Poverty in Mexico's Southern States

Wodon, Quentin and Lopez-Acevedo, Gladys and Siaens, Corinne

World Bank

November 2003

1

Poverty in Mexico's Southern States

Quentin Wodon, Gladys Lopez-Acevedo, and Corinne Siaens

I. Introduction

This Note attempts to answer the following questions: How poor are the southern states of Chiapas, Guerrero, and Oaxaca? How much progress was achieved in the 1990s toward reducing poverty in these states? Why are households in these states so poor? Specifically, does their poverty result from a lack of assets or from low returns to existing assets? Finally, to what extent do federal transfers and programs benefit the south and poor households within the south?

The main results and conclusions that emerge from the analysis are as follows:

- **How poor is the south?** Households living in the southern states are very poor, and certainly much poorer than households living in the rest of Mexico. Estimates of income and consumption poverty suggest that two thirds of the population in the southern states may not be able to pay for the cost of their basic food and nonfood needs, versus 42 to 45 percent of the population at the national level (Table 1). While these estimates of poverty are probably on the high side, the differences between the south and the country as a whole would be even more striking if methodologies yielding smaller estimates were used. The high level of deprivation in the south is confirmed by both the Marginality Index (based on access to basic infrastructure services, housing conditions, education attainment, and wage earnings) from the National Population Council *(Consejo Nacional de Población*—CONAPO) and the Human Development Index (HDI) (based on per capita gross domestic product [GDP], educational achievement and enrollment, and life expectancy) from the United Nations Development Programme (UNDP).. For both indices, the three southern states have the lowest rankings among all states.

Table 1. Summary Statistics on Indicators of Well-Being in the Southern States, 2000

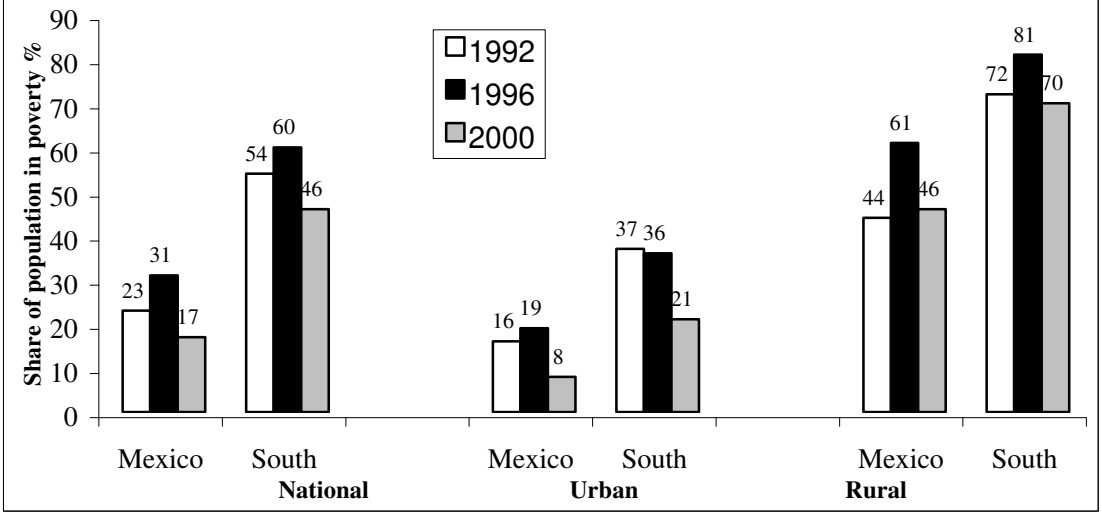
	National	*Chiapas*	*Guerrero*	*Oaxaca*
Share of population in poverty	42%–45%	Three states jointly: 67%–68%		
Share of population in extreme poverty	23%–25%	Three states jointly: 54%–56%		
Human Development Index and state ranking	0.791	0.693 (32nd)	0.719 (30th)	0.706 (31st)
CONAPO Marginality Index and state ranking	—	2.25 (1st)	2.12 (2nd)	2.08 (3rd)

—Not applicable

Source: Authors' estimation for poverty; CONAPO for marginality and HDI.

- **How much progress has been achieved toward poverty reduction?** Some progress was achieved in the 1990s (Figure 1). Although the pace of progress for income and consumption poverty could have been faster, with better growth in rural areas and no increase in inequality, the gains achieved are real. In other areas as well (such as primary school enrollment and access to basic infrastructure services), the pace of progress is encouraging. Thus, the south may be slowly catching up, especially in nonmonetary areas of well-being, even though there may not be income or GDP convergence yet.

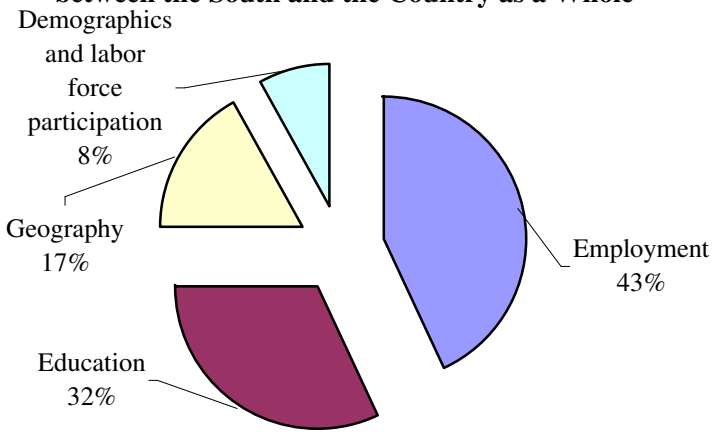
Figure 1. Trend in Extreme Poverty According to Consumption



Source: Author's estimate

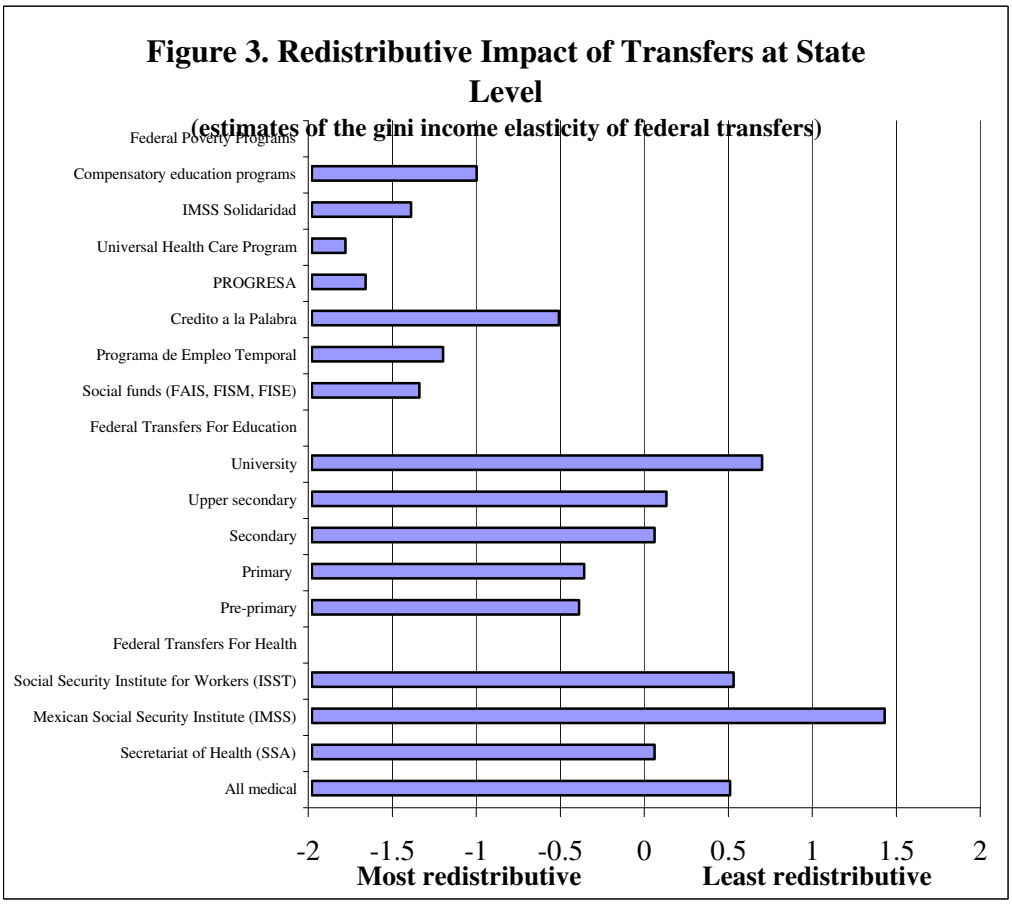
- **Why are households in the southern states so poor?** Households in the south have a level of per capita income that is only half (54 percent) that enjoyed at the national level. An analysis of the determinants of income poverty suggests two main reasons for this. First, two thirds of the differences in per capita income are the result of differences in assets rather than differences in the returns to these assets. This implies that a poverty-reduction strategy for the south must rely primarily on interventions designed to improve the assets of the households living there. Second, as shown in Figure 2, in terms of categories of assets explaining the differences in income between the south and Mexico as a whole, the quality of employment comes first (accounting for 43 percent of the gap), followed by education (32 percent of the gap). Living in urban areas and unobserved effects likely to result from differences in area characteristics between the south and the country as a whole come third, at 17 percent. The contribution of demographic and labor force participation characteristics is lower, at only 8 percent. While the analysis may be sensitive to some assumptions for the measurement of differences in per capita income and their determinants, it does suggest where gains can be obtained to improve standards of living. (As pointed out by government counterparts in Guerrero, the comparatively lower quality of the jobs in the south relates to broader issues of the lack of public and private investments and the relatively high cost of doing business in the south; these issues are discussed in more detail in some of the other Notes in this report.)

