POVERTY IN LATIN AMERICA: TRENDS (1986-1998) AND DETERMINANTS

QUENTIN WODON, RODRIGO CASTRO-FERNANDEZ,
KIHOON LEE, GLADYS LOPEZ-ACEVEDO, CORINNE SIAENS,
CARLOS SOBRADO, JEAN-PHILIPPE TRE[*]

ABSTRACT

This paper analyzes the evolution of poverty in Latin America. In 1998, about a third of the population was poor, and one sixth extreme poor. This represents 179 million poor people, of which 89 million lived in extreme poverty. The share of the population in poverty has decreased in the 1990s, and it is now back to its level of the mid 1980s. But due to population growth, the number of the poor has increased over the last fifteen years. The paper also investigates the impact of household characteristics on poverty, including demographics, education, employment, geographic location, migration, and ethnicity. Many of these characteristics have large impacts on per capita income and thereby on the probability of being poor or extremely poor.

RESUMEN

Este trabajo analiza la evolución de la pobreza en América Latina. En 1998, alrededor de un tercio de la población era pobre, y un sexto extremadamente pobre. Esto representa 179 millones de pobres, de los cuales 89 millones viven en la extrema pobreza. La proporción de la población pobre ha descendido en los años 90, y está ahora de nuevo en sus niveles de mediados de los 80. Pero debido al crecimiento de la población, el número de pobres ha aumentado durante los últimos quince años. Este trabajo también investiga el impacto de las características de los hogares pobres, incluyendo demografía, educación, empleo, ubicación geográfica, migración y etnia. Muchas de estas características tienen gran impacto en el ingreso per cápita y, por tanto, en la probabilidad de ser pobres o extremadamente pobres.

1.   INTRODUCTION

This paper has two objectives. The first objective is to assess the extent of poverty in Latin America today, and the trend over the last fifteen years. The estimates are based on the unit level data from household surveys for 18 countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Uruguay, and Republica Bolivariana de Venezuela. Together, these countries represent more than 90 percent of the region's population, but the coverage in the surveys is smaller because some surveys are urban only. The main conclusion is that one in every six persons (17.8 percent of the population) was extremely poor in Latin America in 1998, and one in three persons (35.8 percent of the population) was poor. This represents progress versus the early 1990s, and a return to the levels of poverty observed in the mid 1980s.

The second objective is to provide a simple analysis of the determinants of poverty. While one often finds a poverty profile in a paper on poverty, it is better to provide regressions that give insights into the determinants or correlates of poverty. Similar regressions for the determinants of per capita income were estimated for nine of the seventeen countries mentioned above. Household demographics, education, employment, geographic location, migration, and ethnicity were all found to have large impacts on per capita income and thereby on the probability of being poor. Brief discussions of the policy implications of the findings are provided. Section 2 presents the poverty trends. Section 3 discusses the determinants. A conclusion follows.

2.   TRENDS IN POVERTY

2.1.   Methodology

Three ingredients are needed to compute a poverty measure: a) an indicator of well-being such as consumption or income per equivalent adult, b) a poverty line to which the indicator can be compared, and c) a statistical tool (the poverty measure) used for reporting the result of the comparison of the indicator with the poverty line at the aggregate level. The most widely used poverty measures are the first three measures of the additively decomposable FGT class (Foster, Greer, and Thorbecke, 1984). The headcount index of poverty H is the share of the population living with per capita income or consumption below the poverty line. The poverty gap PG captures the distance separating the poor from the poverty line as a proportion of that line (the non poor having a zero distance). The squared poverty gap SPG takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor by squaring the distance separating the poor from the poverty line. It is said that H, PG, and SPG provide measures of, respectively, the incidence, the depth, and the severity of poverty. Denoting by Y_i the indicator of well being for household i (such as per capita income), by N the population, by w_i the household's weight (the household's size times its expansion factor, the sum of the weights being N), and by Z the poverty line, the poverty measures H, PG, and SPG are obtained for θ equal to 0, 1, and 2 in:

(1) $P\theta = \Sigma_{Y_i \leq Z} (w_i/N) [(Z - Y_i)/Z]\theta$

Our poverty lines were computed to measure the cost of basic food needs (extreme poverty line) as well as the cost of both food and other basic needs (moderate poverty line). The extreme poverty lines are based on the cost of country-specific food baskets providing 2,200 kcal per day per person. Following standard practice in Latin America, the moderate poverty lines are equal to twice the food poverty lines in urban areas, and 1.75 times the extreme poverty line in rural areas. The same extreme poverty lines are used for urban and rural areas since the cost of basic food needs does not differ a lot between these areas in most countries. A household is poor if its indicator of well-being (in our case, income per capita) is below the moderate poverty line. The household is in extreme poverty if its per capita income is below the extreme poverty line. The total number of the poor is the number of the extreme poor plus the number of the moderate poor, who are poor but not extremely poor. The poverty lines have been adjusted over time using the countries' monthly CPI matched with the month and year of the household surveys.

It is a common practice in Latin America to adjust welfare indicators for underreporting in the surveys. There is a presumption of underreporting when the mean income or consumption in the surveys is below the National Accounts

aggregates. Underreporting tends to be more severe when poverty measures are based on income instead of consumption. The problem is that many countries do not have good consumption surveys. When surveys with consumption data exist, there is in most cases a lack of comparable surveys over time (Mexico's ENIGH surveys are an exception here). For this report, all poverty measures are therefore based on income. To take into account various alternatives for dealing with the possibility of underreporting of income, we could compute at least three sets of poverty measures[1]:

- Upper bound for poverty: At one extreme, if all income underreporting is done by the non-poor, the measures of poverty obtained without adjustments for underreporting are unbiased. That is, unadjusted measures of poverty provide an upper bound for poverty measurement.

- Lower bound for poverty: At the other extreme, if the underreporting done by the poor is similar to that done by the non-poor, and if it does not depend on the source of income (i.e. underreporting is similar for earnings and other forms of income), then all incomes in the surveys can be scaled up by a common factor. One possibility is to adjust incomes upward using the ratio of per capita GDP to the mean per capita income in the survey, but this is likely to result to an underestimation of poverty since GDP is higher than disposable income.

- Intermediate estimate: Because per capita disposable income is not available and/or comparable in the National Accounts of many Latin American countries, we used instead per capita consumption as a proxy, and adjusted per capita income upward accordingly. The poverty measures in this paper are based on these intermediate estimates[2].

2.2.   Results

The level of poverty (and the number of the poor) in a country or region is what matters in real life. But it is the trend in poverty, not its level, which matters for the evaluation of public policies. While reducing the level of poverty is the goal, the measurement of progress toward that goal is the poverty trend, i.e. the

---

[1] For a broader discussion of issues related to poverty measurement in Latin America, see Szekely *et al.* (2000).

[2] In five countries, we proceeded differently. In Paraguay and Colombia, because some of the data points include only urban areas, we chose not to adjust at all, which makes the poverty measures for these two countries higher than they would be otherwise. In Bolivia and in Guatemala, we used estimates and methods similar to those provided in poverty diagnostics for these countries, but adapting the rural poverty line so that it is equal to 1.75 times the extreme poverty line (see World Bank, 2001, for the poverty diagnostic for Bolivia, and Wodon, Foster, and Tre, 2001, for the poverty diagnostic for Guatemala). In Jamaica, we used per capita consumption as our indicator of well-being because it is better measured in the survey than per capita income, and we did not adjust the indicator to the National Accounts for underreporting. Note also that in Chile in 1987, in the Dominican Republic in 1989 and in Venezuela, we could not distinguish between urban and rural areas in the 1998 survey, so that assumptions were needed for that year.

change in level over time. 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 trend. A poverty level is normatively defined, and thus subjective. For practical purposes, a poverty trend is neither normative, nor subjective: it is a fact. Below, we discuss the trend in poverty as well as its level.

