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PUBLIC SPENDING AND POVERTY IN MOZAMBIQUE

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Abstract

Poverty reduction strategies often highlight public spending to improve health and education, focusing on investments in human capital among poorer members of society. In addition, debt relief programs such as the enhanced Highly Indebted Poor Countries (HIPC) initiative often require increased spending on health and education in return for debt cancellation. Mozambique's poverty reduction strategy is closely integrated with the government expenditure program, yet up to now little is known about the extent to which public spending is targeted toward the poor in Mozambique. This paper assesses whether public expenditures on education and health are successful at reaching the poorer segments of the Mozambican population. Standard nonbehavioral benefit-incidence methodology is applied, combining individual client information from survey data with provincial-level data on the cost of service provision. Most of the public services we are able to measure are moderately progressive, although some of the instruments we could not measure are probably less equally distributed. In Mozambique, it appears that regional and gender imbalances in health and education are more significant than income-based differences. Nevertheless, increased public expenditures on health and education—such as that related to the HIPC initiative—are likely to have significant poverty-reducing effects.

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Acknowledgments

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1. Introduction

Poverty reduction and investment in human capital are important concerns of the Government of Mozambique. Following independence in 1975, a substantial expansion of basic education and health services took place. Enrollment rates went up and mortality declined. However, these gains were soon undermined by war and economic collapse (Tarp et al. 2002a). During the 1980s, *Resistência Nacional de Moçambique* (RENAMO) rebels systematically targeted education and health infrastructure for destruction, and teachers were often killed. The peace accord in 1992 and first multiparty elections in 1994 made it possible to turn attention to economic recovery and reconstruction, including the restoration and renewed expansion of basic health, education, and economic infrastructure, often with the assistance of foreign donors. By the end of the 1990s, macroeconomic stability had been achieved and the rehabilitation program was making steady progress. Nevertheless, poverty remains extremely high, even by African standards. The national poverty headcount ranges from 69 to 82 percent, depending upon the method used (Tarp et al. 2002b). With such levels of poverty, little can be achieved from redistribution alone, so the key development challenge faced by Mozambique in the coming years is to move from stabilization and reconstruction to high, sustained, and equitable economic growth.

Poverty reduction is the central objective in the Five-Year Development Plan for 2000–04 (Government of Mozambique 2000, 2001). However, achieving pro-poor growth is far from easy. Historically, services—particularly transport and shipping—are a major component of the Mozambican economy, yet these sectors yield few direct benefits to the majority of the population (Addison 2001). The same goes for the largest export activity, prawn fishing. Another challenge is the low level of education of the poor, which makes it difficult for them to be absorbed by the relatively more dynamic urban sector. A third constraint relates to the high prevalence of subsistence farming. Estimates vary, but it appears that less than half of farmers sell agricultural output in any given year, primarily because of high transport costs (even after the postwar

reconstruction of infrastructure) and low productivity in traditional peasant farming without modern inputs (Heltberg and Tarp 2002). In this situation, public and donor budgets perform many important direct and indirect functions necessary for human development, equitable growth, and poverty reduction, as explicitly recognized by the Government of Mozambique.

In response to this background, public spending in education, health, water, sanitation, and social welfare has been increasing since the early 1990s, particularly following the end of the war. For example, there has been a rapid increase in the availability of schools, clinics, and other facilities in the social sectors, and expanded coverage of services. Between 1994 and 1997, the number of lower primary, upper primary, and post-primary schools increased by 66, 56, and 69 percent, respectively. These rates of growth were achieved through huge public investments in infrastructure, teacher training, and teaching materials, and the budget share of social sectors is quite substantial. According to official budget figures, education and health together have accounted for 26–28 percent of central government spending from 1998–2000, and all social sectors combined constitute around a third of total spending.[1] Yet, although it is clear that spending on the social sector has been growing, there is limited knowledge about the extent to which this spending is targeted toward poorer households. For example, although the link between better education and poverty reduction is well established (see Datt et al. 2000), it is not known to what extent Mozambique's public spending on education reaches the poorer strata. This motivates the present paper. We focus on the incidence of public expenditures in education and health, which are arguably the main fiscal vehicles for improving the welfare of the poor.

Regional distribution is an important dimension of the incidence of public spending. There are clear regional differences in political support for the ruling Frelimo government and the opposition party RENAMO. The government gets a majority vote in southern Mozambique, while RENAMO is stronger in the central and northern provinces.

[1] This report defines the social sector as education, health, social action, labor, social security, and water.

Traditionally, the south (including the capital city, Maputo) has benefited more from public investment and development than elsewhere. During the war, regional disparities were maintained and exacerbated. The southern provinces were the safest, leading to concentration of government and donor investment in the south, particularly in Maputo. Using public expenditures to reduce regional gaps in income and in access to infrastructure and public services remains important for conflict avoidance (Addison and Murshed 2001).

The incidence of public spending is also a concern to the donor community. Mozambique is one of the most aid-dependent countries in the world, and there is a growing trend away from aid tied to specific projects and toward general support of public-sector budgets. In addition, a significant portion of debt relief under the Heavily Indebted Poor Countries (HIPC) process is earmarked for social-sector spending and poverty reduction, so it is important to know how the benefits of this spending are distributed. Finally, the government's poverty reduction strategy places great emphasis on poverty reduction through investing in the human capital of lower income groups (Government of Mozambique 2001). All of these factors point to the need for evidence regarding the distribution of benefits.

In summary, the objective of the present analysis is to assess the extent to which public expenditure on social sectors constitutes a targeted, efficient, and powerful instrument for poverty reduction and human development. This may help underpin analysis of the social impact of debt relief and generate recommendations for a pro-poor allocation of resources. After this introduction we briefly summarize the sources of data. Section 3 is devoted to methodology. Results are presented in Sections 4 (on participation) and 5 (on distribution of monetary benefits). Section 6 analyzes the causes of the decline in progressivity as we move up the educational ladder, and Section 7 concludes with a discussion of policy implications.

2. Data

Two types of data are necessary for benefit incidence studies: household-level data on participation in public services, and information on the unit costs (or benefits) of those services. Whereas participation in public services can be determined quite reliably from the nationally representative household surveys now available for many developing countries, information on the unit costs of service provision is often less reliable, insufficiently disaggregated, or both (see, for example, McKay 2000).

The source of data concerning participation in and access to public services is the first Mozambican National Household Survey of Living Conditions (*Inquérito Nacional aos Agregados Familiares sobre as Condições de Vida*), conducted in 1996–97 by the National Institute of Statistics (INE). The household survey, hereafter referred to by its Portuguese abbreviation, IAF, covered both rural and urban areas in all provinces of the country. A total of 8,289 households were included in the original sample, and 8,250 households had information on daily consumption over a seven-day period. The survey used a three-stage stratified cluster sample, designed to be representative at national and provincial levels, treating the capital city of Maputo as a separate province or stratum. It was also representative along the rural/urban dimension. Data collection occurred throughout the year within the rural sample of each province to assure coverage during the different seasons of the year (Cavero 1998).

Two household-level components of the IAF data set are used here: the principal questionnaire and the daily household expenditure questionnaire. The principal questionnaire covered a broad range of data, including individual-level information on topics such as demographic characteristics, migration history, health, education, and employment status. For health and education, the questionnaire included questions on the use of facilities and on past and current enrollment in schools at all levels. At the household level, additional information was obtained on landholding, agricultural production, livestock and tree holdings, dwelling characteristics, types of basic services (water, power, and sanitation), asset ownership, major nonfood expenditures during a

three-month period, regular nonfood expenditures during the past month, transfers in and out of the household, and basic sources of income. A daily consumption module collected information on consumption of food items and common nonfood items (such as firewood, charcoal, kerosene, and soap) consumed during a seven-day period. Each household was interviewed three times during the seven-day period.

In addition to data collected at the household level, there were two instruments administered once during the survey period at higher levels of aggregation. First, within each village, a community-level survey was conducted soliciting information on available infrastructure, major recent improvements in infrastructure, access to services, and general community characteristics. Unfortunately, equivalent data were not collected in urban areas. Second, detailed market price information was collected in the major market for each *bairro* (in urban areas) or *localidade* (in rural areas).

For unit costs, we rely on government budget data made available by the Ministries of Education and Health. These include budget figures disaggregated by province, and unit costs calculated using statistics on the number of students in each province. Two important cautions should be noted regarding these data. First, the amount of funds received by a province can be quite different from the amount originally programmed for that province. Unfortunately, budget execution accounts are not available. Second, because more disaggregated data were not available, we assume a uniform distribution of the budget within each province, i.e., the expenditure per student at a given educational level does not vary within a province. Our analysis—and policymaking more generally—could be improved if investment were undertaken to produce and publish disaggregated fiscal accounts.

3. Methodology

In this paper, we estimate the distribution, or incidence, of public spending by socioeconomic status of recipients using the nonbehavioral social benefit incidence approach (van de Walle and Nead 1995). In essence this means that data on costs of

service provision are combined with client information to assess how costs are distributed among the various population subgroups. Specifically, we undertake the following steps:

1. Identify the households that receive (benefit from) public services.
2. Rank all households (recipients and nonrecipients alike) by level of welfare. The welfare indicator used here is total household consumption per capita.[2]
3. Graph concentration curves that show the cumulative distribution of total consumption plotted against cumulative participation in public education and health services, as well as the distribution of new rural infrastructure.
4. Place a value on services received. This is taken to be the unit cost of service provision, disaggregated by type of service and province whenever possible.
5. Plot concentration curves that show the cumulative distribution of benefits across households. The concentration curves may be compared to the cumulative distribution of total consumption (often referred to as the Lorenz curve).
6. Test for statistically significant differences among the concentration curves, also known as welfare dominance tests.
7. Conduct supplementary descriptive data analysis to help identify the sources of inequality in education.

