Has economic growth in Mozambique been pro-poor?

January 2005

Robert C. James

National Directorate of Planning and Budget

Ministry of Planning and Finance, Mozambique

Channing Arndt

Department of Agricultural Economics

Purdue University

Kenneth R. Simler

Food Consumption and Nutrition Division

International Food Policy Research Institute

Has economic growth in Mozambique been pro-poor?

Abstract

Using the 1996–97 and 2002–03 nationally representative household surveys, the extent to which growth in Mozambique has been pro-poor is examined. While all sections of society enjoyed a rapid annual increase in consumption between the sample periods, the rate of growth in consumption was slightly higher for richer households. This has led to a moderate increase in inequality at the national level, as demonstrated by the rise in the Gini coefficient from 0.40 to 0.42. However, this slight increase in inequality at the national level is not statistically significant, and its impact on poverty reduction efforts is small: the poverty headcount would have been 53.0 percent in 2002–03 if all sections of society had enjoyed the mean growth rate in consumption, compared to the 54.1 percent at which it actually stood. Interestingly, the use of the entropy class of inequality measures indicates inequality in real consumption between provinces and regions has diminished over time, in contrast to popular claims. Maputo City continues to have the highest rates of inequality in the country and witnessed a significant increase in inequality between 1996–97 and 2002–03 (the Gini coefficient rose from 0.44 to 0.52).

1. Introduction

Within the discourse on "pro-poor growth", the long-standing debate about the extent to which the poor benefit from economic growth has re-emerged as a topical and controversial issue. Opponents of the current patterns of economic growth insist that global market forces are leading to ever widening inequalities at national levels. These critics argue that although economic growth may be occurring at an aggregate level, its distributional impact renders its importance for national poverty reduction minimal (Oxfam, 2000). Others disagree. Dollar and Kraay (2002), for example, in a cross-country analysis conclude that log mean income of the poorest quintile (inferred from distributional shares and GDP per capita) changes one-to-one with the overall log GDP per capita. Empirical evidence is cited to support both views. However, there is considerable controversy over definitions, measurement techniques and analytical approaches, particularly in the analysis of cross-country data sets (see Ravallion, 2001).

At the time of the first national household survey in 1996–97, Mozambique was recognized as one of the world's poorest countries (UNDP, 1997). In fact, in the 1996–97 national survey of household consumption (known as the IAF96[1]), the mean consumption per capita in Mozambique was actually below the absolute poverty line (MPF/UEM/IFPRI, 1998). In other words, if there had been no inequality in Mozambique

[1] The abbreviation IAF is from the Portuguese name for the survey, *Inquérito aos Agregados Familiares*, or "Household Survey."

in 1996, every man, woman and child would have lived in absolute poverty.[2] In the Mozambican context therefore the need for pro-poor growth is self-evident: redistribution efforts alone have extremely little scope to reduce levels of poverty. Poverty reduction in Mozambique requires growth, as it does in many low-income countries.

Fortunately, in the period 1996 to 2002, the economy grew by a cumulative 62 percent. Poverty and well-being analyses already undertaken indicate a substantial fall in the poverty headcount from 69.4 percent of the population in 1996–97 to 54.1 percent in 2002–03 (MPF/IFPRI/PU, 2004). Whilst the trend is impressive, that over half the population continues to live in absolute poverty highlights the imperative for poverty reduction to remain at the heart of Mozambican policy.

This paper seeks to examine trends in inequality, particularly the extent to which growth in Mozambique has benefited the poor. Inconveniently, despite the pervasiveness in development discourse of the term "pro-poor" there is little consensus on its definition. Kakwani and Pernia (2000) suggest a narrow definition in which growth can be deemed pro-poor if the accompanying change in income distribution by itself reduces poverty. Yet, as Kraay (2004) notes, this is a rather restrictive notion given that patterns of growth would not be deemed pro-poor if the income of the poor grew at a slower pace than the incomes of wealthier groups, even if rapid rates of poverty reduction had taken place.

[2] As the mean consumption was 97 percent of the poverty line, if there had been no inequality in the 1996-97 survey there would have been a tiny poverty gap (0.027) and a negligible squared poverty gap (0.001)

A broader definition is that growth is pro-poor when the poverty incidence falls (Ravallion and Chen, 2003). However, this definition is also not without problems. It is questionable, for example, whether an annual 10 percent growth rate for the population as a whole should really be described as pro-poor if the real income growth of those below the poverty line was considerably smaller – for example, one percent – resulting in only a marginal reduction in absolute poverty and a significant increase in relative poverty. This paper attempts to take a nuanced view by focusing on the pattern of growth across the entire income distribution.

In this paper two broad research questions are addressed: (1) What is the inequality profile in Mozambique in 2002–03? (2) How did the inequality profile of Mozambique change between 1996–97 and 2002–03? Static decomposition techniques are used to examine the pattern of inequality between and within different sub-groups of the 2002–03 national household survey of consumption known as the IAF02. In examining how inequality has changed over time, the IAF96 and IAF02 consumption surveys are compared using standard inequality measures. The statistical significance of changes in inequality is tested using bootstrapped standard errors. This, coupled with an examination of the average annual growth rate in consumption across the population distribution, enables us to examine how broad-based the growth in consumption was between the two survey periods.

The methodology used in this paper is described in the following section, including the construction of the welfare measure, the inequality indexes employed, and the method

used to estimate their standard errors. Section 3 presents national and sub-national inequality results for Mozambique for the two surveys (1996–97 and 2002–03). The pattern of economic growth across the income distribution is also examined in this section. Discussion of the results and conclusions are presented in section 4.

