Poverty Alleviation in Mexico

Santiago Levy

The main determinants of poverty in Mexico are macroeconomic uncertainty, an urban bias in social and infrastructure spending, and institutional arrangements and government policies in rural areas that discriminate against the poor. Benefits to the poor should be administered under a single program that simultaneously delivers food (through coupons rather than price subsidies), preventive health services, and information on hygiene, birth control, and food handling.
This paper is a product of the Country Operations I Division, Country Department II, Latin America and the Caribbean Regional Office. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Margaret Stroude, room 18-155, extension 38831 (94 pages).

Among the findings is this ambitious analysis of poverty in Mexico:

Mexico's moderately poor lack some goods and services that everyone should enjoy, given Mexico's wealth. The extremely poor have so few resources as to be at risk of undernutrition and illness.

At most, 1 percent of the population is extremely poor (probably an overestimate), and extreme poverty is mostly a rural problem. The extremely poor have larger households, more children, and the highest dependency ratios.

The three main determinants of poverty are urban bias, macroeconomic uncertainty, and institutional arrangements and government policies in rural areas that discriminate against the poor. Urban bias in social and infrastructure spending reduces the rural poor's ability to increase their human capital. Macroeconomic uncertainty and stop-go cycles depress the permanent demand for unskilled labor and the steady stream of social spending. Institutional arrangements and resource allocation policies to increase agricultural output deliver substantial rents to high-income agricultural producers while depressing returns to land and the demand for unskilled rural labor, the two main assets of the rural poor.

Development policies to help the poor should focus on:

- Furthering the process of institutional reform of the incentive structure in rural areas.
- Changing the way resources are channeled to rural areas (eliminating price subsidies and increasing investment in rural roads, irrigation, extension services, and the like).

- Eliminating urban bias in social and infrastructure spending
- Bringing private costs of production in urban areas in line with social costs.

Policies to alleviate poverty must allow for the fact that the extremely poor are less able to bear risk, have higher fertility rates, have higher price and income elasticities of demand for food, and may experience more household inequality. The moderately poor, on the other hand, can migrate, can benefit from educational opportunities, and can participate more fully in the labor market.

There is a strong case for direct targeting of benefits only to the to the extremely poor. Such benefits should be administered under a single program that simultaneously delivers food (through coupons rather than price subsidies), preventive health services, and education about hygiene, birth control, and food preparation and conservation. Food pricing policies should be divorced from poverty considerations. A poverty program for the extremely poor should direct its efforts at reducing fertility, morbidity, undernutrition, and infant mortality.

Intertemporal, incentive, and administrative considerations all argue that the government can best help the moderately poor indirectly. This can be done through policies that increase the permanent demand for unskilled labor, returns to land, and the poor's access to education and social infrastructure.
## CONTENTS

I. Introduction ........................................................................... p.3

II. The Setting................................................................. p.4

III. Poverty: Concepts and Measurement

   III.1 Concepts........................................................................ p.6
   III.2 Measurement................................................................... p.10
   III.3 Operational Measures of Poverty................................. p.15

IV. Quantification of Poverty

   IV.1 Data............................................................................... p.20
   IV.2 Socioeconomic Characteristics of Households.............. p.25
   IV.3 Estimates of Moderate and Extreme-Poverty.............. p.27

V. Determinants of Poverty

   V.1 Rural and Agricultural Development............................ p.32
   V.2 Urban Bias....................................................................... p.41
   V.3 Macroeconomic Policy.................................................... p.43

VI. Policies for Poverty Alleviation

   VI.1 Needs, Behavior, and Policy........................................ p.45
   VI.2 Determinants of Intervention in Poverty Alleviation...... p.50
   VI.3 Objectives in Poverty Alleviation.................................. p.53
   VI.4 Policies for the Extremely-Poor.................................... p.55
   VI.5 Development Policies for the Poor............................... p.64

VII. Government Programs for Poverty

   VII.1 Description of Current Programs............................... p.72
   VII.2 Preliminary Assessment.............................................. p.76

VIII. Concluding Remarks

   VIII.1 Summary of Results.................................................. p.83
   VIII.2 Issues for Further Research........................................ p.86

References............................................................................. p.89

* This paper was prepared for the World Bank, Latin American and Caribbean Operations Department. I want to thank Sweder Van Wijnbergen for inviting me to work on this topic, and Hans Binswanger, Ken Chomitz, Santiago Friedmann, Ravi Kanbur, Nora Lustig, Lyn Squire and Paul Streeten for useful conversations. Fidel Jaramillo provided excellent research assistantship.
VI. Policies for Poverty Alleviation.