Figure 2. Factors Explaining Difference in Income between the South and the Country as a Whole



Source: Authors' estimate

- **To what extend do federal programs and transfers reach the south and the poor who live there?** Almost all countries in Latin America experienced an increase in public social spending in the 1990s. In Mexico, the increase was 55 percent, thanks to economic growth (a higher level of per capita gross national product [GNP] leads to higher spending per capita, holding the share of spending in GNP constant), a higher level of fiscal pressure, and a reorientation of fiscal priorities toward the social sectors. We have not estimated the extent to which the southern states have benefited from this increase in spending. But several categories of spending are explicitly targeted to poor areas and households, and therefore to the south. A state-level analysis suggests that poorer states tend to benefit more than other states from spending for social funds and a range of targeted programs. In Figure 3, the redistributive impact of federal transfers is measured through the Gini income elasticity (GIE) of the various transfers (see text for more explanation). A value of zero for the GIE implies that all states receive transfers in proportion to their population. A value below zero indicates more spending for the poorer states. A value higher than zero indicates more spending for the richer states. Clearly, poorer states (including the three southern states) benefit well from a number of federal programs. At the household level, while food subsidies do not appear to be well targeted in the south, demand-side education and human development programs such as the Education, Health, and Nutrition Program (*Programa de Educación, Salud y Alimentación*—PROGRESA) and others appear to be well targeted. Some of these programs also have features that generate long-term gains for beneficiaries, beyond the immediate cash transfers provided (for a discussion of long-term gains from programs, see the Millennium Development Goals Note and the efficiency of the southern states in reaching these goals).



Source: Authors' estimate

Given the many dimensions of poverty and the limited space available to analyze them, the discussion in this Note remains at a fairly high level of generality in several areas (as noted in comments on a draft of this Note by the Development Planning Committee for the State of Guerrero (*Comite de Planeacion Para el Desarrollo del Estado de Guerrero*). The Note also does not discuss some of the policies implemented at the state level, not only because state and local resources remain small in comparison with federal transfers and programs targeted to the poor, but also because many of the household survey data sources used for the empirical work are unfortunately not representative at the state level. Finally, the Note does not discuss the issue of the vulnerability of households to natural shocks (for example, hurricanes, earthquakes, fires, and impacts of El Nino) and, more generally, the relationships between poverty and the environment. While such issues and relationships are important in the south (as noted by government counterparts in Oaxaca), we did not have adequate survey data at our disposal to analyze them. In general, given its limitations, the material in this Note should be read in conjunction with the more detailed work provided in the various sectoral Notes. Still, while the material presented in this Note does not lead to specific recommendations at the state level, it is hoped that it does at least provide an idea of the magnitude of the task ahead for poverty reduction in the southern states and some broad suggestions or directions for public action.

II. How Poor is the South? A Review of Various Measures of Deprivation

Deprivation is a multidimensional condition that is not well captured by monetary measures of poverty alone. Therefore, beyond estimates of the share of the population in poverty according to income and consumption data, this section also reviews nonmonetary measures of deprivation, namely CONAPO's Marginality Index and the UNDP's HDI

Income and Consumption Poverty: Comparing the South with the Country as a Whole

Table 2 presents estimates of the share of the population in poverty in the three southern states and at the national level, together with a basic poverty profile according to the characteristics of the household head. The estimates are given for the three southern states jointly rather than for each state individually because the data from the 2000 National Household Survey (*Encuesta Nacional de Ingresos y Gastos de los Hogares*—ENIGH) used for the estimation are not representative at the state level. Estimates are provided using aggregates for both per capita income and per capita current consumption in the household. Details on the methodology are given in Annex 1.

The first four columns give the shares of the population in the samples as a whole or in the respective household groups that are in poverty, using both income- and consumption-based definitions of poverty. The same poverty lines are used for the two poverty measures, so that the difference comes only from the fact that household measures of per capita income or per capita consumption are compared with the poverty lines. We find that approximately two thirds of the population in the southern states may not be able to pay for the cost of their basic food and nonfood needs, versus 42 to 45 percent of the population at the national level. These estimates of poverty are probably on the high side, essentially because the bundle used to estimate the cost of basic food needs (following a method proposed by the National Institute of Statistics, Geography, and Information [*Instituto Nacional de Estadística, Geografia e Informática*—INEGI] and the Economic Commission for Latin America and the Caribbean [*Comisión Económica para América Latina y el Caribe*—CEPAL] in the early 1990s; see Annex 1) tends to be generous. However, there is some evidence that surveys such as the ENIGH may not adequately capture the poorest of the poor (for example, indicators of unmet basic needs such as access to basic infrastructure services tend to be higher with Census data than with the ENIGH). In any case, for the purpose of this Note, the estimates are sufficient to show the higher level of poverty in the south, and it could be shown that with lower poverty lines, differences in poverty between the south and the country as a whole would be even more striking. Note also that the higher poverty in the south is not limited to specific household groups since headcounts of poverty are systematically higher there than in the country as a whole. In household groups defined according to the education of the household head, for example, poverty in the south is up to 20 percentage points higher than in the country as a whole. Similar results are obtained when classifying households according to other characteristics.

The next four columns in table 2 give the contributions of the various household groups to the overall levels of poverty (the contributions always sum to 100 percent). The information presented suggests that, apart from higher poverty rates by category in the south, the overall high rates of poverty in the three southern states also result from lower endowments for the population living there. These lower endowments are such that in the case of education, for

example, individuals living in households in which the household head has no education or an incomplete primary education account for 72 percent of the poor in the southern states, versus 57 to 58 percent nationally. Endowments in terms of job quality also differ. For example, in the southern states the self-employed account for more than half of the poor, versus only a third nationally. Regression results are presented later in this Note to measure whether the higher level of poverty (or more precisely the lower level of per capita income) in the three southern states results primarily from lower levels of endowments or assets or from lower returns to such assets.

Table 2. Share of the Population in Poverty and Poverty Profile by Characteristics of the Household Head, 2000 ENIGH

	Share of the Poor in the Group				*Share of the Poor by Group*			
	Current Consumption		*Income*		*Current Consumption*		*Income*	
	National	*Southern States*	*National*	*Southern States*	*National*	*Southern States*	*National*	*Southern States*
Share of population in poverty	45	68	42	67	—	—	—	—
Profile by education								
No education - primary incomplete	67	80	64	78	57	72	58	72
Primary complete	47	65	43	65	26	18	26	18
Lower secondary complete	33	50	30	56	14	6	13	7
Upper secondary complete	16	23	12	21	3	3	2	2
University complete	4	12	2	10	1	1	0	1
Profile by literacy								
Literate	41	63	38	62	80	69	80	70
Illiterate	77	82	73	80	20	31	20	30
Profile by employment								
Laborer (nonagricultural)	36	43	31	44	43	18	41	18
Rural laborer	86	92	86	90	18	24	19	23
Employer (under 5 employees)	30	40	26	38	4	3	4	3
Employer (5 or more employees)	5	10	4	0	0	0	0	0
Self-employed	59	78	57	79	35	55	36	56
Profile by formal/informal sector								
Formal	41	59	37	59	64	44	63	44
Informal	59	78	57	78	36	56	37	56
Profile by sector of activity								
Agriculture	80	88	79	87	39	66	41	65
Extraction	16	37	18	37	0	0	0	0
Manufacturing	36	61	32	63	20	17	19	18
Utilities	61	64	55	66	15	6	15	6
Construction	15	9	9	9	0	0	0	0
Commerce	31	29	29	40	7	1	7	1
Transportation	36	43	30	32	4	3	4	2
Financial services	8	0	5	0	0	0	0	0
Services	30	30	26	34	15	7	14	8

— Not applicable

Source: Authors' estimates using 2000 ENIGH, with poverty lines and consumption/ income aggregates based on INEGI/ CEPAL method (see Annex 1 for details).

State-Level Indices of Marginality and Human Development

A Marginality Index at the municipal and state level is computed by CONAPO in Mexico. Based on Census data (the housing and population Censuses of 1990 and 2000 and the municipalities Census of 1995), the index is used to classify municipalities according to various levels of marginality. The underlying indicators used to estimate the overall index are:

- **Access to basic infrastructure services and housing.** Four indicators are used, namely the shares of the population living in dwellings without sanitation, without electricity, without piped water, and without sanitation. The index also takes into account the share of households living in dwellings with a dirt floor and the share of the population living in localities with less than 5,000 inhabitants.

- **Education and wage indicators.** Three indicators are used: the rate of illiteracy among the population 15 years old or older, the share of the population 15 years old or older without completed primary education, and the share of workers with earnings below two minimum wages (the level of the minimum wage in Mexico is very low in comparison with mean wages, hence the threshold of two minimum wages is used as a proxy for poverty).

Table 3 provides estimates of the underlying indicators at the national level and in the three southern states, together with the value of the Marginality Index and the states' ranking. Chiapas, Guerrero, and Oaxaca have in that order the highest marginality indices among all states.

Table 3. State-Level Marginality Index and its Components, 2000 Census

	Dwellings without Latrines, %	*Dwellings without Electricity, %*	*Dwellings without Piped Water, %*	*Dwellings without Sanitation, %*	*Dwellings with Dirt Floor, %*	*Localities with < 5,000 Inhabitants, %*
National	10	5	11	46	15	31
Chiapas	19	12	25	65	41	61
Guerrero	35	11	30	60	40	53
Oaxaca	18	13	27	59	42	64
	Illiteracy among 15+ Year Olds, %	*No Primary Education among 15+ Year Olds, %*	*Workers below Two Minimum Wages, %*	*Overall Index of Marginality*	*Level of Marginality*	*State Ranking*
National	9	28	51	—	—	—
Chiapas	23	50	76	2.25	Very high	1
Guerrero	22	42	66	2.12	Very high	2
Oaxaca	21	46	72	2.08	Very high	3

— Not applicable
Source: CONAPO.

Another useful measure is UNDP's HDI. The HDI is a weighted sum of three indices based themselves on underlying indicators related to life expectancy, educational attainment, and per capita income (Box 1). As shown in Table 4, life expectancy is two to three years lower

in the three southern states than at the national level. The rate of literacy among the population over 15 years of age is 12 to 13 percentage points lower than the national average (this variable is one minus the illiteracy rate used in CONAPO's Marginality Index). The share of the population between 6 and 24 years of age enrolled in school also is lower in Chiapas than nationally, but apparently this is not the case in the two other states. Finally, the level of per capita GDP also is lower, at approximately half the national average. Overall, the three southern states have the lowest ranking among all states for their HDI.

Table 4. State-Level Human Development Index and Its Components, 2000 Census

	Life Expectancy at Birth	*Index of Life Expectancy*	*Literacy among 15+ Year Olds*	*Index of literacy*	*Share of 6- to 24-Year-Olds Enrolled in School*	*Index of Combined Gross Enrollment*
National	75.3	0.839	90.5	0.905	62.8	0.628
Chiapas	72.4	0.790	77.1	0.771	57.0	0.570
Guerrero	73.3	0.804	78.4	0.784	63.3	0.633
Oaxaca	72.5	0.792	78.5	0.785	63.3	0.633
	Overall Education Index	*GDP per Capita (US$)*	*GDP Index*	*HDI*	*Level of HDI*	*State Ranking*
National	0.813	7,495	0.721	0.791	Medium high	
Chiapas	0.704	3,302	0.584	0.693	Medium high	32
Guerrero	0.734	4,112	0.620	0.719	Medium high	30
Oaxaca	0.734	3,489	0.593	0.706	Medium high	31

HDI, Human Development Index.
Source: CONAPO.

