

HEALTH, EDUCATION AND POVERTY REDUCTION

by

Christian Morrisson

- 
- The poor are the principal beneficiaries of universal access to social services.
 - Instead of thinking in terms of supply, we need to meet the demand for services from the poor.
 - Policies should be judged by their outcomes rather than by the amount of resources employed.
 - Coherent, long-term and participatory policy are needed to escape from the poverty trap.

POLICY BRIEF No. 19

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Introduction

In April 2001, the Member countries of the OECD Development Assistance Committee (DAC) reaffirmed their commitment to the reduction of poverty in all of its forms. The seven international development goals established as part of this commitment give a prominent place to education and public health, as they include primary education for all children, lower infant and maternal mortality rates, and improved reproductive health. Another of the goals — the reduction of extreme poverty — reaffirms a commitment made in the broader forum of the United Nations Millennium Summit to reduce by half the number of persons living in extreme poverty by the year 2015. The OECD Development Centre's research project on "Health, Education Spending and Poverty" is therefore central to the concerns expressed by these bodies in both its focus and its results; in fact, one of the latter — the conclusion that women's advancement in society is key to poverty reduction — is also one of the DAC goals.

The Development Centre has recently achieved four case studies on Indonesia, Madagascar, Peru and Tanzania, along with three Technical Papers on the topics of primary education (covering five francophone African countries) and malnutrition (covering about 20 sub-Saharan African countries). This research has yielded a number of results which will be summarised here, with emphasis on three points: the impact of education and health spending, the incidence of social spending for the poor and the behaviour of poor households. The second section provides policy recommendations based on these results.

The main findings can be summarised in the following four points:

- Expanded access to public services, the emergence of a private sector that charges for services and the establishment of self-selecting services all benefit the poor.
- Instead of providing services for the poor, we need to meet their demand for services.
- Instead of thinking in terms of resources, we should judge policies by their outcomes.
- In order to escape from the poverty trap, initiatives must be integrated to form a coherent, long-term strategy that includes the participation of all stakeholders.

Facts and Questions

The Impact of Education and Health Spending

Studies on the benefits of education and health spending for the poor usually assume that a given expenditure will always produce the same gain in human capital: any expenditure that provides five years of primary education is supposed to result in the acquisition of the same basic reading, writing and arithmetic skills. It is also assumed that this stock of knowledge allows individuals to obtain employment at a given wage level, which might, for example, be twice that of the jobs available to an illiterate person. These two assumptions lead to a simple, stable relationship between an expenditure in favour of a child from a poor household and the future earning potential which will lift that child above the poverty line.

The study of primary education in five francophone African countries (Burkina Faso, Cameroon, Côte d'Ivoire, Madagascar and Senegal) challenges this standard assumption. A series of surveys on children's educational attainment in mathematics and French at the end of their primary education (CMI, i.e. the fourth year of primary schooling, normally completed when the child is ten years old) revealed that the percentage of pupils responding correctly to at least 40 per cent of the questions varies significantly from country to country and bears no relation to the amount spent per pupil. In countries facing a shortage of skilled labour, wages increase with the level of actual educational attainment, but not with the number of school years completed or the overall cost of those years. These results thus call into question the accepted relationship between education spending and earning potential, and hence that between education spending and poverty reduction.

The percentage of pupils answering at least 40 per cent of the questions correctly ranges from 36 to 77 per cent depending on the country, and these differences cannot be attributed to different levels of spending on primary education. Spending per pupil as a percentage of GDP per capita is three times higher in Senegal than in Madagascar, yet the percentage of correct answers for Senegal is 36 per cent, compared with 76 per cent in Madagascar. It might be objected that a pupil in Madagascar usually takes twice as long to reach CMI, owing to the high repetition rate. If, however, we take a more pertinent indicator — the national level of basic educational attainment (equal to the national rate of enrolment in CMI multiplied by the percentage of correct responses) — we see that the level in Cameroon is three times higher than that in Senegal, although these countries spend the same amount on primary education relative to GDP.

These differences between countries prove that there is no strong relationship between spending per pupil and educational attainment, and thus between such spending and future earning potential. Significant differences can also be observed within each country. For example, an analysis of pupils' performance based on the characteristics of the school attended reveals a number of differences: pupils' performance tends to improve when teachers have participated in training courses, have more years of experience, undergo more frequent teacher evaluations and when the school has more textbooks; they tend to diminish when the school day is divided in half (one group of pupils in the morning, another in the afternoon). Given the value of the coefficients obtained, performances will be very different if the effects of these factors are either all positive or all negative. Furthermore, the performance of children attending the same school varies with the family's standard of living: it improves with the number of regular meals, ownership of a radio or television set, and the availability of books. This means that the poorer the family, the more disadvantaged the child relative to other children.

Scholastic performance and subsequent earning potential thus vary substantially depending on the school and parents' income, whereas it is usually assumed that all children have acquired the same quantity of human capital at the end of their schooling. Children from poor households acquire less human capital both because their parents are poor and because they are probably more likely to attend schools that lack textbooks or are overcrowded (to the extent that the school is forced to split the school day in half, thus reducing the number of hours spent in class). This hypothesis is confirmed by the results of the case studies of Peru and Madagascar (Table I).

Table I. The Quality of Education and Health Services

Country	Quality Indicator	Pupils' Socio-economic Background
Peru	Availability of equipment in schools	
	– primary	– ratio 5th quintile/1st quintile ranges from 2/1 to 4/1
	– secondary	– ratio 5th quintile/1st quintile ranges from 1.2/1 to 2/1
Madagascar	Percentage of primary schools with satisfactory infrastructure	– 51% in 5th quintile – 14% in 1st quintile
	Percentage of health centres with satisfactory quality	– 68% in 5th quintile – 16% in 1st quintile
	Percentage of health centres where medicines are available year-round	– ratio 4th and 5th quintiles/1st and 2nd quintiles equal to 2/1

These conclusions cast doubt on resource-based methods of analysis, suggesting that it is preferable to use data on outcomes and to think in microeconomic rather than in overall terms. Instead of referring to the average amount spent per pupil or the number of pupils enrolled in the last year of primary school, we need to know the percentage of pupils who have actually acquired a certain level of basic knowledge, as well as the socio-economic status of these pupils' families (based, for example, on consumption per person in a family). It is only by looking at these statistics, to be collected through surveys of representative population samples, that the impact of primary education on poverty reduction can be measured.

We do not have comparable survey information on the outcomes of health care dispensed in different health centres or hospitals. We do know, however, that the average expenditure for a medical visit or for a day of hospitalisation is a biased indicator: this expenditure is calculated by methods such as dividing the national budget for such centres by the number of visits, whereas quality of care can vary from one health centre to another, to the detriment of the poor (Table I).

Thus for health as for education, we overestimate the real benefit (educational attainment or improved health) to a poor pupil or patient. Yet the future earning potential of the poor depends precisely on this benefit, rather than on the national average expenditure per pupil or per medical visit.