TABLE 1

POVERTY MEASURES FOR LATIN AMERICA, 1986–98

(13 COUNTRIES, OF WHICH 7 HAVE RURAL DATA)

	Poverty			Extreme poverty		
	Headcount	Poverty Gap	Sq. Pov. Gap	Headcount	Poverty Gap	Sq. Pov. Gap
	Regional population, weighted average					
1986	33.35	14.57	8.92	14.40	6.44	4.39
1989	37.33	17.37	10.92	18.19	8.37	5.49
1992	40.00	19.12	12.45	20.06	9.66	6.65
1995	36.71	16.63	10.30	17.05	7.63	5.07
1998	34.62	15.89	9.99	16.14	7.34	4.97
	Regional population, equal country weights					
1986	43.19	22.49	15.73	23.40	12.80	9.80
1989	41.11	19.51	12.65	21.11	10.71	7.72
1992	40.07	18.79	12.16	19.90	9.57	6.73
1995	38.97	17.60	10.92	18.58	8.38	5.63
1998	36.43	17.03	10.93	16.87	8.05	5.64
	Urban population, weighted average (13 countries)					
1986	25.38	10.96	6.93	9.67	4.98	3.80
1989	30.24	13.58	8.52	12.81	6.17	4.35
1992	31.68	14.27	9.14	13.33	6.53	4.72
1995	29.15	12.57	7.73	11.31	5.31	3.82
1998	27.47	12.25	7.81	11.08	5.45	4.05
	Urban population, equal country weights (13 countries)					
1986	37.95	19.38	13.61	19.79	11.35	9.04
1989	35.49	16.29	10.55	16.76	9.15	7.00
1992	34.03	15.60	10.16	15.57	7.79	5.72
1995	34.17	15.03	9.31	14.96	6.98	4.90
1998	31.76	14.62	9.41	13.66	6.73	4.90
	Rural population, weighted average (7 countries)					
1986	50.84	22.49	13.29	24.79	9.65	5.66
1989	54.20	26.36	16.63	31.00	13.61	8.21
1992	61.38	31.60	20.96	37.37	17.70	11.60
1995	57.59	27.84	17.39	32.90	14.02	8.52
1998	55.62	26.55	16.39	31.00	12.89	7.68
	Rural population, equal country weights (7 countries)					
1986	54.70	29.30	20.39	31.33	15.97	11.47
1989	54.48	27.18	17.63	31.45	14.41	9.41
1992	55.60	26.98	17.32	31.03	14.14	9.30
1995	52.23	24.68	15.35	28.56	12.25	7.65
1998	50.17	24.11	15.40	26.29	11.94	7.81

Source: Own estimates from unit level data of country-specific household surveys.

TABLE 2
POVERTY MEASURES FOR LATIN AMERICA, 1995–98
(18 COUNTRIES, OF WHICH 15 HAVE RURAL DATA)

	Poverty			Extreme poverty		
	Headcount	Poverty Gap	Sq. Pov. Gap	Headcount	Poverty Gap	Sq. Pov. Gap
	Regional population, weighted average					
1995	37.66	17.37	10.88	17.85	8.17	5.48
1996	37.41	17.46	11.16	17.96	8.50	5.88
1998	35.78	16.98	10.93	17.77	8.42	5.81
	Regional population, equal country weights					
1995	38.46	17.91	11.34	18.31	8.67	5.92
1996	37.81	17.65	11.25	17.97	8.66	5.96
1998	37.32	17.76	11.44	18.42	8.92	6.15
	Urban population, weighted average (18 countries)					
1995	29.05	12.50	7.66	10.89	5.10	3.68
1996	29.26	12.74	7.98	11.30	5.46	4.04
1998	27.24	12.14	7.70	10.94	5.37	3.97
	Urban population, equal country weights (18 countries)					
1995	31.68	13.76	8.42	12.14	5.63	3.96
1996	31.31	13.68	8.51	12.17	5.83	4.19
1998	30.67	13.65	8.52	12.58	5.96	4.19
	Rural population, weighted average (15 countries)					
1995	61.42	30.82	19.78	37.05	16.63	10.47
1996	60.37	30.78	20.11	36.70	17.06	11.05
1998	60.88	31.22	20.42	37.85	17.35	11.20
	Rural population, equal country weights (15 countries)					
1995	57.15	29.39	19.40	35.35	17.05	11.34
1996	56.13	28.81	18.97	34.30	16.62	10.97
1998	56.86	29.83	20.02	35.59	17.61	11.90

Source*:* Own estimates from unit level data of country-specific household surveys.

In Tables 1 and 2, we provide two sets of poverty measures. The first set, which covers the period 1986 to 1998, is based on data for 13 countries, of which only 7 have information for rural areas (in these 13 countries, three have information for rural areas from the mid 1990s onwards, but this information is not used in order to make the trend over time consistent). The second set, which covers the period 1995 to 1998, is based on surveys for 18 countries, of which 15 have data for rural areas. The second set is better than the first since its country coverage is improved, especially in rural areas, but for comparisons over a relatively long period of time, we have to rely on the first set of measures. Poverty estimates for at the country level are available upon request.

According to the estimates based on 13 countries[3], poverty affected a third of the Latin America population in 1998. Extreme poverty, defined as the inability to pay for food needs, affected one of every six people. More precisely, using per

---

[3]   The 13 countries used for the estimates in Table 1 represent 90 percent of the Latin America population, but some countries have urban coverage only, so the actual share of the population covered by the surveys is closer to 75 percent. In the sample of 13 countries, only half of the countries have their rural population covered in the surveys for the whole period in review. Fortunately, Brazil and Mexico have national surveys, so that the coverage of the sample for rural areas remains high. In the sample of 17 countries used in Table 2, 14 countries have rural data.

capita income-based poverty measures adjusted to per capita consumption in the National Accounts to correct for underreporting, it is estimated that 34.62 percent of the Latin America population was poor in 1998 (first column "Headcount" in Table 1). The share of the population with per capita income below the extreme poverty line was 16.14 percent in 1998. These estimates are obtained as the population weighted average of poverty measures computed in each of the 13 countries using the countries' household surveys unit level data, with one caveat. The household weights in the surveys were computed for estimating the urban and rural poverty estimates for Latin America, but the Latin America urbanization rate were used to compute the regional poverty measures. That is, the regional poverty measures were obtained by multiplying the urban and rural poverty measures by the urban and rural shares of Latin America as a whole, rather than the urban and rural population shares in the surveys. This was done because some surveys are representative of urban areas only, so that using straight household weights throughout would have resulted in an underestimation of the regional poverty given that rural poverty is higher than urban poverty.

It is interesting to point out that in Table 1, the population weighted headcount index of poverty increases in urban and rural areas between 1986 and 1998 by respectively two and five percentage points, while it increases at the national level over the same period by only slightly more than one percentage point. The same is observed for extreme poverty. This apparently surprising result is due to the fact that the share of the population living in urban areas has increased over time, from 68.7 percent in 1986 to 74.6 percent in 1998, and poverty is much lower in urban than in rural areas. It is fair to say that a household migrating from rural to urban areas faces a lower probability of being poor at its place of destination than at its place of origin, so that urbanization contributes to poverty reduction over time (see section 3.5 for a brief discussion of the impact of migration on per capita income at the household level).

Whether the results for 1998 are encouraging or not depends on one's time horizon. The headcount indices of poverty observed in 1998 are significantly below than those observed in 1992, which suggests progress in the 1990s. This progress is due in part to Brazil where poverty reduction has been substantial between 1992 and 1996. The progress would have been stronger without the 1995 crisis that hit Mexico, where a dramatic increase in poverty was observed in 1996. Still, despite the progress achieved in the 1990s, the shares of the population living in poverty and extreme poverty in 1998 remain high, and the region is only now back to the poverty levels observed in 1986 (at 33.35 and 14.40 percent, respectively). This indicates that the economic recovery of the 1990s and the associated reduction in the share of the population in poverty has been just large enough to compensate for the "lost decade" of the 1980s. A reduction in the number of the poor and extreme poor in the 1990s is observed (top part of Table 3), but this reduction is small due to population growth. If the comparison is made with 1986, using the estimates based on 13 countries, the number of the poor has increased. In 1998 there were 37 million more poor people than in 1986, and 22 million more people in extreme poverty.

TABLE 3
POPULATION AND NUMBER AND EXTREME POOR
IN LATIN AMERICA, 1986-98

	Population and urban/rural shares			Poverty headcount (% of population)			Number of poor (in million)		
	Population (in million)	Share Urban	Share Rural	LAC	Urban	Rural	LAC	Urban	Rural
Moderate poverty (13 countries, of which 7 have rural data)									
1986	408.31	68.70	31.30	33.35	25.38	50.84	136.17	71.19	64.97
1989	431.94	70.45	29.55	37.33	30.24	54.20	161.24	92.02	69.18
1992	455.66	71.97	28.03	40.00	31.68	61.38	182.26	103.89	78.40
1995	479.28	73.38	26.62	36.71	29.15	57.59	175.94	102.52	73.48
1998	501.27	74.57	25.43	34.62	27.47	55.62	173.54	102.68	70.90
Extreme poverty (13 countries, of which 7 have rural data)									
1986	408.31	68.70	31.30	14.40	9.67	24.79	58.80	27.13	31.68
1989	431.94	70.45	29.55	18.19	12.81	31.00	78.57	38.98	39.57
1992	455.66	71.97	28.03	20.06	13.33	37.37	91.41	43.71	47.73
1995	479.28	73.38	26.62	17.05	11.31	32.90	81.72	39.78	41.98
1998	501.27	74.57	25.43	16.14	11.08	31.00	80.90	41.42	39.52
Moderate poverty (18 countries, of which 15 have rural data)									
1995	479.28	73.38	26.62	37.66	29.05	61.42	180.49	102.16	78.36
1998	501.27	74.57	25.43	35.78	27.24	60.88	179.36	101.81	77.60
Extreme poverty (18 countries, of which 15 have rural data)									
1995	479.28	73.38	26.62	17.85	10.89	37.05	85.54	38.30	47.27
1998	501.27	74.57	25.43	17.77	10.94	35.35	89.10	40.89	45.06

Source: Own estimates from unit level data of country-specific household surveys.