Box 1. Methodology for Estimating the Human Development Index

The HDI is a weighted sum of three indices based themselves on underlying indicators. The three underlying indicators deal with life expectancy, educational attainment, and per capita income. Because per capita income or GDP is included in the HDI, the HDI is a mixed indicator rather than a purely nonmonetary measure of well-being. Denoting by X the value of any one of the three underlying indicators, the corresponding index is computed using a formula taking into account the actual value of the indicator and fixed minimum and maximum values, namely Index = (Actual X - Minimum X)/ (Maximum X - Minimum X). The formula is such that for each country, the value of the indices is between zero and one. The higher the value of the index, the better the performance of the country. The underlying indicators and corresponding indices are:

- **Life expectancy.** The maximum and minimum values are set at 85 and 25 years, respectively.
- **Educational attainment.** The index is a weighted average of two components. The first component is the adult literacy rate index for which the minimum and maximum values are 0 and 100 percent. The second component is the combined gross enrollment ratio index for primary, secondary, and tertiary education, with minimum and maximum values also fixed at 0 and 100 percent. In the HDI calculation, the adult literacy index and the combined gross enrollment ratio index are given equal weight, so that the educational attainment index is the arithmetic mean of its two components.
- **Per capita GDP.** The index is based on the logarithm of real per capita GDP measured using purchasing power parity values in U.S. dollars, with the minimum and maximum values set at log(100) and log(40,000). According to UNDP's report (2002), income enters into the HDI as a proxy

for a decent standard of living, that is, a proxy for "the dimensions of human development not reflected in a long and healthy life and in knowledge."

The HDI is obtained as the straight arithmetic mean of the above three indices. Real GDP, life expectancy, and educational attainment are thus given equal weights. See UNDP (2002) for details.

III. How Much Progress Was Achieved in the 1990s?

The level of poverty and other indicators in a country is what matters in real life, but it is the trend rather than the level that must be used for evaluating progress. This is recognized in the definition of the Millennium Development Goals MDGs agreed upon at the international level (these goals are discussed in some detail later in this Note). The first MDG is the eradication of extreme poverty and hunger. But if achieving such an outcome, or more realistically, if reducing the absolute number of the poor is the goal, the measurement of progress toward that goal is the poverty trend, that is, the change in the rate of poverty over time.

This is true for other indicators as well, and it explains why the MDGs are not set in terms of some given poverty or other thresholds to be achieved by 2015, but in terms of a percentage reduction in poverty and other indicators from their baseline 1990 values. In the case of poverty, it often happens that different analysts find different poverty levels because they use different methodologies for measuring poverty. This is not a problem as long as they agree on the broad trend. A poverty level is normatively defined, and therefore subjective. For practical purposes, a poverty trend is neither normative nor subjective: it is a fact that can be agreed upon. In this section, in reviewing the progress achieved in the 1990s, we focus on trends in poverty and other indicators, rather than on the level of these indicators. We start with poverty and then review other indicators. While our poverty measures may be on the high side, our trends should be similar to those obtained by other analysts estimating poverty measures in Mexico.

Progress for Income and Consumption Poverty

Since poverty measures depend only on the mean level of per capita income in a country or region, and the inequality in the distribution of per capita income, the story of the trend in poverty in the 1990s in Mexico and in the southern states can be related to changes in mean per capita income (economic growth) on the one hand and changes in inequality on the other hand.

Thanks to solid growth in the second half of the 1990s, Mexico has been able to offset the negative impact of the 1994–95 crisis on standards of living; this is observed in the southern states as well as in the country as a whole. Table 5 provides estimates of mean per capita income levels divided by the poverty line and the extreme poverty line, so that the estimates can be considered as representing measures of purchasing power in real terms. All estimates are based on the 2000 ENIGH survey. At the national level, the mean per capita income was equal to 3.1 times the extreme poverty line in 1992. This ratio dropped to 2.6 in 1996 after the crisis, but it rebounded to 3.9 in 2000. Over the decade as a whole, there was thus a 27.5 percent increase in real income per capita (3.94/ 3.09 = 1.275). The increase was in fact larger in the southern states,

at 44 percent. Most of the gain, however, was achieved in urban areas (and through rural-urban migration). In rural areas, the gains in real per capita income have been much smaller.

Table 5. Mean per Capita Income Divided by the Poverty or Extreme Poverty Line, 1992–2000

	National			*Urban*			*Rural*		
	Mexico	*South*	*Difference*	*Mexico*	*South*	*Difference*	*Mexico*	*South*	*Difference*
	Mean per Capita Income Divided by the Extreme Poverty Line								
1992	3.1	1.5	- 1.6	3.5	1.5	- 2.0	1.6	1.7	0.1
1996	2.6	1.4	- 1.1	3.1	1.7	- 1.4	1.2	1.5	0.3
2000	3.9	2.1	- 1.8	4.7	2.5	- 2.2	1.7	2.0	0.3
	Mean per Capita Income Divided by the Moderate Poverty Line								
1992	1.6	0.8	- 0.8	1.8	0.8	- 1.0	0.9	1.0	0.1
1996	1.3	0.8	- 0.6	1.5	0.8	- 0.7	0.7	0.9	0.2
2000	2.0	1.1	- 0.9	2.3	1.2	- 1.1	1.0	1.1	0.2
	Mean per Capita Consumption Divided by the Extreme Poverty Line								
1992	2.8	1.3	- 1.5	3.1	1.4	- 1.8	1.5	1.5	0.0
1996	2.4	1.4	- 1.0	2.8	1.6	- 1.2	1.2	1.4	0.3
2000	3.5	1.9	- 1.6	4.1	2.2	- 1.9	1.5	1.8	0.3
	Mean per Capita Consumption Divided by the Moderate Poverty Line								
1992	1.4	0.7	- 0.7	1.6	0.7	- 0.9	0.9	0.9	0.0
1996	1.2	0.7	- 0.5	1.4	0.8	- 0.6	0.7	0.8	0.2
2000	1.8	1.0	- 0.8	2.1	1.1	- 1.0	0.9	1.0	0.2

Source: Authors' estimates using 1992, 1996, and 2000 ENIGH surveys. See Annex 1 for details.

To measure inequality, we use the Gini index, which typically takes a value between zero and one. A value of one means that one individual or household has all the income or consumption (extreme inequality). A value of zero means that all households have the same level of per capita income or consumption (perfect equality). With Gini indices varying between 0.47 and 0.56 at the national and state level, the levels of inequality observed are high by international standards, but not especially high by Latin American standards. The levels are similar in the south and in the country as a whole. For example, there is slightly more inequality in per capita income in the south, but inequality in per capita consumption is higher in the country as a whole.

As shown in Table 6, the main difference between the south and the country as a whole relates to changes in inequality over time. While there has not been an increase in Mexico as a whole (at least when using per capita income as indicator of well-being; with per capita consumption, there is a small increase), inequality did apparently increase in the south by 3 to 4 percentage points, a substantial amount since inequality measures tend to be sticky. This may have both short- and long-term implications. In the short run, a higher inequality means higher levels of poverty for many given the level of mean per capita income or consumption. In the long run, it can be shown that the elasticity of poverty reduction to growth (how much decrease in poverty is obtained for each percentage point in growth) is lower when initial inequality is higher. The rationale for this can be understood intuitively if one realizes that if an individual had all the income (extreme inequality), growth would not lead to poverty reduction since all

the gains from growth would be captured by that rich individual. While designing policies to tackle inequality is difficult (more so than designing policies for reducing poverty), the apparent increase in inequality in the south should be kept in mind in any strategy for poverty reduction.

Table 6. Gini Index of Inequality (multiplied by 100), 1992–2000

	National			*Urban*			*Rural*		
	Mexico	*South*	*Difference*	*Mexico*	*South*	*Difference*	*Mexico*	*South*	*Difference*
	Gini Index of Inequality in per Capita Income								
1992	53	52	- 2	50	50	0	44	54	10
1996	52	54	2	49	53	4	45	57	11
2000	53	56	3	50	54	5	47	56	9
	Gini Index of Inequality in per Capita Consumption								
1992	50	47	- 3	47	46	- 1	42	49	7
1996	48	51	3	45	49	4	42	54	12
2000	51	50	- 1	48	47	- 2	43	50	7

Source: Authors' estimates using 1992, 1996, and 2000 ENIGH surveys. See Annex 1 for details.

Despite the increase in inequality in the south, growth in the 1990s led to a substantial reduction in poverty. As shown in Table 7, from 1992 to 1996, the share of the population in extreme poverty (defined as having a level of adjusted per capita income below what is needed to meet basic food needs) increased from 54 percent to 60 percent in the south (and from 23 percent to 31 percent at the national level). But by 2000, extreme poverty levels had fallen well below those of 1992, to 46 percent in the south and 17 percent in the country as a whole. One might have observed a stronger decline in the south if inequality had not increased over the same period. In rural areas especially, the combination of lower growth and the increase in inequality meant that over the decade as a whole, only limited progress was achieved toward poverty reduction.