As early as 1990, the World Bank's *World Development Report* on poverty for that year, used the results from a number of studies from the 1970s and 1980s to show that educational attainment increases both wages and labour productivity in agriculture and the informal sector. The four studies conducted for the present project confirm the World Bank's results, although with some slight differences. The incidence of education spending on wages in the formal sector is always significant. In Indonesia, for example, rates of return on primary and secondary education expenditures exceed 10 per cent; in Tanzania, they amount to 8 or 9 per cent. In Madagascar, primary education shows a 10 per cent return for salaried workers in the formal and informal sectors. In agriculture, however, the gains related to human capital are less clear. In Indonesia, additional years of education (nine instead of five) increase agricultural output by 10 per cent, but no discernible effect on agricultural productivity was observed in Madagascar. In this case, however, education does allow some reallocation of the labour force outside of farming, thereby increasing a given family's total income by the addition of non-agricultural revenue to the (unchanged) amount earned through farming.

The 1990 *World Development Report* addresses the impact of improved nutrition on agricultural labour productivity, but provides no information on the effects of health care. In contrast, several surveys undertaken in Madagascar and

Indonesia show that access to health care has a positive effect on income. The first study relates to the capital of Madagascar, and uses a composite indicator of disability as diagnosed by a physician. Persons classified as disabled tend to participate less in the job market and to earn less when they are employed, since they are more likely to work in the informal sector. Furthermore, a national survey in Madagascar indicated that more than half of those reported as ill during the two preceding weeks were obliged to take time off from work. In Indonesia, a survey of two provinces shows that when the rate of visits to health centres decreases, the average wage of men falls as well, along with the labour force participation rate of women. These results all point to the following conclusion: a person who cannot obtain medical care for a treatable condition suffers a substantial loss in income, especially when the illness requires a period of inactivity. Medical treatment also has a long-term impact on income: according to the Demographic and Health Surveys (DHS) undertaken in 20 African countries, children who were vaccinated or whose mothers received prenatal care were generally healthier (taller), and children's health influences their performance in school — and hence their future earning potential.

These estimates of the gains achieved through learning and medical treatment are biased in the sense that they do not take into account certain reciprocal positive externalities. Education has an impact on health and vice versa, making the overall effect on gains greater than the sum of the direct effects of these two factors. The Demographic and Health Surveys show that in most of the 20 African countries studied, a mother's educational level (or access to information) had a positive impact on her child's health. The studies on Madagascar, Tanzania and Peru confirm these observations on the impact of parents' level of education (Table 2).

Table 2. The Impact of Parental Educational Levels

Country	Variable	Impact on Child
20 African countries	Mother can read	Increased size (especially for girls)
	Mother has access to the media	Increased size
Tanzania	Mother attended school	Begins schooling at an earlier age
	Parents can read	Greater likelihood of attending school
Peru	Mother: number of years of schooling	Size increases as a function of this number
Madagascar	Father: number of years of schooling	Likelihood of medical visit depends on this number
	Prenatal care (depends on mother's number of years of schooling)	Size depends on prenatal care

In the same way, health status generates externalities for education, as school performance depends in part on a child's health (Martorell and Habicht, 1986). This impact is confirmed by the surveys of school performance in the five francophone African countries. In an initial phase, performance improves when a child is better nourished (here the "number of meals" variable has a significant effect on performance). Thus the positive (or negative) interactions between education and health have a tendency to work in combination. Children of educated parents tend to be in better health, and this advantage, combined with that of higher family income, produces better school performance and, consequently, higher earning potential. Unfortunately, the same interactions can work in the other direction. Children of illiterate parents tend to be less healthy, to enrol in school later and leave at an earlier age, and to perform less well in school, all of which lowers their future earning potential. When these interactions are negative, their effect is to transmit poverty from one generation to the next. When they are positive, however, the benefits of education (or health) exceed those obtained through direct effects alone. This being the case, we can no longer consider the effects of education or health in isolation; rather, the two must be taken together to estimate the overall impact on poverty.

The Incidence of Social Spending for the Poor

Estimates for Indonesia, Madagascar and Peru confirm the hierarchical relationship found in many earlier studies: the higher the level of education considered, the less spending is redistributive. Similarly, health spending becomes less redistributive as one rises from village health centres to city hospitals. Primary education is always "progressive" (meaning that the share of spending allocated to the poor is greater than or equal to their share in the population). The share of the first two (or the first three) quintiles is greater than or equal to 40 per cent (or 60 per cent). This result is possible even when low-income households show a lower rate of enrolment in public education, for two reasons: these households have more children on average, and private schools enrol more children from higher-income households. Conversely, low-income households' share of upper secondary or higher education may be comparable to or lower than their share of consumption. In the latter case, the impact of spending is "regressive" (meaning that the share of the poor is lower than their share in consumption or income). The same hierarchical effect is observed for health care. In Indonesia, for example, the average benefit obtained from basic health services is the same for all, irrespective of income, whereas the average benefit from health care dispensed in public hospitals is four times higher for the top

quintile than for the bottom quintile. The real gap between rich and poor is even greater, since higher-income patients make greater use of private hospitals than do the poor.

If we consider total public spending on education and health in Indonesia and Madagascar, we see that the share of the first two (or three) quintiles is lower than their share of the population, but clearly exceeds their share of consumption, meaning that the incidence of this spending is “relatively progressive”. Optimists will conclude that these public expenditures reduce inequality, but pessimists will rightly point out that poor households receive less per person than other households. Moreover, it should be recalled that the health and education services to which the poor have access are of below-average quality, a factor not taken into account by estimates of national average cost per service. The real difference in benefit between the poor and non-poor is therefore greater than that calculated from overall public spending on health and education.

The studies on Indonesia and Peru estimate the marginal incidence of these expenditures (until the 1990s, only the average incidence was calculated). This is an important item of information for policymakers, because each country has numerous education and health services, even if part of the population does not have access to them. Policymakers therefore make their decisions at the margin: how much will the budget of each service be increased and who will benefit from this increase? Information on the allocation of services in a given year (i.e. average incidence) is not a valid basis on which to make such decisions, as an analysis of marginal incidence may show that the people benefiting from the budget increase are not the same as those who benefited from the service in the past. In Peru, for example, four surveys undertaken between 1985 and 1997 allow us to compare the incidence of each health and education expenditure. For all services, the share of the poorest 40 per cent (or 60 per cent) rose between 1985 and 1997. In Indonesia, the same was true for primary and lower secondary education. There were substantial increases in enrolment between 1978 and 1997, with households in the poorest 40 per cent being the principal beneficiaries. The distribution of services dispensed by hospitals did not change over the same period, but poor households derived more benefit from the services supplied in basic health centres.

These results confirm the hypothesis of Lanjouw and Ravallion (1999) that there is a positive correlation between the rate of coverage of a public service and its progressive character. When a service is offered in limited quantity (with only one-fourth or one-half of a population receiving it), higher- and middle-income families generally have first access, rather than poor families. When the rate of

coverage is raised from 50 per cent to 80 or 100 per cent, then it is poor families that benefit most from the budget increase. Thus the mere decision to increase the budget for a particular service modifies the distribution of this budget among households, and this effect always works to the benefit of poor households when the rate of coverage is below 90/100 per cent. For example, increasing the rate of primary school enrolment from 60 to 90 per cent benefits the poor, whereas medium-income families will be the first to benefit if the secondary school enrolment rate is increased from 20 to 40 per cent.