2. Methodology

2.1 Definition of welfare measure

This study builds on the analysis already undertaken as part of the second national assessment of poverty and well-being and uses consumption per capita as the welfare metric (MPF/IFPRI/PU, 2004). As the current analysis is based on the estimates of real consumption calculated in the poverty assessment, an outline of the methodology is necessary.[3] Both the 1996–97 IAF and 2002–03 IAF were nationally representative surveys containing detailed information on expenditure for 8250 and 8700 households respectively. In the analysis of both surveys, a cost of basic needs approach was employed to ascertain the absolute poverty lines (Ravallion 1994, 1998). Region-specific poverty lines were constructed, with the same 13 spatial regions used in both studies.

To obtain the poverty line in each region, food and nonfood basic needs were considered. To derive the food component of the line, the minimum caloric requirements of different groups of the population (e.g., children, pregnant or lactating women, adult males) were ascertained and weighted to reflect the average region-specific household composition. In

[3] The full methodology is presented in MPF/IFPRI/PU (2004).

turn, the cost of buying the food necessary to satisfy the caloric requirements was calculated. As different commodities may be more or less expensive in different parts of the country this food poverty line was calculated separately for (the same) 13 spatial regions in each of the surveys. As there is considerable spatial variation in relative food prices in Mozambique (Tarp et al. 2002), the composition of the food poverty line bundles was also allowed to vary across the 13 regions.

In updating the 1996–97 poverty lines for use with the 2002–03 data, it was necessary to consider the likely impact of temporal variation in relative prices. Considerable relative price changes took place between the two survey periods in all the 13 spatial domains (i.e., in many cases a food commodity that was best value in 1996–97 was no longer such in 2002–03). This means there was a considerable incentive for poor households to change their consumption choices between the two survey periods. Under this scenario poverty headcounts would be overestimated in the latter sample if the same baskets of goods used to derive the poverty lines in 1996–97 were adopted in 2002–03. Such overestimations would have considerable ramifications for the accuracy of comparisons between the two surveys. To overcome these problems a flexible approach to estimating the poverty line in 2002–03 was adopted with a different basket of food being used to derive the poverty line in 2002–03 than in 1996–97.

Nevertheless, in using a flexible approach, serious methodological challenges must be overcome to ensure the chosen food bundles reflect the same standard of living, both across space in 2002–03 and relative to the bundles chosen in 1996–97 (Ravallion and

Lokshin, 2003). Utility consistent food poverty lines were estimated using the approach outlined in Arndt and Simler (forthcoming). In particular, an information theoretic criterion was employed to adjust the food bundles for 2002–03 such that these bundles satisfied both spatial and temporal revealed preference conditions.

Turning to nonfood, even the very poorest households allocate a non-trivial portion of their total consumption to nonfood items. The nonfood component of the poverty line was estimated based on the average nonfood budget share of households whose total expenditure is close to the level of the food poverty line. To ensure an adequate sample, the expenditure pattern of all households whose per capita total consumption was between 80 and 120 percent of the food poverty line was examined. From these households, the cost of the minimum nonfood bundle was then estimated non-parametrically as the weighted average nonfood expenditure. A triangular weighting scheme was used in constructing the average, giving greater weight to observations the closer they were to the food poverty line (see Hardle, 1990). This method was used in both the 1996–97 IAF and the 2002–03 IAF to derive the nonfood share of the poverty line value in the 13 spatial areas (see Table 1).

The poverty line for each of the 13 spatial areas was calculated as the sum of the food and nonfood poverty lines. To derive per capita daily consumption values, household consumption was divided equally among all household members. To obtain real per capita consumption values these figures were then deflated using the poverty line for the appropriate spatial area. Representing actual consumption as a proportion of the

appropriate poverty line facilitates comparisons between spatial areas within the same survey and across the two survey periods. For example, the total poverty lines in 2002–03 in the two spatial areas Nampula rural, and Gaza-Inhambane urban, were 5972 Meticais per day and 10721 Meticais per day, respectively. Thus, a person who consumed exactly 5972 Meticais per day and lived in rural Nampula and a person living in Inhambane city (where the cost of living is much higher) who consumed 10,721 Meticais per day would be viewed as having the same standard of living, exactly 100 percent of the respective poverty line.[4]

2.2. The Gini and GE measures of inequality

To derive an inequality profile for Mozambique, the Gini and generalized entropy inequality measures were used. From its first proposal in 1921, the Gini coefficient or index has been one of the most widely used measures of social and economic inequality. The Gini index was proposed as a summary statistic of the dispersion of a distribution taking on values between zero and one with zero interpreted as no inequality.

---

[4] While this works well for people at or around the poverty line, it is recognized that the use of this form of deflator is less appropriate for comparing wealthy households from different regions. This is because the poverty line is derived from the goods that make up a poverty line basket, which is based on consumption patterns of poor households. However, to continue with example given above, it is unlikely to be the case that a wealthy individual in rural Nampula consuming 597,200 Meticais a day is really as wealthy in real consumption terms as a person in Inhambane city who consumes 1,072,100 Meticais a day as the goods such an individual consumes are unlikely to be more expensive in Inhambane city in the same way goods which make up the poverty line basket of goods would be.