Table 7. Share of the Population in Poverty and in Extreme Poverty, 1992–2000

	National			*Urban*			*Rural*		
	Mexico	*South*	*Difference*	*Mexico*	*South*	*Difference*	*Mexico*	*South*	*Difference*
	Share of Population in Extreme Poverty According to per Capita Income								
1992	23	54	31	16	37	21	44	72	28
1996	31	60	29	19	36	17	61	81	20
2000	17	46	29	8	21	13	46	70	24
	Share of Population in Poverty According to per Capita Income								
1992	54	82	28	47	77	30	74	88	14
1996	61	83	22	52	70	18	85	94	9
2000	42	67	25	32	48	16	72	86	14
	Share of Population in Extreme Poverty According to per Capita Consumption								
1992	25	56	31	17	43	26	45	69	25
1996	30	60	30	18	34	16	61	82	22
2000	18	41	23	8	18	10	46	63	16
	Share of Population in Poverty According to per Capita Consumption								

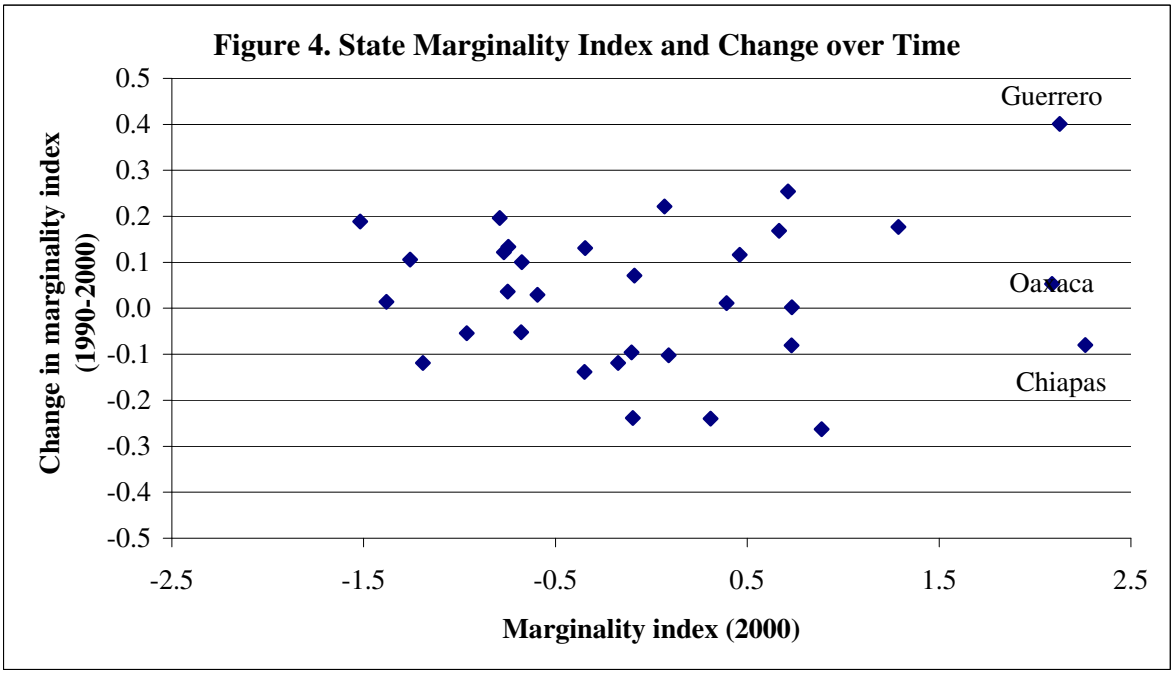
1992	56	84	28	49	79	29	73	89	16
1996	61	84	23	53	71	18	85	95	10
2000	46	68	22	36	52	15	73	84	10

Source: Authors' estimates using 1992, 1996, and 2000 ENIGH surveys. See Annex 1 for details.

Progress for Nonmonetary Indicators of Well-Being

The data for poverty do not enable us to assess progress at the state level within the southern states, because the 2000 ENIGH is not representative at the state level for these three states. To assess progress at the state level we can, however, rely on CONAPO's Marginality Index as measured through the 1990 and 2000 Censuses. Figure 4 graphs on the horizontal axis the state-level Marginality Indices for 2000. The changes in the indices between 1990 and 2000 are represented on the vertical axis. The three southern states are on the far right of the figure, since they have levels of marginality. What is more important is the difference observed in terms of progress over time. On average, the changes in the Marginality Indices for the 32 states are zero. This does not mean that there has been no progress over time in the underlying indicators used for the index (there has been substantial progress, as shown below in Table 8). Rather, the Marginality Indices should be considered as a relative measure of deprivation versus the national average. Now, while Chiapas and Oaxaca have experienced only small changes in the index over time, Guerrero has experienced a substantial increase, which suggests a lower performance.

Figure 4. State Marginality Index and Change over Time



Source: CONAPO.

The lower performance of Guerrero is confirmed in Table 8, which provides data on the underlying indicators used for estimating the index. The figures in the table represent in

percentage points the gains achieved for each of the underlying indicators during the 1990s. For example, a value of 7.18 for illiteracy in Chiapas means that the rate of illiteracy among the adult population has been reduced by 7.18 percentage points between 1990 and 2000. Overall, the gains are substantial, especially in terms of access to basic infrastructure services, but they are lower for Guerrero than for the other two southern states in virtually all the indicators. We do not have the means to conduct a detailed analysis at the state level in this Note to understand what happened in Guerrero, but the lower performance of the state warrants further work.

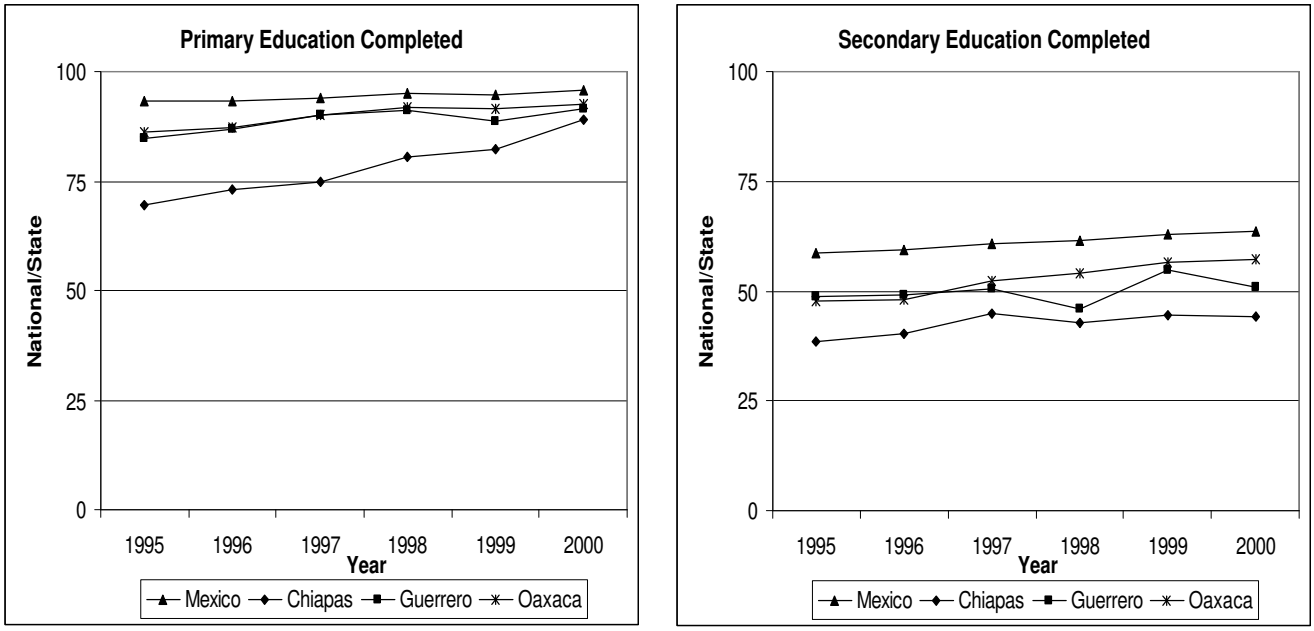
Table 8. Progress in State-Level Components of the Marginality Index, 1990–2000

	Illiteracy	*Primary Education*	*Latrines*	*Electricity*	*Piped Water, %*	*Sanitation*	*Dirt Floor*	*Population Density*	*Adult Wages*
Chiapas	7.18	11.77	23.33	22.91	17.10	9.04	10.00	5.35	4.19
Guerrero	5.30	8.44	15.19	11.59	14.49	9.97	9.86	2.69	1.65
Oaxaca	6.05	11.17	27.42	11.27	15.26	10.49	10.91	5.61	6.80

The numbers above reflect percentage point improvements in the indictors over time.
Source: CONAPO.

We do not have data readily available to provide a similar analysis of trends over time in the HDI and its components, but it is likely that improvements have been observed there as well. For illustrative purposes, Figure 5 provides trends for the period 1995–2000 in the primary and secondary school completion rates for Mexico as a whole and for the three southern states, using data from the Ministry of Education. The southern states are clearly catching up with the national average at the primary level, even if they are still lagging behind at the secondary level.

Figure 5. Primary and Secondary School Completion Rates, 1995–2000



Source: Secretariat of Public Education (*Secreteria de Educación Publica*—SEP) 2002.

Overall, then, for both poverty and nonmonetary indicators of well-being, we can say that substantial progress was achieved in the southern states during the 1990s. In some areas, such as primary schooling and access to basic infrastructure services, the southern states are slowly catching up with the rest of the country. In other areas, including levels of income and per capita GDP, the southern states still have a lot of room for progress ahead of them. In the next section, we go beyond a purely descriptive presentation of the data to analyze the determinants of per capita income, and thereby answer the question: Why are the southern states so poor?

IV. Why Is the South So Poor? An Analysis of the Determinants of Income Poverty

Difference between a Poverty Profile and an Analysis of the Determinants of Poverty

A profile of the poor in the southern states and a comparison with the national poverty estimates was provided in Table 2. While the information in Table 2 is useful, it is better to rely on regressions to analyze the determinants of poverty. The problem with poverty profiles is that although they give information on who the poor are, they cannot be used to assess the impact of various variables on the probability of being poor, controlling for other variables that may affect this probability. For example, the fact that households in the south have a higher probability of being poor than households in the country as a whole may have little to do with area characteristics of the south. The differences in poverty rates between the south and the country as a whole may result instead from differences between the characteristics of the households living in the south and those of households nationally. To sort out the correlates or "determinants" of income and, thereby, poverty and to assess why households are poorer in the south, regressions are needed.

This section provides the results of such regressions using the 2000 ENIGH survey. The impact on per capita income of the following variables is assessed: (a) the geographic location of the household (urban versus rural); (b) household size variables and their square (number of infants, children, and adults), whether the household head is a woman, the age of the household head and its square, and whether the household head has a spouse; (c) a number of characteristics of the household head, including his/ her level of education; whether he/ she is employed, unemployed, searching for work, or not working; his/ her sector of activity; his/ her position; whether he/ she works in the public sector; the size of the firm in which he/ she works; and whether he/ she is underemployed; and (d) the same set of characteristics for the spouse of the household head, when there is one. Separate regressions are estimated for the country as a whole and for the three southern states taken together. We do not estimate the regressions separately for each state because of a lack of representativity of the underlying data at the state level (as was the case for the poverty profile in Table 2). While we do not report results for the determinants of per capita consumption, the conclusions reached when analyzing the determinants of income also are valid for the determinants of consumption, because both measures of well-being are highly correlated.