All of the above conclusions refer to relative poverty (see Box p. 34). If a government wants to structure its social spending according to a measure of *absolute* poverty, it can use either a national or international definition of the latter. We have begun to examine the implications of these indicators of absolute poverty, on the basis of a study of malnutrition in 19 sub-Saharan African countries (Morrisson *et al.*, 2000). This study is based on representative samples of children under five years of age in these countries. From the anthropometric data collected, we can calculate the percentage of such children suffering from severe malnutrition, i.e. those whose height or weight is over two standard deviations less than the developed country median. Between 20 and 60 per cent of African children fall into this range, as opposed to 2.5 per cent in developed countries. We have made the following assumption: these statistics are probably linked to the number of individuals who are poor in absolute terms.

We made this assumption for the following reasons. For children to grow normally, they must have a balanced diet and receive medical treatment when ill. From the age of 8-12 months, they need fats and especially protein, as these are vital to the development of the immune system. A child lacking adequate protein is likely to develop more and longer-lasting infections than well-nourished children. While ill, children do not grow and gain weight at a normal rate. Subsequently, they cannot make up this lost growth, even if they are no longer ill. In addition, childhood illnesses are frequent in all countries, even in the developed world: when the disease is not treated, the infection persists, which also results in a loss of growth. The poorer the family, the more it is likely to be exposed to the factors that cause illness (dirt floors, lack of drinking water, no refrigerator, etc.) These factors suggest that families living below the absolute poverty line do not have the resources to pay for a balanced diet (which is more expensive), decent housing and sanitary conditions, or medical care. In contrast, families living above this minimum can afford these basic expenditures even if they are fairly poor, knowing that their children's future, and perhaps even their lives, are at stake.

If we accept the argument that there is a correlation between child malnutrition and absolute poverty — because children’s health seems as good an indicator of family living standards as the number of calories consumed by individuals (with reference to a threshold defined by calorie requirements) — we can compare the number of children affected by malnutrition with the number of individuals classified as poor. This calculation can be made using a national poverty line, a fixed level of daily consumption such as \$1 or \$2, or the caloric intake standard set by the FAO (see Box p. 34). The results of the econometric tests are clear: the number of malnourished children is correlated to the number of poor individuals if we use the national poverty line (values of R^2 reach 0.70). The results are less satisfactory, however, when we use the measure of \$1 or \$2 per day to estimate the connection with poverty. Finally, the relationship between poverty and malnutrition according to the FAO method is not borne out. The last result is not surprising given the obvious problems with the FAO method. According to the FAO, rates of malnutrition for the total population in Cameroon and Zimbabwe are higher than those for Madagascar and Niger, even though the anthropometric survey data show the number of children suffering from malnutrition to be twice as high in Madagascar and Niger (a result that agrees with other estimates of poverty in these countries). Moreover, the FAO method of estimation has come under heavy criticism (see Svedberg, 1998).

Comparing the results obtained using the \$1 or \$2 standard (1985 dollars, after adjustment for purchasing power parity) with those obtained using a national poverty line reveals that the World Bank method leads to an underestimation of the number of poor in middle-income countries. For example, our data show the number of malnourished children to be twice as high in Madagascar as in Côte d’Ivoire, whereas the World Bank (1998) gives the percentages of the population living on less than \$1 per day as 72 and 17 respectively for the two countries. If severe child malnutrition is a significant indicator of absolute poverty, then the figure of 17 per cent given for Côte d’Ivoire underestimates the rate of absolute poverty in that country relative to Madagascar, although there remains a substantial gap between the two countries (a ratio of at least 1 to 2).

Supply of and Demand for Health and Education Services

For historical reasons, studies of poverty have long taken a supply-based approach to the question of access to services for the poor. In both western European countries and in the United States, primary education for the poor

began to develop as early as the 18th century (17th in Scotland and Sweden). This happened for moral and religious reasons, and before any government intervention (with the exception of France, where the state wished to supplant the Catholic church, which had begun this process in the 18th century). States subsequently took control of primary education, making it mandatory and financing all or part of it. Previously, churches and village communities were in charge of education. Some countries such as Prussia had private schools that charged a fee, but these were accessible only to the middle and upper classes. By the end of the 19th century, the state (either alone or in partnership) was providing free, mandatory primary education in all of these countries, as well as Japan. Developing countries took up this model in the 1950s and 1960s, but often lacked the resources to make education available to all children. In this case, it was mostly the children of poor families in rural areas who were excluded. Faced with the state's inability to provide primary education to all children, policymakers and donors continued to reason in terms of supply, setting an objective of 100 per cent enrolment for developing country governments. This kind of "planned economy" thinking consisted of calculating the human and financial resources necessary to increase supply, with little or no attention paid to spending available resources more efficiently or to adjusting the supply of education according to what families wanted. More specifically, given the consensus as to the absolute necessity of sending all children to school until 14 years of age, the concept of demand for education seemed to make no sense.

It should be noted, however, that in the 19th century, family demand and specific needs for vocational qualifications were sometimes taken into account by the churches or states in control of primary education systems. In Prussia, for example, vocational training was given to pupils in elementary schools attended by working-class populations, so that children could both earn a living and remain in their class of origin (fee-based private schools did not provide this kind of training).

In developing countries, demand by families began to be taken into account only in the 1980s, in the context of adjustment policies. First, the drop in primary school enrolments in the rural areas of several sub-Saharan African countries and Morocco demonstrated that supplying a service was not enough to ensure that it was demanded. Owing to falling employment in the modern sector, particularly in the Civil Service, some parents refused to send their children to school, which no longer offered them any chance to obtain employment in this sector. Second, as a result of severe budget deficits, some adjustment programmes suggested charging a fee (or increasing an already existing fee) for access to education or medical care. Such measures cannot, however, be taken without regard to the reaction of households. If the price elasticity of demand is negative, and its

magnitude increases with the poverty of the household, such a measure will reduce overall demand and lead to a less equitable distribution of social services because the poor ultimately renounce access to them.

Fortunately, the studies of Indonesia, Madagascar and Tanzania perform such analyses of household reactions. In Madagascar, poor households' demand for primary education is very sensitive to cost (registration fees, books, transport), while that of the wealthiest 20 per cent of the population is inelastic. The elasticity of demand with respect to educational quality is also high, particularly for poor households. For secondary education, the only cost data available are for transport, and these also show high elasticity. In health services, the study looks at both direct (cost of medical visit, transport) and indirect (loss of income due to time spent in transport) costs. Whether one considers basic health centres or hospitals, the price elasticity of demand for a visit is always high, and even higher for the poor than for others. For example, if the price of a medical visit in a health centre increases from \$0.5 to \$1, the probability of consulting a physician diminishes by half for the poorest, and dips only slightly for the wealthiest. Reactions are the same in the private sector. In Tanzania, the same behaviour was observed in connection with health care: the price elasticity of demand is high for both hospitals and health centres, whether public or private. Households shift to the private sector if the public sector increases its fees. Lastly, any improvement in the quality of care causes an increase in demand. In Indonesia, a study of health services in two provinces reveals that the elasticity of demand with respect to the cost of a medical visit is higher for hospitals than for health centres, and that it is higher for poor households (for a given increase in prices, their number of visits would decrease twice as much as that of other households).