The generalized entropy (GE) set of inequality measures were also used to explore the distribution of the consumption in the sample. This class of measures takes the form given in Equations 1a, 1b, and 1c below.

$$GE(c) = \frac{1}{c(c-1)} \sum_i f_i \left[\left(\frac{y_i}{\mu} \right)^c - 1 \right] \quad \text{for c} \neq 0,1 \qquad (1a)$$

$$GE(0) = -\sum_i f_i \log\left(\frac{y_i}{\mu} \right) \quad \text{for c} = 0 \qquad (1b)$$

$$GE(1) = \sum_i f_i \left(\frac{y_i}{\mu} \right) \log\left(\frac{y_i}{\mu} \right) \quad \text{for c} = 1 \qquad (1c)$$

In these equations f_i is the population share of household i, y_i is per capita consumption of household i, μ is average per capita consumption, and c is a weighting parameter. Lower values of c are associated with greater sensitivity to inequality amongst the poor, and higher values of c place more weight to inequality among the rich. The most common values of c used are 0, 1 and 2 which correspond to the GE(0), GE(1) and GE(2) measures.[5] An advantage of the GE measures over the Gini coefficient is that, in being

[5] The GE(1) measure is also known as the Theil entropy measure, and the GE(0) measure is also referred to as the Theil L or mean log deviation measure.

additive on *i*, they can be additively decomposed into between-group and within-group components of inequality. The decomposition of total inequality *(I)* into two parts for the GE(1) measure is given in Equation 2 below.

$$GE(1) = \left[\sum_j g_j \left(\frac{\mu_j}{\mu}\right) \log\left(\frac{\mu_j}{\mu}\right)\right] + \sum_j GE_j\, g_j \left(\frac{\mu_j}{\mu}\right) \qquad (2)$$

In Equation 2, *j* refers to sub-groups, g_j refers to the population share of group *j* and GE_j refers to inequality in group *j*. The between-group component of inequality (I_b) is captured by the first term in the right hand side of the equation. This is inequality in mean consumption between the sub-groups and reflects what the level of inequality in the population would be if everyone within each sub-group had the same (the group-average) consumption level μ_j. The second term on the right hand side of the equation reflects within group inequality (I_w), or what the overall inequality level would be if there were no differences in mean consumption across groups but there was inequality within each group. Cowell and Jenkins (1995) further show that (R_b), the amount of total inequality (I) explained by differences between-groups, is equal to I_b over I.

For tests of statistical inference, a bootstrap procedure was used to generate estimates of the standard errors of the Gini and GE(1) inequality measures. The bootstrap samples were drawn in a manner that mimicked the cluster sample design of the IAF surveys. Enumeration areas were sampled, with replacement, with the probability of selection

proportional to the population of the enumeration area. The estimates of the standard errors are based on 500 replications.

3. Results

3.1 2002–03 Inequality

The national Gini coefficient based on the 2002–03 IAF is 0.42 which represents a fairly high degree of inequality, though not out of line with other sub-Saharan African countries.[6] Average consumption in the highest quintile is eight times the average consumption in the poorest quintile. In fact, mean consumption in the poorest quintile is only 39 percent of the poverty line, i.e., less than half of what is required to meet basic needs. Mean consumption per capita for the entire population in 2002–03 is 128 percent of the poverty line (see Table 1). Consequently, if there were no inequality in the country, everyone would live above the absolute poverty line.[7]

Inequality varies considerably within different regions, provinces and areas (see Table 2). In rural areas the Gini coefficient was just 0.37 compared to 0.48 in urban areas. In other words, consumption in rural areas was far more equal across the sample households than in urban areas, a familiar result because urban areas tend to be more economically heterogeneous. At the regional level, inequality was lowest in the north and center, with

[6] For example, the Gini coefficient is 0.43 in Uganda (Uganda, 2003).

[7] As indicated earlier, this contrasts with the situation in 1996-97 where mean real consumption was below the poverty line.

estimated Gini coefficients of 0.35 and 0.39, respectively. Inequality was much higher in the south of the country, particularly in Maputo City, where the estimated Gini coefficient was 0.52.

The GE inequality measures parallel the patterns revealed from the Gini coefficients. Consumption is more equal in rural areas, while the south, particularly Maputo City, exhibits the highest inequality in the country (whichever GE measure is used). Interestingly, the GE(2) value for Maputo City is nearly twice that of the national average. This indicates that the higher inequality in Maputo City is attributable to the presence of a small but particularly wealthy sub-group of citizens.[8]

Inequality by province was also examined (Table 3). The pattern of inequality within provinces tends to follow the regional figures, with northern and central provinces enjoying somewhat lower levels of inequality than the southern provinces. Provinces with inequality above the national average were Cabo Delgado, Inhambane, Sofala, and Maputo (province and city). Given the higher levels of inequality recorded in urban areas generally, it is not surprising that inequality was higher in Sofala province than other central provinces given it is home to the second largest city in the country, Beira. Inhambane was the province with the highest poverty headcount in the 2003-03 IAF and also the province with the lowest mean consumption. The high inequality in general, and

[8] Although this sub-population was extremely rich relative to other sample households, in Western terms there were no super-rich households sampled. The highest real consumption per capita observed in the 2002–03 IAF was less than US$100 per day.

particularly the GE(0) figure, suggest the presence of a significant minority of extremely poor households in the province.

