticities. They use ratios of poverty elasticities with respect to actual growth and distributional neutral growth, and, define a pro-poor growth index as:

$$\phi = \frac{\eta}{\eta_g} \dots (4)$$

where ϕ is an index of pro-poor growth and η is the elasticity of poverty with respect to per capita income (gross elasticity), and η_g is the elasticity of poverty with respect to per capita income, assuming no change in income distribution. If $\phi > 1$, then the growth process is considered to be pro-poor. If $0 < \phi < 1$, economic growth reduces poverty, but the ‘inequality effect’ of economic growth is negative so that the poor benefit proportionately less from economic growth than the non-poor. In case of economic recession, the pro-poor index is negative if only poverty declines, in which case the poor have been insulated from the effects of economic recession. The core of equation (4) is the decomposition of a measure of poverty change into growth and inequality effects. That is, Kakwani and Pernia (2000) start from the basic definition of an income-based measure of poverty:

$$P = P(z, \mu, L(P)) \dots (5)$$

where P is a measure of poverty, z is the poverty line, μ is per capita income and L(P) is the Lorenz function underlying the income distribution, or a summary measure of the income distribution. A proportional change in P between two periods, P_{12} is decomposed into the growth component, G_{12} and the inequality component, I_{12} , as follows:

$$G_{12} = \frac{1}{2}(\ln(P(z, \mu_2, L_1(p)) - \ln(P(z, \mu_1, L_1(p))) + \ln(P(z, \mu_2, L_2(p)) - \ln(P(z, \mu_1, L_2(p))))$$

and

$$I_{12} = \frac{1}{2}(\ln(P(z, \mu_1, L_2(p)) - \ln(P(z, \mu_1, L_1(p))) + \ln(P(z, \mu_2, L_2(p)) - \ln(P(z, \mu_2, L_1(p))))$$

If we add G_{12} and I_{12} together we get the basic equation that captures the proportional change in poverty between two periods. If the underlying poverty measure is additive in inequality and per capita income, this decomposition fully captures the whole effect of economic growth. The main point is that Kakwani and Pernia's (2000) measure of pro-poor growth index is dependent on the poverty function. Their measure is inherently poverty-focused. That is, the way we measure poverty matters for measuring pro-poor growth. This measure compares changes in the level of poverty due to economic growth alone, holding inequality constant against changes in poverty when changes in inequality are accounted for. So a growth episode is called pro-poor only if inequality declined or at best remained unchanged. Growth episodes accompanied by even the slightest increase in income inequality are considered anti-poor, while it is pro-poor if inequality does not increase. Since responsiveness of poverty to income growth and inequality change varies considerably across different types of poverty measures, the pro-poor index is sensitive to the choice of a poverty index. As we shall also see below, the Kakwani-Pernia index is ambiguous to classify some episodes such as poverty declining during recession.

Ravallion and Chen (2003) propose a pro-poor measure, which focuses mainly on the changes in the income of the poor in a growth episode, avoiding some of the problems encountered with respect to poverty incidence in, for instance, the estimates proposed by White and Anderson. In addition, their measure is linked to a specific poverty index, that is, Watt's⁸ index of poverty, which has been shown to meet several desirable axioms.

The measure of pro-poor growth proposed by Ravallion and Chen starts from the basic idea of 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 quantile, we get the income of that quantile:

$$y(p) = L'(p)\mu \dots(6)$$

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

⁸ Watt's Index can be written as:

$$W = \int_0^h (\ln z - \ln y) dp$$

$$g_t(p) = \frac{L_t(p)}{L_{t-1}(p)} (\gamma_t + 1) - 1 \dots (7)$$

where $g(p)$ is growth rate in the income of the p th quantile and γ_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 quantile are weighted by the shift parameter in the slope of the Lorenz curve.⁹ Cumulating (7) up to the proportion of the poor (H_t) gives an equivalent expression for a change in the Watt's index of poverty:

$$-\frac{dW_t}{dt} = \int_0^{H_t} g(p) dp \dots (8)$$

Normalizing equation (8) by the number of poor people we get what Ravallion and Chen (2003) define as their measure of pro-poor growth.¹⁰

Kakwani, Kanderk, and Son (2003) suggest a poverty equivalent growth rate (PEGR) as an index of pro-poor growth as follows:

$$\gamma^* = \frac{\int_0^H \frac{\partial P}{\partial x} x(p) g(p) dp}{\int_0^H \frac{\partial P}{\partial x} x(p) dp} \dots (9)$$

where γ^* is the PGER and the expressions on the LHS 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 normalizing 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 generalization 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 (2) using Ethiopian data sets.

⁹ In fact, if we simplify (3) we get:

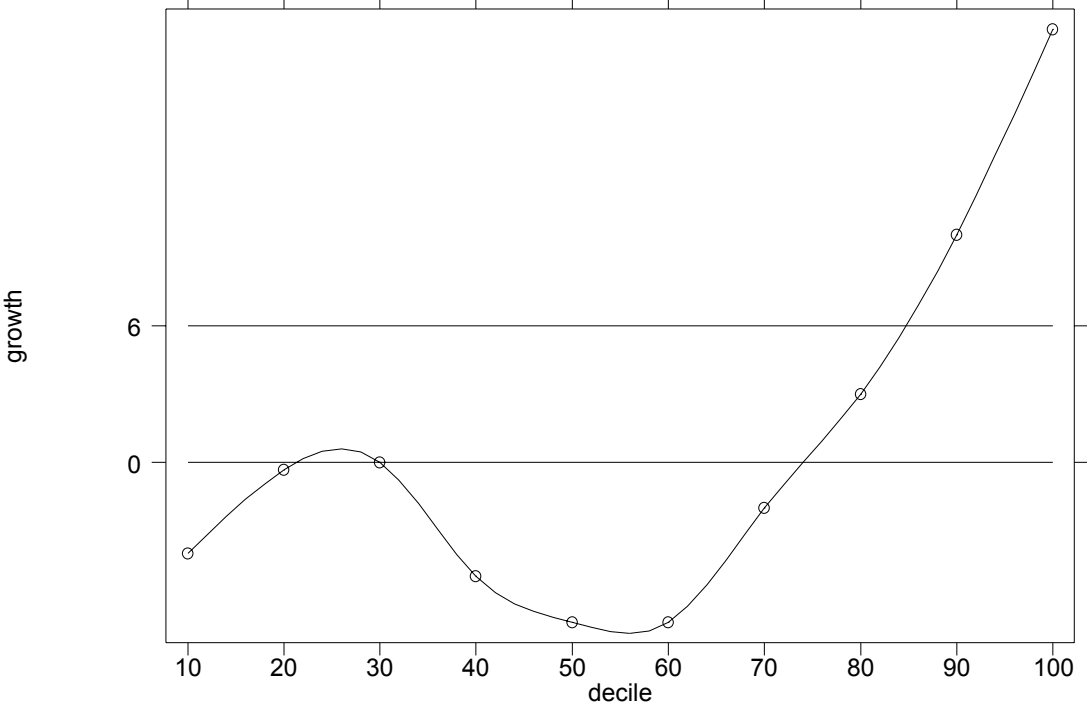
$$g(p) = \frac{y_t(p)}{y_{t-1}(p)} - 1$$