These arguments thus point to the same conclusion: household demand is sensitive to price (negatively) and quality (positively) for both education and health care, whether public or private, and it is always poor households that show the strongest demand response. Higher prices (or lower quality) decrease the demand of poor households much more than that of other households. Simply offering a service to the poor does not suffice to ensure a corresponding demand, and charging fees for services is incompatible with the reduction of inequality unless the poor are exempt from these fees. Even without fees, these services still entail some costs (books, medicine, transport), and the most efficient way to increase the demand of poor households is to reduce these costs (no charge for schoolbooks, medicine, access to nearby health centres, etc.).

These results show that the supply approach used in developing countries since the 1950s is not well suited to the poor. Provision of education and health services should not be based on an abstract, general notion of equal rights to

education or health care for all, but should be structured instead according to the specific needs and behaviour of poor households. For example, rural and urban areas may have different training needs. Moreover, even when instruction or medical care is provided free, households bear part of the costs (including loss of the income from children's labour). While these costs are negligible for higher-income households, they are significant for the poor. It is therefore necessary to reason in terms of both supply and demand (with different demand functions for different groups) in order to adapt education and health services to the needs of the poor, even when supply is not affected by market forces because these services are provided free of charge.

Questions

Instead of pronouncing a series of assertions, we would like to open the debate by raising a number of questions.

Are indicators of resources sufficient?

National strategies for social development and the statistical yearbooks and reports published by international organisations have attributed more and more importance to indicators of *resources*, such as education or health spending as a percentage of GDP, per pupil or per capita; the total number of children enrolled in school; rates of primary and secondary school enrolment; number of teachers, nurses and doctors; number of hospital beds, etc. Such national statistics are in keeping with a supply-based approach, and they are included in the objectives of every social development programme. It is clear that they are indispensable and sometimes very helpful indicators. We have noted already that an increase in the primary school enrolment rate from 60 to 90 per cent provides the majority of children from poor families with access to education, whereas previously they were excluded.

These statistics are nevertheless insufficient. It is now generally agreed that they must be supplemented by indicators of *outcomes*. How can we be satisfied with an indicator such as primary education spending relative to GDP given that, for the same level of spending, the percentage of children having a minimum level of educational attainment in Cameroon is three times that in Senegal? Furthermore, it is important to have disaggregated indicators, as the quality of education and health services varies widely and the poor are often left with those of lower quality. The most significant indicators for poverty reduction are those reflecting *outcomes* by group, such as the percentage of 11-year-olds with a minimum level

of basic educational attainment, disaggregated according to whether their parents belong to the lowest (1, 2, 3) middle (4) or highest (5) quintiles. In addition, results can vary even when the quality of service is the same. Children in the same class may show different levels of language acquisition if the language being taught (not their native language) is spoken only in the households in the top quintile. In this instance, an indicator of resources can be misleading, since the rate of enrolment is the same for poor and non-poor children. Some indicators of outcomes are available, of course, such as anthropometric data for children under five, infant/child mortality rates (up to five years of age) and the percentage of literate adults. Other such indicators (such as the educational attainment of children at the end of primary schooling, or at the end of the first cycle of secondary school) are rarely available, however, and existing indicators are not disaggregated by income level or father's employment. If education and health services are to be better targeted in order to fight poverty more effectively, the general knowledge, skills and health of children and adults in the poorest 40 or 60 per cent of the population need to be measured.

Can resource indicators and outcomes indicators be combined?

Organisations such as the UNDP have developed composite indicators of human development and poverty that combine resource indicators with outcomes indicators. The UNDP's human development index includes per capita income and life expectancy, but also the literacy rate (outcome) and the primary and secondary school enrolment rates (resources). The poverty indicator combines access to medical care (resources) and the under-40 mortality rate (outcome).

Given the observed discrepancy between these two types of indicators (for primary education in five francophone African countries, for the FAO calorie consumption standard and childhood malnutrition in 19 African countries), it would be preferable to combine *either* resource indicators *or* outcomes indicators. For example, the percentage of people who die before 40 years of age could be combined with other outcomes indicators such as the mortality rate or size of children under five years of age. This would give a consistent indicator of a population's overall health status.

Can education and health indicators be combined?

UNDP's poverty indicator includes indicators of health and the percentage of literate adults. This combination may be justified in several ways. There is general agreement that the majority of the poor face a double handicap (lack of

education and poor health), which is both a sign and a cause of poverty. We have already demonstrated the importance of external factors: each handicap exacerbates the other, so that the overall effect of both together is greater than the sum of the direct effects of each. These externalities contribute to perpetuating a poverty trap.

A composite indicator of this kind may be misleading, however, if it is used to rank countries. For example, the same value of the indicator could be obtained for a south Asian country with a very serious health handicap and an African country with a high adult illiteracy rate. It is clear that these two countries should adopt very different poverty reduction strategies, because the main form of poverty is not the same. This type of indicator should be used with caution in formulating poverty reduction measures.

Should measures of relative poverty be used?

There are many studies on the impact of education and health spending in which the frame of reference is an income classification of households, and hence relative poverty (see Box p. 34). As GDP per capita increases, the definition of poverty shifts: individuals could be initially be considered poor if they fall in the first, second and third quintiles; then only those in the first and second; and finally only those in the first. Madagascar, with GDP per capita of \$250 in 1996, and with nearly 60 per cent of children suffering from severe malnutrition, is an example of the first case, while Tunisia, with GDP per capita of \$2 000 and 9 per cent of children suffering from malnutrition, is an example of the third. However, there is no standard rule for determining the level of GDP per capita at which only a given percentage of the population is in relative poverty. We can justify this relationship only by pointing out that a fixed percentage makes no sense: we cannot classify all people in the first quintile as poor, regardless of whether we are considering Madagascar or a western European country whose GDP per capita is 100 times higher (or 30 times higher in terms of PPP). If we use indicators such as the under-40 mortality rate or the number of children suffering from severe malnutrition, we see that, with few exceptions, the values are close to those of developed countries once GDP per capita reaches \$5 000. Counting the first three quintiles as poor in countries with low GDP per capita seems reasonable, since in these countries the proportion of illiterate adults is 50 per cent (the average for the least developed countries, according to the UNDP's *Human Development Report* for 1998) and the percentage of children suffering from severe malnutrition is between 30 and 60 per cent.

Can a standard of absolute poverty be substituted for this relative poverty approach?

According to our study of malnutrition in some 20 African countries, a fixed threshold of \$1 or \$2 per day should be used in combination with a national absolute poverty line (using either the national estimate or the value calculated from the relationship between the national poverty line and GDP per capita for a regional group of countries). The use of a national poverty line results in higher percentages of poor in middle-income countries, but these percentages are in line with other indicators such as the rate of child malnutrition. Comparing the percentages of people living in poverty according to these two standards (national and fixed) with health indicators (malnutrition in children, infant mortality rate, under-40 mortality rate, etc.) would allow us to assess the relevance of each standard, and thus to improve the quality of our information on poverty by building a consistent set of indicators.

Recommendations

We propose the following three goals for developing poverty reduction strategies: equity, efficiency and consistency.