Thus, in this paper, we follow the standard procedure where the monetary valuation of the benefits an individual receives from using a certain public service is not based on any behavioral information, such as opportunity cost or willingness to pay.[3] Instead, all those who used the service are assigned the same monetary value of benefits

[2] Total consumption is the sum of food and nonfood consumption expenditures, using standard definitions (see, for example, World Bank 2000). Food consumption includes all items consumed by the household (from purchase, own production, wages in kind, or transfers). Nonfood consumption includes all nonfood items, such as clothing, house rents, cooking fuel, transport, education, etc., as well as imputed values for rents if the household lives in owner-occupied housing, and imputed use values of household durable goods.

[3] For an example, see Younger (1999), who estimated monetary benefits based on estimated demand functions for public services.

received. This value is the unit cost of providing the service. As such, the term benefit incidence is really a misnomer in the present context. Rather than measuring the exact value to recipients of government-sponsored services, we are looking at the distribution of beneficiaries from those services. It follows that "beneficiary incidence" would be a more precise term for this kind of study.

In the analysis that follows, we say that the distribution of benefits is progressive if it is more equal than consumption, that is, if the concentration curve for benefits lies everywhere above the Lorenz curve for consumption. In this case, public benefits are helping to equalize the distribution of welfare. Furthermore, if the distribution of benefits is such that poorer individuals receive more per capita in absolute terms than richer individuals, we say that the distribution is per capita progressive (also referred to as absolute progressivity). Graphically, per capita progressivity appears as a concentration curve of benefits above the 45-degree line. Per capita progressivity indicates successful targeting of benefits toward lower income groups. If benefits are distributed more unequally than consumption (i.e., the concentration curve lies below the Lorenz curve), services are said to be regressive. When curves cross, no determination of progressivity or regressivity can be made using the Lorenz criterion, although one could resort to other criteria—such as the Gini coefficient, Atkinson index, or generalized entropy measures—for a complete ordering.

The main advantage of the nonbehavioral benefit incidence methodology is its simplicity and the relatively modest data requirements. A potential problem occurs when quality of the service varies systematically with the level of welfare. If poorer individuals receive lower quality services, the results will be biased in the direction of finding progressive results. Since the war resulted in massive destruction of infrastructure in remote and rural areas, there are good reasons to expect the quality of public service delivery to vary extensively across the country; these expectations are reinforced by field observations. This potential problem can be handled in various ways. It is most important to use data for the unit costs of service provision that are as disaggregated as possible. In this way, variation in the quality of service may be captured

(to the extent quality variation shows up in the unit costs), and bias will be reduced.[4] We therefore obtained unit costs at levels that are disaggregated by both province and kind of service provided, as further discussed below. As a form of sensitivity test, one may complement the analysis using direct information on quality of public services that can be obtained, for example, from participatory techniques or from outcome data such as student pass rates, grades attained, and to some extent, mortality and morbidity rates.[5]

Before proceeding, a further caveat should be noted. We study the incidence of average public spending. It is not known whether average spending is different from the marginal spending that, for example, donors are funding directly (through untied aid and debt relief) or indirectly. Lanjouw and Ravallion (1999) have argued, using data from rural India, that marginal spending affects the poor more than average spending, because when programs are expanded or reduced, the composition of beneficiaries tends to change. Thus, expanding programs may increase coverage of the poor; likewise, contraction may hurt the poor relatively more. Hence, benefit incidence studies based on average incidence are likely to underestimate the impact on poverty of marginal fiscal changes. This may also hold true for Mozambique. Reconstruction started in relatively more accessible and high-potential areas, and it is likely that the expansion of coverage over time will gradually improve access to those services by poorer households. This effect will tend to make marginal benefits more pro-poor than average benefits. In this paper, we seek to shed light on marginal incidence by analyzing the distribution of recent rural infrastructure investment (in Section 4) and by assessing the gains from the

[4] To the extent that quality variation is not captured in the cost data, e.g., because of systematic variation in teacher absenteeism between the schools attended by poorer and richer students (which is plausible), bias in the direction of finding progressivity still prevails. Similarly, the cost of providing services of identical quality may vary with the remoteness of an area or the size of the population served, with a higher proportion of fixed costs in more remote areas. If poorer households are disproportionately represented in areas where the unit cost of service delivery is high, our analysis would be biased toward findings of progressivity. Alternative methods for adjusting for differences in the quality of services delivered are necessary but difficult to identify.

[5] Strictly speaking, one cannot attribute all differences in outcomes (pass rates, health status, etc.) to differences in the quality of services, as other factors inevitably come into play. A health service in a poor area with inadequate public sanitation is likely to be associated with inferior outcomes when compared with an identical service located in an area with good public sanitation.

expansion of education during the 1990s by looking at variations in cohort-specific schooling experience.

The identification of the utilization of services was based on the IAF data. In the survey data, we identified those individuals who reported that they were enrolled in a school during the survey period or who had consulted any health service during a period of one month prior to the date of the interview. Ideally, we should only include in the analysis benefits from public services, and to the extent possible, private services (such as *curandeiros*, or traditional healers) were excluded from the analysis. Unfortunately, the survey does not allow complete identification of whether the health service or school in question is public or private. This introduces a potential bias in the direction of finding benefits to be regressive to the extent that the poorer individuals attend private facilities. However, as private health and education services are extremely limited (apart from *curandeiros*), this does not appear to be a serious problem.[6]

More generally, the strength of this survey-based approach to identifying beneficiaries of public services is that the data come directly from the household survey and are unlikely to have been tampered with in political processes. The drawback is that only a fraction of total public expenditures can be assessed. This is because the household survey does not identify the beneficiaries of many categories of spending, including administration, military spending, and, within the education sector, university spending.[7] The omitted spending categories are likely to be less progressive than those we include, and our results may therefore not be representative for overall public spending. An additional limitation, along these same lines, is that the intensity of the use of health services—that is, the number of visits during the reference period and the type of treatment received—is not captured in the survey data.

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[6] For example, according to the IAF data, only 1.4 percent of those who sought medical treatment for an illness or accident went to a private clinic (Lindelow 2002).

[7] The proportion of university students in Mozambique is too small for that category to be adequately represented in the survey.

As already mentioned, the unit cost of service provision was calculated, by province and type of service, by dividing the total expenditures for providing the service by the number of individuals who used the service. For education benefits, we used the 1997 budget data provided by the Department of Finance and Administration of the Ministry of Education (MINED) to obtain the cost of service provision and 1997 Annual Statistics produced by the Planning Directorate of MINED to obtain the number of students enrolled in public schools, by level of education and by province. We followed the same procedure for the health sector, where the budget and the health services utilization data were provided by the Planning Directorate of the Ministry of Health (MISAU). The data were disaggregated by province and by type of facility (health posts, health centers, and hospitals). One should note that average unit cost is only a rough approximation for value of service provided. For example, for the same level of service quality, unit costs are likely to be higher in more sparsely populated areas. We are also aware that actual distribution of service provision can be quite different from that estimated using budget unit costs (as done for this study). Hence, the results for the distribution of monetary benefits have to be interpreted with caution. Nevertheless, this caveat does not apply for the participation results, which make no attempt to assign a monetary value to services received, thus implicitly assuming that all participants receive the same level of benefit. All analysis was done using the individual as the unit of analysis, with the application of sampling weights so that the results are representative at national and provincial levels.

4. Participation in Public Services

The empirical results are presented in three parts. In this section, results for participation or utilization are reported, measuring incidence as a binary variable that indicates whether an individual used a given type of service. This approach is less demanding of the data, but it is limited in that no allowance is made for the level of expenditure related to the benefit received. In Section 5, the analysis is done using the

unit costs of each type of service. This approach takes account of the level of public expenditure and allows, to some extent, for variations in service quality as discussed above. Section 6 explores the education results in greater depth to gain a better understanding of the underlying reasons for inequality in education.

The Lorenz curve (or expenditure/consumption concentration curve) shown in Figures 2–9 plots the cumulative distribution of per capita household expenditure. By inspecting Figure 2, for example, it may be seen that the poorest 50 percent of households account for only about 24 percent of total expenditure. However, compared to many other African countries, Mozambique is not an especially unequal society. In South Africa, the poorest 50 percent account for less than 10 percent of total expenditures. In Côte d'Ivoire, Guinea, Madagascar, Uganda, and Madagascar, the poorest half account for less than 20 percent, while in Ghana and Tanzania, the share of the poorest half of the population is around 25 percent (Sahn, Younger, and Simler 2000; Sahn and Younger 1999). The present high rates of economic growth may well result in rising inequality, as the market-oriented growth process is likely to reward those relatively few Mozambicans who possess human and physical capital of any magnitude. The large majority of people, virtually without assets and with minimal education, risks not sharing in economic growth, at least in the absence of equalizing government action (Wuyts 2000).

Education

The education system in Mozambique is divided into the following levels and age groups:

EP1 Lower primary school *(ensino primário de primeiro grau*, or EP1), from 1st through 5th class, which is intended to correspond to ages 6–11. In practice, EP1 takes in many children who are much older, because they started school late, had interruptions in their schooling, repeated grades, or experienced some combination of these. Naturally, this also has an impact on the ages of students in subsequent levels of schooling.

EP2 Upper primary school (*ensino primário de segundo grau*), 6th and 7th class, intended for those ages 12–13.

ES1 Basic postprimary technical or lower secondary school (*ensino técnico básico* and *ensino secundário geral, primeiro ciclo*, ESG1), intended for those ages 14–16.