A different pictures emerges using non-weighted poverty measures in which countries such as Bolivia or Paraguay receive the same weight as countries such as Brazil or Mexico. When all countries receive the same weights, one observes a more consistent reduction in poverty throughout the period in review. Thus the number of countries for which there has been progress (and the extent of this progress) is larger than the number of countries for which there has been a deterioration. Still, the reduction in the magnitude of the poverty measures remains limited. The poverty gap and squared poverty gap are better measures of poverty for evaluation purposes than the headcount if one wants to pay more attention to the poorest of the poor, the squared poverty gap should be preferred as a measure of poverty[4]. The conclusions reached with these alternative measures of poverty are fairly similar to those reached with the headcount index.

---

[4] Consider a transfer from a very poor household well below the poverty line to a less poor household. The transfer is such that the less poor household exactly reaches the poverty line. In such a scenario, social welfare will deteriorated because resources will have been shifted from a more to a less needy household. This negative impact on welfare is captured by an increase in the squared poverty gap. By contrast, the headcount index of poverty is reduced by the transfer (one less household is poor), and the poverty gap remains unchanged.

If one wants to provide an estimate of the extent of poverty today rather than an assessment of the trend over the last 15 years, it is better to rely on the poverty measures provided in Table 2, because they are based on a larger set of countries where rural areas are better represented. Because the five countries added in Table 2 tend to be poor (Guatemala, Jamaica, Nicaragua, Panama, and El Salvador), the overall estimates of poverty are slightly higher, at 35.78 percent for the headcount of poverty, and 17.77 for the headcount of extreme poverty. Applying these estimates to the Latin American population yields 179 million poor people in 1998, of which 89 million lived in extreme poverty (bottom part of Table 3).

Not surprisingly, as was already mentioned above, poverty tends to be higher in rural than in urban areas. In Table 2, the headcount of extreme poverty is three times higher in rural than in urban areas. For total poverty, the headcount is twice higher in rural areas. Since 75 percent of the Latin America population is now urban, the absolute numbers of the poor is larger in urban areas (102 million people using the headcount estimates for 17 countries at the bottom of Table 3) than in rural areas (78 million). But the absolute number of the extreme poor is larger in rural areas (45 million) than in urban areas (41 million). Moreover, when using the poverty gap or squared poverty gap for sectoral comparisons, the differences between urban and rural areas are larger than for the headcount. In other words, if policy makers were to focus on the extreme poor and to minimize the squared poverty gap as the preferred measure of extreme poverty, and if the impact and cost of interventions were the same in both urban and rural areas, funds should in theory be allocated at the margin according to the poverty gap, and this would yield slightly more funds for poverty alleviation in rural areas than in urban areas at the Latin America level[5].

Our estimates are broadly similar to those obtained in other studies.

- At the Inter-American Development Bank, Londoño and Szekely (1997) find an increase in the headcount index for extreme poverty in Latin America from 12.0 percent in 1986 to 16.2 percent in 1995 (using the US$1 a day poverty line in purchasing power parity terms). For total poverty, they suggest an increase from 25.9 to 33.1 percent (using US$2 a day). In our sample as well, the headcount indices of poverty and extreme poverty increase from 1986 to 1995, by about three percentage points in each case. Our levels of poverty and extreme poverty are also similar to those of Londoño and Szekely (1997).

- At CEPAL (1999), the Panorama Social for 1998 suggests that the share of poor households (rather than individuals) in Latin America remained stable between 1980 and 1997, at 35–36 percent for total poverty and 15-16 percent

---

[5] In many of the countries, beyond urban/rural differences, there are also large differences in poverty according to geographical location. This is discussed below in the section devoted to the determinants of poverty.

for extreme poverty. The poverty lines correspond to the cost of a basic food basket for extreme poverty, and to that cost scaled up by a fixed factor (2.0 in urban, 1.75 in rural, as in this study) for moderate poverty. The corresponding headcount index for poor individuals is higher because larger households are more likely to be poor than smaller ones (CEPAL's headcount for individuals is about 42 percent in 1997). Again, at least in broad terms, the poverty levels and trends reported by CEPAL are similar to ours.

- At the World Bank (2001), the Global Economic Prospects suggest a decrease in the headcount of poverty in the 1990s from 38.1 percent to 31.7 percent, and a similar decrease in the headcount index of extreme poverty from 16.8 percent to 12.1 percent (in that update, the poverty and extreme poverty lines correspond to the US$1 and US$2 in 1985 PPP prices). This decrease is a bit larger than ours for the period 1992-1998, but not out of line with our own estimates of the trend in poverty during the 1990s.

The country-level poverty estimates available upon request highlight the negative impact of macroeconomic shocks on the poor (Lustig, 1995, 1999; Ganuza *et al.*, 1998), as well as the potential for poverty reduction through economic growth. Consider for example the case of Mexico between 1992 and 1996. Mexico was hit by an economic crisis in 1995 following the devaluation of the peso in December 1994. The crisis resulted in a sharp drop in per capita GDP and consumption, and in a large increase in poverty. The same applies to Argentina and Brazil in the late 1980s. These macro shocks have undermined progress towards poverty reduction. By contrast, in most cases, economic growth results in a reduction of poverty, which is not surprising since the elasticity of poverty reduction to growth is negative (it has been estimated at about minus one by Wodon *et al.*, 2000). This can be illustrated with the case of Chile, which recorded impressive gains towards poverty reduction over the period in review. In some countries such as Paraguay (for which we decided not to adjust the poverty measures to underreporting because we have only urban data for the first few years, and an adjustment would have to be based on National Accounts), the data gives surprising results, in that we find decreasing poverty, while the country has suffered from poor macroeconomic performance. In the case of Paraguay, and perhaps a few other isolated instances, the country-level data may not accurately reflect poverty trends, but for the region as a whole, the trend is reliable.

The good performance of Chile was mentioned above to illustrate the positive impact of growth on poverty reduction. Another way to look at the impact of growth on poverty reduction is to examine poverty levels according to economic development as measured by per capita GDP in U.S. dollars. The richer countries such as Argentina, Chile, and Uruguay, have levels of total (extreme plus moderate) poverty between 15 and 30 percent for the headcount index (Argentina's lower poverty is in part due to lower coverage of the survey, in better off areas). Brazil and Mexico follow, with levels of poverty between 25 and 40 percent. Colombia, the Dominican Republic, Ecuador, Paraguay, and the República Bolivariana de

Venezuela have poverty levels between 40 and 60 percent[6]. Finally, the two poorest countries in the sample, Bolivia and Honduras, which participate in the debt relief program HIPC (Heavily Indebted and Poor Countries), have poverty levels above 60 percent. While the levels of poverty depend on other factors such as inequality, there is a strong link between growth and poverty.

We wish to emphasize once more that caution should be exercised when using country-level poverty estimates. These estimates could be used to discuss the performances of various countries in reducing poverty, but we will not do this here. The necessity to use a standard methodology for estimating poverty measures in all the countries in a study such as ours does not allow for special adjustments that may be warranted in some countries. The reader is advised to consult poverty studies at the country-level before reaching a judgment on a country's performance. Moreover, in some countries the data is not as comparable over time as in others. This is for example the case in Bolivia and the Dominican Republic, where different types of surveys were used over time. We recommend using country-based estimates and/or the country poverty assessments prepared by the World Bank apart from the estimates provided here in this regional overview for more detailed discussions of the trend in poverty at the country level.

3.   DETERMINANTS OF POVERTY

3.1.   Methodology

Many papers on poverty include a poverty profile, which is a set of tables giving the probability of being poor according to various characteristics, such as the area in which a household lives or the level of education of the household head. The problem with a poverty profile is that while it gives information on who are the poor, it cannot be used to assess with any precision what are the determinants of poverty. For example, the fact that households in some areas have a lower probability of being poor than households in other areas may have nothing to do with the characteristics of the areas in which the household lives. The differences in poverty rates between areas may be due to differences in the characteristics of the households living in the various areas, rather than to differences in the characteristics of the areas themselves. To sort out the determinants of poverty and the impact of various variables on the probability of being poor while controlling for other variables, regressions are needed.