This section is concerned with the design of government programs to alleviate poverty. The objective is to construct a poverty program whose various components deal most effectively with the different dimensions of poverty. Since policy must be based on the behavioral characteristics of the target population, I begin in sub-section VI.1 with a discussion of the needs and behavior of the extremely-poor and the moderately-poor. I next turn in sub-section VI.2 to discuss four considerations that affect the nature of government intervention in poverty alleviation. In sub-section VI.3 I pull together these two strands to identify the objectives of government intervention in poverty alleviation, and the various components of a poverty program. Sub-sections VI.4 and VI.5 discuss the specific components of the poverty program.

VI.1 Needs, Behavior, and Policy.

Policies to help the extremely-poor and the moderately-poor must take as departure point their characteristics; this allows to identify each group's needs and directs policies to the relevant margin. Seven characteristics of the extremely-poor merit attention.

One, the extremely-poor have higher fertility ratios and more children per household (Lipton (1983b), Birdsall and Griffin (1988); table 3 above)\(^\text{74}\). In these households children play the role of insurance policies for the future and, after age 5 or 6, additional labor force\(^\text{75}\). There is growing evidence that high fertility is a result of the characteristics associated

---

\(^{74}\)I was unable to find any studies linking fertility to income levels in Mexico. The tabulations that I obtained from the 'Encuesta Nacional de Fecundidad y Salud' carried out by the Ministry of Health in 1987 only classify women into urban and rural groups. Global fertility ratios for urban (rural) women for the period 1981-86 were 3.6 (5.6), respectively.

\(^{75}\)What is not clear is how out-migration changes this situation. If migrants send remittances, the initial investment by parents is recuperated while household size falls; else migration can reduce average incomes for extremely-poor households.
with poverty, particularly high infant mortality rates\textsuperscript{76}. Having extra children "...can be interpreted as the insurance response parents make in the face of high infant mortality. As the risk of infant mortality declines, these excess births should become unnecessary" (Birdsall and Griffin, 1988, p. 36). Thus, it appears that fertility declines follow reductions in infant mortality\textsuperscript{77}. Higher infant mortality, in addition, increases the number of pregnancies for extremely-poor females since: (a) more children are wanted and, (b) more replacement births are required to attain the desired family size. This increases the dependency ratio, as female members retire from active participation in work during childbirth and lactating periods. Higher fertility, however, may also be due to lack of education and access to birth control methods. Hence, unwanted pregnancies are higher. Unwanted pregnancies that lead to abortions are an additional burden on the health and nutritional status of females\textsuperscript{78}; those that lead to children, on the other hand, further increase the dependency ratio.

\textsuperscript{76}See Mina Valdez (1988) for a study of infant mortality in Mexico. In particular, see his table 5, p. 280, where average infant mortality rates for the period 1965-79 for eight 'social classes' are computed as follows: bourgeoisie, 36.5; new petty bourgeoisie, 30.2; traditional petty bourgeoisie, 54.1; non-wage free laborers, 57.3; typical proletariat, 59.2; un-typical proletariat, 53.5; peasants, 81.2; agricultural proletariat, 96.7. While it is difficult to interpret some of these social classes, these numbers do roughly indicate a strong association between lower income and high infant mortality. Also, the World Bank (1989b, p. 42) estimates infant mortality rates in Mexico per live births of 20/1000 in the metropolitan areas vs. 80/1000 in backward rural areas. Finally, a 1982 nutrition survey in rural areas of Oaxaca found that women average nine deliveries during their childbearing years, with only five children surviving to adulthood (Torche, 1990, p. 13).

\textsuperscript{77}There is, of course, a lag between the drop in infant mortality and the behavioral response of parents to limit family size and increase investments per child; this lag is sometimes referred to as the 'demographic transition', and explains why in most LDC's death rates fell long before birth rates. Policy can influence this lag be reducing child mortality and increasing income security (cf. Birdsall and Griffin, 1988, p. 37).