¹⁰ 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.

$$\frac{\sum_{i=1}^q g_t(i)}{H_t} - 1 \quad \text{This obviously is different from changes in the mean income of the poor.}$$

The vertical axis measures growth rate in per capita expenditure during the period, and the horizontal axis measures the percentiles of households ranked on the basis of their income. The growth rate in mean income is given by the horizontal curve at 6%. We see that per capita consumption expenditure declined for all households until the 75th percentiles. As a result, income inequality increased sharply during the period, undermining the effect of growth on poverty (see Bigsten et al, 2003) for details. Thus, growth-incidence curves provide a sharper picture of what happened to the income of poorest deciles during growth episodes.

Figure (2): Growth Incidence Curve for Ethiopia-1994-1997



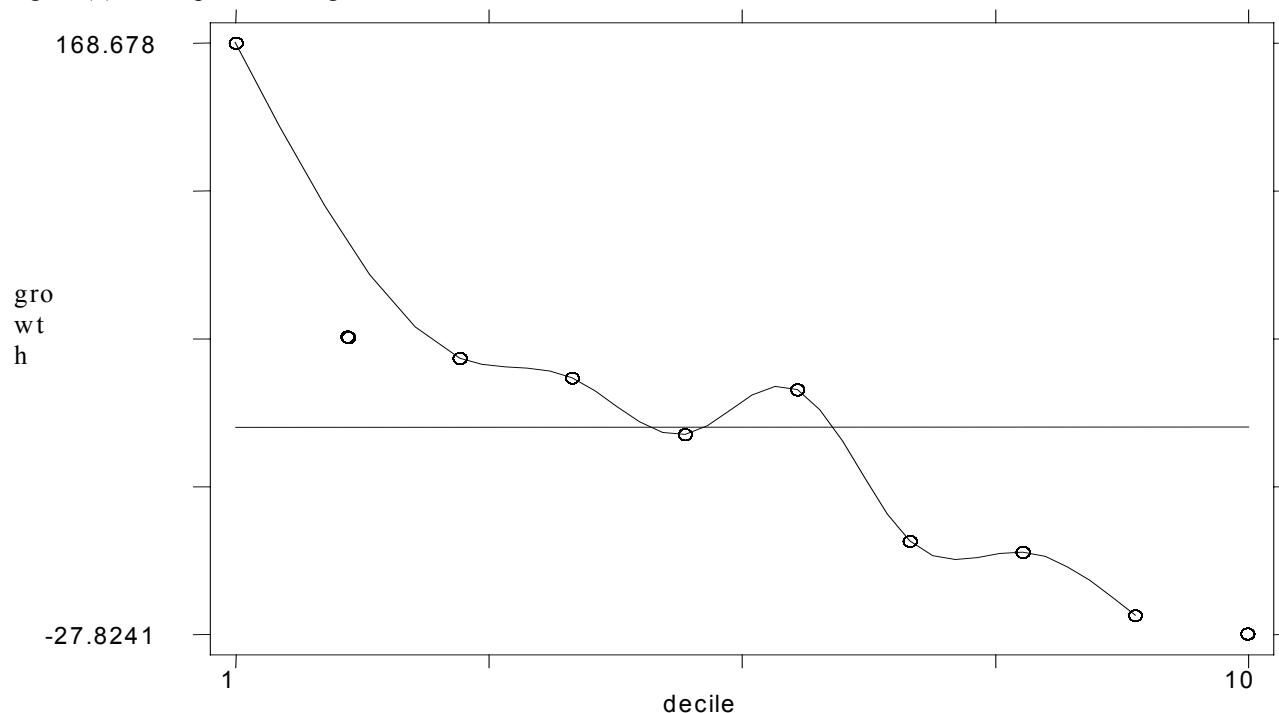
There is however an issue that could be of interest. While Fig (2) is simply based on the income growth of people in specific deciles, being a panel, we had an opportunity to trace out the income growth of people on the basis of their income group in 1994. Basically what we did was that we divided households into deciles for 1994. We then computed the growth rate in the income of households belonging to specific decile in 1994. That is, we traced growth of income of each household and linked it with their status in 1994. The picture we get is quite interesting. Households who were in the lowest decile in 1994 had the highest income growth in 1997 and, this continued to decline monotonically with the deciles (Fig. 3). Those households that were among the top decile in 1994, lost much. This picture is consistent with the income mobility discussion made in Bigsten and Shimeles (2003). The implication of Figure (3) to a pro-poor growth index is not so obvious. But, it coincides with the population anonymity axiom in most measures of income inequality. It also alerts to the fact that in the discussion of pro-poor growth, whose income changed during a growth episode matters.¹¹

¹¹ We may illustrate this point using the following table.

Individuals	T ₀	T ₁₁	T ₁₂	G(p) (%)	I(p) (%)
A	10	20	10	0	100
B	20	10	20	0	-100

We can see from the example that individual A, who was poorest in t₀, had his income doubled in T₁₁, while that of B was reduced by half. This incidence would not change income inequality nor poverty as shown by G(p). But, individual specific measures varied considerably (I(p)). From the point of view of the policy maker, whose focus is on those who are currently poor, the overall outcome is not encouraging. From the point of society, it is expected that T₁₁ is better than T₁₂. But, our pro-poor measures do not distinguish the two episodes.

Figure (3): Per capita income growth on the basis of income deciles in 1994.



As a measurement tool, the Ravallion and Chan measure of pro-poor growth is a sum of all growth rates of the poor population normalized by the poverty rate in the base year. Or simply, it is the average growth rate of the income of the poor. As is also the case with the rest of the pro-poor measures reviewed here, this measure is insensitive to what happens to the overall performance of the economy.