Some researchers analyze the determinants of poverty (or their correlates if one does not want to assume causality) through categorical regressions such as probits and logits. Apart from the fact that categorical regressions throw away a lot of information about the dependent variable, their estimates are sensitive to

---

6   As mentioned earlier, in Colombia and Paraguay, because we did not adjust incomes for underreporting, the poverty measures tend to be somewhat on the high side in comparison with other countries.

specification errors. With probits, the parameters are biased if the underlying distribution is not normal, and we can assume that it is not since per capita income typically follows a log-normal distribution. A better alternative regressions is to use the full information available, i.e. to run a regression of the log of per capita income (possibly normalized by the poverty line which applies to each household). From such a regression, the probability of being poor can easily be estimated (see for example Ravallion and Wodon, 1999), and this can be done for any poverty line the analyst whishes to use without having to rerun a new regression for every new poverty line as is the case with categorical regressions[7]. More precisely, with different poverty lines for urban or rural areas as a whole (or for specific departments within the urban and rural sectors), only the overall constant (and the coefficients of the departmental dummy variables in case of department-specific poverty lines) in the regressions will change, and this happens in a straightforward way, so that predicting poverty remains easy. Note however that for linear regressions as well as for probits or logits, the impact on the probability of being poor of any one variable depends on where the household is located in the distribution of income given its other characteristics. For example, the expected impact of a better education on the probability of being poor will be lower for a household who is further below the poverty line given its other characteristics than for a household who is closer to the poverty line. In practice, it is easier to report the marginal impact of the independent variables on a household's expected per capita income than on poverty, and this is what we will do below.

For this paper, we have estimated linear regressions for nine of the seventeen Latin American countries mentioned above, using the latest survey available. The dependant variable is the logarithm of per capita income divided by the poverty line, so that a value of one indicates that the household is at the level of the poverty line. Separate urban and rural regressions are provided within each country. That is, for each country, we have estimated two regressions:

(2.1)   Urban areas: $\text{Log}\,(y^{*}_{Ui}\,/z_{U}) = \gamma_{U}{}'X_{i} + \varepsilon_{Ui}$

(2.2)   Rural areas: $\text{Log}\,(y^{*}_{Ri}\,/z_{R}) = \gamma_{R}{}'X_{i} + \varepsilon_{Ri}$

The vectors X vary slightly from one country to another due to data availability, but apart from a constant, they typically include: (a) departmental, provincial, or state geographic location dummies; (b) household size variables and their square (number of babies, children, and adults), whether the household head is a woman, the age of the head and its square, and whether the head has a spouse or not; (c) characteristics of the household head, including his/her level of education; whether he/she is employed, unemployed and searching for work, or not working;

---

[7]   This does not mean that probit or logit regressions should never be used. Categorical regressions will typically have better predictive power for classifying households as poor or non-poor, which can be useful for assessing the performance of targeting indicators (e.g., Wodon, 1997). However, to conduct inference on the impact of variables on poverty, it is better to use linear regression.

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; whether he/she is underemployed; and whether he/she has not been able to work due to health or other reasons; (d) the same set of characteristics for the spouse of the household head, when there is one; (e) the ethnic origin of the household head; and (f) whether the household head has migrated since his/her birth or over the last five years.

These independent variables can be considered as exogenous, although the possibility of reverse causation cannot be excluded. While some additional variables could probably be included, one should be careful in so doing. For example, some analysts include in the regressors variables such as the ownership of a house or other assets, or the access to basic services such as electricity or piped water connections. This is problematic because the endogeneity with respect to income of these assets and access variables may lead to bias in the parameter estimates of the regression (if panel data is available, assets and access variables can be used as initial conditions affecting the movements in and out of poverty, but in a cross-section setting such as ours, these variables should not be included in the regressors, unless they are measured at a community or geographic level of higher aggregation than the household itself).

Despite our efforts to estimate comparable regressions for the various countries, the independent variables differ somewhat from one country to the next even when they are labeled in the same way in the tables giving our results. For example, the length of the primary education cycle is different in different countries, and this may affect the interpretation of the coefficient estimates. Still, we believe that in broad terms, the regressions highlight some common features in the various factors affecting poverty in different countries, and in this respect they should be useful for policy makers. In order to save space, we report only the coefficient estimates for each country, indicating whether there are statistically significant or not. The full set of regressions with the standard errors are available upon request. The estimates for Latin America as a whole are straight averages of the estimates at the country level, assigning a zero value to any coefficient which is not statistically significant. We do not report the coefficient estimates for the geographic dummies because they are not comparable between countries, but we discuss briefly the importance of geographic effects.

3.2.   Household structure

Controlling for other variables, households with a larger number of babies and children have a lower level of per capita income or consumption, and thereby a higher the probability of being poor. This is indicated in Table 5 by the negative coefficients in the regressions for these variables (the negative impacts are decreasing at the margin since the quadratic variables have a positive sign). In many cases, having a larger number of adults in the household also increases the probability of being poor. Both of these results may however be due to economies of scale. By using per capita income and consumption as our indicators 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 babies and children and adults on poverty. Note also that 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 per capita than smaller households because the needs of babies and children tend to be lower than those of adults. In other words, our poverty line measures the cost of basic needs for an "average" individual, but very large families do not consist of average individuals, essentially because babies and children are over-represented in them. Not considering differences in needs leads to an overestimation of the impact of the number of babies and children on poverty. Nevertheless, even if differences in needs and economies of scale within the household were taken into account, a larger number of babies and children would still lead to a lower level of per capita income, and thereby to a higher probability of being poor.

TABLE 4

POVERTY AND EXTREME POVERTY IN LATIN AMERICA ACCORDING TO OTHER STUDIES

| | Londono and Szekely (1997)—H, PG, and SPG measures, population based | | | | | |
| | Poverty (US $2 PPP per day) | | | Extreme poverty (US $1 PPP per day) | | |
	H	PG	SPG	H	PG	SPG
1986	25.9	10.0	4.9	12.0	2.3	1.0
1989	34.8	15.6	8.8	17.0	5.4	2.8
1992	33.1	15.5	9.4	16.0	6.3	4.2
1995	33.1	15.4	9.2	16.2	6.1	3.7

| | World Bank (1999)—Headcount indices, population based | |
	Poverty (US $2 PPP per day)	Extreme poverty (US $1 PPP per day)
1987	35.5	15.3
1990	38.1	16.8
1993	35.1	15.3
1996	37.0	15.6
1998	31.7	12.1

| | CEPAL (1999) – Headcount indices, household based, by sector | | | | | |
| | Poverty (Cost of food/non-food basic needs) | | | Extreme poverty (Cost of food basic needs) | | |
	National	Urban	Rural	National	Urban	Rural
1980	35	25	54	15	9	28
1990	41	35	58	18	12	34
1994	38	32	56	16	11	34
1997	36	30	54	15	10	31

Source: Londoño and Szekely (1997), CEPAL (1999), and World Bank (2001).   In the case of the Global update of the World Bank, additional data points for 1987, 1993, and 1996 have been included apart from those provided in the publication for 1990 and 1998. H = Headcount, PG = Poverty Gap, and SPG = Squared Poverty Gap.

TABLE 5

MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED WITH DEMOGRAPHIC VARIABLES

[The reference categories are a household with a male head and a spouse]

	Mexico		Guatemala		El Salvador		Honduras		Nicaragua	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Number of infants	-0.34	-0.32	-0.28	-0.26	-0.20	-0.23	-0.27	-0.25	-0.28	-0.29
Number of infants squared	0.04	0.04	0.03	0.03	0.01	0.02	0.03	0.03	0.03	0.03
Number of children	-0.32	-0.33	-0.26	-0.21	-0.22	-0.20	-0.29	-0.27	-0.29	-0.24
Number of child squared	0.03	0.04	0.03	0.02	0.01	0.02	0.03	0.02	0.03	0.02
Number of adults	-0.2	-0.23	0.00	NS	-0.05	NS	-0.07	NS	-0.06	-0.15
Number of adult squared	0.02	0.02	0.00	NS	0.01	0.01	0.01	NS	0.01	0.02
Female head	NS	NS	-0.10	-0.19	-0.10	-0.12	-0.15	-0.21	NS	NS
Age of the head	0.02	0.03	0.02	0.02	0.01	0.01	0.02	0.02	0.03	0.02
Age of the head squared	NS	NS	0.00	0.00	0.00	0.00	0.00	NS	-0.00	-0.00
No spouse for the head	-	-	NS	NS	NS	NS	0.50	NS	NS	-0.42

	Colombia		Bolivia		Chile		Brazil		Latin America	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Number of infants	-0.29	-0.25	-0.22	-0.30	-0.10	-0.14	-0.42	-0.38	-0.27	-0.27
Number of infants squared	NS	NS	NS	0.04	-0.00	-0.04	0.04	0.03	0.02	0.02
Number of children	-0.38	-0.28	-0.28	-0.24	-0.19	-0.20	-0.39	-0.37	-0.29	-0.26
Number of child squared	0.04	0.04	0.03	0.03	0.02	0.02	0.04	0.03	0.03	0.03
Number of adults	NS	0.13	-0.09	-0.23	NS	NS	-0.10	-0.10	-0.06	-0.06
Number of adult squared	NS	NS	NS	0.02	0.00	0.01	0.00	0.00	0.01	0.01
Female head	-0.21	-0.20	NS	NS	-0.11	-0.11	-0.19	-0.16	-0.10	-0.11
Age of the head	0.02	NS	0.03	NS	0.00	NS	0.01	NS	0.02	0.01
Age of the head squared	-0.00	NS	NS	NS	-0.00	NS	NS	0.00	0.00	0.00
No spouse for the head	NS	NS	1.10	0.79	0.02	NS	0.67	0.36	0.29	0.09

Source: Own estimates from unit level data of country-specific household surveys. NS means not statistically different from zero at 10 percent level. Coefficients underlined are significant at the 10 percent level. Coefficients not underlined are significant at 5 percent level.