Measures to Promote Equity

In principle, any measure to help the poor is equitable, but not all equitable measures necessarily benefit the poor. In middle-income countries, households ranked in the fourth decile are above the poverty line, but they may not be able to afford secondary education for their children. Giving these children free books and scholarships is an equitable measure. Conversely, let us consider an equitable anti-poverty measure in a low-income country, such as the provision of free care for the poor in health centres: if there are many more health centres in cities than in rural areas, the free care they provide will be of little benefit to the poorest living in rural villages. This example raises a question: should poverty reduction strategies seek to benefit the poorest, or those closest to the poverty line? If the percentage of people living below the poverty line is used as the criterion, free services will decrease this number significantly, but if the criterion used is the intensity of poverty (determined as the sum of the differences between the income of each poor person and the poverty line), there will be little effect on poverty.

If the aim is to reduce absolute poverty, it is preferable not to use only a fixed poverty line of \$1 or \$2 per day, but to combine this with a national absolute poverty line. This national poverty line should be compared to poverty standards in neighbouring countries (taking into account differences in average income) in order to provide a frame of reference for the national estimate and verify its accuracy. Subsequently, periodic surveys (i.e. every five years) of health and infant/child mortality rates should be conducted using a representative sample of children or adults. This will allow verification of the relationship between poverty (using a poverty line based on food consumption) and health. This information could serve as an effective guide for health policy broadly speaking (including food subsidies for certain groups, such as pregnant women or young children), but it is not sufficient to guide education policy: some malnourished children may attend school, and some healthy children may not. It is always possible, however, to add questions to such surveys in order to determine school attendance and adult literacy rates, and subsequently to take the measures needed to address these issues. Having this information makes it possible to concentrate poverty reduction efforts on a specific group. The experience of prenatal and paediatric health care centres where this information is gathered has shown that significant and rapid reductions in malnutrition (in adults and children) and in infant/child mortality are possible. Of course, health does not depend simply on the consumption of a certain number of calories. Studies have shown that infrastructure (e.g. access to drinking water) also has an impact on health, making it advisable to add statistics reflecting access to such infrastructure to the data on food consumption.

Another strategy consists in directing poverty reduction efforts at all households considered poor in relative terms, such as the poorest 60 per cent in low-income countries (less than \$500 per capita) or the poorest 20 per cent in middle-income countries (\$2 000-\$4 000 per capita). These figures are given solely to indicate orders of magnitude and are open to criticism. Nonetheless, this strategy follows a rather straightforward logic: spending on education and health should be increased in favour of the poorest 60 (or 40 or 20) per cent, which means adopting more redistributive policies aimed at making these expenditures more progressive. If these are distributed in the same pattern as consumption (i.e. “neutral”), the share of the lower deciles must be increased in order to make them “relatively progressive” (the share of the poor increases, but remains less than their percentage in the population) or, better yet, “progressive” (where the share of the poorest 20 or 40 per cent exceeds 20 or 40 per cent of total expenditures). Any measure that makes spending more progressive reduces inequalities of living standard between households (if the estimated value of the cost of these services is included in household income). Such a redistributive

policy can be applied once a ranking of household budgets has been established through surveys. This strategy may benefit some people living above the absolute poverty line or leave out others who are below it. However, this risk of error is marginal if poverty reduction measures are ranked according to the beneficiaries' ranking in the national income distribution (priority is given to a measure benefiting the first decile over one benefiting the second, and to a measure favouring the second over one benefiting the third, etc.).

Spending on health and education becomes gradually less progressive as one rises through the system, from primary education to university, and from the village health centre to the well-equipped hospital located in the capital city. It is therefore evident that the first measure to be taken to make spending more progressive is the restructuring of budgets to the benefit of primary education and basic health centres. Moreover, a consensus was reached at the 1990 Jomtien conference that absolute priority should be given to basic education. This link between progressivity and type of expenditure has been understood for about 20 years. It is therefore surprising that many countries have not undertaken the necessary restructuring, which is all the more vital given the fact that in some countries spending is highly imbalanced, for example in favour of post-secondary education and to the detriment of primary education. The budget share of the former is much higher than in western European countries a century ago, and the share of the latter much lower. Budget restructuring is impeded, however, by political factors. Families that enjoy free post-secondary education (middle- and upper-income brackets) have much more influence on government policy than rural families whose children do not attend school, or do so under unfavourable conditions. These higher-income families put pressure on policymakers to increase the number of university students (without selective admission) and to improve the quality of instruction.

As recent studies from the 1990s on the marginal effect of spending show a positive relationship between the coverage of a service and progressivity, particular attention should be given to services with a rate of coverage between 50 and 70 per cent. In these cases, any budget increase that extends coverage further will certainly benefit the poor. This recommendation is especially pertinent for those countries where the rate of primary school enrolment is between 50 and 70 per cent. In order for such a policy to succeed, two conditions must be met. First, the state must have the funds to make such changes and second, it must take the behaviour of families into account.

Some very low-income countries run the risk of failure if they attempt to make primary education mandatory immediately, as the experience of Madagascar shows. When the government does not have the resources to finance such

measures, it obviously does not suffice to declare that education is mandatory. Without sufficient funding, the quality of education falls so much that the percentage of children who have actually learned the basics at the age of 11 rises very little, despite a rapid increase in school enrolment. To avoid this problem, the increase in school enrolments must follow the growth of the budget, or even be slower, since providing a quality school environment is more costly in rural areas than in urban areas. This strategy does not call into question the ultimate goal of 100 per cent enrolment, but rather the timetable for opening new schools.

The demand for primary education must also be taken into account, keeping in mind that supply does not necessarily create demand. In the poorest countries, parents sometimes refuse to send their children to school, especially girls, or remove them from school when they reach 8 or 9 years of age. This is often the case in rural areas where children participate in the work of the household. Recent food subsidy programmes have made school attendance a condition for participation. This has proved to be an effective solution, and aid in this form is also sure to benefit children, which is not always the case with direct financial assistance.

The least developed countries face such obstacles as a lack of administrative resources, difficulties in targeting their initiatives and the possibility of fraud and embezzlement. For these reasons, services that are “self-selecting” constitute a particularly effective way of increasing the redistributive effect of health and education spending, as our case studies have shown. Such services are open to all, but demand for them will come only from the poor as other income groups do not need them. For example, adult literacy campaigns benefit only those in the lowest income brackets, because other groups already know how to read. The same is true for vaccination campaigns, since all but the poor know that they need vaccinations and can afford to pay for them.

Although it may seem paradoxical, the idea of using the private sector to make public spending more progressive merits some attention. In fact, whether a private secondary school or health centre receives no subsidy or a subsidy well below what such a service would cost the state, the effect will be the same: through a process of self-selection, only households in the upper deciles will turn to the private sector. Yet we know that these households previously used public services (they are always the first to utilise a new service). As a result, the development of private medicine and education leads to a decrease in the share of public services benefiting higher-income households (e.g. the richest 20 per cent), and this decrease makes public spending more progressive. It is easier to call on the private sector than to introduce user fees for public services that

would be applicable only to higher-income households. Moreover, the private sector diversifies supply: people for whom time has a high opportunity cost prefer to pay five times more for a medical visit than wait several hours in a public clinic. Finally, in urban areas the private sector would create competition, thus making it possible for the state to increase efficiency in the public sector.

Traditional studies on the effect of health and education spending relied essentially on one hypothesis for evaluating the progressive nature of spending: that service provision was homogeneous. However, the four country studies show this to be illusory. The quality of school and medical personnel is lower in rural areas than in urban, and rural schools and health centres are less well equipped. Even within cities, the quality of personnel and equipment are lower in poor neighbourhoods than elsewhere. This hidden form of inequality is all the more serious in that it discourages poor families from seeking services. Studies of demand show that the poor are sensitive to the quality of a service: the poorer the quality of a health centre, the less it is used. Improving the quality of these services thus increases the rate of coverage and makes social spending more progressive.