ES2 Intermediate postprimary technical or upper secondary school (*ensino técnico médio* and *ensino secundário geral, segundo ciclo,* ESG2), intended for those ages 17–18 or 19.[8]

Enrollment data are presented in Table 1, with age groupings that reflect the intended ages for the four different levels of schooling described above. The enrollment rates shown are the proportion within each age group currently studying at any level. Hence, the data pertain to a certain age group, not to a specific level of schooling. Nationally, 54 percent of boys and 45 percent of girls age 6–11 are enrolled in schools according to the survey,[9] while 36 and 13 percent of males and females ages 17–18 attend school. Enrollment rates are highest among those ages 12–13. Enrollment rates of boys (but not girls) ages 14–16 are almost equal to those ages 6–11. As further discussed below, to a large extent this does not reflect enrollment in secondary education, but rather is an indication of starting school late or delayed progress through primary school. Enrollment is highest in Maputo City, which has more developed infrastructure and higher incomes, followed by the rest of the southern provinces. Gender gaps in enrollment are smallest in Maputo City for all age groups. However, if we leave aside for a moment the unusual case of Maputo City, we note that in the youngest age group, interregional differences are greater than within-region gender differences. For example,

[8] Regular secondary education is intended to end at age 18, while technical education is intended to end at age 19, although as with primary education, students are often older. Lower and upper secondary school are sometimes referred to as secondary school, first and second cycle, respectively.

[9] According to more recent data, primary enrollment is now above 60 percent. However, that figure refers to the gross enrollment rate, which includes children of higher age who are still enrolled in primary education; hence, the data are not directly comparable to that used here.

the largest male/female enrollment rate gap in the 6–11 group is 11 percentage points in the central region; this compares with south/central gaps of 19 and 24 percentage points for boys and girls, respectively. In older age groups the pattern is reversed, with girls leaving school faster than boys in all regions. A particularly striking gender feature is that enrollment rates for girls drop sharply at age 14 in all provinces, perhaps reflecting parents' unwillingness to send their girls to secondary schools that are often located at some distance from the residence. The analysis of equity in schooling is pursued in greater depth in Section 6.

Table 1—Enrollment rates, by age group, region, and gender

	Age 6–11		Age 12–13		Age 14–16		Age 17–18	
	Male	Female	Male	Female	Male	Female	Male	Female
North	0.50	0.40	0.61	0.46	0.52	0.25	0.25	0.06
Central	0.48	0.37	0.59	0.42	0.48	0.33	0.41	0.13
South, excluding Maputo City	0.67	0.61	0.71	0.68	0.53	0.42	0.33	0.15
Maputo City	0.87	0.83	0.82	0.88	0.73	0.71	0.45	0.37
Total	0.54	0.45	0.63	0.53	0.52	0.37	0.36	0.13

Note: Age groups correspond to intended ages for lower primary (EP1), upper primary (EP2), lower secondary (ESG1), and upper secondary (ESG2). Actual ages of students in these levels are often higher, because of delays in starting school, interruptions in studies, and repetition of classes.

Figures 1a and 1b plot age-specific enrollment rates for each decile of real per capita consumption for boys and girls, respectively. Enrollment in the education system increases markedly with consumption for all age groups and for both boys and girls. For example, among children ages 6–11, in the first decile only 38 and 32 percent of boys and girls, respectively, are currently enrolled in school as compared to 77 and 67 percent of boys and girls in the tenth decile. Among those ages 12–13, 49 and 34 percent of boys and girls, respectively, in the first decile are currently enrolled against 85 and 77 percent in the last decile. With few exceptions, boys have higher enrollment rates than girls within the same decile. However, from some perspectives, the level of consumption appears to be a more significant factor than gender. For example, across all age groups, girls from better-off households are more likely to be enrolled than boys from poorer households.

Figure 1a—Enrollment for boys, by age and consumption decile

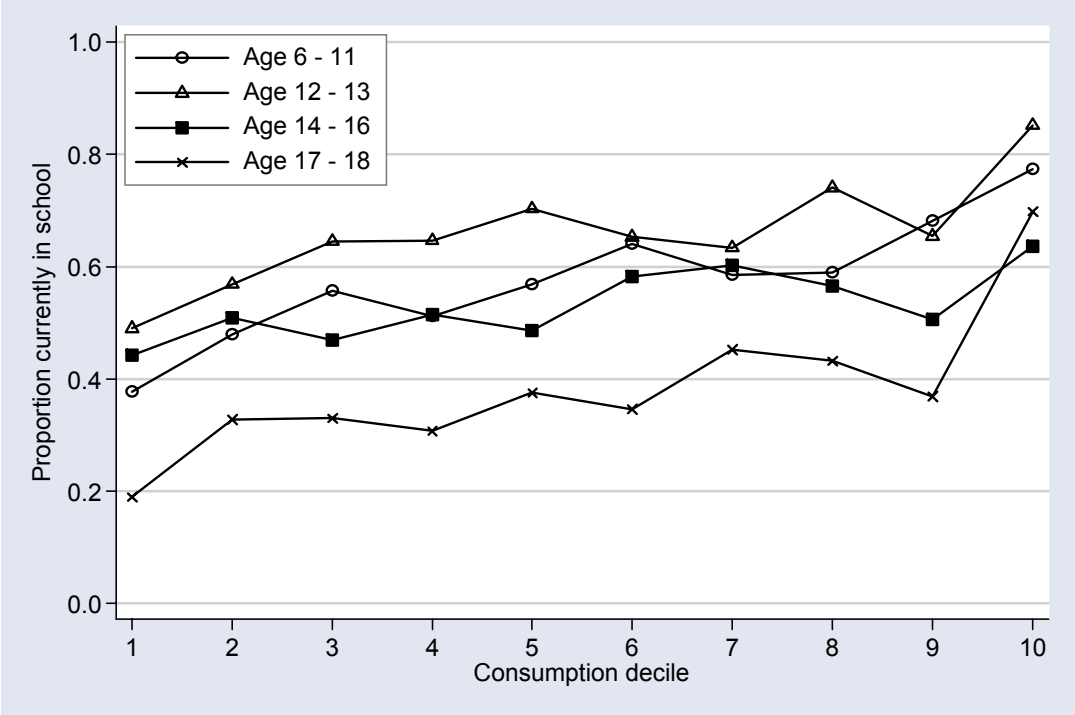
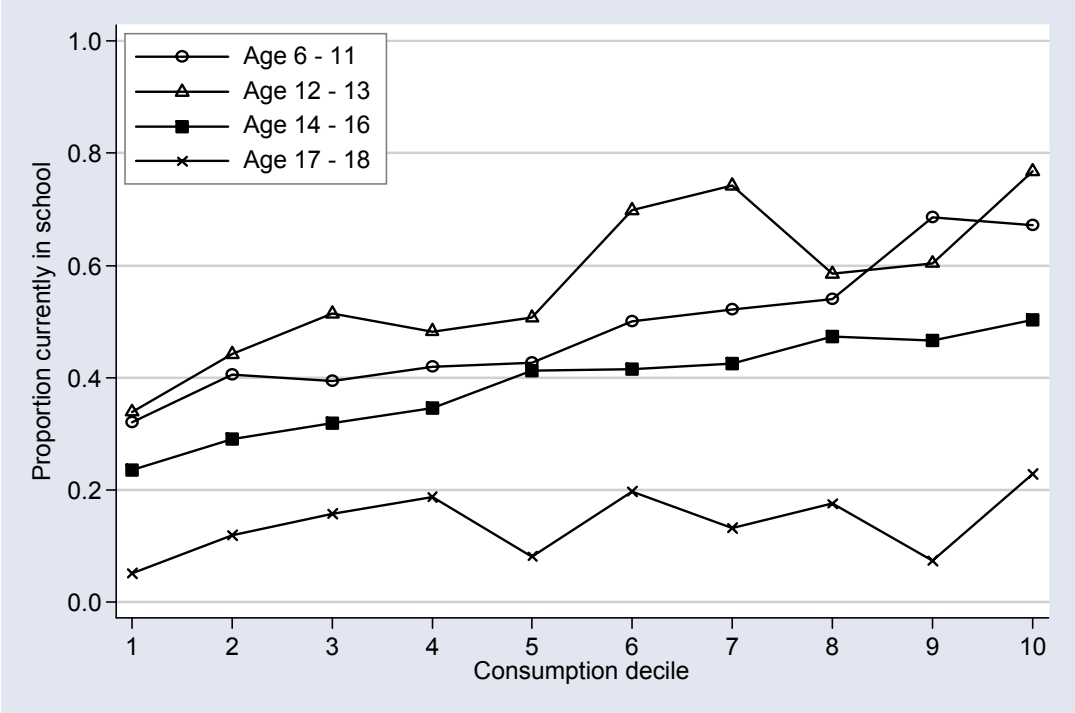
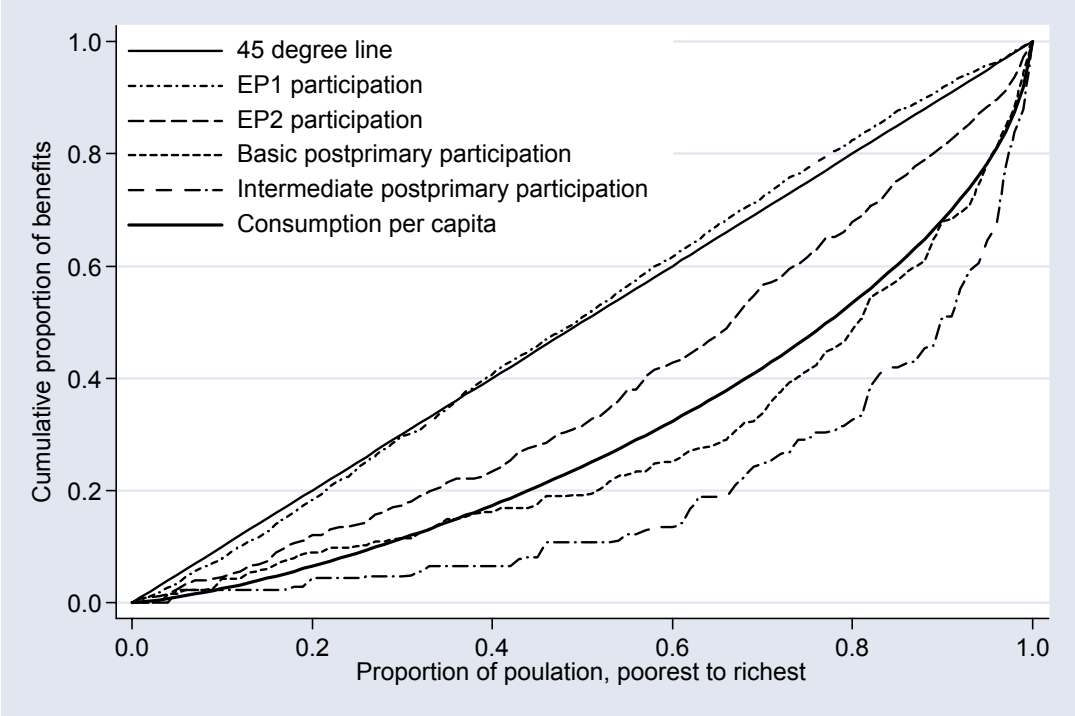