Table 5 also indicates that households with younger heads are more likely to be poor across all countries (there may be a life cycle effect at work here, whereby older worker have better earnings than younger worker), and that urban households whose head has no spouse are less likely to be poor (controlling for female headship, a large number of urban heads without spouse are single males whose per capita income or consumption does not have to be shared with any other family members; while this is partly captured by the demographic variables in the regression, it can still lead to statistically significant coefficients for that variable). Finally, Table 4 suggests that female headed households have per capita income levels about ten percent lower than male headed households. The impact of female headship is similar in rural and urban areas.

One key implications of Table 5 is that programs enabling women to take control of their fertility are likely to help in reducing poverty (better education for girls should help in this respect). Programs promoting earning opportunities for female heads should also have a positive impact. In Chile for example, using household survey results, the government identified in the early 1990s youths and women heads of households as target groups in need of training. This lead to the creation of two training programs: one for women (*Capacitacion para Mujeres Jefes de Hogar*), and one for youths (*Chile Joven*). An evaluation of the program for women heads of households was prepared by the Centro de Investigacion y Desarrollo de la Educacion or CIDE (1997). When asked whether the program improved their conditions for a job search, 61 percent of the women interviewed answered positively. The unemployment rate among program participants was found to be 15 percentage points lower after training in the program, from 58 percent to 43 percent. And the quality of employment also appeared to have improved after the training: a larger share of the women were employed as salaried workers with open-ended contracts. Salary levels and numbers of hours worked also improved. CIDE's evaluation was based on a sample of women who participated in the program from 1995 to 1997, but the analysts did not use an adequate treatment and control group methodology, so that it is not clear whether the good results obtained for the program are due to the self-selection of the participants into the program. Still, the evidence available at this stage on the program is encouraging.

3.3.   Education

Table 6 provides estimates of the gains from education. The gains are substantial. A household with a head or spouse having gone to the university (superior level in Table 5) has an average increase in the expected level of income of 87 percent to 97 percent (Latin America mean estimates) when compared to a similar household whose head has no education at all. In Brazil and Guatemala, the impact of higher education is even more remarkable, exceeding 100 percent in both urban and rural areas. Completing secondary schooling brings around a 50 percent gain versus no schooling in both urban and rural areas. Completing primary school brings in a 21 to 26 percent gain. The gains are slightly higher in urban areas,

TABLE 6
MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED WITH EDUCATION
[The reference categories are a household head and a spouse with no education at all]

Central America	Mexico		Guatemala		El Salvador		Honduras		Nicaragua	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Household head										
Primary partial	0.01	0.09	0.25	0.15	0.20	NS	0.21	0.19	-	-
Primary total	0.19	0.18	0.40	0.27	0.33	0.31	0.38	0.40	0.15	0.16
Secondary partial	0.32	0.32	0.56	0.32	0.27	0.35	0.59	0.50	-	-
Secondary total	0.52	0.63	0.67	0.52	0.39	0.45	0.73	0.88	0.46	0.23
Superior (university)	0.95	1.12	1.03	1.06	0.75	0.64	1.06	0.76	0.94	1.04
Education for adults	-	-	-	-	-	-	-	-	NS	0.27
Technical	-	-	-	-	-	-	-	-	0.57	0.53
Military	-	-	-	-	-	-	-	-	-	-
Household spouse										
Primary partial	0.10	0.12	0.10	0.13	0.23	NS	0.15	0.15	-	-
Primary total	0.15	0.14	0.20	0.24	0.26	0.41	0.14	0.16	0.19	0.10
Secondary partial	0.24	0.25	0.28	0.33	0.29	0.25	0.27	0.21	-	-
Secondary total	0.38	0.5	0.41	NS	0.45	0.51	0.36	0.52	0.28	NS
Superior (university)	0.61	1.04	0.54	0.86	0.42	0.52	0.60	0.56	0.67	NS
Education for adults	-	-	-	-	-	-	-	-	NS	NS
Technical	-	-	-	-	-	-	-	-	0.38	NS
Military	-	-	-	-	-	-	-	-	-	-

	Colombia		Bolivia		Chile		Brazil		Latin America	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Household head										
Primary partial	-	-	-	-	0.40	0.26	-		0.21	0.14
Primary total	NS	NS	0.27	0.25	0.36	0.30	0.22	NS	0.26	0.21
Secondary partial	-	-	-	-	0.70	0.51	-	-	0.49	0.40
Secondary total	0.26	0.16	0.44	0.39	0.65	0.61	0.64	0.38	0.53	0.47
Superior (university)	0.89	0.57	0.86	0.62	0.90	0.81	1.37	1.17	0.97	0.87
Education for adults	-	-	0.33	NS	-	-	NS	NS	0.11	0.09
Technical	-	-	0.64	0.99	-	-	-	-	0.61	0.76
Military	-	-	0.52	1.14	-	-	-	-	0.52	1.14
Household spouse										
Primary partial	-	-	-	-	0.20	0.32	-	-	0.16	0.14
Primary total	-0.10	NS	NS	0.13	0.20	0.19	0.38	NS	0.16	0.15
Secondary partial	-	-	-	-	0.35	0.52	-	-	0.29	0.31
Secondary total	NS	0.11	NS	0.38	0.41	0.51	0.59	0.34	0.32	0.32
Superior (university)	0.39	0.55	0.47	0.87	0.69	0.79	0.89	0.88	0.59	0.67
Education for adults	-	-	NS	0.03	-	-	0.23	NS	0.08	0.01

Source: Own estimates from unit level data of country-specific household surveys. NS means not statistically different from zero at 10 percent level. Coefficients underlined are significant at the 10 percent level. Coefficients not underlined are significant at 5 percent level.

perhaps because there may be more opportunities for qualified workers there. The gains from a well educated spouse are also large, but slightly below those for the head, which is not surprising given that the employment rate for women is smaller than for men for all levels of education, so that women use their education endowment less than men. Another explanation could be that there is gender discrimination in pay, but additional work would be needed to substantiate this claim.

The large impact of education on per capita income and poverty justifies the implementation of programs such as Mexico's PROGRESA. Although a majority of the funds in the program are devoted to stipends for poor rural children in primary and secondary school, the program integrates education interventions with health and nutrition interventions. The program started in 1997, and it now covers 2.6 million families, which represents 4 out of every 5 families in extreme poverty in rural areas and 14 percent of Mexico's population. The results of an evaluation conducted by PROGRESA staff and the International Food Policy Research Institute are encouraging (PROGRESA, 2000). Female enrollment rate in secondary-level schools increased, and overall school attendance also increased, on average by one year, which should translate in future gains in labor income when the children reach adulthood. The program also improved health outcomes, and reduced morbidity rates among children 0 to 2 years of age.

Education is very important, but it is not the sole solution to poverty. While this will not be done here, it can be shown through individual level labor earnings regressions that a better education helps in escaping poverty, but it is not enough if only one household member is working. That is, over the life cycle, one working adult with primary or even secondary education is not enough in most countries to help the household emerge from poverty when a typical increase in family size is taken into account to estimate basic needs. This is why in many World Bank poverty assessments and other studies (e.g., Inter-American Development Bank, 1998), there is an emphasis on improving employment and earnings opportunities for women. On the other hand, it is also worth noting that education also reduces poverty and increases per capita income indirectly through its impact on demographics, since better educated women have fewer children, and smaller families are less likely to be poor. Another impact of education on poverty works through the employment opportunities education provides[8].