To see some of the empirical implications of pro-poor growth indices, we report in Annex Table 1 estimates of pro-poor growth as they apply to selected African countries. The picture we get is that more growth or recession episodes are characterised as pro-poor under the first White and Anderson measure than under the Kakwani and Pernia measure. The White-Anderson measure of pro-poor growth index classifies 57% of the growth and recession episodes as being pro-poor, while Kakwani-Pernia index classifies only 40% of them as being pro-poor. The two measures come up with similar classifications only in 45% of the cases. The problem in the White-Anderson case as mentioned is due to its disregard to what happens to the level of poverty. In Kakwani-Pernia's case, the measure of pro-poor index is vaguely defined in a situation where recession leads to reduction in poverty due to decline in income inequality. Example is given in the Table below where recessions that led to significant reduction in poverty could not be classified unambiguously. In fact, if one follows the definitions provided in Kakwani and Pernia (2000), a value exceeding 1 is considered pro-poor and pro-rich otherwise. According to this definition, thus, the recession episodes in Table (4) are pro-rich, which as is very clear not the case.

Table (4): Ambiguity in the Kakwani-Pernia Measure of Pro-Poor Growth

Country	Period	Growth in per capita GDP(%)	Change in the headcount (%)	Kakwani-Pernia index
Cote d'Ivoire	1985-88	-1,77	-3,99	-0,735
Senegal	1991-94	-2,11	-9,60	-0,185
Tanzania	1991-93	-1,76	-14,35	-0,071

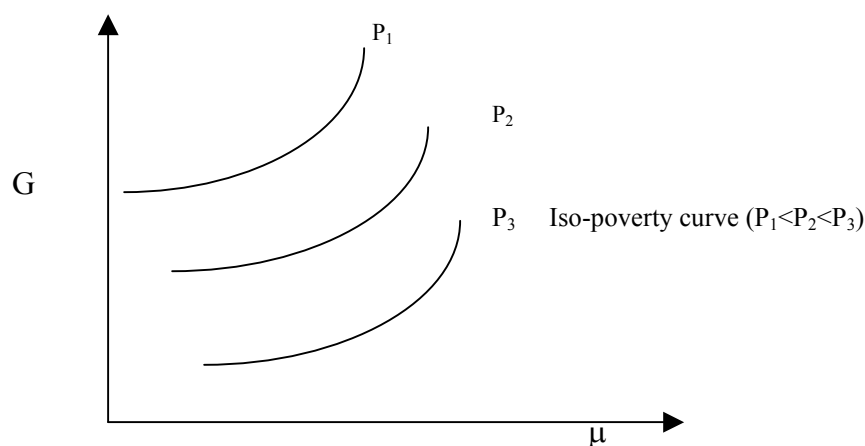
Source: authors' calculation

The other problem with nearly all measures of pro-poor growth is that they only offer benchmarks with no order of magnitude involved in their measures. That is, for a policy maker, there is no guide based on the values of the pro-poor measure whether one pro-poor episode is better than the other¹². Still, as far as poverty reduction and pro-poor strategy is concerned, both distributional changes and growth have a vital role to play. The next two sections briefly deal with these issues.

3. The Equity-Growth Trade-off.

At the heart of the above discussion on the measurement of pro-poor growth features the issue of income distribution change as an essential component of poverty reduction in regions such as Africa. At the analytical level any poverty measure can be defined over per capita income and a measure of income inequality (Kakwani, 1991, Ravallion, 1992). Therefore we can get some idea of the order of magnitudes involved in redistribution efforts for poverty reduction. See annex 2 on detailed comments regarding Figure (4).

Figure (4)- Per capita income -Inequality Trade-off



The above figure carries two messages. One is that, by definition, poverty levels in a country can be generated using information about the per capita income and the distribution of that income. That is

$$P = P(Z / \mu, G) \dots (10)$$

Equation (10) says that if we know the level of the poverty line, Z , mean per capita income, μ , and the distribution underlying that per capita income, G , it is possible to obtain a measure of poverty that is consistent with standard axioms.^{13,14} Poverty rises with the poverty line and the

¹² See Klasen (2003) for detailed review and summary of the limitations of the pro-poor growth index.

¹³ These axioms mainly are axiom of focus, monotonicity, transfer, sub-group consistency, decomposability (see Haagenars, 1987 for an interesting and in depth discussion of the properties of poverty indices).

Gini coefficient, and declines with per capita income. It is homogenous of degree zero with respect to Z and μ . Using these properties of the poverty index, from (10) we can generate a set of per capita income and Gini coefficients that give rise to a given level of poverty that is iso-poverty curves as depicted above. This relationship has been innovatively utilized in Bourguignon (2002) as well as Ashan and Oberi (2002) to establish the link between economic growth and poverty reduction in a consistent and analytically appealing manner. Assuming that the poverty lines remain constant over time, we can link per capita income and the Gini to generate a locus of points for a given level of poverty as shown in Figure 2. The slope of the iso-poverty curve is the issue of concern here. Figure 2 assumes convex iso-poverty curves, where the second order condition depends on the second derivatives of the poverty function with respect to μ and G , and the interactions between μ and G . If we follow Kakwani et al (2001), we tend to get the convex shape for the iso-poverty curves.¹⁵ Bourguignon (2002) used the decomposition that follows from the definition of poverty (a la Kakwani, 1991 and Datt and Ravallion, 1992) to estimate the elasticity of poverty with respect to economic growth, taking the impact of distributional changes fully into account. This leads to a specification of an econometric model that can be used to estimate the connection between growth, poverty and income inequality.

If there is any theoretically or empirically motivated structural relationship between income inequality and per capita income, there is an opportunity to super-impose this on the definition-driven iso-poverty curve and work out possible growth paths for a given country. Here our interest is to get an idea of what it takes in terms of growth and distributional change to maintain a given level of poverty since there is a *trade-off* between inequality and growth.

Regarding the trade-off we can get some idea by looking at the slope of the iso-poverty curves. We can see the magnitudes involved by totally differentiating (10) and setting changes in poverty equal to zero.

Thus

$$\frac{d\mu}{dG} \frac{G}{\mu} = - \frac{\frac{\partial P}{\partial G} \frac{G}{P}}{\frac{\partial P}{\partial \mu} \frac{P}{\mu}} \dots (11)$$

and we can rewrite equation (11) as

$$v = - \frac{\theta}{\varepsilon} \dots (12)$$

where v is elasticity of per capita income with respect to the Gini, θ is elasticity of poverty with respect to Gini and ε is elasticity of poverty with respect to income. If v is small, (say <1), the cost of redistribution would be small in terms of lost per capita income and vice versa. The

¹⁴ Bourguignon (2002, figure 3) used G on the vertical axis and $\frac{Z}{\mu}$ on the horizontal axis to depict an iso-

poverty curve, which is downward sloping for a given poverty line. His main concern is to address the heterogeneity often reported on the elasticity of poverty with respect to economic growth. Note that for each iso-poverty curve, there is a unique elasticity associated.