\textsuperscript{78}Preliminary results from the 1988 National Nutrition Survey show that one-third of all pregnant women have an inter-birth interval of less than 24 months, and that women with short birth intervals have significantly worse hemoglobin levels (World Bank, 1990a, p. 3).
Two, the extremely-poor may not be able to respond to transitory real wage declines by working more hours. Downturns cannot be offset by working more if households are already working all they can. This might be particularly relevant for rural households which may also have lower mobility (because walking to distant work consumes too many scarce calories, because they live in remote regions with little transportation, or because they cannot afford the transportation) and fewer alternative opportunities in any given location. Thus, temporary downturns in the labor market may have direct nutritional repercussions.

Three, the extremely-poor appear to have higher age-specific participation rates, which affects their demand for education. The children of the extremely-poor may participate early in economic activities in both urban (begging, shoe shining) and rural (working on the family farm, household activities) settings. Independently of the supply of educational facilities, the opportunity cost to the household of having children in school is too high, so that the extremely-poor, as opposed to the moderately-poor, may not be in a position to benefit from educational programs. "In low income households, investments in the human capital of children, which provide lifetime returns to the child but possibly not to the parents making the investments, may be sacrificed to more immediate household needs" (Birdsall and Griffin, 1988, p. 34). Conversely, households with higher incomes can increase investments per child, in a sense engaging in a trade-off of quantity for quality. With larger number of children such investments may be deterred if parents face the risk of losing their investment through child death.

---

79 The 'unemployment rates' registered in table 6 for the lowest income groups would seem to contradict this statement. But recall that the IES only inquired about employment status on the previous month, so that there is a large element of seasonality. A more detailed study of labor participation rates by income groups is required.

80 Contrast this with the usual response for higher income groups, where as income falls the cost of leisure is higher; an increase in hours worked can then partly offset the income fall. At the level of the household this can imply that members that were previously not working can temporarily join the labor force (as probably happened during the 83-88 crisis).

81 "A survey carried out in 1982 in Oaxaca by the National Institute of Nutrition indicates that seasonal variation in food intake is widespread, with a pattern that falls between 1,900 calories per capita per day during harvest time, to close to about 1,400 in the period immediately before harvest. Many infants between 8 and 18 months are not able to survive the drastic decline in food availability" (Torche, 1990, p. 13; emphasis in the original).
Higher age-specific participation rates also imply that targeting food to children through school lunches or similar mechanisms may miss the extremely-poor; their likelihood of being in school is lower.⁸²

Four, because they live so close to income-induced nutritional risks, the extremely-poor have lower ability to bear risk. If they have little access to credit⁸³, and few physical assets, downturns in earnings are immediately translated into lower consumption. This may affect their ability to participate fully in the labor market (or to innovate in the farm with new technologies). In particular, for extremely-poor rural households holding on to small pieces of (probably marginal) land that, on average, generate less income than participating in the labor market may be an optimal strategy for three reasons. First, participation in the labor market may be risky, particularly in rain-fed rural areas with high weather variability⁸⁴. Second, if they live in remote areas with little transportation the supply of food may be uncertain; erratic or high cost transportation may make autarky, particularly with regards to food, a sensible strategy. Third, for ejidatarios full participation in the labor market may entail the risk of losing their land. While I have no direct evidence for Mexico, it is plausible to posit above-average risk aversion for the extremely-poor.

---

⁸² Which is not to deny that, at the margin, school lunches may serve as an incentive for extremely-poor children to attend school (or provide incentives to their parents to send them to school by increasing the opportunity cost of child labor).

⁸³ Unfortunately, little is known about informal credit arrangements in Mexico. If risks are household specific (as is more likely in urban areas) there might be possibilities to borrow from households in the same area. If risks are region specific (as may be more likely in a given rural region dependent on rain-fed agriculture), such borrowing possibilities may be less likely, as all households will be similarly constrained.