As noted by INE (2004), Cabo Delgado has posed a considerable sampling problem in both IAF surveys. In 2002–03, the standard error on the value of mean consumption, measured as a percentage of the mean value, exceeded the value estimated for most other provinces by a factor of three to four, resulting in a very wide confidence interval on the value of mean consumption for Cabo Delgado. This high standard error was driven primarily by a few enumeration areas containing households with consumption levels far above the average for the province and indeed the country as a whole. While the high consumption of these few households matters little for poverty headcount estimates (because nonpoor households receive zero weight in most poverty measures), they exert an extremely strong influence on measures of inequality. The GE(2) estimate for Cabo Delgado, at over three times the national average, is certainly suggestive of the fact that much of the inequality in Cabo Delgado is attributable to the sampling of a small though significant sub-population of relatively wealthy households.

In Figure 1, the Lorenz curves for Zambézia and Maputo City are presented along with a 45-degree line. Zambézia, as one of the more equal provinces in terms of consumption, is selected as a contrast to Maputo City. The more equal distribution in Zambézia is demonstrated by the Lorenz curve being closer to the 45 degree line. As can also be seen in Figure 1, in Zambézia the wealthiest 25 percent of the population consume 49 percent

of the total consumption while in Maputo City the wealthiest 25 percent of the population account for over 64 percent of the total consumption in the City.

3.2 Changes in inequality between the IAF 1996–97 and the IAF 2002–03

Consumption inequality at the national level has slightly increased between the two study periods with the Gini coefficient rising from 0.40 in 1996–97 to 0.42 in 2002–03 for the sample as a whole. However, as the Lorenz curves for the two samples in Figure 2 illustrate, this increase in inequality at the national level is moderate. In the 1996–97 IAF the poorest 50 percent of the population consumed 23.9 percent of the total consumption in the sample. In the 2002–03 IAF the poorest 50 percent consumed 23.3 percent of total consumption. The GE measures also show a moderate increase in inequality in 2002–03 compared with 1996–97 (Table 4).

Of particular concern for poverty reduction efforts is the growth in consumption amongst that percentage of the population who lay below the poverty line in 1996–97. Whilst inequality has moderately increased, there has been a rapid increase in the mean real consumption between the two sample periods. As noted, mean consumption per capita in 1996–97 was less than the poverty line, signifying that everyone would have been below the poverty line had their been no inequality. Encouragingly in the 2002–03 IAF the mean consumption in the sample was 128 percent of the poverty line, which represents a 31 percent increase in mean real consumption between the two time periods.

Of course, this increase in the mean consumption for the sample could, in principle, result solely from increases in the consumption among the top 50 percent of the population. To explore the growth in consumption across the full distribution, the generalized Lorenz curves for the two data sets were drawn (see Figure 3). Unlike standard Lorenz curves, generalized Lorenz curves take into account not only the relative distribution of consumption, but also the absolute level, and can therefore be used to examine how consumption has changed across the distribution. For a population sorted in ascending order of consumption, the y values reflect the mean real consumption per capita (expressed here as a proportion of the relevant poverty line) of the poorest *p* percent of the population, with *p* being the x value on the graph. Therefore, when *p* is 100 percent of the population, the y-value is equal to the mean real consumption per capita in the sample. What Figure 3 shows is that the 2002–03 generalized Lorenz curve dominates the 1996–97 curve.[9] In other words, consumption is higher at each percentile point in the distribution in 2002–03 than it was in 1996–97. For reduction of absolute poverty, that households at all percentiles consume more in the 2002–03 IAF than in 1996–97 IAF is arguably of more significance than the marginal increase inequality.

The change in inequality within sub-populations between the two survey periods was also examined. As shown in Table 5, the increase in inequality within both rural and urban areas is negligible, as would be expected from the moderate increase in total inequality. Changes in inequality measures within provinces varied somewhat. In two cases,

[9] Individual households could of course be worse off, implying that they fell to a lower percentile in the consumption distribution over the period.

Nampula and Manica, inequality marginally fell between the two sample periods. Inequality increased slightly in five provinces: Niassa, Zambézia, Sofala, Gaza and Maputo province (excluding Maputo City), and increased more rapidly in four others: Tete, Inhambane, Cabo Delgado and Maputo City. In fact, the rapid increase in inequality in Cabo Delgado and Maputo City accounts for the majority of the rise in consumption inequality seen nationally. Given the sampling problems in Cabo Delgado already discussed, it would be unwise to read too much into the sharp rise in inequality there.[10] The sharp rise in inequality in Maputo City is more cause for concern, especially considering that the poverty headcount has remained essentially flat in the capital city between the two sample periods, despite the increase in mean consumption. The Gini coefficient has risen in Maputo City from 0.44, already the highest of all the provinces in 1996–97, to 0.52 in 2002–03. Moreover the GE(2) value for Maputo more than doubled from 0.95 to 1.97, which indicates a sharp rise in the consumption growth of the richest households relative to the sample as a whole. Of course, given Maputo City's capital status, with all the associated economic trappings this brings, that it is home to the richest households is no surprise. However, it is also home to a large impoverished population, including squatters, and is the final destination for many rural-urban migrants. What these results indicate therefore is that the benefits of economic growth in the city in recent years may not be reaching the poorer sections of society.

[10] Indeed, the GE(2) inequality measure, which gives higher weight to richer households, has increased six-fold.

As shown in Table 5, most of the changes in the Gini coefficient and GE(1) index at the national and sub-national levels are statistically insignificant. The increase in inequality in the southern region is significant, driven in part by the increased inequality within Maputo City, which is also significant. Tete province is the only other case where increased inequality is significant, and that only for the GE(1).