¹⁵ If we follow the common practice in the empirical literature (e.g. Besely and Burgess, 2002, Fosu, 2002, Ali, 1996), where log of poverty is regressed over log of income inequality and per capita income, to get elasticity values we can think of a Cobb-Douglas specification for the poverty function and determine the shape of the poverty function on the basis of the elasticity values.

effectiveness of redistribution as a tool for poverty reduction would tend to be small. We have computed this elasticity for 27 countries in Africa as reported in Table 4 using headcount ratio as our measure of poverty.

To retain the same level of poverty, the extent of trade-off between growth and income distribution depends on the slope of the iso-poverty curve. Suppose a country wishes to remain on one iso-poverty curve (see for example Ali and Elbadawi, 1999), then, it has a choice between a policy that generates growth and increased inequality and another one that lowers per capita incomes but reduces inequality. But the extent to which such trade-off occurs depends on the ratio of the elasticity of poverty with respect to income distribution and per capita income as shown in Table 5.¹⁶

For most African countries, this ratio is quite small, suggesting that the growth loss due to redistribution may be limited. For countries with high initial inequality, such as Gabon, South-Africa, and Zimbabwe, the inequality-growth trade-off is high. It is important to notice that the elasticity varies considerably by the point where the poverty line is located and the slope of the Lorenz curve at that point. Nevertheless, Table 5 gives an illustration of the trade-off between growth and redistribution in Africa. One has to be cautious in interpreting these elasticities since they are essentially mechanical, non-behavioural relations.

In Table 5 we apply two different poverty lines to compute the slope of the iso-poverty curve. These are the 1\$ and 2\$ a day per person that are often used in cross-country poverty comparisons. If data had been available it would have been more sensible to use national poverty lines to evaluate the elasticity ratios to get an idea of how a movement along an iso-poverty curve behaves with changes in either income inequality or per capita income. For some countries, we could not compute the relevant elasticities, particularly, for relatively high-income countries when the poverty line was set at 1\$ a day per person. It is too low to compute poverty estimates.¹⁷ Nevertheless, we can observe at least two things from Table 5.

Table 5: Inequality-Growth ‘Trade-off’ for Selected African countries

Country	Year	V ₁	V ₂	Gini coefficient	Per capita income (in 1996 PPP)
Burundi	1992	1,54	0,268	33,33	926
Burkina Faso	1994	1,67	0,325	48,20	971
Botswana	1986	---	0,510	54,21	3895
CAR	1993	---	0,789	61,33	1306
Cote d'Ivoire	1993	---	1,700	36,91	1970
Ethiopia	1995	0,60	-0,213	40,00	583
Gabon	1960	7,14	3,056	64,00	2966
Ghana	1997	2,54	0,940	32,70	1416
Guinea	1994	6,28	2,742	46,80	2732
Gambia	1992	2,71	0,797	47,80	1312
Kenya	1994	2,34	0,669	57,50	1215
Lesotho	1993	5,06	2,022	57,94	2215
Morocco	1984	----	3,439	39,19	3242
Madagascar	1993	1,43	0,216	43,44	888
Mali	1994	1,35	0,172	50,50	854

¹⁶ The elasticities are with respect to the Headcount ratio.

¹⁷ We have used the POVCAL program by Ravallion, Chen and Datt (1996). This program returns no results (or run time error) if the poverty line is set either too low or too high compared to the mean.

Mozambique	1996	1,75	0,371	39,61	1003
Mauritania	1995	2,83	0,914	38,90	1399
Namibia	1993	11,46	----	74,3	4541
Niger	1995	0,61	0,205	50,50	880
Nigeria	1997	1,93	0,467	50,56	1072
Rwanda	1984	----	0,518	28,90	1108
Senegal	1994	3,10	1,050	41,28	1498
Tunisia	1971	---	2,949	53,00	2882
Tanzania	1993	0,51	-0,240	38,20	553
Uganda	1993	1,16	0,083	39,20	788
South Africa	1993	----	8,924	62,30	7289
Zambia	1996	1,40	0,205	49,80	876
Zimbabwe	1990	----	3,031	56,83	2948

Source: Authors' computation

One is that high-inequality and relatively high-income countries (e.g. Namibia, South-Africa, Senegal, Gabon, Zimbabwe) had higher elasticity of the iso-poverty curve, indicating that redistribution policies may be effective tools in dealing with poverty in those countries. For instance, if we take South-Africa, at the poverty line close to 750\$ per person a year, a one percent decline in the measure of income inequality needs about 7% decline in per capita income just to remain on the same poverty level. That means, any reduction in per capita income lower than 7% would lead to a reduction in poverty itself. So, basically the implied trade-off is quite high. In other words, it takes a large reduction in per capita income following a one percent reduction in the Gini for poverty not to decline. On the other hand, any increase in income inequality, beyond its current level, requires a large per capita income growth to maintain the existing level of poverty.

The second point is that, for low-income countries, such as Burundi, Burkina Faso, Niger, Ethiopia, Tanzania and Zambia, the room for poverty reduction via redistribution is very limited. A one percent reduction in income inequality would need a small change in per capita income just to stay on the same level of poverty. The iso-poverty curves for these countries tend to be flatter. Likewise, the effect of rising income inequality on poverty would be offset by a low rate of growth in per capita income. A change in income inequality may not be a significant poverty threat if there is high rate of growth in these countries. Finally, we note the particularly in the countries where initial inequality is high, the elasticity underlying the iso-poverty curve at the lower poverty line is larger than the elasticities at the higher poverty line,

The main message of this section is that the trade-offs between redistribution and growth as tools of a poverty policy vary quite a lot by country. Depending on the order of magnitude involved in the trade-off, the best choice of a pro-poor growth path varies. We should also add that our estimates are entirely based on the definition of poverty, with no inherent functional relationship between growth and income inequality. If there is a structural relationship between the two, as we would assume that there is, then the choices that a country have may be restricted.

To further appreciate the issue of redistribution with regard to poverty reduction, we may show the poverty outcomes for four countries of two growth scenarios. One scenario is that income inequality remains unchanged (or Distribution Neutral Growth, DNG) and the other scenario is that additional income is equally distributed, that is growth follows an Equally Distributed Growth path. The first growth pattern is equivalent to the Kakwani-Pernia

measure of pro-poor index with a value of unity. The simulations will give us an opportunity to closely examine the poverty impact of such a scenario as well as the prospect for pro-poor growth when this value exceeds 1. The other pattern of growth considered here is the second measure of pro-poor growth suggested by White and Anderson (2000) as discussed above. This scenario is of course an extreme definition of pro-poor growth, but we include it for illustrative purposes anyway, though fully endorsed by all measures of pro-poor growth.