⁸⁴ Risk considerations probably affect too their migratory behavior. Roberts (1982, p. 319) notes that poor households in Mexico "...cannot afford to undertake the substantial investment needed to support a circular migrant and the risk that he will not quickly obtain a job and send remittances." Recall from table 5 that migrant remittances account for a very small share of the extremely-poor's earnings. On the other hand, most studies of labor market behavior in rural areas concentrate on households who own land (either private or ejido). Much less is known about landless households (cf. Gregory, 1986, pp. 110-13). This is a significant omission, since not only are landless rural households among the very poor, but also due to the semi-frozen nature of the land ownership pattern there is a strong likelihood that the marginal rural poor is landless; see below, section VI.
Five, the composition of the diet for the extremely-poor is different, as well as the price and income elasticities of demand for food. At very low income levels, households consume a diet composed of cheap calories. Some evidence also shows that in the range of extreme-poverty Engel's Law (as income increases the proportion spent on food falls) is violated. There is, in addition, "... compelling evidence that the poor are more responsive – to income, own-prices, and cross-prices – than the rich" (Behrman and Deolalikar, 1988, p. 677). Studies also show that a distinction is required between the income (or expenditure) elasticity of demand for food and the income (or expenditure) elasticity of demand for nutrients (of which more below).

Six, for extremely-poor households nutritional status appears to have a direct impact on productivity, both for adults and for children. For adults studies by Strauss (1986) for Sierra Leone and Deolalikar (1988) for India find that agricultural labor productivity increases with calorie availability. For children it appears that school performance also improves with nutrition: anthropometric indicators like height for age (which reflects the cumulative outcome of nutrition) appear to positively influence both the probability of being in school as well as relative performance.

Finally, the importance of intrahousehold inequality is higher. While this inequality is probably not unique to the extremely-poor, it is

85 Lustig (1984, pp. 443-4 and table 14.4) presents evidence based on the 1977 Income-Expenditure Survey that shows significant differences in the diet composition of Mexicans when classified by income groups; she also runs log-linear regressions of food expenditures on total expenditures for poor households in 18 regions and finds that the associated elasticity exceeds unity in 13 out of the 18 regions (op. cit., table 14.8). Lipton (1988a) quotes evidence of the failure of Engel's law for Northeast Brazil; see also Streeten (1989b).

86 Note that the causality between nutrition and productivity is not obvious: if higher labor productivity increases income then nutrition may also increase (given greater food consumption); conversely, more nutrition may increase labor productivity which then increases income. The Strauss and Deolalikar studies correct for this endogeneity (see Behrman and Deolalikar, 1988, pp. 683-86).

87 These results are found in studies of children in China and Nepal; Behrman and Deolalikar (1988, pp. 688-89) point out, however, the possibility of self-selection bias: school performance is observed only for those who did go to school (and did not drop out).
operationally more important, as it determines how additional resources for
the household as a whole translate into resources for each member of the
household\(^8\). If such inequality is significant, it may imply that additional
resources for the household as a whole may fail to reach some individual
members (e.g. children)\(^9\). Under these circumstances more detailed targeting
may be required\(^10\).

\**VI.2 Determinants of Intervention in Poverty Alleviation.**

The central aim of government poverty programs should be to create
conditions where the poor can increase their income and improve their living
standards. To translate this aim into operationally useful objectives, it is
necessary to consider not only how the poor behave, but also other factors
that condition the form of government intervention. There are four dimensions
of this problem that I want to emphasize.

First, an inter-temporal dimension: the extent of poverty in Mexico
implies that it cannot be eliminated in a short period of time (say, two to
three years). This creates a need for balanced interventions that help the
poor immediately, but also create conditions for them to grow out of poverty.
A poverty program that contemplates a permanent need for generalized income or

\(^8\)Unfortunately, little is known about this problem in Mexico. Sen
(1988) and Bardhan (1988) discuss its importance for India (with emphasis in
sex bias); Behrman (1988) presents evidence of age-bias in poor rural Indian
households, with parents discriminating in favor of earlier born children in
the allocation of nutrients (with the effect having a seasonal component).
Haddad and Kanbur (1989), on the other hand, find that intra-household
inequality may lead to underestimates of the true levels of poverty and
inequality, but that the estimated patterns of poverty across groups are
relatively invariant.

\(^9\)This may or may not be a manifestation of sex or age discrimination.
It may pay for the household as a whole to concentrate resources on the more
able members who are the principal 'bread winners'.