Another way to examine the impact on poverty reduction of changes in inequality over time is to examine the rate of growth in consumption for different percentiles of the sample population. To do this both samples were ordered from poorest to richest, and the difference in consumption calculated for each percentile. The annual average growth rates were calculated by taking the differences in consumption between the two samples for each percentile. The increase in the mean consumption (from 97 to 128 percent of the poverty line) reflects an average annual growth rate in consumption of 4.6 percent. As illustrated in Figure 4, the average annual growth rate was higher amongst the non-poor. Nevertheless, this unequal pattern of growth in consumption has meant relatively little for poverty reduction.[11] Had all percentiles of the population enjoyed the mean rate of growth in consumption, measured poverty in 2002-03 would only have fallen by a further percentage point to 53.0 percent of the population, rather than the 54.1 percent it actually stood at. At the national level therefore it is concluded that broad-based consumption growth has occurred.

[11] The average annual growth rate was regressed against each 10^{th} of a percent of the population (ranked by consumption wealth). The regression used was adapted to minimize the effects of autocorrelation.

3.4 Inequality decomposed by household characteristics

The GE(1) estimates of inequality were decomposed into within-group and between-group components for a set of household characteristics. Of the total GE(1) inequality in the sample, 5.4 percent is accounted for by differences in consumption between provinces leaving 94.6 percent of inequality being explained by inequalities within the provinces. These findings are important as they demonstrate that the difference in mean consumption between provinces is not the major explanation for inequality within the sample.[12]

Other factors used to decompose the sample included whether the household was rural or urban, the gender of the household head, whether the household head was literate, and whether the household head derived his or her income principally from agriculture (see Table 6). Just 0.6 percent of total inequality was accounted for by inequality between male-headed and female-headed households. Similarly between-group inequality for rural and urban households only accounted for 2.5 percent of total inequality in the sample.

By contrast, some 7.2 percent of total inequality was accounted for by differences in consumption between those households whose household head's principal livelihood was

[12] That only 5.4 percent of total inequality is accounted attributable to differences in the provincial means of consumption may appear surprising. Because of the additive nature of the decomposition it follows that, other things equal, the between share increases with the number of sub-groups. Therefore, at the national level, inequality is 100 percent within, and at the individual level inequality is 100 percent between.

agricultural and those whose households head was non-agricultural based.[13] This is an important finding as it demonstrates that there is considerably more inequality between agricultural and non-agricultural households than between rural and urban households *per se*. A key reason for this is the large number of urban households whose head reported agriculture to be her or his chief source of income. Of the 4005 household heads defined as urban in the 2002–03 survey, 1193 identified agriculture as their chief income source. Notably the mean consumption for these households was just below the poverty line (at 99 percent of the poverty line). By contrast the other 2812 urban households, whose heads main income source was non-agricultural, had a mean consumption of 178 percent of the poverty line. A similar difference emerges between rural households whose heads main income source was agriculture and those whose income was non-agricultural, though there are relatively few of the latter group (see Table 7). Nevertheless, as the high standard deviations suggest, there is considerable inequality between households within these groups, particularly those households whose heads main income source is non-agricultural.

Changes over time in inequality between sub-populations were also observed. The amount of consumption inequality in the sample explained by differences between living in rural and urban areas has remained more or less the same between the two sample periods (see Table 8). By contrast the amount of inequality accounted for by differences in the mean consumption between individuals living in different provinces and regions

[13] That 7.2 percent of total inequality is accounted for by the agricultural/non-agricultural household head variable is notable given that this is a simple two-category variable.

was far less in the 2002–03 survey. In 1996–97 the inequality between provinces accounted for 8.0 percent of the total inequality. By 2002–03 inequality between provinces only accounted for 5.4 percent of total inequality. This is important as it indicates that inequality between provinces and regions has actually declined between the two survey periods.[14]

4. Conclusion

The pattern of growth in Mozambique between 1996–97 and 2002–03 has benefited the poor to a considerable extent. The proportion of the population living below the poverty line has fallen by 15 percentage points. Moreover, all percentiles of the population have seen their consumption per capita grow in real terms at a rate of over 3 percent annually during this period. Nevertheless, though all sections of society have enjoyed a rapid annual increase in consumption, the rate of growth in consumption has been slightly higher for wealthier households. This has meant point estimates of inequality have increased, usually moderately and without statistical significance, with the Gini coefficient rising from 0.40 in 1996–97 to 0.42 in 2002–03.

In determining whether growth in Mozambique has been pro-poor, it is clear that this depends on what definition is used. Certainly growth in Mozambique has been broad-

[14] Excluding the Maputo City households, the amount of total inequality explained by differences in the mean consumption between provinces fell from 8.0 percent to 5.9 percent in the 1996-97 IAF compared to a fall of just 0.1 percent from 5.4 percent in 2002–03.

based, as it has benefited all percentiles of the population and the change in inequality measures at the national level have not been significant. Yet, using the definition given by Kakwani and Pernia (2000), in which growth is deemed pro-poor if the accompanying change in income distribution by itself reduces poverty, growth in Mozambique would not be deemed pro-poor. Given the 15 percentage point fall in the poverty headcount this seems somewhat unintuitive. Indeed, using the more popular definition proposed by Ravallion and Chen, (2003): that growth is pro-poor when the poverty incidence falls, it is concluded that the pattern of growth in Mozambique between 1996–97 has been pro-poor.