Figure 1b—Enrollment for girls, by age and consumption decile



Participation in education is plotted using concentration curves in Figure 2. This shows that the lower the level of education, the more progressive is the distribution of its utilization. The figure shows that enrollment in primary education (EP1 and EP2) is progressive, i.e., school enrollment is distributed more equally than consumption (note that in this case, the 45-degree line represents equal participation among all school-age children, and thus takes into account the larger number of school-age children in poorer households). Lower primary education, EP1, has the most progressive distribution, closely following the 45-degree line, but because it crosses the 45-degree line, we cannot say it is per capita progressive. The EP1 and EP2 results are cases of Lorenz-dominance, i.e., the concentration curve for lower primary education lies everywhere above other levels of education, meaning that access to lower primary education is more equal than

Figure 2—Education participation, by level of schooling



access to other education services.[10] Participation in upper primary education is also progressive and more equally distributed than postprimary education.

The concentration curves for postprimary basic and intermediate education cross the Lorenz curve, meaning that they are neither progressive nor regressive by the Lorenz criterion. However, postprimary intermediate education crosses the Lorenz curve at 0.1 on the horizontal axis, and lies well below the Lorenz curve for the rest of the distribution, so it would be considered regressive by most other criteria. From the concentration curves, it might be observed that the poorest 50 percent of school-age children constitute 50 percent of all students enrolled in lower primary education (EP1) and 32 percent of students in upper primary education (EP2). At higher levels, participation by the poor drops drastically, with the poorest half accounting for only 19 percent of students in postprimary education and 11 percent of students in the intermediate postprimary category.

The pattern observed in Figure 2 cannot be explained by the fact that the poor tend to have more children. The calculations are done on an individual (rather than household) basis. Hence, the effect coming from higher demand from poor households because they have more children has been removed by scaling the concentration curves to individuals. The observed trend is more likely explained by relatively easy access to lower primary education in the areas where the poor live, and conversely by constraints (in terms of access, financing, and other) for the participation of the poor at higher levels of education, something to which we return below.

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[10] Welfare dominance tests show that EP1 and EP2 both statistically dominate per capita consumption. Here, and elsewhere in this paper, we say that one curve dominates if the ordinates at the 5^{th}, 10^{th}, 15^{th}, ..., and 95^{th} percentiles of per capita consumption are all statistically significantly different from one another at the 5 percent significance level. This is a more stringent test than is usually found in the literature, so it is difficult to find results of statistical dominance (see Sahn, Younger, and Simler 2000 for further discussion of these issues). All tests allow for the dependence between the distributions; however, they do not incorporate the effects of the stratified cluster sample design. Other analysis shows the cluster design to have a significant effect on computed standard errors (MPF/UEM/IFPRI 1998). As such, the significance of dominance in our dominance tests is likely to be overstated. Thanks are due to Steve Younger and Jean-Yves Duclos for providing Gauss programs for statistical dominance testing.

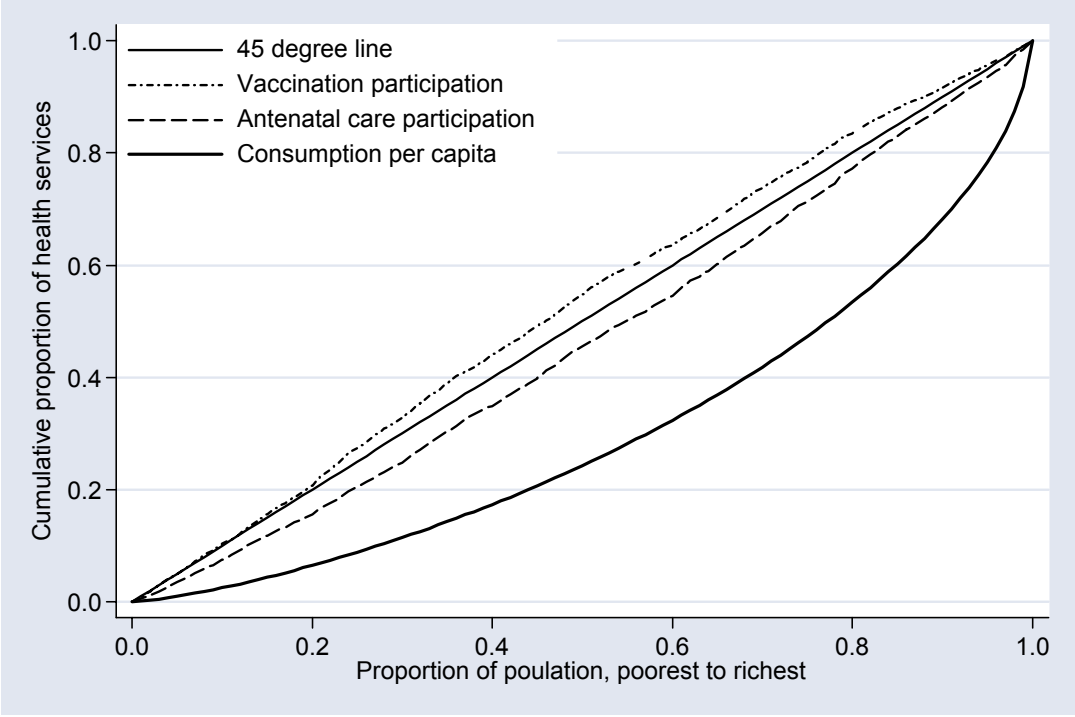
Health

In the analysis of the distribution of benefits from public health services, the following types of health service utilization are considered:

1. Children age 0–5 who were vaccinated at least once;
2. Women who were pregnant at least once and received antenatal care;
3. All individuals who accessed health services (hospital, health center, or other medical facility) during the month preceding the interview, seeking treatment for an illness or accident.

The results are presented in the concentration curves in Figure 3 for preventive care (i.e., items 1 and 2 above) and in Figure 4 for curative care (item 3), allowing comparison with household consumption expenditure. The participation of infants and pregnant women in basic preventive health care is progressive and appears particularly

Figure 3—Use of preventive health care

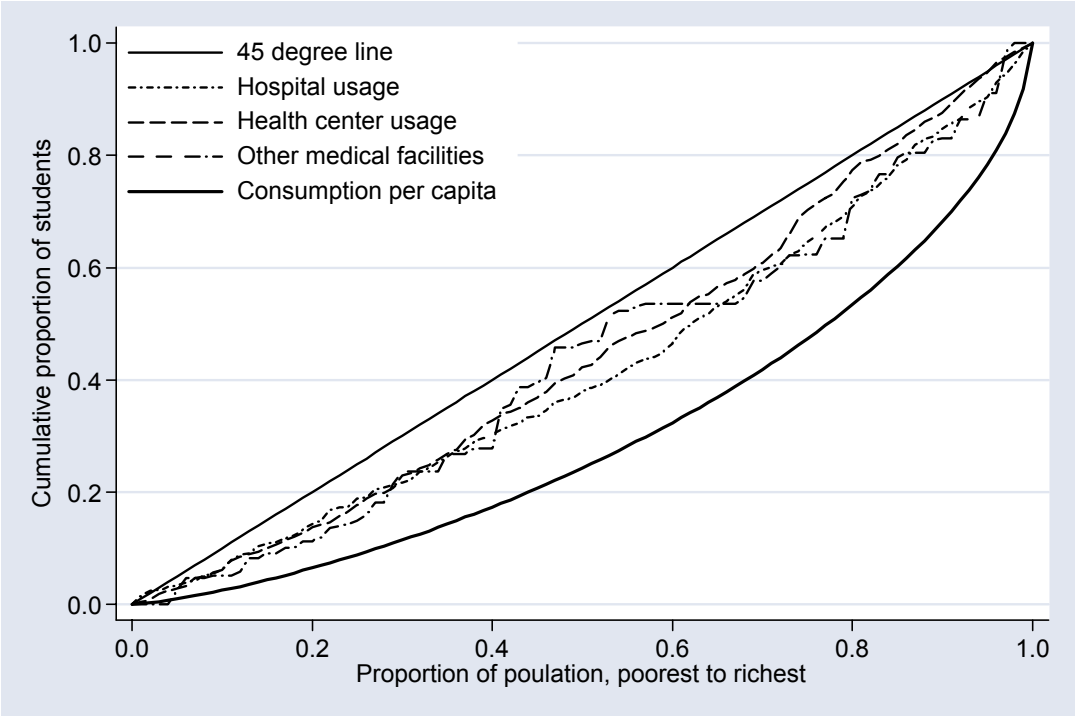


progressive for infant vaccinations. For most of the distribution, the curve for infant vaccinations lies above the 45-degree line; vaccinations cannot be classified as per capita progressive because it crosses the 45-degree line at about the 5th percentile. The dominance testing of these preventive health services finds that the curve for infant vaccinations statistically dominates both antenatal care and the Lorenz consumption curve. Access to basic preventive care helps equalize the income distribution curves, although the caveats previously noted apply here as well. The data show that among the group of children who have received at least one vaccination, 54 percent come from the poorest 50 percent of children, i.e., the poor are disproportionately represented in this group. For antenatal services, the poorest 50 percent of pregnant women account for 45 percent of those who receive at least some antenatal care.[11]