Table (6): Simulation of the impact of pattern of growth on poverty in Ethiopia

Year	Real Per capita GDP in PPP (1996 prices)	Headcount (DNG or $\phi=1$)	Gini (DNG or $\phi=1$)	Headcount (EDG)	Gini (EDG)
1995	583	42,0	41,0	42,0	41,0
1996	600	40,0	41,0	36,0	39,0
1997	618	38,0	41,0	33,0	38,0
1998	637	37,0	41,0	29,0	37,0
1999	656	34,0	41,0	26,0	36,0
2000	675	32,0	41,0	20,0	35,0

Source: authors' calculation,

Table 6 reports the likely impact of the two types of growth patterns mentioned above. We took the average growth rate in real per capita GDP that prevailed 1993-2000, which was 3%, as our measure of the long-term growth that can be sustained by the economy.¹⁸ One type of growth pattern is a situation where the Gini coefficient remains unchanged (or Distribution Neutral Growth) through out the growth episode in line with the measures proposed by White and Anderson (2000) and Kakwani and Pernia (2001). The other is an Equally Distributed Growth pattern, where all additional income is divided equally across the population. It can be seen that even under a distribution neutral growth (DNG), poverty in Ethiopia would have declined by 10 percentage points 1995-2000, a significant reduction that would have enabled the country to halve poverty by 2005 if it were sustained. As pointed out in Bigsten et al (2003), the growth impact of poverty in Ethiopia would have been substantial during the mid-1990s, if it were not for the worsening in the distribution of income. Addressing issues of income distribution is important.

In our second, Utopian scenario, where additional income is equally distributed, Ethiopia could have halved poverty by 2000! It would have required a reduction in the Gini coefficient of 6 percentage points and a 3 percent per capita growth in this period. What would in actual fact mean of a reduction of such order in the Gini coefficient? In our case it means that the income of the richest quintile would grow only by 8% in this period, while the income of the poorest quintile would grow by nearly 50%!

Tables 7,8 and 9 report similar illustrations between Distribution Neutral Growth and Equally Distributed Growth for Mozambique, Uganda, and South-Africa. The first two countries were among the fastest growing African economies in the 1990s. Mozambique's per capita GDP grew at a rate of 3.1% between 1990-2000, while that of Uganda grew at a rate of 3.3% during this period. In terms of poverty reduction, Uganda managed to reduce poverty significantly during this period (by more than 20 percent), while Mozambique reduced poverty by a modest 9 percent despite its robust growth in per capita GDP (see ECA, 2003). We also look at the poverty impact of growth patterns in these economies for comparison purposes. We computed

¹⁸ See World Bank, African Development Indicators CDROM (2002) for the per capita growth figure. In addition, Ministry of Finance and Economic Development (2002) believes that Ethiopia would achieve a 3% per capita growth easily for in the coming decades.

the illustration based on per capita GDP in PPP from Penn World Tables and a poverty line of 2\$ a day per person.

Table 7: Simulation of Pattern of Growth on Poverty in Mozambique

Year	Per-capita GDP in PPP (1996 prices)	Headcount (Under DNG or $\phi=1$)	Gini (Under DNG or $\phi=1$)	Headcount (Under EDG)	Gini (Under EDG)
1996	1003	48	40	48	40
1997	1034	46	40	43	39
1998	1066	44	40	42	38
1999	1133	42	40	40	37
2000	1168	40	40	35	35
2001	1204	39	40	32	34
2002	1241	37	40	29	34
2003	1280	35	40	23	32

Source: authors' calculation

It can be seen that Mozambique could have reduced poverty by about thirteen percentage points between 1996 and 2003 if growth remained to be distribution neutral. As we have noted the recent rapid growth of Mozambique did not translate into a poverty reduction of that order. To maintain the existing level of inequality the government would have had to introduce some deliberate egalitarian policy measures. The Equally Distributed Growth pattern, Mozambique would have been able to reduce poverty by half by 2003. The required overall change in the Gini is a reduction by more than eight percentage points.

Similarly, for Uganda (Table 8), the pattern shows that poverty could have been halved by 2003 if economic growth were such that each additional income was equally distributed among the population. Still, the actual performance of Uganda in reducing poverty is commendable. It managed to reduce poverty by more than 20 percent during the 1990s. Our simulations show that the impact of growth that is distribution-neutral is very significant.

Table 8: Simulation of Pattern of Growth on Poverty in Uganda

Year	Per capita GDP In PPP	Headcount (Under DNG or $\phi=1$)	Gini (Under DNG or $\phi=1$)	Headcount (Under EDG)	Gini (Under EDG)
1993	788	62	40,0	62	40,0
1994	814	60	40,0	59	38,0
1995	841	58	40,0	57	37,0
1996	868	56	40,0	54	36,6
1997	897	54	40,0	51	34,5
1998	926	52	40,0	49	34,0
1999	957	50	40,0	45	32,0
2000	989	48	40,0	42	31,0
2001	1021	46	40,0	38	29,6
2002	1055	44	40,0	34	29,0
2003	1090	42	40,0	29	28,0

Source: authors' calculation

Table (9): Simulation of Growth Pattern on Poverty in SA

Year	Headcount (DNG or $\phi=1$)	Gini (DNG or $\phi=1$)	Headcount (EDG)	Gini (EDG)
1993	22,0	62	22,0	62
1994	21,5	62	20,0	61,5
1995	21,7	62	19,7	61,2
1996	21,6	62	19,6	61,2
1997	21,3	62	19,5	61,1
1998	20,7	62	16,8	59,0
1999	20,6	62	16,7	58,6
2000	20,5	62	16,5	58,2
2001	20,4	62	11,2	57,2

Source: authors' computations at a poverty line of 3 USD per day per person in PPP

Per capita income in South Africa hardly grew over the last decade. The average growth in real per capita GDP between 1993-2000 was about 0,5%. Taking this as a proxy to long-term growth (though things might change favorably in future), we see that such growth could not make much impact on poverty (see Table 9). The slow growth in per capita GDP and the very high level of income inequality provides a case for policy measures that focus on redistribution. The likely impact of such redistribution on incentive structure, productivity and growth is uncertain. It is possible that it might even speed up the process of growth, or vice versa. But, as far as poverty reduction is concerned, South-Africa would need quite high rate of growth in per capita GDP, as is the case for the rest of Africa, though it is unclear how this can materialize in an atmosphere of political transition where expectations among the poor are high.

In short, the preceding discussion illustrates the potential poverty impact of policies that target both distribution as well as growth. The challenge, however, is to identify policy instruments that address both growth and distributional issues in the context of Africa. The next section looks at some of the challenges of addressing distributional issues in the African context.