Apart from analyzing the determinants of per capita income and, thereby, poverty, we also provide decompositions to explain where the differences in per capita income between the

southern states and the country as a whole come from. Households in the south have a level of per capita income equal to only half (54 percent) of the national average. Such differences in income may come from differences in assets (say, a lower level of education for the household head and the spouse in the south), or from differences in the returns to assets (say, a lower impact of education on earnings and thereby a lower per capita income in the south). In some cases, the differences in assets and in the returns to assets reinforce each other but, in other cases, they partially offset each other, and it is often difficult a priori to establish what will be the case.

Impact of Demographic and Labor Force Participation Characteristics of the Household

Controlling for other variables in the regressions, households with a larger number of infants and children have a lower level of per capita income, and thereby a higher probability of being poor. This is indicated by the negative regression coefficients (declining at the margin because of the positive term for the coefficients of the quadratic variables) in the first two columns of Table 9. The negative impact on per capita income of having many infants and children is not surprising since the resources of the household have to be shared among a larger number of members.

The next two columns in Table 9 provide the mean values of the variables nationally and in the southern states. Families in the southern states tend to have many infants (0.76 infant per household on average, versus 0.69 at the national level) and children (1.54 infant per household on average, versus 1.25 at the national level). If we were not taking into account differences between the southern states and the country as a whole in the impact of each additional infant or child on per capita income, the fact that households in the south have more infants and children would account for one tenth (9.6 percent) of the total difference in per capita income between the south and the national average. However, differences between the south and the country as a whole in the "returns" to having more infants or children account for - 7.5 percent of the difference in per capita income (a negative contribution suggests a gain for income in the south). Thus, the net impact of the larger number of infants and children in the south represents only 2.1 percent of the total difference in per capita income. Closer inspection of the results in Table 9 suggest that the offsetting impact of the returns results from a lower negative impact of having many children in the south. What is probably happening here is that children are more likely to contribute to the resources of the household in the south, essentially through child labor.

Table 9. Impact of the Number of Infants and Children, 2000 ENIGH

	Regression Coefficients		*Assets (variable means)*		*Share of Difference in per Capita Income*	
	National	*South*	*National*	*South*	*Assets*	*Returns*
Number of infants (0–4 years old)	- 0.21	- 0.38	0.69	0.76	2.1	18.2
Number of infants squared	NS	0.08	1.27	1.41	- 0.3	- 14.0
Number of children (5–14 years old)	- 0.31	- 0.25	1.25	1.54	13.4	- 13.8
Number of children squared	0.03	0.03	3.28	4.52	- 5.6	2.2
Total infants and children					9.6	- 7.5

NS, not statistically significant.
Note: Underlined coefficients are significant at the 10 percent level. Other coefficients are significant at the 5 percent level.
Source: Authors' estimates using ENIGH 2000.

Table 10 provides a similar analysis for the adults in the households. There are a number of offsetting impacts here, but the bottom line is relatively easy to see. Differences in the demographic characteristics for the adults and in their labor force participation account for a relatively minor share (6.3 percent) of the difference in per capita income between the south and the country as a whole. There is a small gain in the south because of such characteristics (- 3.5 percent), and a loss from differences in returns (9.8 percent). Other interesting results from Table 10 include the fact that, nationally, having more adults in the household is associated with a lower per capita income, but in the south the impact is not statistically significant, possibly because poverty requires a larger share of adults to be working in the south (this is apparent in the table for both the head and the spouse who have a lower probability of not working in the south, but it may also apply to other household members above 15 years of age whose work patterns are not explicitly modeled in the regressions). The results also suggest that households with younger heads are more likely to be poor, which is not surprising since they have had less time to accumulate assets. Households whose head has no spouse are also likely to be poorer, at least at the national level (the impact in the south is not statistically significant).

Regarding employment, not working is associated with a drop in income. This is also the case for underemployment, but to a lower extent, and only in the south, possibly because households have fewer other sources of income to rely on when the spouse is not working full time. The negative impact of underemployment for the spouse in the south may have implications for policy, as other countries have been able to implement job training and employment programs targeted to women. Still, more work would be needed in this area to reach a better understanding of the issues and their relationship to the characteristics of the labor market in the south. This issue is examined further in the Labor Markets Note.

Table 10. Impact of Adult Demographic Characteristics and Work Patterns, 2000 ENIGH

	Regression Coefficients		*Endowments (variable means)*		*Share of Difference in per Capita Income*	
	National	*South*	*National*	*South*	*Assets*	*Returns*
Demographics						
Number of adults (15 years or older)	- 0.17	NS	3.26	3.23	- 0.7	- 125.1
Number of adults squared	0.02	NS	13.05	12.75	0.7	68.8
Age of the head of household (head)	0.04	0.04	45.87	47.74	- 11.7	14.0
Age of the head squared	0.00	0.00	2305	2505	10.3	1.0
Female head	- 0.14	NS	0.15	0.14	- 0.2	1.6
No spouse	0.17	NS	0.18	0.17	0.2	9.9
Employment and underemployment						
Head not working	NS	NS	0.14	0.10	- 0.3	- 1.3
Spouse not working	- 0.18	- 0.52	0.53	0.46	- 1.9	23.0
Head working less than 13 hours	0.13	NS	0.19	0.16	0.4	4.0
Head working 13–19 hours	NS	NS	0.02	0.03	- 0.1	- 0.1
Head working 20–39 hours	NS	NS	0.14	0.17	- 0.1	0.8
Spouse working less than 13 hours	NS	- 0.21	0.57	0.53	- 0.4	10.0
Spouse working 13–19 hours	NS	NS	0.02	0.04	0.1	0.2
Spouse working 20–39 hours	NS	- 0.24	0.09	0.10	0.0	2.9
Total adult characteristics					- 3.5	9.8

NS, not statistically significant.
Notes: The coefficients are significant at a 5 percent level. Underlined coefficients are significant at the 10 percent level.
Source: Authors' estimates using ENIGH 2000.

While the above results regarding the impact of demographics on per capita income and thereby poverty make sense, they are to some extent sensitive to methodological choices made for income measurement. By using per capita income as our indicator of well-being, we do not allow for economies of scale in the household, or for differences in needs between household members. By ruling out economies of scale, we consider that the needs of a family of eight are exactly twice the needs of a family of four. With economies of scale, a family of eight having twice the income of a family of four would be judged better off than the family of four. Thus, not allowing for economies of scale overestimates the negative impact of the number of infants and children on poverty. Moreover, by ruling out differences in needs between household members, we do not consider the fact that larger households with many children may not have the same needs as smaller households because the needs of babies and children tend to be lower than those of adults. Not considering differences in needs thereby also leads to an overestimation of the impact of the number of infants and children on poverty. Even if corrections were made to take into account both differences in needs and economies of scale within the household, a larger number of infants and children would still lead to a lower level of per capita income and thereby a higher probability of being poor, so that a reduction in fertility would still reduce poverty.

For the analysis of the sources of the differences in per capita income between the south and the country as a whole, this methodological clarification implies that we may be

overestimating the role of demographics. Since the total contribution of demographics and labor force participation (in terms of differences of both characteristics and returns) is itself relatively small, we can probably safely say that enabling the south to catch up with the level of per capita income enjoyed in the rest of the country will not depend primarily on policies dealing with fertility.

Impact of the Education of the Head of Household and the Spouse

The education of the head of household and the spouse has a large impact on per capita income (Table 11). Nationally, a household with a head having completed university has an expected level of income higher by 78 percent higher than an otherwise similar household whose head has no education at all. Having a head of household with secondary education brings in a gain in per capita income of 40 percent versus no schooling. Completing primary schooling brings in a gain of 16 percent. The gains from a well-educated spouse are of a similar order of magnitude. Given the structure of the returns to education, the fact that heads of households and spouses have a lower level of education in the south than in the country as a whole accounts for more than a fifth (21.6 percent) of the total differential in per capita income. Additionally, the returns to education tend to be smaller in the south, perhaps because employment opportunities are not as attractive, so that household heads and spouses with some education do not fully reap the benefits of their education.

When the differences in returns to education are taken into account, education accounts for one third (31.6 percent) of the differential in per capita income between the south and the country as a whole. This has clear implications for education sector policy as a key component of any poverty-reduction strategy (this issue is discussed in the Education Note and, to some extent, in the discussion of targeted programs such as PROGRESA provided later in this Note).

Table 11. Impact of Education of the Head of Household and Spouse, 2000 ENIGH

	Regression Coefficients		*Endowments (variable means)*		*Share of Difference in per Capita Income*	
	National	*South*	*National*	*South*	*Assets*	*Returns*
Head of household (head) some primary education	NS	NS	0.24	0.33	- 0.1	3.1
Head primary completed	0.16	NS	0.22	0.17	1.2	1.9
Head some lower secondary	0.19	0.33	0.03	0.02	0.4	- 0.3
Head lower secondary completed	0.24	NS	0.16	0.07	3.2	1.0
Head some upper secondary	0.40	NS	0.02	0.01	0.8	0.4
Head upper secondary completed	0.41	0.40	0.05	0.05	0.0	0.1
Head some university	0.56	NS	0.03	0.02	1.0	1.0
Head university completed	0.78	0.51	0.08	0.03	4.7	1.4
Spouse some primary education	0.10	NS	0.21	0.26	- 0.7	0.1
Spouse primary completed	0.22	NS	0.19	0.14	1.6	2.4
Spouse some lower secondary	0.23	NS	0.03	0.01	0.4	0.0
Spouse lower secondary completed	0.33	0.39	0.16	0.05	5.4	- 0.5
Spouse some upper secondary	0.44	NS	0.01	0.01	0.5	0.1
Spouse upper secondary completed	0.47	0.56	0.05	0.03	1.1	- 0.4

Spouse some university	0.57	0.75	0.02	0.01	0.7	- 0.3
Spouse university completed	0.83	0.83	0.04	0.03	1.5	0.0
Total education					21.6	10.0

NS, not statistically significant.
Note: The coefficients are significant at a 5 percent level. Underlined coefficients are significant at the 10 percent level.
Source: Authors' estimates using ENIGH 2000.

Impact of the Quality of Employment of the Head of Household and the Spouse

The quality of employment of the head of household and the spouse is an even more important contribution than education to the difference in per capita income between the south and the country as a whole. Overall, differences in employment characteristics account for 43.1 percent of the income gap between the south and the country as a whole. Slightly more than half (23.8 percent) results from differences in characteristics and the other half from differences in returns.