Figure 4 plots concentration curves for visits to curative health services by people who were ill during the month prior to being interviewed. The curves for hospital and health center utilization are both situated between the Lorenz curve for consumption expenditure and the 45-degree line. This implies that access to these levels of health care is progressive, but not per capita progressive. The curve for other health services largely follows the same pattern, except that it crosses the Lorenz curve near the origin. Subject to the qualification already noted in footnote 11, we observe that 38 percent of those who were hospital patients, and 42 percent of those who attended health centers, come from the poorest 50 percent of the population. In comparison, the poorest 50 percent account for only 24 percent of total consumption. Dominance tests show that both the hospital and health center curves dominate the consumption curve and neither of these two services dominates the other.

[11] A data limitation should be kept in mind in the discussion of health service utilization. The operative variables at the individual level are binary, indicating whether a person accessed a given service during the reference period of the survey. However, multiple visits for antenatal, and multiple vaccinations are possible; indeed, they are recommended. Thus, there is a degree or intensity of participation that is not captured in the results reported here. For example, while it is estimated that 45 percent of women who received some antenatal care were from the bottom 50 percent of the income distribution, one cannot infer that this same group of women accounted for 45 percent of all antenatal care visits.

Figure 4—Use of curative health care



Rural Infrastructure

As previously mentioned, the IAF questionnaire collected community data regarding construction and rehabilitation of public infrastructure during the two years prior to the survey. We linked this community data with data on consumption expenditure of individual households residing in the community and then identified those communities that received new investment for rehabilitation or construction of infrastructure, classified by the level of well-being of individuals in the respective villages.[12] As noted in Section 3, this analysis focuses on new investments in infrastructure, thus capturing the incidence of marginal spending. This is in contrast to the average incidence that is analyzed for education and health sectors.

[12] The IAF collected this data only in rural areas.

Table 2 shows the proportion of rural households whose villages have received various types of public infrastructure investment, broken down by expenditure tercile and region. We see that because of the rapid postwar reconstruction and rehabilitation of Mozambique, a fairly large proportion of the population has recently benefited from public investment. The most common investment received by rural communities is a new or rehabilitated school, followed by roads and health facilities. Investments in all types of public infrastructure appear to be more widespread in southern regions than in other regions. In the education sector, in particular, large regional differences in the incidence of fresh investment are apparent. The incidence of road improvements shows a different pattern, with road investments more common in the northern region of Mozambique.

Table 2—Percentage of households in villages that benefited from rehabilitation or construction of infrastructure (health, education, and roads), by terciles of household expenditure

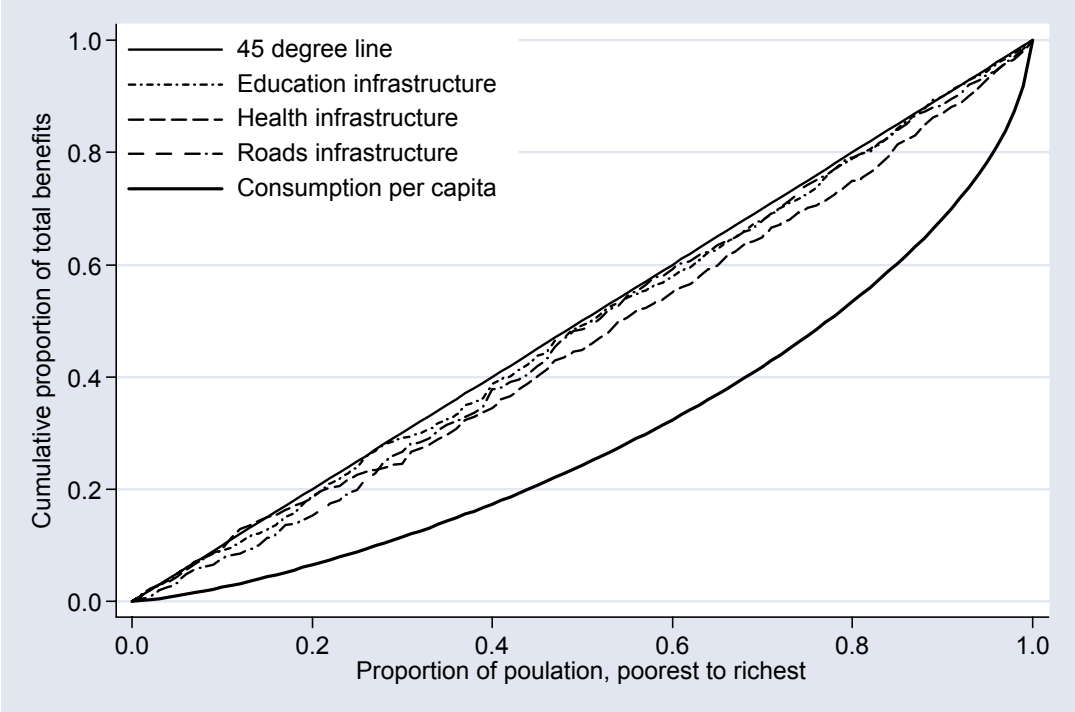
Regions	1st tercile	2nd tercile	3rd tercile	Total
Construction and improvements of schools				
National	20	22	23	21
North	13	16	19	16
Center	18	20	20	20
South	32	37	41	37
Construction and improvement of health infrastructure				
National	8	9	10	9
North	13	9	9	10
Center	5	7	9	7
South	9	16	18	14
Paving and improvement of roads				
National	14	17	17	16
North	24	20	25	23
Center	11	14	7	11
South	8	17	21	15

Differences in the incidence of recent infrastructure investments among expenditure terciles appear to be small. It should be kept in mind that this analysis is confined to rural areas because of data limitations, but it appears that rural public investment is fairly evenly spread across income groups, but not across regions.[13] This

[13] This result may obtain in part because of the two-year time reference period for the data, compounded by the inherent "lumpiness" of infrastructure investments.

line of analysis is further pursued using concentration curves in Figure 5. This figure confirms that construction and rehabilitation of public infrastructure is progressive and close to the equality line. This means that recent public investments in rural areas have gone to poorer and richer households in more or less the same proportion. A key fact underlying this result is the observation that the majority of inequality in Mozambique is within-village.[14] In other words, it is not especially useful to categorize rural Mozambique into "poor" and "nonpoor" areas, because the poor and the nonpoor live side by side.

Figure 5—Benefits from rehabilitation or construction of infrastructure (schools, health facilities, and roads)



Our understanding of the optimal geographic distribution of infrastructure is still limited. From a poverty reduction perspective, a uniform distribution of investment is

[14] We have calculated a Theil index of inequality from the IAF data. It is 0.255 for rural Mozambique, which may be decomposed into 0.145 within-village and 0.110 between villages. Put differently, approximately 60 percent of rural inequality in Mozambique is within-village.

unlikely to be desirable. The social return to infrastructure investment may be higher in areas with relatively good agroecological characteristics and market access. However, there is no assurance that the benefits of this investment will reach poorer households in these high-potential areas, much less those situated in marginal or more isolated locations.[15] Conversely, infrastructure investment in remote, low-potential, and relatively poor areas is not always the most efficient way of combating poverty. Spending on education and health, however, remains warranted, also in low potential areas. The benefit incidence approach is not well suited to capture the indirect effects of public spending, say, on agricultural prices or employment. Other work exploring these issues in more detail include Arndt et al. (2000), using an approach based on a Social Accounting Matrix (SAM).

5. Incidence of Monetary Benefits

Unit Costs

Table 3 provides the unit costs of education services by level of education and by province (when available).[16] In general, the cost of providing education increases as we move from lower to higher levels of education. The second cycle of general secondary education (ESG2) is particularly costly. The major reasons for these variations in unit costs are that teachers at upper levels of education have higher qualifications and receive higher wages than those at lower levels. Also class sizes tend to be smaller at higher levels. Most of the variation in unit costs across provinces at the same level of education can be explained by a combination of variations in the qualifications of teachers and their salaries, variation in student/teacher ratios, and provision of pedagogical materials.

[15] Poor people living in areas of low potential can also benefit from investment in relatively better-endowed areas, for example, through migration to areas where new opportunities for paid employment arise.

[16] Regionally disaggregated unit costs are not available for the intermediate postprimary technical education category. This group is therefore left out of the monetary analysis of total educational benefits as discussed further below.