4. The Challenges of Pro-Poor Growth Strategies

We have observed that inequality is quite high in Africa. So what are the factors that generate this income pattern? The income distribution of a country is the outcome of the whole economic process, where factor prices are determined within an interdependent system. To analyse changes in income distribution properly it would thus be very useful to use an economy-wide computable general equilibrium model, where it is possible to identify the variables that drive both economic growth and income distribution in a given setting. Without such information, it is difficult for policy makers to implement pro-poor growth policies.

A convenient way to look into the level and trend of income inequality is to distinguish the long-term or persistent incomes from the temporary or transitory ones. In Africa, household income or consumption expenditure is made up of resources obtained from several sources: earnings, loans, transfers (in kind or cash), gifts, non-marketable items (own produce, freely collected items, e.g. water, firewood), some of which are transitory and others are of long-term nature.

There are also significant regional or urban vs. rural differences in incomes (Bigsten, 1980, Bigsten et al, 2003). In general, inequality in urban areas tends to be higher than in rural areas

in most parts of Africa. Similarly, within urban and rural areas, inequality tends to vary across agro-climatic zones and economic sectors (such as formal vs. informal, service vs. manufacturing). As much as the sources of growth are important to account for overall economic growth, so is important to have disaggregated information on the sources of income inequality. Such exercise have been done for poverty in the literature (e.g. Ravallion and Datt, 2002 for India) trying to capture the effect of changes in the regional and sectoral distribution of income on overall reduction of poverty. The findings suggest that initial inequality interact with such factors as literacy, farm productivity, and asset distribution affect the impact of growth on poverty.

Standard explanations of income inequality relate to the underlying asset distribution. Several studies have shown particularly the land distribution to be important in the determination of income inequality. However, in terms of the Gini coefficient for land distribution, Sub-Saharan Africa is the least unequal region (Deininger and Squire, 1998). So, asset distribution, though important, does not seem to be the major factor in the case of Africa. Physical and human capital, however, are scarce in Africa, and their distribution is certainly highly skewed. This certainly contributes very significantly to the extent of inequality.

At the level of theory as well as empirics the direction of causation among growth, income distribution and poverty is still very unclear. What we know for sure is that economic growth is important, and necessary for sustained poverty reduction. It is important to know the factors that drive both growth and distribution of income in Africa. For policy makers it is particularly important to understand the impact of policy reforms on growth and inequality and thus poverty.

Widespread initial poverty, as is the case in Africa, accompanied by several forms of market imperfections, indivisibility of investment, and strategic complementarities among economic agents can have a dampening effect on economic growth (see Lustig et al, 2002 for review of the literature). Credit rationing in these economies make it very difficult for poor people to break out of the poverty trap. The strategic complementarities introduce the issue of coordination failures, where incentives for the expropriation of other people's wealth dominate the strategy of individual economic agents. Poverty itself generates a high degree of risk aversion and reduces the incentive for investment. One policy implication is for governments to invest in basic infrastructures, such as physical and financial infrastructures, that reduce transaction cost to individuals. Redistribution of assets, such as land, can also ease the credit constraint poor people face.

Another aspect highly correlated with initial level of poverty is the low level of human development, which in itself affects subsequent growth. The literature in this regard has shown the importance of better education and health for economic growth, and thus on poverty reduction. Most analyses of poverty profiles confirm that the poor have relatively low level of education and health. One reason is the very fact that they are poor. The opportunity cost of sending children to school for poor households is higher than in better-off households.

Finally, along with these factors is the ill feeling and social unrest that widespread poverty instils among members of society. Poverty undermines stability, well-functioning institutions, and good governance. Many African countries have gone through destructive civil wars, conflicts, and social upheavals in the recent past. A major cause of such instability is poverty itself. Therefore, the challenge for Africa is to ensure a growth process that benefits the larger segment of the poor population.

5. Conclusion

This paper has investigated income distribution and issues related with pro-poor growth in the context of Africa. The focus has been on the link between changes in average per capita income and the incomes of the poor. This is motivated by the emerging consensus at various levels on reducing poverty in Sub-Saharan Africa and the emphasis on pro-poor growth in major policy documents. The clarity on what means pro-poor growth, its operationalisation remain a challenge to policy makers in Africa. In this regard, we have reviewed the measures of 'pro-poor' indices currently applied in the literature. We have noted the limitations of each of these indices with respect to concept and empirics, and thus the dire need for clarity and consistency that can be easily applied by policy makers. To highlight some of the issues involved, we have estimated different pro-poor growth indexes. The results suggest that the poor in several cases are surprisingly little affected by economic declines in Africa. On the other hand, there were also cases where the poor did not benefit from economic growth, leading to rising poverty. These facts bring into focus the relevance of income distribution issues in the African setting.

Using the definition of income poverty as a function of income distribution and per capita income, this paper has attempted to show the implied trade-off between the two that exists to maintain a given level of poverty. Some computations of such trade-offs illustrate the choices open to different countries between growth and redistribution depending on their level of inequality and per capita income. High inequality and high-income countries were found to have a higher value of the elasticity of the iso-poverty curve, indicating that redistribution policies for poverty reduction may be more effective there. For most of these countries, if inequality were to increase further, the rate of growth in per capita income needed to maintain existing levels of poverty is very substantial. Thus, policies that lead to a further rise in income inequality must have a very strong growth effect for the poor to benefit. On the other hand, low-income countries tended to have had on average flatter iso-poverty curves, implying that a one percent increase in income inequality needs a much lower rise in per capita income to stay at the same level of income inequality. Here growth strategies leading to inequality are more acceptable from a poverty point of view, provided that they generate sufficient growth.

Finally, it all boils down to the understanding of factors that influence both income distribution and economic growth in African countries. Micro-level analysis is required to establish why income inequality is so high in most African countries and its trend over time. Investigating the two-way causations from growth to poverty and from poverty to growth opens several avenues for pro-poor growth strategies.