\(^10\)This provides the rationale for targeting individual members within the
household, like milk to children under five years of age, or additional food
for pregnant and lactating mothers. In the absence of household inequality
such degree of targeting would be unnecessary. On the other hand, note that
if such inequality is significant, the effects of this targeting may be partly
offset if the amount of own household resources allocated to the targeted
members is reduced when the targeted program is implemented so that, for
example, after a school lunch program parents no longer give milk to their
children since they expect them to get it at school; see below, section VI.4.
consumption subsidies is, even if budgetarily feasible, not focusing on the right objectives. The appropriate mix between policies that increase current consumption of the poor and investment policies that generate future growth in their income is a key issue. Now, if the government has one peso to spend on poverty programs, should this be spent to increase current income, or should it be allocated to investment? In a world of full information and no externalities the answer is that if the objective is to maximize the poor's welfare, the government should increase their current income; then, depending on the poor's discount rate, they can choose the optimal mix between consumption and investment, i.e., the optimal mix is determined by the direct beneficiaries of the program. For three reasons this solution is inadequate for Mexico (and, presumably, for other developing countries). One, the presence of externalities associated with infrastructure and other investments generates a difference between the private and the social rate of return to investment: if the government does not carry out the investments in, for example, roads in poor rural regions, it is unlikely that poor people will do so. The unfeasibility of full private appropriation of the benefits from roads reduces the private incentive for this type of expenditure. Two, some investments are lumpy and indivisible, so single individuals on their own at low levels of income might not be able to purchase the required amounts. Three, the existence of intra-family inequality implies that current income transfer may fail to increase investment by the family in the welfare of some of its members (e.g. schooling for children).

Second, there is an informational dimension: identifying the poor is difficult and costly. In addition, some might live in remote areas. Targeting and delivering income or consumption subsidies to the poor is therefore administratively difficult, and raises the cost of subsidy programs. Moreover, if direct subsidy programs are permanent frequent testing to determine eligibility will be needed. Of course, as I discuss below, targeting can be refined by methods that induce self selection of the beneficiaries, through either the location of where benefits are given, the quality of the goods delivered, or the type of goods subsidized. But any realistic program of direct subsidies to the poor will leak to the non-poor. From the viewpoint of poverty alleviation this is a net loss.

Current income can be increased either by direct income transfers or indirectly via subsidies to consumption; from our perspective here consumption subsidies (say for food) should be thought of as additional purchasing power; see section VI.4 below.
Third, there is an incentive dimension: policies that help the poor need to avoid the creation of a class of 'welfare dependents'; the incentive structure must be such that, at the margin, it always benefits the poor to work and earn additional income. This point is illustrated in figure 4\textsuperscript{92}, where the horizontal axis plots the income of individuals before any government program (or 'original income'), while the vertical axes measures income levels after the government program (or 'final income'); as before, $z$ denotes the poverty line. Assuming the government can measure everybody's income, it can potentially increase each individual's income by the difference between $z$ and the 45\textdegree line. This eliminates poverty (with the total cost of the program given by the triangle $OAz$). The program is financed by taxes on individuals with incomes above $z$, so that their final income lies below the 45\textdegree line. Note now that when original income increases along the range $Oz$, individual's final income stays constant. Differently put, along the range $Oz$ poor individuals face a marginal tax rate of 100\%. In this type of transfer scheme every additional peso earned by the poor is matched by one peso of transfers taken away. The problem with this scheme is that the transfer depends on individuals' income. Under these circumstances it is natural to expect that individuals will modify their behavior to take advantage of this scheme (or any other so-called 'means-tested' scheme where benefits depend on characteristics that are under the beneficiaries's control). Clearly, schemes that simply transfer income to the poor give no incentive for them to work\textsuperscript{93}. Thus, incentive considerations argue strongly against direct income transfers.

Finally, there is a dimension of bounded rationality and administrative capability: there is a limit to the number of policies and programs that the government can run in a cost-effective and efficient way. A large number of programs opens more possibilities for waste and duplication (cf. section VII.1, below). In addition, programs that create multiple prices for the same commodity open possibilities for graft. A desideratum is for the government to concentrate on a few programs, but to implement them well. As in any other area of intervention, minimizing the possibilities for government failure is also important.