Improving quality of service requires increased funding for schools and health centres in villages and in poor urban neighbourhoods. It is necessary to raise budget appropriations to pay for new equipment and materials, as well as to attract and keep high-quality teachers, nurses and doctors in such schools and health centres. It is obvious that rural areas cannot attract qualified personnel if salaries are lower than in urban areas. Recruitment is a problem even when the salaries offered are the same, because most teachers and doctors prefer to work in the city than in poor and remote villages. This makes it impossible to offer an adequate level of service to the poor without incurring unit costs that are equal to or even higher than the average. Taking higher unit costs in rural areas into account is a new idea which may seem surprising to some, but which is necessary if the quality of service in these villages is to be improved.

It has been suggested, with good reason, that decentralisation of education and health services, (placing them under local control), will result in more efficient management (see below). While such reforms are desirable, as they are in keeping with the democratic process, governments must be careful not to allow inequalities to develop between villages or between regions as a result of such local financing. In some Latin American countries, for example, spending per pupil in primary education can vary in a ratio of 1 to 5 from one town to another, causing very substantial differences in educational quality, to the detriment of the poor.

If the funds needed to improve quality are not available, then services that meet a satisfactory standard of quality could be fee-based. This would immediately restore equality among households because the fee would make up for the difference in quality and give the government more resources to spend on disadvantaged schools and health centres. For example, medical visits in rural health centres might be free while those in the city would cost \$1. This would not cause perverse effects as it is unlikely that urban families will go to rural areas for the free service. However, this type of measure is not very well targeted, because the urban poor would still have to pay for care.

In fact, free service provision was called into question by the financial crises of the 1980s. In order to cover excessive budget deficits, some stabilisation programmes called for charging users for part of the cost of certain services. Analyses of demand in relation to household income reveal the risks of this policy. Household demand is sensitive to the price of a service, and the poorer the household, the more elastic its demand. Thus, any single-rate fee excludes a portion of the poor, while higher-income households, whose demand is inelastic, continue to benefit from services that are largely subsidised by the government. The rate of coverage diminishes and spending becomes less progressive as the poor seek medical care less often and poor children leave school, which in turn increases their disadvantage. Charging a fee for services is thus not compatible with poverty reduction, unless the fee is charged only to higher-income households (the wealthiest 20 per cent, or in middle-income countries — i.e. those with GDP per capita above \$2 000 — the wealthiest 40 per cent). It should be emphasised that such a measure presents certain difficulties of implementation. In poor countries such as those in sub-Saharan Africa, income tax either does not exist or is not a reliable means of pinpointing a specific income group (non-wage income makes up a very large share of household income and very little of it is accounted for). Using income tax brackets as an indicator of income is a viable option only in middle-income countries, and even here there is some uncertainty where high non-wage incomes are concerned.

Measures to Increase Effectiveness

The failure of the aggressive interventionist policies implemented in Madagascar and Tanzania in the 1970s and 1980s reveals a first cause of ineffectiveness: an interventionist policy that sets ambitious goals without giving sufficient consideration to constraints such as available resources and the time required to train qualified personnel.

The governments of these two countries promised to ensure that all the poor would soon have access to primary education and health care, which seemed the most fair and appropriate strategy for reducing poverty. Within about ten years, they had reached nearly 100 per cent primary school enrolment and had established basic health centres in every town or rural district. During the same period, however, economic policy errors led to a drop in exports and in GDP per capita, and to faster growth of the budget deficit and national debt. As a result, public revenues decreased at the time when these programmes required very large funding increases. In Madagascar, for example, education spending per person was cut in half and health spending by one-third. After a few years, it was obvious that the programme had failed. Enrolment in Madagascar fell to its previous level, while the infant mortality rate and the frequency of childhood illness went up.

Such a policy approach does not reduce poverty. Rather, it wastes valuable resources because it entails spending which ultimately brings little or no benefit to poor families. Building schools and health centres costs money, but if these schools have no books, if teachers are poorly qualified or often absent, and if health centres have no medicine, they do not benefit the poor. Analyses of demand shows that the poor are sensitive to a fall-off in quality, and that some respond by ceasing to use these services. Higher-income families also abandon the public system, but they enrol their children in private schools, which ultimately widens the gap between these children and those of the poor, who attend inferior schools or no schools at all.

Failures like these prove that no policy can be effective when the objectives do not correspond to available resources, and if they do not allow for the time required for training. It is not possible to hire a large number of teachers, nurses and doctors in just a few years, since these jobs require more or less extensive training. Whenever governments attempt to fill these positions by massive hiring campaigns, recruitment standards fall and personnel are less well qualified. Maintaining educational quality is particularly important given that poor children are already at a disadvantage on entering the school system. The study of five francophone African countries reveals that school performance decreases when children are malnourished, when families have no books and when parents are illiterate. If these handicaps are compounded by instruction of poor quality, most children from these families will be headed for failure and will have acquired no basic education at all on leaving school. They will thus remain in the same situation of poverty as their parents. Instead of increasing the rate of enrolment from 60 to 100 per cent within just a few years, it is preferable to raise the enrolment rate to 80 per cent nationally — i.e. to enrol only half of the children not in school —

and to provide them with a decent education so that most of them acquire the earning potential that their parents lack. Poverty is not reduced by increasing enrolment rates (resource) but by the acquisition of a stock of knowledge (outcome). It is better to take 20 years to reach the goal of 100 per cent than to ignore the real constraints and rush into a slapdash enrolment programme which ultimately proves to be a waste of public funds.

Even high-quality primary education is not always effective. The reason for this is that education has long been considered only in terms of supply, and not in terms of demand. Poor families are sensitive not only to the cost and quality of education, but also to its utility. The poor work primarily in agriculture (small farmers and farm workers), craft trades and small trading businesses (informal sector). Instruction that does not prepare pupils for these activities can seem superfluous. For example, this is true when the language of instruction is different from the local language, as in some African countries. A small trader might not see the purpose of learning a language not spoken by his customers. Although the language of instruction may be a requirement for government or salaried private-sector jobs, the possibility of such jobs may seem remote to parents if they live in a remote village or if civil service hiring has been frozen (or is linked to ethnicity, party affiliation, etc.). In other instances, general education that does not prepare pupils for an occupation may dissuade parents from sending their children to school. Skilled craftsmen may prefer to teach their children their trade first, before sending them to school, in part because they fear that children will refuse to learn it once they have been to school. This behaviour stems from the notion that learning on the job brings a greater return than school learning. While this attitude may be open to criticism, it cannot be ignored. In a number of African countries where a majority of the population lives in rural areas, and where several local languages coexist with an official language that is non-native, it is clearly difficult to match the supply of education to demand, but it also seems clear that providing a general education that is identical for all pupils may not be the best solution. Education would be more effective if the demand expressed by families were taken into account, which would require having local officials participate systematically in the management of primary schools.