Interestingly, the use of the entropy class of inequality measures indicates inequality in real consumption between provinces and regions has diminished over time, which is in contrast to many popular claims. Nevertheless the rapid rise in inequality observed in Maputo City is of growing concern and indicates the pattern of economic growth in the city in recent years may not be benefiting the poorer sections of society.

This paper has sought to describe the pattern of change in inequality in Mozambique rather than state the underlying reasons for the changes observed. Clearly it is imperative that attention now turns to addressing these issues and devising policies to ensure that the growth in Mozambique continues to benefit the poorest sections of society.

5. References

Arndt, C. and K. Simler. (Forthcoming). Estimating Utility Consistent Poverty Lines. Food Consumption and Nutrition Division Discussion Paper. Washington, D.C.: International Food Policy Research Institute.

Cowell, F. and S. Jenkins. (1995). How Much Inequality can we Explain? A Methodology and an application to the USA. *Economic Journal, 105,* 421-30.

Dollar, D. and A. Kraay. (2002). Growth is Good for the Poor. *Journal of Economic Growth, 7*(3), 195-226.

Elbers, C., P. Lanjouw, J. Mistian, B. Özler, and K. Simler. (2004). On the Unequal Inequality of Poor Communities. *World Bank Economic Review*, 18(3): 401–421.

Hardle, W. (1990). Applied nonparametric regression. Cambridge: Cambridge University Press.

INE (Instituto Nacional de Estatística). (2004). *Inquérito Nacional aos Agregados Familiares Sobre Orçamento Familiar 2002/3.* Maputo.

Kakwani, N. and E. Pernia. (2000). What is pro-poor growth. *Asian Development Review, 16*(1), 1-22.

MPF/UEM/IFPRI (Mozambique Ministry of Planning and Finance/Eduardo Mondlane University/International Food Policy Research Institute). (1998). *Understanding poverty and well-being in Mozambique: The first national assessment (1996–97).* Maputo.

MPF/IFPRI/PU (Mozambique Ministry of Planning and Finance/ International Food Policy Research Institute/Purdue University). (2004). Poverty and well-being in Mozambique: The Second National Assessment (2002-2003). Maputo

Oxfam. (2000). Growth with equity is good for the poor. Available at http://www.oxfam.org.uk/what_we_do/issues/debt_aid/growth_equity.htm

Ravallion, M. (1994). *Poverty comparisons.* Chur, Switzerland: Harwood Academic Publishers.

Ravallion, M. (1998). *Poverty Lines in theory and practice.* Living Standards Measurement Study Working Paper No. 133. Washington D.C.: World Bank.

Ravallion, M. (2001). Growth, Inequality and Poverty: Looking Beyond Averages. *World Development, 29*(11), 1803-1815.

Ravallion, M. and S. Chen. (2003). Measuring Pro-Poor Growth. *Economics Letters, 78,* 93-99.

Ravallion, M. and M. Lokshin (2003). On the utility consistency of poverty lines. World Bank Policy Research Working Paper No. 3157. Washington, D.C.: World Bank.

Shalom, S. (1999). The State of the World. Available at: http://www.zmag.org/CrisesCurEvts/Globalism/14shalom.htm

Tarp, F., K. Simler, C. Matusse, R. Heltberg, and G. Dava. 2002. The robustness of poverty profiles reconsidered. *Economic Development and Cultural Change*, 51(1): 77–108.

Uganda. (2003). *Uganda National Household Survey 2002/2003.* Uganda Bureau of Statistics.

UNDP. (1997). *Human Development Report 1997: Human Development to Eradicate Poverty.* Available at http://hdr.undp.org/reports/ global/1997/en/

Table 1: Mean consumption by quintiles in 2002-03.

Population quintile	Mean consumption	
	As proportion of poverty line	As proportion of highest quintile's mean consumption
0–20%	0.39	0.13
21–40%	0.66	0.22
41–60%	0.94	0.30
61–80%	1.32	0.43
81–100%	3.08	1.00
Mean	1.28	0.41

Table 2: Inequality estimates at the national, rural, urban and regional levels.

	Mean consumption (as proportion of poverty line)	Gini	GE (0)	GE (1)	GE (2)
National	1.28	0.42	0.30	0.37	0.99
Rural	1.15	0.37	0.24	0.27	0.55
Urban	1.53	0.48	0.39	0.50	1.45
North	1.22	0.39	0.25	0.35	1.13
Central	1.40	0.39	0.27	0.31	0.65
South*	1.00	0.44	0.33	0.40	0.97
Maputo City	1.69	0.52	0.46	0.60	1.97

*Excluding Maputo City

Table 3: Estimated inequality measures by province.

	Mean consumption (as proportion of poverty line)	Gini	GE (0)	GE (1)	GE (2)
Northern:					
Niassa	1.29	0.36	0.22	0.26	0.48
Cabo Delgado	1.27	0.44	0.35	0.62	3.04
Nampula	1.18	0.36	0.21	0.24	0.33
Central					
Zambézia	1.35	0.35	0.21	0.23	0.32
Tete	1.06	0.40	0.29	0.30	0.47
Manica	1.41	0.40	0.29	0.30	0.45
Sofala	1.81	0.43	0.31	0.41	1.13
Southern					
Inhambane	0.77	0.44	0.34	0.40	0.80
Gaza	1.24	0.41	0.28	0.38	1.11
Maputo*	1.01	0.43	0.31	0.36	0.65
Maputo City	1.69	0.52	0.46	0.60	1.97
National	1.28	0.42	0.30	0.27	0.99

*Excluding Maputo City

Table 4: Changes in inequality at the national level over time.