The largest negative factor affecting the south is the fact that many heads and spouses work in firms with fewer than five workers, and that the income penalty from working in such firms (as opposed to larger firms) is larger in the south. When taking both characteristics and returns into account, the impact of working in small firms accounts for 26.6 percent of the difference in per capita income between the south and the country as a whole. This result does not mean that the creation of small firms in the south should be discouraged. It remains better to work, even in a small firm, than to not work at all. And there may be ways to improve the productivity of small firms through well-designed credit and other programs and through better access to markets thanks to better infrastructure (see the Infrastructure Notes). At the same time, however, one must be realistic in acknowledging that small firms cannot provide benefits similar to those available in larger firms, and that encouraging relocation of large firms to the south is not likely to be a viable option. In this respect, temporary and permanent migration from the south to other areas, or from rural areas to cities within the south, represents an appropriate strategy for households to diversify their income sources, access better jobs, and improve their standards of living (see the NAFTA Note on why the North American Free Trade Agreement [NAFTA] did not reach the south and the Labor Markets Note for a discussion).

Table 12. Impact of Employment Characteristics of the Head of Household and Spouse, 2000 ENIGH

	Regression Coefficients		*Endowments (variable means)*		*Share of Difference in per Capita Income*	
	National	*South*	*National*	*South*	*Assets*	*Returns*
Job characteristics of head of household (head)						
Head worker (nonagricultural)	- 0.08	- -0.19	0.46	0.25	- 2.6	4.0
Employer (fewer than 5 employees)	0.34	0.40	0.06	0.04	0.9	- 0.3
Employer (5 or more employees)	0.94	1.06	0.01	0.01	0.0	- 0.1
Self-employed	NS	NS	0.23	0.42	0.5	2.9
Head in firm with fewer than 5 workers	- 0.30	- 0.37	0.38	0.55	7.8	5.5
Firm with 5 to 9 workers	- 0.22	- 0.30	0.15	0.15	0.2	1.7
Firm with 10 to 19 workers	- 0.12	NS	0.07	0.05	- 0.3	- 1.3
Access to social security (household)	0.07	NS	0.28	0.12	1.6	1.5

Job characteristics of spouse						
Spouse worker (nonagricultural)	NS	NS	0.13	0.06	0.0	1.5
Employer (fewer than 5 employees)	0.33	0.96	0.01	0.00	0.3	- 0.3
Self-employed	NS	NS	0.10	0.22	0.2	- 0.4
Spouse in firm with fewer than 5 workers	- 0.21	- 0.43	0.18	0.30	3.8	9.5
Firm with 5 to 9 workers	NS	NS	0.04	0.03	0.0	0.3
Firm with 10 to 19 workers	NS	NS	0.02	0.02	0.0	0.4
Head sector of activity						
Extraction	0.59	0.89	0.00	0.00	0.3	- 0.1
Manufacturing	0.30	0.32	0.21	0.17	2.0	- 0.6
Utilities	0.25	0.36	0.10	0.06	1.4	- 0.9
Construction	0.15	NS	0.01	0.00	0.1	- 0.1
Commerce	0.34	0.49	0.08	0.02	3.3	- 0.4
Transportation	0.33	0.60	0.05	0.04	0.5	- 1.5
Financial services	0.81	1.19	0.01	0.00	1.4	0.0
Services	0.26	0.50	0.19	0.15	1.7	- 5.1
Spouse sector of activity						
Manufacturing	NS	NS	0.10	0.18	- 0.3	1.3
Utilities	NS	NS	0.00	0.00	0.0	0.0
Commerce	0.20	NS	0.05	0.02	0.9	0.2
Transportation	0.29	NS	0.00	0.00	0.0	0.1
Financial Services	NS	NS	0.00	0.00	0.1	0.0
Services	NS	NS	0.10	0.06	0.0	1.5
Total employment characteristics					23.8	19.3

NS, not statistically significant.

Note: The coefficients are significant at a 5 percent level. Underlined coefficients are significant at the 10 percent level.

Source: Authors' estimates using ENIGH 2000.

Apart from the impact of the size of the firm, the second largest contributor to the difference in expected income between the south and the country as a whole is the sector of activity in which the head and the spouse are working. The bottom part of Table 12 gives the expected impact of working in various sectors, as compared with working in agriculture (the excluded category not represented in Table 12). The fact that all the regression coefficient estimates in the table are positive implies that households with heads working in the agricultural sector tend to have lower levels of per capita income than other households. This is true nationally as well as in the south. For example, a household with a head employed in manufacturing has an expected level of per capita income 30 percent higher than an otherwise similar household with a head working in agriculture. The impact of the spouse's sector of activity tends to be smaller than that of the head of household (many coefficients are not statistically significant). Nationally, only 19 percent of the population lives in a household whose head is working in agriculture, versus 45 percent in the south. In the south, virtually no households have a head or spouse working in the financial services sector, which is the sector with the highest return. Overall, the fact that the population in the south is more dependent on sectors of activities that are less favorable accounts for 11.5 percent of the income differential between the south and the country as a whole. However, the gains associated with not working

in agriculture are slightly higher in the south, so that the impact of differences in returns offsets part of the negative impact of the sectoral composition of employment (5.6 percent). The net impact of the sector of activity is then only 5.8 percent.

Impact of Geographic Location

As shown in Table 13, differences in urbanization and area characteristics account for 17.2 percent of the differences in income between the southern states and the country as a whole. Controlling for other variables, households living in urban areas have a higher level of per capita income than households living in rural areas. The premium for urban households is 39 percent nationally and 46 percent in the south. When both the proportion of the population living in urban areas and the returns to living there are taken into account, the lower rate of urbanization in the south accounts for 9.8 percent of the difference in per capita income between the south and the country as a whole. Moreover, the impact of unobserved differences between households in the south and the overall population is captured by the difference in the overall constants of the regression. These unobserved effects, which are likely to be related to area characteristics rather than to household characteristics (since we have controlled in the regressions for a large number of household characteristics), account for 7.2 percent of the gap in income between the south and the country as a whole. It can be expected that urbanization will progressively increase in the south, thereby reducing the contribution of this factor to the lower levels of income in the south, but this is likely to take a long time (the gap in the rate of urbanization is large, at 27 percent).

Table 13. Localization and Unobserved (probably area) Characteristics, 2000 ENIGH

	Regression Coefficients		*Endowments (variable means)*		*Share of Difference in per Capita Income*	
	National	*South*	*National*	*South*	*Assets*	*Returns*
Urban location (vs. rural)	0.39	0.46	0.75	0.48	15.0	- 5.2
Constant	6.06	6.02	—	—	0.0	7.2
Total location					15.0	2.0

— Not applicable

Note: The coefficients are significant at a 5 percent level. Underlined coefficients are significant at the 10 percent level.

Source: Authors' estimates using ENIGH 2000.

Conclusion on the Determinants of per Capita Income

As mentioned earlier, households in the south have a level of per capita income equal to only half (54 percent) of that enjoyed in the country as a whole. The analysis conducted above suggests two main reasons for this. First, two thirds of the differences in per capita income result from differences in characteristics rather than from differences in the returns to these characteristics. This implies that a poverty-reduction strategy for the south must rely primarily on interventions designed to improve the characteristics of the households living there. Second, in terms of categories of effects explaining the differences in income between the south and the country as a whole, the quality of employment comes first (accounting for 43.1 percent of the gap), followed by education (31.6 percent of the gap). Urbanization and unobserved effects likely to result from differences in area characteristics between the south and the country as a whole come third, at 17.0 percent. The contribution of demographic and labor force participation characteristics is lower, at only 8.4 percent. While this analysis is fairly simple, it does suggest where gains can be obtained to improve standards of living in the south.

IV. Do the Poor in the South Benefit from Federal Transfers and Programs?

From the previous section, we know that interventions designed to improve the education level of the poor and their employment opportunities are key to offset the gap in standards of living between the south and the rest of the country. Since the mid-1990s, there has been a substantial increase in real terms in federal funding for the social sectors, including targeted poverty programs. Special focus has been placed on investing in human capital of the poor. In this last section, after briefly documenting the increase in public social spending at the federal level, we assess whether poorer states (and thereby the southern states) benefit more or less than other states from federal transfers and programs. Next, using household data, we assess whether selected federal programs do reach the poor within the southern states. Finally, we discuss briefly some of the features of PROGRESA, the newest and largest program for the poor.

Increase in Social Sector Spending in the 1990s

Federal, state, and local governments have a fundamental role to play in reducing poverty and improving social indicators. At the federal level, stable and sound macroeconomic and labor policies are one of the most important contributions that governments can make for the reduction of poverty (see the Macroeconomic and Labor Markets Notes). A second important contribution comes from the impact of federal public spending for the social sectors.

According to CEPAL (2001), social public spending per capita increased on average by 50 percent between 1990–91 and 1998–99 in Latin America. The scope of the increase differed between countries, but the increase was generalized. In Colombia, Guatemala, Paraguay, Peru, and the Dominican Republic, spending more than doubled. In countries with higher initial levels of spending (Argentina, Brazil, Costa Rica, and Panama), the increase was smaller, around 30 percent over the decade. In Mexico, the increase was 55 percent, from US$259 per capita in the beginning of the decade to US$402 at the end of the decade. In Mexico, as in other countries, the increase in spending was made feasible thanks to economic growth (a higher level

of per capita GNP leads to higher spending per capita, holding the share of spending in GNP constant), a higher level of fiscal pressure, and a reorientation of fiscal priorities toward the social sectors.

While this increase in spending was good news for the poor, in comparison to other countries, the level of public social spending in Mexico still remains relatively low. Table 14 proposes a typology of the countries in terms of their fiscal pressure and their fiscal priorities. Countries such as Argentina, Brazil, and Uruguay have high levels of social spending as a share of GNP because they combine high fiscal pressure with an emphasis on the social sectors for expenditures. By contrast, countries such as El Salvador, the Dominican Republic, and Peru have low levels of social spending as a share of GNP because they combine low fiscal pressure with low levels of priority for the social sectors. Despite some prioritization for the social sector, the level of social spending as a share of GNP in Mexico remains low because of low fiscal pressure.

One priority, therefore, could be to increase the resources available to the government (at the federal level) to pursue a more aggressive social policy. A range of options would be available. One existing proposal consists of raising the value-added tax (VAT) (by terminating some exemptions) and using a substantial portion of the proceeds for social and poverty programs. While raising the VAT would in itself hurt the poor (since the VAT is less progressive than other taxes), combining an increase with strong compensatory measures for the poor could be in their favor overall. We do not want to argue for specific policy recommendations in the area of taxation in this Note, but it is important to highlight the fact that Mexico's level of spending for the social sectors remains low given its level of economic development (see the Macroeconomics and Federalism Notes). Bolivia, Colombia, Costa Rica, Nicaragua, and Panama all spend a larger share of their GNP on the social sectors than Mexico, as do Argentina, Brazil, Chile, and Uruguay.