Table 3—Unit costs of education and health services in 1996–97 (in 1,000 meticais)

	Hospital care	Other health care	EP1	EP2	ESG1	ESG2	Basic technical	Intermediate technical
Niassa	1,159	253	167	307	1,578	3,064	959	–
Cabo Delgado	993	517	101	462	1,932	2,407	3,859	–
Nampula	1,682	141	153	598	1,256	1,901	2,815	–
Zambézia	891	251	138	441	598	5,009	1,762	–
Tete	1,701	652	135	384	1,094	–	2,057	–
Manica	1,254	314	112	215	1,101	2,379	1,475	–
Sofala	1,784	408	138	397	695	5,172	995	–
Inhambane	509	258	110	318	446	3,486	2,092	–
Gaza	294	1,314	100	160	585	1,972	1,636	–
Maputo Province	–	–	100	186	1,174	4,312	1,372	–
Maputo City	–	–	144	253	645	3,782	1,392	–
National	–	–	128	325	901	3,400	1,567	4,807

Note: EP1 is lower primary (grades 1–5), EP2 is upper primary (grades 6–7), ESG1 is lower secondary (grades 8–10), and ESG2 is upper secondary (grades 11–12). In 1996–97, the exchange rate was approximately 11,000 meticais to US$1.

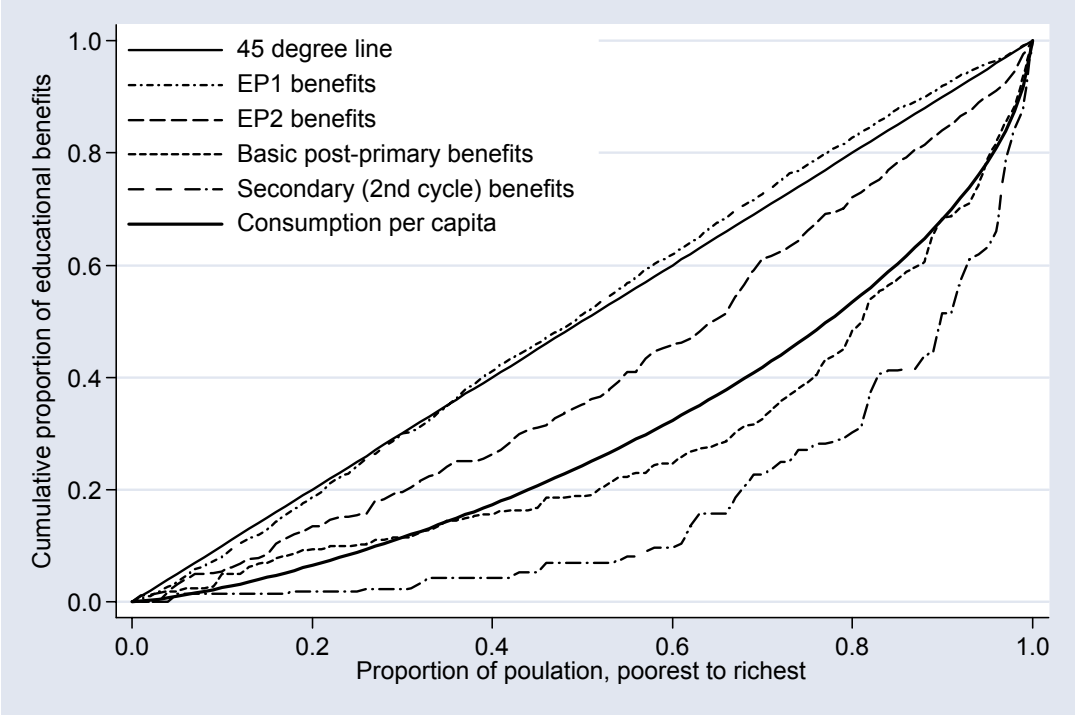
It was not possible to place a separate monetary value on preventive health care, nor for investment in new infrastructure. As in the education sector, there is substantial variation in the cost of service provision across provinces. These variations are a combined result of the professional qualifications and salaries of personnel in each province, the level of demand for services by the population, and the type of services available. Thus, the higher the ratio of hospitals to basic care facilities in a given province, the higher are the average qualifications and average salaries of health personnel. The same holds for maintenance costs. This means that variation in unit costs are likely to be linked to differences in the type of facility and quality of service, and that the provincial breakdown of unit costs as carried out here is highly relevant to the analysis.[17]

[17] As noted in Section 4, the household survey does not have complete information on the number of visits and the specific services received. Within each province, we therefore had to assign the same benefit to anyone who utilized the service during the reference period. To the extent that better-off individuals made more visits, received more costly services, or both, than poorer individuals, the results reported here may overstate the progressivity of the benefit incidence.

Concentration Curves for Monetary Benefits

Figure 6 shows the concentration curves that result from matching the unit costs of provision with the household data on participation in education. The pattern found for participation remains intact once we look at monetary benefits. Thus, the lower the level of education, the more equal its distribution, with primary education being clearly progressive. For lower primary education (EP1), there is an almost equal distribution with the exception of the poorest 25 percent of the population, who receive slightly less. Despite this very equal distribution, the EP1 concentration curve does not dominate the other curves, because the confidence intervals overlap within the first 5 percent of the poorest. Yet, overall, EP1 benefits in Mozambique are progressive. For example, the poorest 50 percent receive around 51 percent of all expenditures on EP1 education, whereas they only account for around 24 percent of total consumption expenditures.

Figure 6—Incidence of education benefits in monetary value

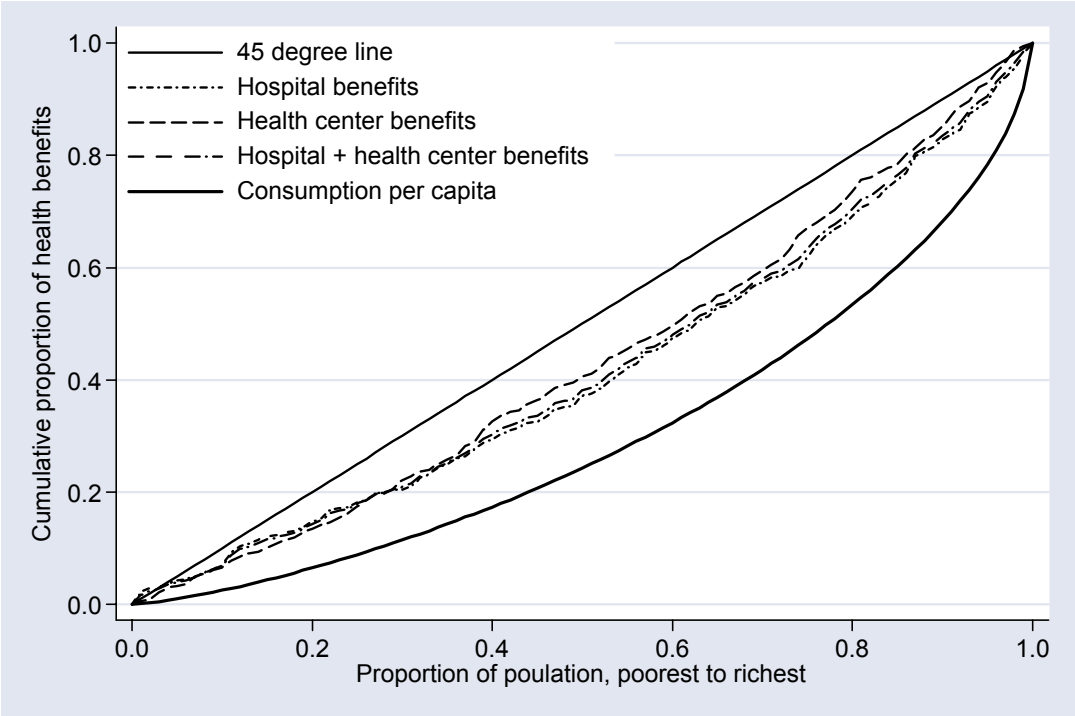


For upper primary education (EP2), a progressive trend can be noted, and the EP2 curve statistically dominates the consumption curve. However, except for a crossing at the poorest tail end of the distribution, EP2 is less progressive than EP1, with the poorest half receiving 35 percent of all EP2 education expenditures. The curve that represents the benefits of postprimary basic education crosses the consumption distribution, so the Lorenz criterion cannot indicate whether this kind of education is progressive or regressive. The poorest 50 percent of the population receive less than 19 percent of expenditures on basic postprimary education (general and technical) and the 10 percent richest receive more than 32 percent. Note also that upper (second cycle) secondary education is distributed especially unequally. As already noted, the data are weak when it comes to the postprimary intermediate technical and university categories, which therefore had to be left out of the analysis both here and in what follows below.

An analysis of total benefits of education (all benefits added together—except the postprimary intermediate technical category) shows a progressive distribution in relative, but not in absolute, terms, as EP1 is strongly progressive. We estimate that the poorest quintile receives 14 percent of total education spending, the poorest half receives 36 percent of public spending in the education sector, while the richest quintile receives 33 percent. Compared to other African countries surveyed by Castro-Leal et al. (1999), this distribution is more unequal than in Kenya, Ghana, and Malawi; roughly comparable to Côte d'Ivoire, Tanzania, Uganda, and South Africa; and more equal than in Madagascar and Guinea.

Figure 7 shows the concentration curves for the incidence of benefits associated with public health expenditures. In broad terms, there is little difference in the incidence of hospital and other health-care medical facilities, but both types of expenditure are clearly progressive in the sense that they dominate the Lorenz curve. It is common for benefit incidence studies undertaken in other developing countries to find nonhospital facilities to be more progressive than hospitals, so the degree of progressivity of hospital benefits in Mozambique is remarkable.