According to the comparative study of five francophone African countries, the productivity of primary education (which varies significantly from one country to the next) could also be increased through new measures that are not very costly. Indeed, some of these measures — such as separating classes by gender and having same-gender teachers for them, a measure which has shown to improve results — entail no expenditure at all. Other low-cost measures that improve performance include providing teacher's manuals and stepping up teacher training courses and information-sharing exchanges between teachers.

More stringent measures are also needed, however. Nothing can justify the rate of absenteeism of primary school teachers in Senegal, which amounts to nearly one week per month (three times the absentee rate in Cameroon, where teaching salaries are markedly lower). Absenteeism has a negative impact on pupils' performance and could be lowered through increased oversight of teachers. A first recommendation, particularly applicable to village schools, is to increase the number of school inspections, since these have a significant impact on performance. Teachers' salaries could be linked to inspectors' evaluation reports and to pupils' results on standard tests taken by all children in a region. In urban areas, introducing competition could improve school efficiency. We have already noted that the presence of fee-based private schools increases the redistributive effect of public education to the benefit of the poor. If public school quality is low, scholarships allowing the poor to attend private schools may create competition, which would stimulate improvement in public schools. Poor families can evaluate the quality of education just as well as higher-income families, and their children would benefit from the positive externalities of attending school with more privileged children. Of course, competition cannot solve all of the problems facing education systems. In countries like Tanzania and Madagascar, wages are too low to attract qualified teachers, without which the education system cannot function well. Raising salaries is thus a necessary step for improving schools in these cases. But in other countries such as Senegal and Côte d'Ivoire, the relatively poor performance of the education system cannot be attributed to wage levels (Cameroon shows better results with lower salaries).

These examples demonstrate that poverty reduction strategies can no longer be formulated in terms of increased resources, as has been the case until now. A new approach is needed, in which countries design and implement education and health policies that — for a given budget — maximise the gains to the poor.

Complete decentralisation of health and education services can make these systems more effective and better adapted to the needs of families. In this way, families as well as representatives of the various professions involved can participate in decision making and monitor these services. Peru has experimented with programmes for distributing breakfast and a glass of milk in school, and the results show that this strategy increases equity (local committees know who the poor families are, and these well-targeted programmes are thus highly redistributive) and effectiveness (the programme is closely supervised by the local committees). Local management of basic services (primary education and health care) is therefore recommended for those countries which have not yet decentralised these services.

Decentralisation also entails certain risks, however, and it is necessary to identify them and take steps to avoid them. The first is the lack of administrative personnel available in rural communities. In many rural communities in Madagascar, for example, around half of health credits are unspent at the end of the year. These communities need substantial administrative assistance; more precisely, in a context of decentralisation, they should be sent qualified administrative staff to enable them to manage basic services. This kind of support measure has received little attention to date, but it is vital if decentralisation is to work.

The second risk is related to the substantial differences in average income between different communities or regions. Decentralising funding would be dangerous because spending per pupil would be four or five times lower in the poorest communities than in the capital city, with the poor suffering the most from this inequality. It is essential to maintain centralised financing in order to guarantee a constant level of spending per pupil throughout the country. Only the management of credits should be decentralised.

Measures to Ensure Consistency

Instead of unco-ordinated measures taken by independent actors at different times, countries need to design a consistent set of measures to achieve specific goals, which should be defined in terms of outcomes rather than resources. This package of measures should be part of a long-term strategy and should provide for co-ordination of all the actors involved, including donors. The need for consistency thus applies to timetables and actors as well as specific initiatives.

Making Initiatives Consistent

If the poor are to rise above the poverty line, they must build up reserves of health and a fund of knowledge that allow them to procure a lasting increase in income. All anti-poverty initiatives should therefore be designed and implemented with these two objectives in mind, instead of addressing each one in isolation. Many education and health policies have proved ineffective because — owing to the influence of pressure groups — they focused only on increasing budgets for a particular programme, instead of starting from the specific outcome desired (e.g. enabling a particular group to acquire a given body of knowledge) and trying to find the best combination of actions to obtain it at the lowest possible cost. This error is due to confused reasoning: resources were regarded as the foremost requirement, whereas it is outcomes that should take priority. While

the need for providing health and education to the poor is incontestable, this is no reason for avoiding critical examination of all the methods employed to reach this goal. For example, the study of five francophone African countries revealed that the number of years of education of primary school teachers does not have much effect on performance, while increasing the number of school inspections does. This means that future spending should be allocated in the most effective way, by increasing the number of school inspections rather than extending teacher training and raising salaries, which would be much more expensive and would produce less satisfactory results.

Ensuring consistency requires an overall view of all the measures to be implemented to achieve a given result. It is useless to build rural health centres if these centres are not supplied with medicines, since the poor cannot obtain the medicines they need anywhere else. The goal is not to enable the poor to visit a health centre, but to restore their health and enable them to work. The shortage of medicines can be due to several factors, including bad management by the government department responsible for supply, forecasting errors related to foreign currency controls and import licences, and nurses who steal and sell medicines for personal gain. Health centres may also be of little use for other reasons (lack of qualified personnel, lack of drinking water, difficulty of access, etc.), and since all these factors are complementary, the lack of any one of them robs the others of much of their impact on poverty. Doubling the health budget for a given region may or may not procure substantial benefits for the poor, depending on whether programmes are designed and implemented in a co-ordinated and coherent fashion.

Not only must all measures for health or education be co-ordinated, but the interactions between health and education must be taken into consideration. The study of malnutrition in 20 African countries shows that children's health depends on the parents' level of education (particularly that of the mother), the mother's access to the media and the interval between births (which is related to information about contraception). Children's health also depends on health spending: vaccinations, for example, have a significant effect on size. It would be a mistake, however, to increase health spending without considering women's level of education and information, which is as important as health services *per se*. A coherent programme for children must therefore consist of a set of complementary measures to promote both children's health and the education of mothers. Such integrated sets of measures have an impact greater than the sum of the effects of each measure taken individually. Increasing returns can be obtained when policy seeks to derive the greatest possible benefit from externalities instead of considering only the direct effects of each measure.

Mexico's PROGRESA programme, which reaches 14 million poor, is based on recognition of the interactions between nutrition, health and education. Because of these interactions, the poorest are unable to escape from the vicious circle of poverty, and social programmes focusing on isolated problems are ineffective. For this reason, PROGRESA combines several types of assistance for each family: scholarships that are conditional on school attendance; transfer payments for the purchase of clothing, books, etc.; regular medical check-ups (including birth control, prenatal care and young children's health) that require each family member to meet appointments or risk losing their subsidy; and, finally, a food programme for pregnant women and for children under two years of age (extended to five years for malnourished children). The success of this programme, which is due to the complementarity of its components, demonstrates that effective poverty reduction strategies require the provision of co-ordinated nutrition, health and education services to each family.

Coherence of Implementation Timetables

The example of child vaccination and maternal education programmes proves that programme coherence requires a long-term perspective. Spending on girls' education will have an impact on the health of their children 10 or 15 years later, a result not taken into account if only short-term benefits are considered. The effects may be felt even later than that. In Tanzania, for example, it appears that demand for the education of children depends on the educational level of the mother. Strategies for reducing poverty through education and health spending should therefore be based on a generational time horizon.