[8]   The inability to escape poverty with only one wage earner does not imply that measures such as minimum wages are useful and beneficial for the poor. In principle, the impact of minimum wage legislation on poverty is uncertain. On one hand, those who benefit from a minimum wage may enjoy higher salaries, and this may lead to lower poverty. On the other hand, if the level of the minimum wage is higher than the marginal productivity of some workers, these may lose their employment, which may increase poverty. For any one or both of above effects to be observed, the minimum wage must be binding, and there is no certitude a priori that it will be, in part because many Latin American countries lack the capacity to enforce their minimum wage legislation. One might think that due to enforcement constraints in the informal sector, minimum wages would tend to affect only formal workers. But this need not be the case, because informal workers wages may adjust to formal minimum wages. A concern about the minimum wage is that it may be costly for public expenditures because of its effect on the pay of public workers such as teachers and physicians when their wages are set at a multiple of the minimum wage. When this occurs, public servant pay may wipe out scarce budgetary resources which could be used for poverty reduction.

3.4.   Employment

Probably in part because we rely on per capita income as the indicator of well-being, the employment of the head and spouse are found to have large impacts on per capita income and thereby poverty. However, due to household coping and consumption smoothing strategies, the measured impacts of variables such as unemployment and underemployment could have been smaller if we had used consumption rather than income data (unfortunately, consumption data is available in only a few countries; in most cases we have to rely on labor force surveys). Despite such limitations, the regression specification enables us to look at various issues (Tables 7 to 9):

- *Unemployment:* Having a head or spouse searching for employment has a substantial negative impact on per capita income averaging 27 and 29 percent in urban and rural areas respectively. In urban areas, a head or spouse not working does not have lower levels of income than households with fully employed heads or spouses. This may due to the fact that heads and spouses who are not in the labor force can probably afford not to be working. Rural households see their per capita income decrease by 13 to 25 percent when the head or spouse is not working. A second job plays an important role in increasing per capita income for both the household head and the spouse. The marginal gain stands around 16 percent for the head and between 6 percent and 12 percent for the spouse.

- *Underemployment:* Having a head underemployed (i.e., working less than 40 hours per week) reduces expected per capita income by up to about 35 percent in urban areas, but the impact is smaller in rural areas. The impact is also smaller when the spouse is facing underemployment, or when underemployment is mild (the larger the extent of underemployment, the larger its negative impact on per capita income). Also, those who would like to work more tend to be poorer, although the impact is often not significant.

- *Sector of activity:* Having a head belonging to the construction, commerce, or transport sector brings in a gain in per capita income of at least 20 percent as compared to working in agriculture (the excluded reference category), especially in urban areas. Households with heads working in services, mining, or manufacturing are even better off when compared to households with heads in agriculture, with an increase in per capita income ranging from 20 percent to 65 percent in urban areas. The impacts in rural areas tend to be smaller. The impacts of the spouse's sector of activity also tends to be smaller than that of the head. These results suggest that policies facilitating the transition of workers from one sector of activity to another may have beneficial effects for poverty reduction.

TABLE 7

MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED
WITH EMPLOYMENT VARIABLES

[The reference categories are a household head and a spouse fully employed
(at work and not underemployed)]

	Mexico		Guatemala		El Salvador		Honduras		Nicaragua	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Employment of Head										
Search (unemployed)	-0.35	-0.46	NS	-0.21	-0.40	-0.36	-0.73	NS	NS	NS
Not working	-0.34	-0.39	NS	NS	-0.09	-0.31	0.42	NS	NS	0.12
Has a secondary occupation	-	-	-	-	-	-	-	-	NS	0.12
Employment of Spouse										
Search (unemployed)	-0.51	-	NS	NS	-0.38	-0.50	-0.29	NS	NS	-0.76
Not working	NS	-0.23	NS	NS	-0.39	-0.45	NS	NS	NS	-
Has a secondary occupation	-	-	-	-	-	-	-	-	NS	NS
Underemployment of Head										
Work < 13 hours	0.20	NS	-0.18	NS	-	-	-	-	-1.67	NS
Work 13 to 19 hours	-	-	-0.13	-0.20	-0.33	-0.20	-0.34	-0.35	-1.75	NS
Work 20 to 39 hours	-	-	-0.04	-0.10	-0.14	-0.11	-0.17	-0.19	-1.70	NS
Want to work more	-	-	-0.08	NS	-	-	-0.17	-0.22	-0.17	NS
Can work more	-	-	-	-	-	-	-	-	-	-
Underemployment of Spouse										
Work < 13 hours	-0.23	NS	-0.15	-0.25	-	-	-	-	-	-
Work 13 to 19 hours	-	-	NS	-0.30	-0.34	-0.38	-0.18	-0.38	-	-
Work 20 to 39 hours	-	-	-0.11	NS	-0.12	-0.19	NS	-0.24	-	-
Want to work more	-	-	-0.08	NS	-	-	NS	0.18	-	-
Can work more	-	-	-	-	-	-	-	-	-	-

	Colombia		Bolivia		Chile		Brazil		Latin America	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Employment of Head										
Search (unemployed)	-	-	NS	NS	-0.22	-0.72	-0.46	-0.53	-0.27	-0.29
Not working	NS	-0.50	0.35	NS	0.06	NS	0.07	-0.07	0.05	-0.13
Has a secondary occupation	-	-	0.16	0.13	-	-	0.34	0.22	0.17	0.16
Employment of Spouse										
Search (unemployed)	-0.43	NS	0.63	NS	NS	NS	-0.31	-0.42	-0.14	-0.21
Not working	NS	-0.48	0.71	NS	NS	-0.60	-0.14	-0.25	0.02	-0.25
Has a secondary occupation	-	-	NS	0.18	-	-	0.17	0.17	0.06	0.12
Underemployment of Head										
Work < 13 hours	-0.14	-0.19	-0.20	-0.30	-	-	-0.13	NS	-0.35	-0.08
Work 13 to 19 hours	NS	NS	NS	-0.23	0.12	0.15	-0.14	-0.14	-0.32	-0.12
Work 20 to 39 hours	NS	-0.09	-0.14	NS	-0.15	-0.26	-0.10	-0.09	-0.31	-0.11
Want to work more	-	-	NS	0.12	NS	NS	-	-	-0.08	-0.02
Can work more	-	-	NS	-0.12	-	-	-	-	0.00	-0.12
Underemployment of Spouse										
Work < 13 hours	NS	NS	-	-	-	-	-0.18	NS	-0.14	-0.06
Work 13 to 19 hours	NS	NS	NS	0.20	-0.03	0.20	-0.14	NS	-0.10	-0.09
Work 20 to 39 hours	NS	NS	-0.11	NS	0.19	0.48	-0.09	-0.09	-0.03	-0.01
Want to work more	-	-	NS	NS	NS	-0.24	-	-	-0.02	-0.02
Can work more	-	-	-0.19	NS	-	-	-	-	-0.19	0.00

Source: Own estimates from unit level data of country-specific household surveys. NS means
not statistically different from zero at 10 percent level. Coefficients underlined are significant
at the 10 percent level. Coefficients not underlined are significant at 5 percent level.

TABLE 8

MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED
WITH THE SECTOR OF ACTIVITY

[The reference categories are a household head and a spouse working

	Mexico Urban	Mexico Rural	Guatemala Urban	Guatemala Rural	El Salvador Urban	El Salvador Rural	Honduras Urban	Honduras Rural	Nicaragua Urban	Nicaragua Rural
Sector of activity of head										
Mining	0.48	0.47	-	-	-	-	-	-	0.88	NS
Manufacturing and industry	0.28	-0.14	0.16	0.12	0.31	0.24	NS	0.20	0.23	0.19
Electricity	0.24	NS	-	-	-	-	-	-	-	-
Construction	0.19	NS	0.17	0.29	0.28	0.37	0.18	0.49	0.17	NS
Commerce	0.3	0.11	0.26	0.35	0.39	0.38	0.17	0.46	0.39	0.48
Transportation	0.34	NS	0.31	NS	0.55	0.63	0.34	0.49	0.50	0.48
Financial services	0.56	NS	-	-	-	-	-	-	-	-
Services	-	-	2.31	0.19	0.26	0.24	NS	0.20	-	-
Social	-	-	-	-	-	-	-	-	-	-
Public Administration	-	-	-	-	-	-	-	-	-	-
Others	0.26	NS	-	-	-	-	-	-	0.24	NS
Sector of activity of Spouse										
Mining	NS	NS	-	-	-	-	-	-	-	-
Manufacturing and industry	NS	NS	NS	0.58	0.16	NS	NS	NS	NS	0.39
Electricity	NS	0.46	-	-	-	-	-	-	-	-
Construction	NS	0.74	NS	0.50	0.21	0.41	NS	1.10	-	-
Commerce	NS	0.19	NS	0.57	0.25	0.14	0.37	0.34	0.44	0.39
Transportation	NS	NS	NS	NS	0.25	NS	NS	0.92	-	-
Financial services	NS	NS	-	-	-	-	-	-	-	-
Services	-	-	NS	0.51	0.19	0.16	NS	NS	-	-
Social	-	-	-	-	-	-	-	-	-	-
Public Administration	-	-	-	-	-	-	-	-	-	-
Others	NS	0.16	-	-	-	-	-	-	NS	NS