Table 14. Typology of Latin American Countries in Terms of Social Spending, 1998

Fiscal Pressure: Expenditures as Share of GNP	*Fiscal Priority: Share of Total Public Spending Going to Social Sectors*		
	Less than 40%	*Between 40% and 60%*	*More than 60%*
More than 30%	Nicaragua (12.7) Colombia (15.0) Panama (19.4)	Costa Rica (16.8)	Argentina (20.5) Brazil (21.0) Uruguay (22.8)
Between 20% and 30%	Honduras (7.4) Venezuela, R.B. de (8.6)	Bolivia (16.1)	Chile (16.0)
Less than 20%	El Salvador (4.3) Dominican Republic (6.6) Peru (6.8)	Guatemala (6.2) Mexico (9.1) Paraguay (7.4)	

Note: The numbers in parentheses correspond to the share of social spending in GNP.
Source: CEPAL 2001.

State-Level Targeting Performance of Selected Federal Transfers and Programs

The extent to which the southern states benefit from public social spending in Mexico depends on the type of spending considered. Some large categories of expenditures in education and

health are distributed according to past investments and the demand from households, which tends to be higher in non-southern states and among the nonpoor. For example, as discussed in the Education Note, while spending for primary education is propoor, spending at the upper secondary and tertiary levels tends to be pro-rich. At the same time, several categories of spending are targeted to poor areas and households, and therefore to the south.

One simple way to summarize the distribution of federal spending between states is to provide estimates of the GIE of the various transfers and programs (see Wodon and Yitzhaki [2002] for a description of the GIE). A GIE of one means that program benefits or transfers are distributed between states in the same way as per capita GDP, so that an increase in benefits or transfers would not affect the inequality between states in per capita GDP. A GIE larger than zero means that per capita GDP and program benefits are positively correlated, hence the states in the upper (lower) part of the distribution of income benefit more from the increase in spending. A GIE of zero means that all states benefit in the same way on a per capita basis from an increase in federal spending for the program, hence the increase in spending is progressive since it is distributed more equally than per capita GDP. A GIE between zero and one means that the distribution of the increase in spending for the program is positively correlated with per capita GDP, so that the states that are better off receive a higher share of the benefits on a per capita basis, but the increase in spending is progressive because it is not as unequally distributed as per capita GDP. Overall, when comparing programs or categories of transfers, the program or transfer that is most redistributive is the program with the lowest GIE.

While factors other than the GIE should be taken into account when deciding which programs or transfers to cut or expand, the GIE does provide a good basis for ranking the redistributive impact of alternative policies. Also, while the descriptive tool of the GIE can be used to analyze the distribution of transfers between states, it also can be applied to an analysis of the distributional characteristics of programs and transfers at the household level (this is done later in this section). When household data are available, it is better to use household-level estimates of the GIE. Hence, in this section we focus on transfers for which we do not have household-level estimates of the GIE, with the exception of PROGRESA, in order to provide some perspective.

Table 15 provides the state-level estimates of the GIE of selected federal transfers. With the exception of *Credito a la Palabra*, a program run by the Secretariat of Social Development (*Secreteria de Desarrollo Social*—SEDESOL) that provides credit to farmers, all the programs have a GIE below minus one, which is highly redistributive. This means that on a per capita basis, poorer states benefit much more than richer states from the targeted poverty programs, which is logical since many among the poor tend to live in poorer states. Some of the programs have a built-in targeting formula, as is the case with the social funds for new social infrastructure (the Federal Transfer Fund for Social Infrastructure [*Fondo de Aportaciones para la Infraestructura Social*—FAIS], Fund for Municipal Social Infrastructure [Fondo para la Infraestructura Social Municipal—FISM], and the Fund for State Social Infrastructure [*Fondo para la Infraestructura Social Estatal*—FISE]) that are targeted to poor states and to poor municipalities within states, according to a propoor formula known as the Municipal Deficit Level (*Masa Carencial Municipal*-MCM). The Universal Health Care Program (*Programa de Ampliación de Cobertura*—PAC), which provides a basic package of health services to those without access to health posts and centers, is the most redistributive program at the state level, followed by PROGRESA, an integrated

program with education, health, and nutrition components (more details on the targeting performance of PROGRESA and its impact on the poor are provided below). The Mexican Institute of Social Security's (*Instituto Mexicano de Seguridad*—IMSS) Solidaridad, the National Council for Educational Development's (*Consejo Nacional de Fomento Educativo*—CONAFE) compensatory programs for education, and the Temporary Employment Program (*Programa de Empleo Temporal*—PET) also are highly redistributive at the state level

Table 15 also provides estimates of the GIEs for education and health spending. While the education GIEs are based on actual outlays from the federal government to the states, the health GIEs are based on the share of households using the various types of services. The results are as expected. Spending for lower levels of education is more redistributive than spending for higher levels. More precisely, in the case of spending per capita for preprimary and primary schooling, the GIEs below zero mean that if the value of the public education were taken into account in the GDP per capita measures of the states, the poorer states would receive a higher transfer in absolute terms than the richer states. This is the case probably because the fact that some households in richer states use private schools more than compensates for the fact that some households in the poorer states are not enrolled. The GIE for secondary education is close to zero, suggesting an equal per capita allocation for all states on average. The GIEs for the preparatory and tertiary levels are below one, so that even these expenditures are inequality decreasing at the margin, but they also are above zero, suggesting that richer states get a larger allocation per capita than poorer states, especially at the tertiary level. For health, we find that services provided by the Ministry of Health are more redistributive (that is, inequality reducing at the margin) than services provided by the IMSS and the Institute of Social Security and Social Services for State Employees (*Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*- ISSTE),which is again as expected, since these two institutions provide services to the middle income class in urban areas

Table 15. State-Level Estimates of the Gini Income Elasticity of Federal Transfers, 2001

	State-level GIE
Federal poverty programs	
Social funds (FAIS, FISM, FISE)	- 1.36
Temporary Employment Program (PET)	- 1.22
Credito a la Palabra	- 0.53
PROGRESA	- 1.68
Programa de Ampliación de Cobertura (Universal Health Care Program)	- 1.80
IMSS Solidaridad	- 1.41
Compensatory education programs	- 1.02
Federal transfers for education	
Preprimary	- 0.41
Primary	- 0.38
Secondary	0.04
Upper secondary	0.11
University	0.68
Federal transfers for health	
All medical	0.49
SSA	0.04
IMSS	1.41
ISSTE	0.51

Source: Authors' estimates.

Household-Level Targeting Performance of Selected Federal Transfers and Programs

There are a few programs for which we have data on household-level participation and benefits in the 1997 Survey of Household Socioeconomic Characteristics (*Encuesta de Características Socioeconómicas de los Hogares*—ENCASEH. This survey can be used for the analysis of the targeting performance of (a) the Program for Direct Assistance in Agriculture (*Programa de Apayos Directos al Campo*—PROCAMPO), a transitional program giving cash transfers to farmers to compensate them for losses in income following NAFTA (while this program is not targeted to the poor, it has a large impact on the poor because many farmers are poor); (b) the Tortilla Subsidy Program (*Fideicomiso para la Liquidacion al Subsidio de la Tortilla*—FIDELIST), which gives one kilogram of tortillas per family per day to households with low wages; (c) the subsidized milk program LICONSA, which gives a 25 percent reduction in the price of milk for families with low wages and children; (d) Children's Solidarity (*Ninos de Solidaridad*), which is a targeted program of stipends for school children; (e) School Breakfast Program (*Desayunos Escolares*), which consists of school breakfasts given in schools, under management of the Integral Development of the Family Agency (*Desarrollo Integral de la Familia*—DIF); (f) other DIF-funded programs providing support for the poor; and finally (g) PROGRESA, which is discussed in more detail below. For most programs, the survey can be considered as nationally representative. However, for PROGRESA, the data come from a separate component of the survey implemented only in a subset of states, including Guerrero, but not Chiapas and Oaxaca. The data are for 1997, and are already a bit old, but since the distribution of the benefits of the programs has not changed too much since then, the data are likely to provide a good idea of today's benefit incidence profile.

Table 16 first provides estimates of participation rates by quintile. This is done for the sample as a whole and in the southern states. Coverage levels are relatively low for most programs, even in the bottom income quintile. The exceptions are PROCAMPO, the Desayunos Escolares, and especially PROGRESA in the south, with participation rates of about 40 percent in the poorest quintile for the first two programs, and 75 percent for PROGRESA. In terms of the shares of participants in the various income quintiles, we find that the two programs with the lowest performance are the food subsidies for tortillas and milk. The two programs with the best targeting performance are PROGRESA and the Desayunos Escolares. Finally, the table provides the shares of outlays that accrue to the various quintiles for the two programs for which we have information on the amounts of transfers received in the survey, namely PROCAMPO and PROGRESA (for the other programs, we only know about participation). PROGRESA's share of transfers by quintiles is similar to the share of beneficiaries by quintile. This suggests a distribution of benefits closely following the distribution of participants. By contrast, the share of transfers received from PROCAMPO is much less propoor than the share of program participants, essentially because the transfers received are proportional to the amount of land cultivated, with richer farmers controlling larger parcels of land than poorer farmers.

Table 16. Benefit Incidence for Various Social Programs by Quintile, 1997 ENCASEH

	National						*Southern States*					
	All	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*All*	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*
Participation rate												
PROCAMPO	6.0	14.1	6.3	4.2	4.1	1.3	16.8	42.9	22.8	9.7	6.4	1.9
FIDELIST	6.8	6.5	9.2	8.2	7.1	2.9	7.3	2.6	12.1	11.0	6.3	4.5
LICONSA	8.5	8.1	9.9	10.0	8.6	5.8	2.0	0.6	3.5	3.7	1.8	0.6
Ninos de Solidaridad	2.4	4.2	4.3	2.3	0.7	0.5	0.9	1.9	1.9	0.7	0.0	0.0
Desayunos Escolares	6.0	12.1	7.3	5.1	3.3	1.8	14.7	41.0	18.3	7.6	5.4	0.9
DIF	2.7	5.3	3.5	2.2	1.4	0.7	4.9	10.8	7.6	2.6	2.7	0.6
PROGRESA	6.2	15.7	10.1	3.4	1.1	0.5	30.9	74.6	39.0	25.2	12.0	3.2
Percentage of beneficiaries												
PROCAMPO		47.5	21.4	13.7	13.2	4.2		51.3	27.2	11.6	7.7	2.2
FIDELIST		19.4	27.8	24.1	20.1	8.6		7.2	33.4	30.1	17.2	12.1
LICONSA		19.4	24.0	23.6	19.5	13.6		6.3	34.3	36.3	17.5	5.5
Ninos de Solidaridad		34.7	36.1	18.7	5.9	4.5		42.0	43.4	14.5	0.0	0.0
Desayunos Escolares		41.3	24.9	17.1	10.6	6.1		56.0	25.1	10.3	7.3	1.3
DIF		40.9	27.3	16.4	10.1	5.3		44.6	31.4	10.5	11.1	2.4
PROGRESA		51.0	32.7	11.1	3.6	1.6		49.4	29.8	12.1	6.7	1.9
Percentage of amounts												
PROCAMPO		16.4	15.7	13.2	25.4	29.3		25.6	21.5	23.0	11.2	18.7
PROGRESA		46.2	35.2	12.6	4.2	1.8		46.5	28.9	14.1	8.4	1.8

Source: Authors' estimates using 1997 ENCASEH.