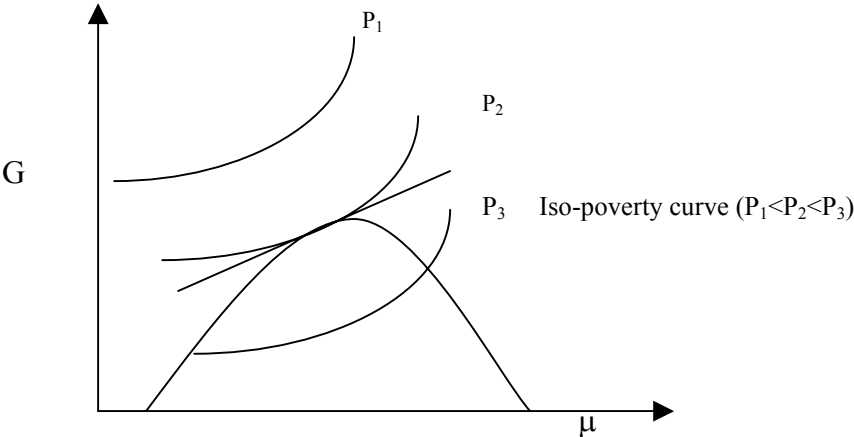
Annex Table 1: Pro-Poor Growth Measure for Selected African Countries

Country	Year	White and Anderson Measure of Pro-Poor Growth	Kakwani and Pernia's Measure of Pro-Poor growth (ϕ)	Growth of GDP per capita_1996 PPP μ	Growth in the Gini Index
Cote d'Ivoire	1985 v 1993	2,72	4,063	-2,34	-1,37
Cote d'Ivoire	1986 V 1993	0,08	1,687	-2,85	-0,64
Cote d'Ivoire	1987 V 1993	1,42	2,274	-2,90	-1,34
Cote d'Ivoire	1988 V 1993	0,78	1,326	-2,68	0,01
Cote d'Ivoire	1985 v 1988	6,02	1,361	-1,77	-3,62
Cote d'Ivoire	1986 v 1988	-1,65	1,814	-3,27	-2,27
Ethiopia	1981 V 1995	-1,33	1,085	-1,29	1,51
Gambia	1991 V 1992	113,59	4,86	-3,53	-14,83
Ghana	1987 V 1997	1,88	0,458	1,11	-0,78
Ghana	1988 V 1997	2,14	0,606	1,04	-1,03
Ghana	1989 V 1997	2,36	0,975	1,05	-1,45
Ghana	1992 v 1997	1,23	0,295	0,93	-0,72
Ghana	1993 v 1997	1,39	0,437	0,72	-0,82
Ghana	1987 v 1993	2,22	0,724	1,37	-0,75
Ghana	1988 v 1993	2,75	0,387	1,30	-1,20
Ghana	1989 v 1993	3,34	1,171	1,37	-2,07
Ghana	1992 v 1993	0,63	-0,027	1,78	-0,32
Ghana	1987 v 1992	2,54	0,4	1,29	-0,83
Ghana	1988 v 1992	3,29	0,856	1,18	-1,42
Ghana	1989 v 1992	4,26	1,738	1,24	-2,65
Guinea	1991 V 1994	28,73	22,81	0,93	0,00
Kenya	1992 v 1994	21,45	71,09	-0,25	2,82
Lesotho	1986 V 1993	-1,35	0,064	-0,10	0,48
Lesotho	1987 V 1993	-1,57	0,206	-0,45	0,56
Madagascar	1960 V 1993	1,24	12	-2,34	-0,60
Madagascar	1980 V 1993	1,28	11,52	-2,93	-0,58
Mali	1989 v 1994	-8,13	0,382	-1,90	6,70
Mauritania	1988 V 1995	8,38	0,146	-0,03	-1,27
Mauritania	1993 v 1995	9,62	-0,091	-1,12	-11,84
Mauritania	1988 v 1993	7,89	-0,089	0,41	3,31
Niger	1960 v 1995	-0,11	0,096	-1,73	1,14
Niger	1992 v 1995	0,00	11,08	-0,86	11,84
Niger	1960 v 1992	-0,12	10,44	-1,81	0,19
Nigeria	1959 v1997	-1,24	0,472	0,47	-0,02
Nigeria	1985 v 1997	-2,65	-3,857	0,42	2,26
Nigeria	1986 v 1997	-4,16	-10,33	0,22	2,87
Nigeria	1991 v 1997	1,45	0,16	-0,38	1,96
Nigeria	1992 v 1997	-7,96	-0,327	0,88	4,20

Nigeria	1993 v 1997	2,24	-0,95	3,37	7,78
Nigeria	1959 v 1993	-1,64	12,66	0,13	-0,90
Nigeria	1985 v 1993	-5,01	0,791	-1,02	-0,40
Nigeria	1986 v 1993	-7,64	0,554	-1,53	0,17
Nigeria	1991 v 1993	-0,13	0,117	-7,48	-8,75
Nigeria	1959 v 1992	-0,18	5,139	0,40	-0,65
Nigeria	1985 v 1992	1,32	-6,323	0,10	0,89
Nigeria	1986 v 1992	-0,88	0,126	-0,32	1,78
Nigeria	1985 v 1991	-6,59	-1,212	1,24	2,55
Nigeria	1986 v 1991	-10,49	-3,894	0,96	3,98
Rwanda	1983 v 1984	0,00	13,9	-9,70	0,00
Senegal	1960 v 1994	2,27	0,851	-0,81	-0,89
Senegal	1991 v 1994	22,48	0,185	-2,11	-0,185
Senegal	1960 v 1991	0,50	7,469	-0,68	-0,11
Tanzania	1964 v 1993	1,21	15,04	0,09	-1,19
Tanzania	1991 v 1993	66,94	-0,071	-1,76	-0,71
Tanzania	1964 v 1991	-2,47	12,66	0,23	0,33
Uganda	1989 v 1993	-6,18	-0,678	2,21	4,40
Uganda	1992 v 1993	-2,65	1,604	3,96	-3,87
Uganda	1989 v 1992	-7,33	-2,235	1,64	7,31
Zambia	1959 v 1996	-1,09	31,52	-1,76	0,10
Zambia	1976 v 1996	0,64	12,18	-3,37	-0,12
Zambia	1991 v 1996	-5,49	1,869	-4,62	2,74
Zambia	1993 v 1996	2,50	1,158	-2,84	2,53
Zambia	1959 v 1993	-1,40	-50,75	-1,66	-0,11
Zambia	1976 v 1993	0,31	-56,62	-3,46	-0,58
Zambia	1991 v 1993	-16,32	1,916	-7,24	3,04
Zambia	1959 v 1991	-0,38	-6,947	-1,30	-0,31
Zambia	1976 v 1991	2,76	-0,397	-2,94	-1,05

Annex 2: Notes on the Iso-Poverty Curve

Per capita income -Inequality Trade-off



1. We have attempted to see the empirical properties of the ‘trade-off’ elasticity with respect to the arguments (mean income and the Gini coefficient). We run an OLS with the following results:
 - a. $V_2 = -2,68 + 0,09 (G)$ Adj R2=20
 (2,5) (-1,6)
 - b. $V_2 = -0,86 + 0,0012 (\mu)$ Adj R2=86
 (-3,83) (12,4)

Which is an indication of convex iso-poverty curves. It is also intuitive to think that the per capita growth rate required in order to keep poverty stationary gets higher and higher as the society becomes more and more unequal.