	Colombia Urban	Colombia Rural	Bolivia Urban	Bolivia Rural	Chile Urban	Chile Rural	Brazil Urban	Brazil Rural	Latin America Urban	Latin America Rural
Sector of activity of head										
Mining	-	-	0.58	0.44	-	-	-	-	0.65	0.30
Manufacturing and industry	NS	-0.12	0.27	NS	0.30	0.39	0.26	0.28	0.20	0.13
Electricity	-	-	-	-	-	-	-	-	0.24	0.00
Construction	-	-	0.49	0.17	0.53	NS	0.23	0.30	0.28	0.20
Commerce	-	-	0.39	NS	0.40	0.50	0.25	0.33	0.32	0.33
Transportation	-	-	0.44	0.40	0.49	0.68	0.41	0.53	0.42	0.40
Financial services	-	-	-	-	-	-	-	-	0.56	0.00
Services	NS	NS	0.40	NS	0.40	0.20	0.22	0.19	0.51	0.15
Social	-	-	-	-	-	-	0.26	0.33	0.26	0.33
Public Administration	-	-	-	-	-	-	0.38	0.50	0.38	0.50
Others	-	-	-	-	-	-	-	-	0.25	0.00
Sector of activity of Spouse										
Mining	-	-	-	-	-	-	-	-	0.00	0.00
Manufacturing and industry	NS	-0.34	0.46	NS	NS	NS	0.15	0.18	0.09	0.09
Electricity	-	-	-	-	-	-	-	-	0.00	0.46
Construction	-	-	-	-	NS	NS	0.30	NS	0.09	0.46
Commerce	-	-	0.76	NS	0.28	0.17	0.17	0.30	0.28	0.26
Transportation	-	-	-	-	NS	NS	0.42	0.37	0.11	0.22
Financial services	-	-	-	-	-	-	-	-	0.00	0.00
Services	NS	NS	0.60	0.32	0.39	0.14	0.15	0.24	0.19	0.20
Social	-	-	-	-	-	-	0.12	0.14	0.12	0.14
Public Administration	-	-	-	-	-	-	0.29	0.29	0.29	0.29
Others	-	-	-	-	-	-	-	-	0.00	0.08

Source: Own estimates from unit level data of country-specific household surveys. NS means not statistically different from zero at 10 percent level. Coefficients underlined are significant at the 10 percent level. Coefficients not underlined are significant at 5 percent level.

TABLE 9

MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED WITH OTHER EMPLOYMENT VARIABLES

[The reference categories are blue collar workers, except from Mexico, workers in the informal and/or private sectors, workers in firms with more than 50 employees, and workers who have not been sick]

	Mexico Urban	Mexico Rural	Guatemala Urban	Guatemala Rural	El Salvador Urban	El Salvador Rural	Honduras Urban	Honduras Rural	Nicaragua Urban	Nicaragua Rural
Type of employment of head										
Unpaid family work	-	-	NS	NS	0.23	NS	NS	-0.78	NS	NS
Salaried employee	-0.21	0.22	-	-	-	-	-	-	-	-
Self-employed	NS	NS	NS	NS	NS	-0.19	0.11	-0.26	NS	NS
Employer	0.86	0.65	0.44	0.76	0.51	0.14	0.63	0.54	0.15	0.08
Type of employment of Spouse										
Unpaid family work	-	-	-0.11	-0.37	NS	NS	-0.32	-0.44	-	NS
Salaried employee	-	-	-	-	-	-	-	-	-	-
Self-employed	-	-	NS	NS	NS	NS	NS	-0.17	NS	NS
Employer	-	-	0.39	NS	0.42	NS	NS	NS	-	NS
Formal/public – Head										
Formal sector	NS	-0.20	-	-	-	-	-	-	NS	0.20
Public sector	-	-	-0.10	-0.27	1.04	1.58	NS	NS	-	-
Formal/public – Spouse										
Formal sector	NS	NS	-	-	-	-	-	-	-	-
Public sector	-	-	NS	NS	-0.15	-0.29	NS	NS	-	-
Size of firm – Head										
1 to 4 workers	-0.30	-0.30	-	-	-	-	-	-	-	-
5 to 9 workers	-0.24	-0.25	-	-	-	-	-	-	NS	NS
10 to 19 workers	-0.14	-0.36	-0.08	-0.08	0.20	0.11	0.17	0.17	NS	NS
20 to 49 workers	-	-	-	-	-	-	-	-	0.23	NS
More than 50 workers	-	-	-	-	-	-	-	-	0.19	NS
Size of firm – Spouse										
1 to 4 workers	-0.15	-0.21	-	-	-	-	-	-	-	-
5 to 9 workers	NS	NS	-	-	-	-	-	-	-	-
10 to 19 workers	-0.14	-0.43	NS	-0.17	0.16	0.15	NS	NS	-	-
20 to 49 workers	-	-	-	-	-	-	-	-	-	-
Sick leave – Head										
Sick less than a week	-	-	-	-	-	-	-	-	NS	-0.09
Sick leave – Spouse										
Sick less than a week	-	-	-	-	-	-	-	-	-	-

	Colombia Urban	Colombia Rural	Bolivia Urban	Bolivia Rural	Chile Urban	Chile Rural	Brazil Urban	Brazil Rural	Latin America Urban	Latin America Rural
Type of employment of head										
Unpaid family work	NS	-0.60	-	-	-0.40	-0.27	-	-	-0.03	-0.28
Salaried employee	-	-	NS	0.31	-	-	0.27	0.16	0.02	0.23
Self-employed	NS	-0.28	0.33	NS	-0.10	-0.54	0.25	NS	0.07	-0.14
Employer	-	-	0.34	0.29	0.51	-0.05	0.79	0.75	0.53	0.40
Type of employment of Spouse										
Unpaid family work	NS	-0.42	-	-	NS	-0.57	-	-	-0.09	-0.30
Salaried employee	-	-	NS	NS	-	-	0.19	0.32	0.10	0.16
Self-employed	NS	NS	NS	NS	-0.21	-0.29	0.12	0.09	-0.01	-0.05
Employer	-	-	NS	NS	0.30	-0.14	0.36	0.51	0.25	0.05
Formal/public – Head										
Formal sector	0.40	0.26	0.36	NS	-	-	0.11	0.22	0.17	0.10
Public sector	0.22	NS	-0.13	NS	1.10	NS	-0.03	-0.23	0.30	0.15
Formal/public – Spouse										
Formal sector	0.21	NS	NS	NS	-	-	0.07	0.08	0.07	0.02
Public sector	NS	0.31	NS	NS	NS	NS	-0.06	NS	-0.03	0.00
Size of firm – Head										
1 to 4 workers	-	-	-0.27	NS	-	-	-0.13	-0.07	-0.23	-0.12
5 to 9 workers	-	-	NS	NS	-	-	-0.06	NS	-0.08	-0.06
10 to 19 workers	-	-	NS	NS	0.10	0.05	-	-	0.04	-0.02
20 to 49 workers	-	-	NS	NS	-	-	-	-	0.12	0.00
More than 50 workers	-	-	-	-	-	-	-	-	0.19	0.00
Size of firm – Spouse										
1 to 4 workers	-	-	NS	0.47	-	-	-0.08	-0.19	-0.08	0.02
5 to 9 workers	-	-	NS	0.58	-	-	-0.06	-0.21	-0.02	0.12
10 to 19 workers	-	-	NS	NS	0.19	-0.21	-	-	0.04	-0.11
20 to 49 workers	-	-	NS	NS	-	-	-	-	0.00	0.00
Sick leave – Head										
Sick less than a week	NS	NS	NS	NS	-	-	-	-	0.00	-0.03
Sick leave – Spouse										
Sick less than a week	0.09	0.11	NS	NS	-	-	-	-	0.05	0.06

Source: Own estimates from unit level data of country-specific household surveys. NS means not statistically different from zero at 10 percent level. Coefficients underlined are significant at the 10 percent level. Coefficients not underlined are significant at 5 percent level.