\textsuperscript{92}This discussion is based on Besley and Kanbur (1990).

\textsuperscript{93}Note also that if as a result of this transfer scheme the poor fail to work, the cost of the program doubles to the square $OAz$, requiring higher marginal tax rates on the non-poor population to finance it, i.e., the solid line beyond $z$ is flattened, generating work dis-incentives for the non-poor.
Figure 4
VI.3 Objectives in Poverty Alleviation.

Given the needs and behavior of the poor, and the intertemporal, incentive and other considerations just made, what should the objectives of the government in poverty alleviation be? There should be a fundamental difference in objectives for the moderately-poor and the extremely-poor. The four considerations discussed in section VI.2 point in the same direction: the orientation of government programs for the moderately-poor should be tilted in favor of investment and the creation of opportunities to enhance their earnings potential. Informational, incentive, externality and administrative reasons all imply that the comparative advantage of government intervention in the alleviation of moderate poverty is to help people indirectly, rather than through direct income or consumption subsidies. Resources can be most effectively used to create institutional environments where the earnings potential of the assets owned by the poor (in particular, their land and labor) is enhanced, at the same time that the possibilities for them to acquire human and financial capital are improved. Over the medium term, what matters most for the moderately-poor are the design of institutional frameworks and policies that do not discriminate against them, as has occurred in the past. There is no case for direct income transfers or subsidies to consumption of any kind, including food subsidies. This is not to argue that no resources should be channeled to the moderately-poor; it is to argue that those resources should be used for investment: primary and technical education; irrigation to increase the productivity of the land they own; timely access to fertilizers and credit to increase yields; widen crop choice; better roads and transportation to reduce (time and monetary) costs of mobility and amplify employment opportunities; infrastructure that promotes regional growth and permanent outward shifts of the demand for unskilled labor. These policies work directly at the relevant margin: increasing earnings opportunities.

The same is not true of the extremely-poor. As section VI.1 argued, they have a prior need to improve their health and nutritional status and break the 'vicious circle' in which they find themselves: unhealthy physical environments, morbidity, lethargy, high infant mortality and high fertility, inability to take risks, inability to demand education, thinly spread resources across large families, and transmission of this state of affairs from one generation to the next. Only when this vicious circle is broken can they 'get on their feet' and work their way out of poverty. Some minimum
level of health and nutrition must be met so people can invest in human capital; or migrate across regions; or participate more actively (even though risky) in the labor market; or engage in more (risky) innovations (new crops, techniques); or have less children and increase their investment per child. There is a case for directly targeted programs of income transfers or consumption subsidies for the extremely-poor.

I argue that the attack on poverty should be separated into two tasks. One, the provision of a basic package of directly targeted benefits for the extremely-poor. Two, the design of effective development strategies, where effectiveness is measured by the potential for increasing earnings of the poor. Separating these two tasks is essential: the policies and institutions required for each are different. Questions like how can targeted programs be organized in a cost-effective way, where should they be located, and how can incentive problems be minimized, pertain to the first task. Questions like where and what type of infrastructure should be provided, what should pricing policies for agriculture be, what reforms are needed for the ejido, and how can the demand for unskilled labor be increased relate to the second task.

But to argue the need for directly targeted benefits only for the extremely-poor is not to argue that they should receive no other benefits. Precisely the opposite is true. The extremely-poor also need policies that increase the value of their land and labor; they also need greater access to education and other opportunities for improvement. But they require, as opposed to all other groups, special attention to be able to fully profit from those policies.

This approach has two important implications. First, the case for some form of provision of direct benefits for the extremely-poor is not a case for distorting food prices for consumers or producers. Based on the considerations discussed above it is clear that with the potential exception of the extremely-poor (see below), all consumers should face prices for all food items that reflect their opportunity costs. Differently put, food pricing policies should be divorced from poverty considerations. Second, the needs of the extremely-poor provide a ranking of which services are essential and must be delivered to get any results, and which services are secondary (e.g. provision of housing). Thus, the approach directs government intervention in poverty matters to a well defined set of actions. This is important given constraints on resources and administrative capabilities.