2. The other point is that if Kuznets’ type relationship is at work in the economy, the choices available are limited in terms of combining growth and redistribution policies. This is to a certain extent possible where the Gini coefficient tends to be higher in fast growing sectors in Africa. For instance, in Ethiopia, a simple regression between the Gini coefficient and per capita income for 45 survey reporting areas showed a strong correlation between the two. If this has to do with the structural feature of the economy, then, the choice of growth and level of inequality involves some kind of optimisation rule as attempted in the figure above.

References

- Ali, A.G.A. 1996. Dealing with Poverty and Income Distribution Issues in Developing Countries: Cross Regional Experiences. Paper Presented at the Bi-Annual Workshop of the African Economic Research Consortium. Nairobi. Kenya.
- Ashan, S. M. and Oberi, J. 2002. Inequality, Well-being and Institutions in Latin America and the Caribbean. Draft
- Ballad, S. 2002. Imagine there is no country: Poverty, inequality and growth in the era of globalization. Washington, DC. Institute for International Economics.
- Besely, T. and Burgess, R. 2002. Halving Global Poverty. Department of Economics. LSE. Mimeo.
- Bigsten, A. 1980. Regional Inequality and Development: The Case of Kenya, Gower, Farnborough.
- Bigsten, A., B. Kebede, A. Shimeles and M. Taddesse. 2003. Growth and Poverty Reduction in Ethiopia: Evidence from Household Surveys. *World Development*, 31 (1), 87-107.
- Bourgignon, F. 2002. The Growth Elasticity of Poverty Reduction: explaining heterogeneity across countries and time periods. Forthcoming in T. Eichler and S. Turnovsky. *Growth and Inequality*, MIT Press.
- Chakravarty, S.R., 1983, Ethically Flexible Measures of Poverty, *Canadian Journal of Economics*, 16, 74-85.
- Chen, S. and Ravallion, M. 2000. How Did the World's Poorest Fare in the 1990s? World Bank Working Paper. Washington.
- Chenery, H.B. et al (1974). *Redistribution with Growth: policies to improve Income Distribution in Developing Countries in the context of Economic Growth*. Oxford. Oxford University Press.
- Christaensen, L. L. Demery and S. Paternostro. 2002. Growth, Distribution and Poverty in Africa. Messages from the 1990s. World Bank Working Paper. Washington.
- Collier, P and Dollar, D. 2000. Can the World Cut Poverty by Half? World Bank. Mimeo. Washington DC.
- Datt, G and Ravallion, M. 1992. Growth and Redistribution Components of Changes in Poverty Measures: Decomposition with Applications to Brazil and India in the 1980s. *Journal of Development Economics*, 38: 275-95.
- Deaton, A. (2003). How to Monitor Poverty for the Millennium Development Goals. Princeton University. Mimeo.

Deininger, K and Squire, L. 1998. New Ways of Looking at Old Issues: inequality and growth. *Journal of Development Economics*. 57: 259-287.

Deininger, K. and Squire, L. 1996. A New Data Set Measuring Income Inequality. *World Bank Economic Review*, 10: 565-91.

Dollar, D. and Kraay, A. 2000. 'Growth is good for the poor'. World Bank. Washington D.C. Draft.

Easterly, W. 2000. The Effect of International Monetary Fund and World Bank Programs on Poverty. World Bank Working Paper Series 2517. Washington DC.

Eastwood, R and Lipton, M. 2001. Pro-Poor Growth and Pro-Growth Poverty. Asia and Pacific Forum on Poverty. Mimeo.

ECA (2003), Africa Economic Report, draft, Addis Ababa.

Ferreira, F.H.G. and Leite, P.G. 2003. Policy Options for Meeting the Millennium Development Goals in Brazil: Can micro-Simulations Help? World Bank Policy Research Paper 2975.

Fields, G. 1998. Poverty, Inequality and Economic Well-being: African Economic Growth in Comparative Perspective' Paper Prepared for presentation to the African Research Consortium. Nairobi. Kenya.

Foster, J.E., and Shorrocks, A.F., 1991, Sub-group Consistent Poverty Indices, *Econometrica*, vol. 59, 3, 687-709

Fosu, A. 2002. Inequality and the Growth-Poverty Nexus: Evidence from Sub-Saharan Africa. Paper presented at the CSAE Conference on 'Understanding Poverty and Growth in SSA' University of Oxford. Oxford. UK.

Geda, A., A. Shimeles, and J. Weeks. 2002. Prospect for Pro-Poor Growth Strategies in Ethiopia. Mimeo. Ministry of Economic Development and Finance of Ethiopia. Addis Ababa

Kakwani, N and Pernia, E.M. 2000. What is Pro-Poor Growth? *Asian Development Review*, 18(1): 1-16.

Kakwani, N. S. Kandhker, and H.H Son. 2003. Poverty-Equivalent Growth Rate: with application to Korea and Thailand. Mimeo.

Kakwani, N. 1991. Poverty and Economic Growth, with an application to Cote d'Ivoire. *Review of Income and Wealth*. 39: 121-139.

Karshenas, M. 2002. Global Poverty: new national accounts consistent and internationally comparable poverty estimates. Department of Economics. SOAS working paper. June.

Klasen, S. 2003. In search of the Holy Grail: How to Achieve Pro-poor Growth? Forthcoming, Proceedings of ABCDE-Europe.

Kundu, A., and Smith, A.E., 1983, An Impossibility Theorem on Poverty Indices, *International Economic Review*, 24, June 1983, 423-434.

Lustig, N., O. Arias, and J. Rigolini. 2002. Poverty Reduction and Economic Growth: A two-way causality. Inter-American Development Bank. Washington DC. Sustainable Development Department. Technical Paper Series No POV-111.

Ravallion. M. 1992. Poverty: A Guide to Concepts and Methods. World Bank. LSMS. Working Paper 88. Washington DC.

Ravallion, M and Chen, S. 2003. Measuring Pro-Poor Growth. *Economic Letters*, 73, 93-99.

Ravallion, M and Datt, G. 2002. Why Has Economic Growth Been More Pro-Poor in Some States of India than Others? *Journal of Development Economics*. 68.

Ravallion, M. and Chen, S. 1997. What Can New Survey Data tell us about Recent Changes in Distribution and Poverty? *World Bank Economic Review*. 11(2). 357-382.

Sala-i-Martin, X. 2002. The Disturbing 'rise' of global income inequality. NBER Working Paper No. 8904.

White, H and Anderson, E. 2000. Growth Vs Redistribution: Does the Pattern of Growth Matter?, Institute of Development Studies. University of Sussex. Mimeo.

World Bank (2002), World Bank Africa Database 2002, CD-rom.