Inequality measure	1996–97	2002–03
Gini	0.40	0.42
GE(0)	0.27	0.30
GE(1)	0.31	0.37
GE(2)	0.59	0.99
Mean consumption (as proportion of poverty line)	0.97	1.28

Table 5: Changes in inequality over time.

Area	Mean consumption (proportion of poverty line) 2002–03	Increase in real consumption from 1996–97 (percent)	Gini 1996–97	Gini 2002–03		GE(1) 1996–97	GE(1) 2002–03	
National	1.28	32	0.40	0.42		0.31	0.37	
Rural	1.15	26	0.37	0.37		0.26	0.27	
Urban	1.53	24	0.47	0.48		0.44	0.50	
North	1.22	20	0.38	0.39		0.29	0.35	
Center	1.40	63	0.37	0.39		0.27	0.31	
South	1.15	4	0.43	0.47	*	0.37	0.50	**
Niassa	1.29	45	0.35	0.36		0.22	0.26	
Cabo Delgado	1.27	8	0.37	0.44		0.27	0.62	
Nampula	1.18	20	0.39	0.36		0.30	0.24	
Zambézia	1.35	44	0.32	0.35		0.20	0.23	
Tete	1.06	49	0.35	0.40		0.21	0.30	*
Manica	1.41	22	0.41	0.40		0.36	0.30	
Sofala	1.81	207	0.40	0.43		0.32	0.41	
Inhambane	0.77	-1	0.38	0.44		0.31	0.40	
Gaza	1.24	12	0.38	0.41		0.27	0.38	
Maputo[1]	1.01	-6	0.42	0.43		0.35	0.36	
Maputo City	1.69	10	0.44	0.52	*	0.41	0.60	*

[1]Excluding Maputo City

** = statistically significant at 1 percent level

* = statistically significant at 5 percent level

Table 6: Static decomposition by sub-group populations using GE(1) measure.

Sub-grouping	Mean consumption (as proportion of poverty line)	% of total inequality in sample accounted for	Within group inequality as % of total inequality
Urban	1.53		
Rural	1.15	2.5	97.5
Literate Head	1.47		
Non-Literate Head	1.05	3.6	96.4
Male Head	1.32		
Female Head	1.12	0.6	99.4
Non-Agricultural Head	1.71		
Agricultural Head	1.07	7.2	92.8

Table 7: Rural and urban agricultural and non-agricultural households mean consumption

Grouping	Number of households	Mean consumption (as proportion of poverty line)	Std. Deviation
Urban Non-Agricultural Head	2812	1.78	3.00
Urban Agricultural Head	1193	0.99	1.23
Rural Non-Agricultural Head	745	1.55	2.27
Rural Agricultural Head	3950	1.08	0.87

Table 8: Static decompositions by sub-groups for both samples using GE(1) measure.

Sub-grouping	% of total inequality in sample accounted for in 1996–97	% of total inequality in sample accounted for in 2002–03
Rural-urban	2.6	2.5
Region	3.8	2.5
Province	8.0	5.4