Figure 7—Incidence of health benefits in monetary value

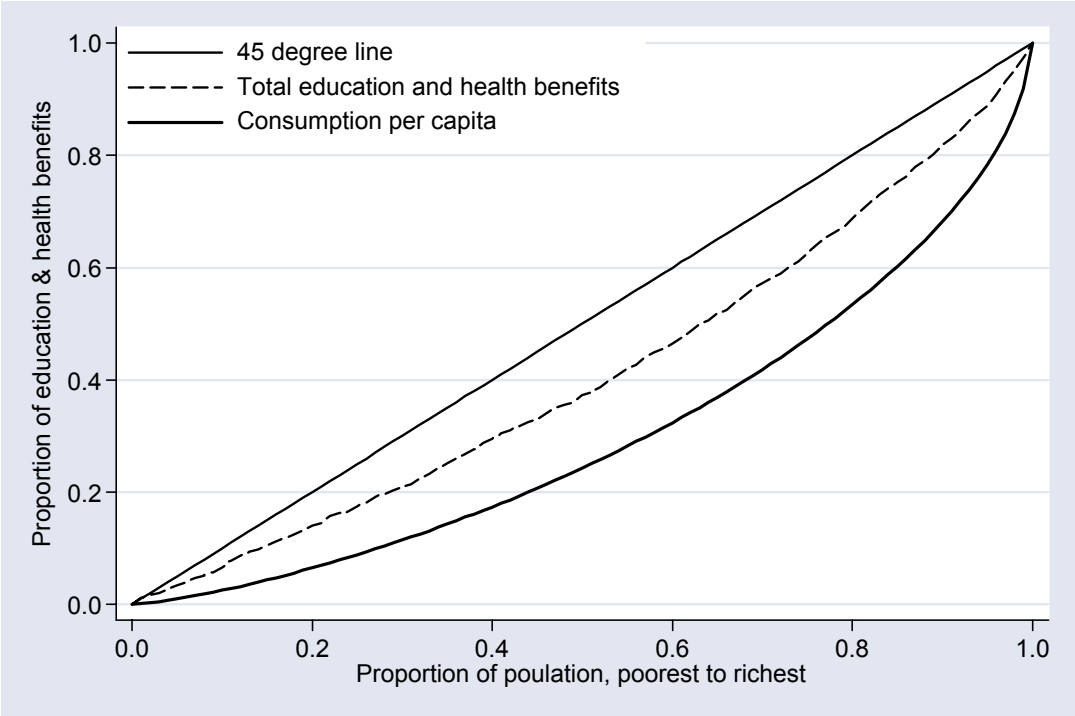


From Figure 8 it is seen that the incidence of "total" education and health benefits (i.e., the total of primary education, part of secondary education, and curative health care), while not per capita progressive, is clearly progressive in the relative sense that public spending on these items is more equally distributed than per capita consumption. The total education and health benefit line lies everywhere above the Lorenz curve.

Regional Analysis

We next analyze how benefits are distributed within each region. In Figures 9a-9c, the concentration curve for total education and health benefits (with the same omitted categories as before) is plotted for each region. It can be seen that total benefits are distributed most equally in the north, where the curve lies slightly above the 45-degree line. Benefits are still very equal in the central provinces, while the distribution of benefits is least equal in the south, where the benefits curve crosses the Lorenz curve near the lower tail of the distribution. These results are caused in large part by higher

Figure 8—Total education and health benefits



enrollment in postprimary education the further south one moves. Hence, postprimary education, which is less progressive, gets a higher weight in the total picture as one moves south.[18] Several caveats apply: the present analysis has only captured a fraction of total public expenditure, and, even among those services that we have in fact been able to analyze, there is potential for biases in the unit costs on which analysis is based.

The distribution of benefits across regions is, as already mentioned, an issue of considerable political interest. Table 4 shows the population share and the proportion of public service benefits (those we are able to measure) of each region. The most striking observation is that the capital city, Maputo, receives almost a third of the benefits, yet accounts for only 6 percent of the population. Part of this is because Maputo provides services such as secondary schools and hospitals for a wider catchment area. Even so,

[18] Disaggregated analysis (not shown here) confirms that lower primary education closely follows the 45-degree line in each of the three regions.

Figure 9a—Total education and health benefits, North Region

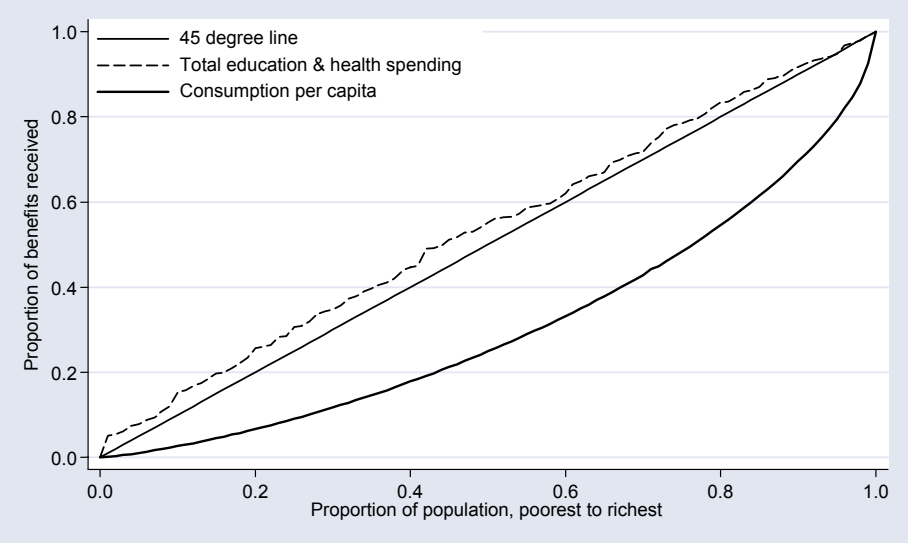


Figure 9b—Total education and health benefits, Central Region

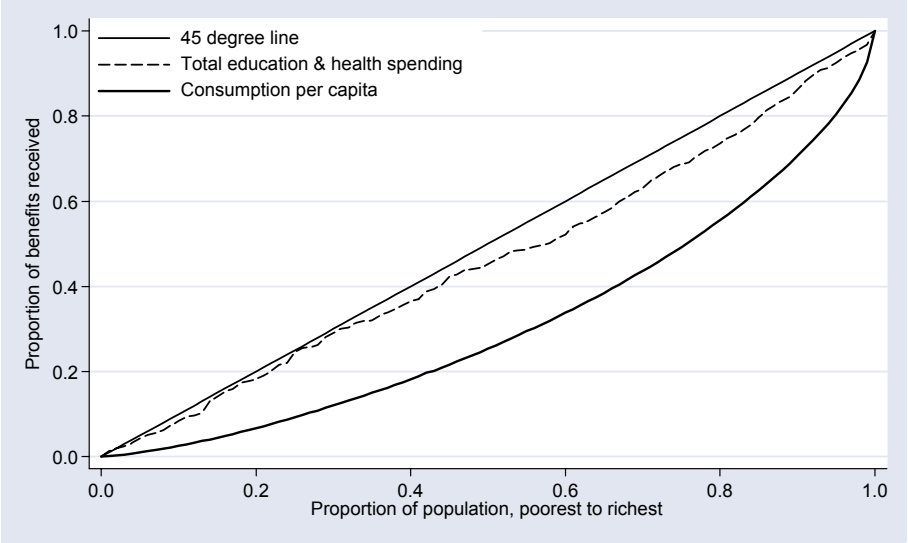
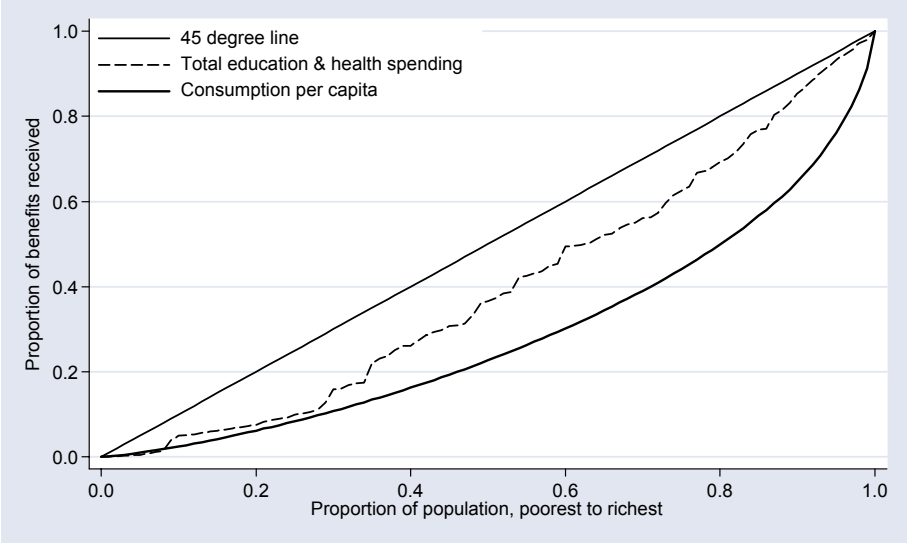


Figure 9c—Total education and health benefits, South Region



the share of benefits received by the southern region, excluding Maputo, is roughly in proportion to its population, leaving the northern, and especially the central, regions underserved when measured as per capita benefits received. Given the regional imbalances already referred to, and the political differences from one region to the next, it would be wise to design future spending programs carefully so as to avoid tension and conflict (Addison and Murshed 2001) and maximize the human and social impact of social spending.

Table 4—Regional distribution of population and monetary benefits

Share (percent)	North	Center	South, excluding Maputo	Maputo City	Total
Population	32.5	42.6	18.8	6.1	100.0
Education	18.8	26.2	22.7	32.2	100.0
Health	27.3	30.0	10.9	31.8	100.0
Total benefits	23.0	28.1	16.8	32.0	100.0

6. Education: What Drives the Results?

It is important to understand the decline in progressivity as we move up the educational ladder. There are many possible reasons, and for policy to be appropriately designed, it is important to understand the factors causing inequalities in access to education. The more widespread availability of lower primary (EP1) schools in rural areas and the supply of education materials to all students benefit poorer groups. For other levels of education, there are much greater access barriers, such as distance to schools, which increases with the level of education. This is especially the case for rural areas where the incidence of poverty is higher. Family work obligations that increase with age may be an important constraint for children from poor and rural households to complete primary school and to undertake to further study. Finally, there is an academic hurdle in that students need to pass primary exams before entering secondary school.