First, it is necessary to identify the clusters of factors that perpetuate a poverty trap, in order to break the transmission process that dooms the children of the poor to lifelong poverty in their turn. These clusters result from a combination of disadvantages: illiteracy, childhood malnutrition, poor health, lack of birth control, lack of any inherited property, unstable family structures and difficulty in accessing health and education services owing to distance or other factors. These factors interact in many ways, making their overall negative impact greater than the sum of the direct effects of each factor considered separately.

Second, we must design the combination of long-term actions for health and education that is most likely to break up these clusters. This involves reasoning in terms of a constant level of spending over a long period, as programmes with different costs cannot be compared accurately. To design the best programme, we must take into account the externalities of education and

health services and the timeframe of direct and indirect effects (which may appear immediately or only after a generation). Such an approach has nothing in common with one that considers actions individually, looking only at their direct, short-term effects.

A good example of such a long-term programme is the establishment of a national network of maternity and child health centres. As the transmission of poverty from one generation to the next depends on the mother-child relationship, such centres can be an effective means of halting this process. The centres address a variety of health needs, of course, including prenatal care, paediatric care for young children, contraception, AIDS prevention, etc. However, since they have administrative staff and information about individual families, they can also serve a variety of other purposes: distributing food to mothers, particularly during agricultural crises (e.g. following a drought), managing literacy campaigns for women, helping women gain access to media and notifying school authorities about family problems. If these centres co-ordinate their efforts with primary schools, this produces an integrated set of health and education services that can gradually change the living standards of mothers and children by applying the same strategy over the course of several decades.

Consistency among Different Actors' Initiatives

This example highlights another reason for the failure of anti-poverty programmes. All countries, including in the developed world, have a variety of bureaucracies that are deeply attached to their own independence, and local services consider themselves accountable only to their own ministry or department. Moreover, if the government announces additional credits for fighting poverty, it provokes competition between the various ministries or departments involved over how this budget increase is to be divided up.

Taking as an example a one-parent family — an illiterate, destitute mother with several children — it is clear that a single person (for example, an employee of a women and children's health centre) should work with this family on a regular basis to help it with all its needs: health, education, employment and housing. The more marginalised the family, the less it is able to apply to several different organisations in turn to obtain the services it needs. The need for local co-ordination results from the interactions among the factors of poverty on the one hand, and the interactions between education and health care on the other. Horizontal structures (e.g. multi-service community centres or mother-child centres) are needed to cope with these multiple interactions, whereas existing administrative structures are vertical.

Programme coherence should also be a concern of donors (international organisations and bilateral aid structures). Many of these organisations are willing to finance poverty reduction programmes. Each operation should be integrated into overall education and health financing (from both external and national sources). It would be irrational to recommend co-ordination and consistency among national initiatives without applying the same requirement to external financing.

Donors can increase the impact of spending on education and health in several ways. First, it would be advisable to adopt a new strategy aimed at using donor funds to collect statistics on programme outcomes. It is somewhat paradoxical that donors are willing to spend considerable resources on anti-poverty measures without having studied the results of previous efforts. Statistics on the outcomes of past efforts are essential if local governments are to start thinking in terms of outcomes rather than resources. Statistics should be collected through surveys of representative samples at regular intervals (e.g. once every five years). The data collected should include educational attainment by the end of primary school and by the end of the first secondary cycle, as well as information on parents, to allow measurement of educational attainment by children from poor families. Information should also be gathered on the health of children and adults, including the same data on the situation of parents. In addition, since the quality of health care and education varies greatly from one establishment to another, national ministries or departments that receive aid should be asked to provide disaggregated statistics on textbooks, number of teachers, number of pupils per class, medical equipment per health centre, etc. It is also necessary to have statistics by neighbourhood for urban areas, and by region for rural areas, in order to determine the quality of services offered to the poor.

It has recently been suggested that donors make both development aid and debt forgiveness conditional on education and health spending policies that provide greater benefit to the poor. These conditions may be placed either on the overall spending structure or on targeted initiatives. In the former case, primary education and adult literacy are given a larger share of the national education budget. Raising the rate of primary school enrolment from 50 to 80 per cent and undertaking literacy campaigns are measures that are sure to reach the poor. Using a given distribution of the overall budget avoids the pitfall of budgetary transfers such as the reduction of national financing for primary school materials on the pretext that primary schools are receiving foreign aid. Donors can also require targeted initiatives such as “food for school” programmes and provision of free schoolbooks or medicines for poor families. This type of

action is required in order to increase the demand for education and health services by these families, since this demand is very price-sensitive. These interventions make services more progressive and increase the rate of coverage, both of which benefit the poor.

Lastly, donors could recommend that the quality of statistics on the poor be improved through the use of several convergent approaches. In addition to the standard World Bank approach with poverty lines of \$1 or \$2, they should use a poverty line calculated on the basis of consumption surveys in the country concerned, after having estimated its relevance by comparing it with the poverty lines in neighbouring countries and its consistency with the statistics on malnutrition (e.g. children's size) and on access to infrastructure (e.g. drinking water).

To strengthen poverty reduction measures, donors must also take into account the political dimension of such initiatives. In some cases, a conventional supply-based approach has allowed powerful interest groups to form, such as teachers' unions. These interest groups continually ask for additional resources without regard to effectiveness or to the actual demand expressed by families. In urban areas, middle- or upper-income families press for improved and expanded secondary and higher education. Health ministry employees working in the central bureaucracy or in urban areas do not want to be assigned to understaffed village health centres. The official position of the government is expressed in repeated calls for poverty reduction, but numerous groups accept this policy only if it does not endanger their own interests. The "more resources" viewpoint always has supporters as long as it respects the status quo, but reforms provoke opposition from vested interests. The problem is precisely that such reforms are essential for taking demand into consideration, improving the quality of services for the poor, improving the management of schools and health centres, increasing employee productivity and reallocating resources in accordance with outcomes. The challenge for donors is to make aid conditional on these reforms, even though many politically influential groups want no other form of aid than "more resources".

Box. Measurements of Poverty

a) Absolute poverty

National definition

- First, the minimum number of calories needed to ensure satisfactory health is estimated. Then, based on the ratio between the amount spent on food and calories consumed, the food expenditure required for satisfactory health is calculated. This allows the total minimum amount spent per individual (or poverty line) to be deduced, based on household consumption surveys that give total amount spent relative to food expenditure.
- This poverty line is calculated by statistics departments in every country, and it varies from country to country. It increases with GDP per capita, but much less in relative terms (it is close to GDP per capita in very poor countries, but only a third of GDP per capita in middle-income countries) for several reasons, including changes in relative prices and changes in types of goods consumed.
- From a sample of several countries, a relationship between this poverty line and GDP per capita can be estimated.

International definition

- A single poverty line is used for all countries. This can be a \$1 or \$2 per day level of consumption (in 1985 dollars, at 1985 purchasing power parity). This method, used by the World Bank, is based on the same basket of goods for all countries.
- A minimum number of calories is set and the percentage of people falling below this level is estimated (FAO method).

b) Relative poverty

- Poverty is defined with respect to average or median income. Those whose income is below one-half (or one-third) of this level are considered poor.
- Poverty is defined with respect to income distribution. Those in the first quintile, or in the first and second quintiles (or even 1, 2 and 3) are considered poor.

Note: The most recent studies, such as the World Bank's *World Development Report 2000*, suggest including qualitative variables in definitions of poverty, such as the participation of the poor in local government. The definitions given here include only quantitative factors.

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