Figure 1: IAF 2002–03 Lorenz curves for Zambézia and Maputo City

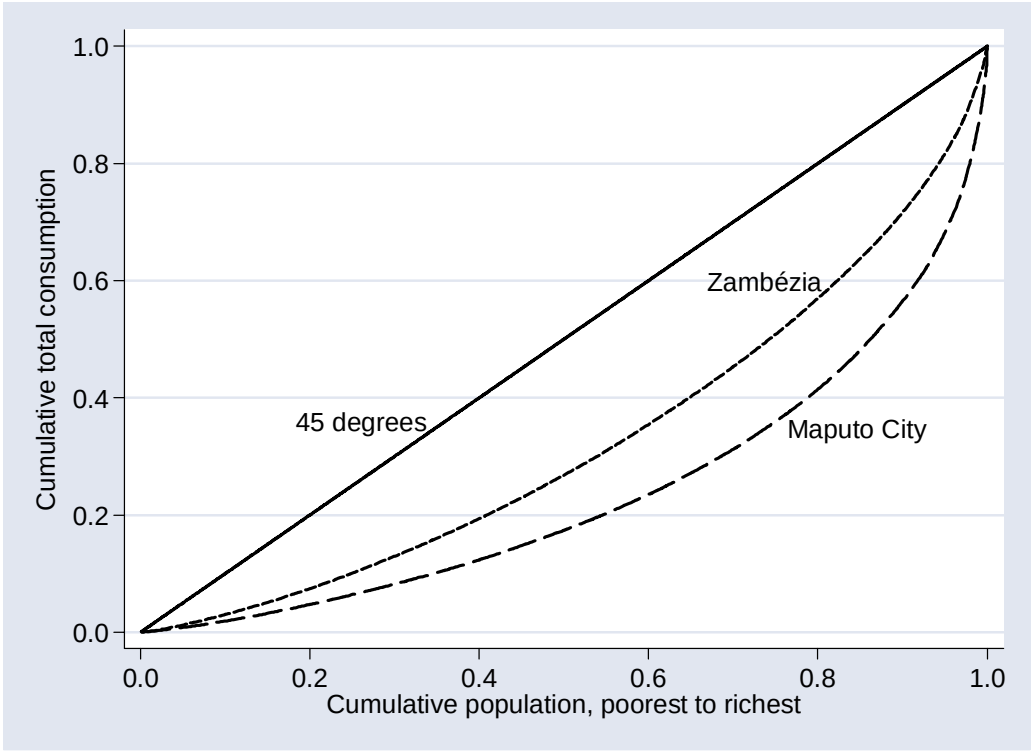

Figure 2: Lorenz curves for 1996–97 and 2002–03 IAF surveys

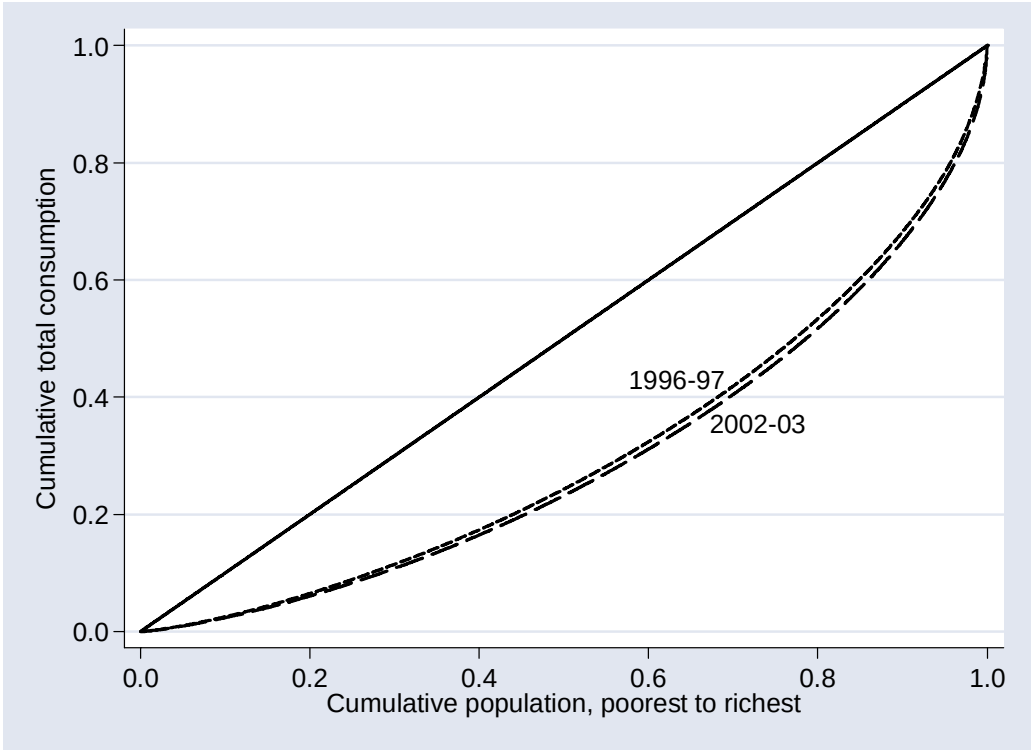

Figure 3: Generalized Lorenz curves for 1996–97 and 2002–03 IAF surveys

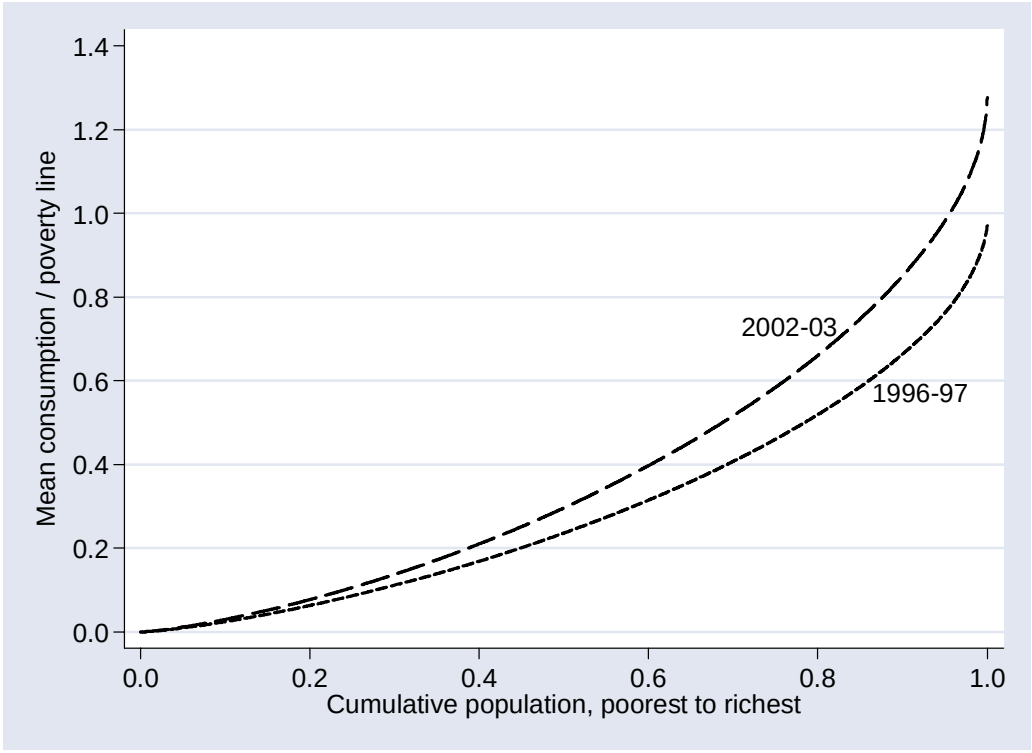

Figure 4: Consumption growth within the sample population