In the following, we address a different but related question: at which step in the educational ladder do the poor drop out? If education is to become more egalitarian, it is

important to know at which level of schooling the constraints on the poor and girls are most binding. Additional data analysis was therefore undertaken to help pinpoint the location of inequalities within the education system. For example, it was observed in the previous sections that participation in and benefits from upper primary education (EP2) are much less progressive than lower primary education (EP1). The reason for this decline in progressivity may be located either at the EP2 or at the EP1 level: the poor may not enroll in or do not pass EP2; they may be less likely to complete EP1 and hence do not qualify for admission into EP2; or both. Policy implications depend on which factor is stronger.

Table 5 describes the schooling experience of all people in the sample ages 10-20. For each level of schooling and tercile of real total consumption, it shows the percentages of those who completed the level in question, are still studying, or did not complete (either never enrolled at that level or enrolled and then subsequently left school before completing). The main insight from the table is that inequalities are present at all levels of education. The first row looks at the proportion of each tercile that replied in the affirmative to the question whether they ever went to school. A marked difference is

Table 5—School experience, by tercile and gender (percent)

	1	2	3	Male	Female	Total
Ever went to school						
Yes	59.4	69.7	74.1	73.2	58.8	66.2
No	40.6	30.3	25.9	26.8	41.2	33.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
EP1 status (conditional on ever attending school)						
Passed EP1	16.8	25.1	34.2	24.1	24.3	24.2
Still studying EP1	58.2	52.2	42.5	55.6	47.3	52.0
Did not pass/enroll	25.0	22.7	23.3	20.3	28.4	23.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
EP2 status (conditional on completing EP1 successfully)						
Passed EP2	19.7	18.1	35.2	25.4	24.2	24.9
Still studying EP2	33.9	40.2	37.8	39.9	34.5	37.6
Did not pass/enroll	46.3	41.7	27.1	34.7	41.3	37.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Postprimary status (conditional on completing EP2 successfully)						
Passed postprimary	2.9	3.7	4.5	5.1	2.4	4.4
Still studying postprimary	32.7	47.1	58.3	48.1	52.4	50.4
Did not pass/enroll	64.4	49.3	37.1	46.8	45.3	45.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: Sample for this table is those ages 10–20 at the time of the 1996–97 household survey.

found, as expected. In the first tercile, 59 percent of this age group have gone to school, compared to 74 percent in the third tercile. Next, the table shows the proportion of those who went to school that either (1) passed EP1, (2) is still enrolled in EP1, or (3) did not pass EP1. It may be noted that students from the third tercile are much more likely to have passed EP1 than others. Students from the first two terciles are more likely to remain at the EP1 level at age 10–20, because of a late school start and/or delays in passing through the relevant grades. Family work obligations, keeping children from the lower terciles away from school part of the time, and low quality of schooling services provided in relatively poor areas may account for this.

This pattern continues up through the education hierarchy. The table goes on to show the status of students with respect to EP2, conditional on already having passed EP1, for each tercile. Students from the third tercile are almost twice as likely as students from the first and second terciles to have passed EP2 (given they previously passed EP1). This difference is not attributable to delays, as the proportion still enrolled in EP2 is approximately the same across terciles. The difference is entirely attributable to the fact that those students from the two lower terciles that qualify either never enrolled in upper primary school, or they enrolled in EP2 and then dropped out. The analysis is repeated for all postprimary education, combining general secondary education with postprimary technical education. In the third tercile, 63 percent of those students who passed EP2 are enrolled in postprimary education or have already passed it, compared to 36 percent in the first tercile.

Turning next to gender inequalities, a similar picture of cumulative inequality appears. Table 5 shows that gender imbalance arises early on—boys are more likely than girls to have ever attended school. Compared to boys, girls that enroll are somewhat more likely to drop out before completing EP1, and those who pass EP1 are more likely to drop out from or never enroll in EP2. Hence, it is concluded that inequalities arise at all levels of schooling, starting from the most basic levels and accumulating upward. It is therefore the accumulated effects of inequalities at all previous levels that make intermediate and higher education regressive, as well as unequal in the gender dimension.

Next we analyzed differences in schooling across age cohorts, based on the question: "Did you ever go to school?" (Table 6). We examine two cohorts, those ages 13–14 years at the time of the survey, and those ages 20–28 years at that time. This comparison gives an indication of the impact of the major school investment and reconstruction program that took place during 1992–96. Those ages 20–28 years at the time of the survey were of school age during the worst part of the war in the mid- and late-1980s, and suffered from massive displacements and destruction of schools. The higher rate of ever attending school was found for those ages 13–14, at 72 percent. This contrasts markedly with the schooling experience of those ages 20–28, which is only 61 percent.

Table 6—Education experience, by cohort and gender, for those who were school-age before and after reconstruction of the school system

	Proportion that ever went to school (in percent)							
	Age 20–28 (school age during war)				Age 13–14 (school age post-reconstruction)			
	Tercile				Tercile			
	1	2	3	Total	1	2	3	Total
By gender								
Males	68	76	82	76	71	82	87	78
Females	43	52	58	51	54	73	76	64
By region								
North	61	64	67	64	64	70	71	68
Central	42	52	60	51	58	79	72	66
South (excluding Maputo City)	58	70	86	70	70	79	96	79
Maputo City	95	96	99	97	88	96	97	95
Total	53	62	69	61	63	78	82	72

The results of the cohort-analysis in Table 6 are disaggregated by gender, tercile, and region.[19] Girls have enjoyed the largest increase in schooling. Growth has been sharpest for girls in the second and third terciles, with an increase in enrollment of 21 and 18 percentage points, respectively. Part of this growth is because females had more scope for increasing enrollment than males, as they had lower enrollment rates in earlier years.

Regionally, the largest gains in schooling occurred in the central and the southern (excluding Maputo city) regions, where the first and second terciles enjoyed substantial

[19] Terciles are measured with respect to expenditure per capita today, not at the time education took place.

increases in the likelihood of receiving schooling. In the other two regions, schooling exposure remained lower (north) or stagnated at a fairly high level (Maputo City), and inequality in schooling access appeared to increase.

7. Conclusions

The conventional wisdom of the benefit incidence literature is that spending on primary health care and primary education are the most progressive items on developing country public-sector budgets, particularly if spending is targeted to rural areas. Nevertheless, previous studies conducted in other African countries indicate that public spending may not be very progressive because of the high budget shares of nonprimary education and health services (Castro-Leal et al. 1999; Sahn and Younger 1999). The objective of the present study was to provide additional country case evidence on these issues based on budget allocation practices in Mozambique.

Poverty is widespread and deeply rooted in Mozambique, and poverty reduction is a fundamental goal of fiscal policy. This implies that there are two basic challenges for fiscal policy: (1) to help spur rapid economic growth, and (2) to ensure that economic growth is distributed in a fair and equitable manner. The analysis in this paper focused on the second point, and most of the public services we were able to measure have a progressive distribution. Mozambique is poor, and most of the public services analyzed seem to reduce inequality relative to the distribution of consumption. The major exceptions at the national level are upper secondary school benefits, which are less progressive than consumption expenditure, and university training, on which we do not have data, but which is almost certainly highly regressive. Moreover, inequalities in public spending appear to some extent to be more of a regional nature. On this basis, we conclude that regional imbalances need to be addressed carefully in future spending programs. Imbalances are important and can fuel conflict, so not addressing them in time may have political ramifications.

The analysis revealed that inequalities in school education and attainment accumulate up through the educational ladder, resulting in increasingly unequal distribution. This does not in itself constitute an argument for scaling back postprimary education. Instead, those factors that constrain poor students from fully sharing in education or advancing up through the system need to be addressed; for example, by expanding coverage and improving quality of services in rural and other less-advantaged areas. This way, the incidence of public spending can become more progressive, yet it will require more fiscal resources devoted to education at all levels. For expanded schooling to be most effective, it will also be necessary to take actions that reduce the opportunity costs of sending children to school.

Other barriers for access by the poor to further education should also be addressed. For example, at present there are great difficulties in recruiting and attracting qualified teachers for primary schools in many areas, constraining the continued expansion (and quality improvement) of primary schooling. This problem is related to the poor state of secondary education. Hence, even if secondary education is not particularly progressive, it requires attention. It would be unwise to place exclusive emphasis on primary education because of immediate equity arguments, as this would compromise long-run growth by not addressing the need for people with higher levels of education. In this context, an economy-wide perspective on bottlenecks in skills and education is required to better guide investments in education. In addition, it has been shown in Mozambique that the presence of a secondary school nearby has a positive impact on enrollment rates at the primary level (Handa and Simler 2004).

With reference to the health sector, even hospital care appears to be distributed progressively, and hence should not be scaled back on equity grounds per se. What appears more relevant is to highlight that there are possibilities for directing welfare benefits to poor people through well-designed public interventions in the health area, and the same goes for the access of poor people to health, education, and road infrastructure.

In sum, in the case of Mozambique, we find the incidence of public services to be fairly progressive, and cautions relating to data and methodology were noted. In

particular, we had to assume that the benefit from a given service is uniform throughout a province. This ignores the heterogeneity of quality that no doubt exists on the ground. To the extent that poorer individuals receive lower quality services, the progressivity of benefits is diminished unless the quality of services in these areas is improved. Investment in better data generation, and especially proper fiscal accounts, are necessary to improve future analyses and better guide budget priorities.

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