Using the concept of the GIE introduced above, Table 17 confirms that PROGRESA and (somewhat surprisingly) the DIF programs have the best targeting performance, with food subsidies lagging far behind. The fact that PROGRESA is well targeted is encouraging since it is by far the largest poverty program in Mexico. In the case of PROGRESA, a sophisticated three-stage targeting mechanism is used (Skoufias, Davis, and Behrman 1999). First, using Census

data, poor rural localities are selected on the basis of their level of marginality. Other elements for selection into the program include geographic location, the distance between localities, and the presence of health and education infrastructures. The second stage in the targeting process consists of selecting eligible families within participating communities. For this, PROGRESA collects data on all households living in participating communities and a discriminant analysis is used to classify households as poor (beneficiaries) or nonpoor (nonbeneficiaries). The third stage in the targeting process consists of checking the selection of beneficiaries within the community. Local authorities have the opportunity to review the targeting proposed by PROGRESA and to suggest a second visit by PROGRESA staff if they believe that some poor families should be reclassified as nonpoor or vice versa (the proportion of households whose selection is disputed is in practice very small — only 0.1 percent of the selected households).

Table 17. Gini Income Elasticities by Programs Nationally and in the Southern States, 1997

	Household-Level GIE National	*Household-Level GIE Southern States*
PROCAMPO (not targeted, but reaching the poor)	0.28	- 0.13
FIDELIST (free tortillas)	- 0.13	0.06
LICONSA (subsidized milk)	- 0.10	- 0.05
Ninos de Solidaridad (stipends for schooling)	- 0.72	NA
Desayunos Escolares (school breakfasts)	- 0.69	- 0.94
DIF (other support programs)	- 0.71	- 0.83
PROGRESA (cash component of the program)	- 0.93	- 0.81

NA, Not available. So*urce:* Authors' estimates using 1997 ENCASEH, based in part on Wodon and others (2002). We do not provide an estimate for Ninos de Solidaridad in the three southern states because of low sample size.

However, while the targeting of PROGRESA is sound overall, there is evidence that targeting the program by distinguishing poor from nonpoor households within very poor communities (many of which are located in the south) may not be efficient. The issue is not so much the administrative cost of the process, but rather the fact that separating poor from nonpoor households in small villages is not easy and may create social tensions. Since the gains from within-community targeting have been shown to be relatively small, it may be better in some cases to let all the households in selected communities benefit from the program. Such a choice has been recommended by the International Food Policy Research Institute in Honduras, where it is advising on the redesign of the Family Allowance Program (*Programa de Asignación Familiar*—PRAF, a program similar to PROGRESA. The main problem with the idea of not targeting the program in small and highly marginalized localities is that two households living in different localities but with otherwise similar characteristics might be treated differently, which raises issues of fairness.

To sum up, in this section, we have found that substantial resources are targeted to the southern states and to poor households living in these states. The southern states tend to benefit more than other states (with respect to their population) from a number of categories of social and targeted spending. This does not necessarily imply that public spending in Mexico favors poorer states and poorer households in these states, because large categories of public spending have not been reviewed in this Note. Still, the findings do suggest an effort at the federal level to attack the root causes of poverty in the south, especially in recent years through the

implementation of programs such as PROGRESA or FISM. Beyond the analysis of the incidence of such transfers, the issue of the potential long-term beneficial impact of programs has not been discussed here, but it is analyzed in some details in the Millennium Development Goals Note and the efficiency of the southern states in reaching these goals.

V. Conclusion

As stated, the objective of this Note is to answer a number of basic questions. First, how poor are households living in Chiapas, Guerrero, and Oaxaca, and to what extent have they benefited from the limited progress observed toward poverty reduction in the 1990s in Mexico as a whole? Second, are households in the south poor because of a lack of assets or because they enjoy only limited returns to their assets? Third, to what extent do federal transfers benefit households in the south, and especially poor households within the south?

The main results and conclusions that emerge from the analysis are not surprising. Households living in the southern states are much poorer than households living in the rest of Mexico, whether poverty is defined in terms of household income or consumption, or in terms of marginality and human development indices. Furthermore, limited progress was observed in the 1990s toward the reduction of income or consumption poverty, although gains were achieved toward improving human development indicators and improving the access of households to basic services. As to why households in the south are so poor, the analysis suggests that a lack of assets rather than differences in the returns to assets is to blame. The main gaps in assets are related to a lower quality of employment in the south, a lower level of education and, to some extent, a lower quality of geographic location. Differences in demographic characteristics and labor force participation, by contrast, play a smaller role.

On the positive side, an analysis of the incidence of federal social spending suggests that poorer states benefit more than other states from spending for social funds and targeted programs for the poor. At the household level, the analysis suggests that while food subsidies apparently suffer from substantial leakages to the nonpoor, demand-side education and human development programs such as PROGRESA appear to be well targeted. These newer programs also tend to generate long-term gains for participants through their impact on the children's human capital.

Annex 1. Methodology for the Measurement of Poverty

Three elements are needed to compute a poverty measure: (a) an indicator of well-being such as consumption or income, (b) a poverty line to which the indicator can be compared, and (c) a statistical tool (the poverty measure) used for reporting the results of the comparison of the indicator with the poverty line. The most widely used poverty measures are the well-known, additively decomposable FGT indices (Foster, Greer, and Thorbecke 1984). The incidence of poverty, denoted by P0 or H for the headcount index, is simply the share of the population living with income or consumption below the poverty line. The depth of poverty, measured by P1 or PG for the poverty gap, captures the distance separating the poor from the poverty line as a proportion of that line (the nonpoor having a zero distance). The severity of poverty, measured by P2 or SPG for the squared poverty gap, takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor. Higher order poverty measures are rarely used and are more difficult to interpret. In this Note, because of limited space, we focus the analysis of the levels and trends in poverty on the headcount index.

The estimation of the poverty lines used for identifying the poor was done following the methodology provided in a study by INEGI/ CEPAL (1993) titled *Magnitud y Evolución de la Pobreza en México: 1984-1992, Informe Metodológico*. The study relies on the cost of basic needs method to measure poverty. It first computes the cost of a food basket to estimate the cost of basic food needs, and then scales up this cost to take into account nonfood needs. The food basket representing basic food needs is anchored in a normative nutritional requirement of 2,165 kcal per person and per day, following the guidelines of the 1981 Consultative Meeting of Experts held by the Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (*Organización Mundial de Salud*- OMS), and the United Nations (*Organización de Naciones Unidas*- ONU). The choice of the food items reflects Mexican food consumption patterns, with different baskets used for the urban and rural sectors. The extreme rural and urban poverty lines corresponding to the cost of basic food needs were computed using survey-based prices or, more precisely, unit values. The unit values are those paid on average by the households with per capita income between the 20th and 50th percentiles of the income distribution, so that they are representative of the prices paid by the poor (the mean unit values differ in urban and rural areas). The surveys identify income received by each family member according to 25 categories, which can be aggregated into (a) wages and salary income; (b) current monetary income, which includes wages and salaries, income from self-employment, property income and rents, monetary transfers, and income from financial assets; and (c) total current income, which includes all of the above, plus nonmonetized income such as imputed rent, in-kind transfers, and stock dividends. For ranking households in the distribution of income, we used total current income.

Having computed the extreme poverty lines for the various years (relying on INEGI/ CEPAL's estimates for 1992), we obtained the moderate poverty lines by assuming (as does INEGI/ CEPAL) that the cost of basic food needs represents 50 percent of the cost of total basic needs in urban areas and 57 percent in rural areas. In other words, to obtain the moderate poverty lines, the extreme poverty lines are scaled up by a fixed factor (2.0 in urban areas and 1.75 in rural areas). The resulting sets of poverty lines are available upon request.

References

The word *processed* describes informally reproduced works that may not be commonly available through libraries.

CEPAL (Comisión Económica par América Latina y el Caribe). 2001. *Panorama Social de América Latina 2000–2001.* Publicación de las Naciones Unidas, Santiago de Chile.

CONAPO (Consejo Nacional de Población). 2002a. *Índices de desarrollo humano y social.* Available at www.conapo.gob.mx.

———. 2002b. *Índices de marginación 2000*. Available at www.conapo.gob.mx.

Foster, J., J. Greer, and E. Thorbecke (1984), A class of decomposable poverty measures, Econometrica 52: 761-65.

INEGI/ CEPAL (Instituto Nacional de Estadistíca, Geografia e Informática/ Comisión Económica par América Latina y el Caribe). 1993. *Magnitud y Evolución de la Pobreza en México, 1984–1992. Informe metodológico.* México City.

SEP (Secretaría de Educación Pública). 2002. Sistemas para el análisis de la estadística educativa. México City.

Skoufias, E., B. Davis, and J. Behrman. 1999. Final Report: An Evaluation of the Selection of Beneficiary Households in the Education, Health, and Nutrition Program (PROGRESA) of Mexico. June. International Food Policy Research Institute, Washington, D.C.

UNDP (United Nations Development Programme). 2002. *Human Development Report 2002.* New York.

Wodon, Q., B. de la Briere, C. Siaens, and S. Yitzhaki. 2002. "The Impact of Public Transfers on Inequality and Social Welfare: Comparing Mexico's PROGRESA to Other Government Programs." World Bank, Washington, D.C. Processed.

Wodon, Q., and S. Yitzhaki. 2002. "Inequality and Social Welfare." In J. Klugman, ed., *Poverty Reduction Source Book.* Washington, D.C.: World Bank.