- *Position held:* Self-employment (as opposed to blue collar employment) reduces per capita income in rural areas, but the impact is small in many countries. Being self-employed in urban areas yields on average a small positive impact when this impact is significant[9]. Not surprisingly, being an employer generates a large gain in per capita income, at 53 percent on average for household heads in urban areas and 40 percent in rural areas. Unpaid family work is associated with poverty for household spouses. Overall, working in the formal or public sector induces a gain in per capita income, but this is again more the case for the head than for the spouse. The size of the firms in which household heads and spouses are employed can also contribute to higher incomes. The smaller the firm, the lesser the income per capita in the household, except for rural spouses.

One should be careful in using such results for policy recommendations, because some of the effects on per capita income associated with employment variables may reflect other variables. For example, some employment variables may function in the regressions as proxies for unobserved characteristics such as specific skills. Still, the fact that unemployment and underemployment can severely affect income provides a justification for workfare (Ravallion, 1999) and training programs which function in part like safety nets (Wodon and Minowa, 2001). *Trabajar en Argentina* is one example of a workfare program that works through public works. In this program, projects are identified by local governments, NGOs and community groups, and can provide employment for no more than 100 days per participant. Project proposals are reviewed by a regional committee, and projects with higher poverty and employment impacts are favored. Workers hired by the project are paid by the Government, specifically the Ministry of Labor. The other costs are financed by local authorities. Example of eligible projects include the construction or repair of schools, health facilities, basic sanitation facilities, small roads and bridges, community kitchens and centers, and small dams and canals. The projects are often limited to poor areas as identified by a poverty map. Wages are set al low levels, so that the workers have an incentive to return to private sector jobs when these are available. Thus, the program involves self-targeting apart from geographic targeting. For a broader review of the policy interventions which can be implemented to provide security to the poor during macroeconomic or idiosyncratic shocks, the reader can consult among others De Ferranti *et al.* (2000) and Hicks and Wodon (2001).

---

[9]   Being self-employed and/or in the informal sector need not be a bad thing in itself, even in rural areas. There is a large literature on self-employment, especially as it relates to the informal sector, but this is not reviewed here.

3.5. *Migration, ethnicity, and geography*

Migration is likely to raise per capita income. As shown in Table 10, individuals living in households where the head has migrated since his/her birth have on average a higher level of per capita income than other households living in their area of destination. The same is observed for migration over the last five years. Even the fact that many coefficient are not statistically significant points to a presumption of benefits from migration. This is because coefficients not statistically significant indicate that at the place of destination, those who have migrated in the recent past do as well as those who have lived there for more than five years. Since migration typically takes place from poorer to richer areas, this suggests that the migrants are likely to do better at their place of destination than they would have done at their place of origin. While more work would be needed to compute the wage gains from migration, the results at least suggest that migration may bring positive results. Hence, rather than trying to reduce migration, public policies might be more effective if they were to accompany or facilitate migration flows.

TABLE 10

MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED WITH MIGRATION

[The reference categories are no migration since birth and over the last five years]

	Mexico		Guatemala		El Salvador		Honduras		Nicaragua	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Migration since birth	-	-	-	-	0.06	0.10	0.04	NS	-	-
Migration in last five years	-	-	-	-	NS	NS	NS	NS	-	-

	Colombia		Bolivia		Chile		Brazil		Latin America	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Migration since birth	0.07	0.10	NS	0.17	-	-	0.06	0.04	0.05	0.08
Migration in last five years	NS	0.21	NS	NS	-	-	0.03	NS	0.01	0.04

Source: Own estimates from unit level data of country-specific household surveys. NS means not statistically different from zero at 10 percent level. Coefficients underlined are significant at the 10 percent level. Coefficients not underlined are significant at 5 percent level.

Belonging to an indigenous population leads to a reduction in per capita income, even after controlling for other household characteristics (Table 11). To identify indigenous households, we used the ethnic origin or the language spoken, depending on the information available. In Guatemala, the negative impact of being indigenous represents about 15 percent of per capita income. In Bolivia, households not speaking Spanish or a foreign language also tend to be poorer. This is the case for Quechua and Aymara speakers, but the impact is not significant for rural households speaking Guarani. In Brazil, black (Preta) and ethnically-mixed

(Parda) groups face a reduction in income of about 10 percent to 20 percent when compared to the white population, while population of Asian origin and other indigenous households do not suffer from a significant decrease in income when compared to otherwise observationally equivalent white households. These results suggest that there may be some level of discrimination in labor markets against indigenous populations or specific ethnic groups depending on the country, but additional work would be needed to test this hypothesis in a thorough way. In any case, the results represent a call for thinking about what could be done to better help indigenous groups (other forms of discrimination, for example in access to schooling, cannot be captured in our regressions since we control for the level of schooling of the household head and the spouse).

TABLE 11
MARGINAL PERCENTAGE CHANGE IN PER CAPITA INCOME ASSOCIATED
WITH ETHNICITY

| | Mexico | | Guatemala | | El Salvador | | Honduras | | Nicaragua | |
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Ethnicity 1	-	-	-0.14	-0.17	-	-	-	-	-	-
Ethnicity 2	-	-			-	-	-	-	-	-

| | Colombia | | Bolivia | | Chile | | Brazil | | Latin America | |
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Ethnicity 1	-	-	-0.11	-0.13	-	-	-0.19	-0.14	-	-
Ethnicity 2	-	-	-0.22	-0.32	-	-	NS	NS	-	-
Ethnicity 3	-	-	-0.14	NS	-	-	-0.15	-0.12	-	-
Ethnicity 4	-	-			-	-	NS	NS	-	-

Source: Own estimates from unit level data of country-specific household surveys. NS means not statistically different from zero at 10 percent level. Coefficients underlined are significant at the 10 percent level. Coefficients not underlined are significant at 5 percent level. Bolivia: languages: Quechua, Aymara and Guarani – the omitted language is Spanish or other foreign language. Brazil: ethnic groups: Preta (Black), Amarela (Asian), Parda (mixed), Indigenous – the omitted ethnic group is Branca (White). Guatemala: Indigenous – the omitted group is White.

Finally, although this is not shown in the tables, controlling for household characteristics, geographic location also has an impact on income. Differences in per capita income remain between departments or states within a country even after controlling for a wide range of household characteristics. In the regressions, the impact of geography wass measured with dummy variables for all departments or states except one excluded reference area. The message that geography does matter even after controlling for observable household characteristics is important, because it gives a rationale for so-called poor areas policies (Ravallion and Wodon, 1999). That is, if geographic effects matter for poverty reduction, the characteristics of the areas in which households live must be improved alongside the characteristics of the households themselves. More work is needed to assess exactly which types of poor areas policies to adopt.

IV.   CONCLUSION

In 1998, there were 179 million poor people in Latin America (35.78 percent of the population), of which 89 million lived in extreme poverty (17.77 percent of the population). All poverty measures decreased substantially in the 1990s, but they are only now getting back to their level of the mid 1980s. Moreover, due to population growth, the number of the poor has increased. If projections for the poverty measures were done to 2000, there would be very limited progress since 1998, since per capita GDP growth has been fairly limited. This paper also investigated the impact of household variables on poverty, including household demographics, education, employment, geographic location, migration, and ethnicity. Many of these variables have large impacts on per capita income and thereby on the probability of being poor. Although much more thorough work would be needed to suggest detailed policy recommendations, the results from the regressions suggest that the determinants of per capita income, and thereby of poverty, are similar for the various countries, and the estimates for Latin America provided in this paper can be considered as more representative of typical impacts than single-country estimates since they are obtained with a larger and more varied set of surveys.

REFERENCES

CEPAL (1999), Panorama Social 1998 de América Latina, Santiago, Chile: United Nations.
CIDE (Centro de Investigación y Desarrollo de la Educación) (1997), "Evaluación Ex Post del Programa de Capacitación para Mujeres Jefas de Hogar", Santiago de Chile.
De Ferranti, D.; G. E. Perry, I. S. Gill, and L. Servén, with F. H. G. Ferreira, N. Ilahi, W. F. Maloney, and M. Rama (2000), *Securing our Future in a Global Economy*, World Bank, Washington, DC.
Foster, J.; J. Greer, and E. Thorbecke (1984), A Class of Decomposable Poverty Measures, *Econometrica* 52: 761-66.
Ganuza E.; L. Taylor, and S. Morley (1998), *Política macroeconómica y pobreza en América Latina y el Caribe*, PNUD-CEAPL-IDB, Ediciones Mundi-Prensa, Madrid, España.
Glewwe, P., and G. Hall (1998), Are some groups more vulnerable to macroeconomic shocks than others? Hypothesis tests based on panel data from Peru, *Journal of Development Economics*, 56: 181-206.
Hicks N., and Q. Wodon, Forthcoming, Economic Shocks, Safety Nets, and Fiscal Constraints: Social Protection for the Poor in Latin America, *CEPAL Review.*
Inter-American Development Bank (1998), *Facing Up to Inequality in Latin America*, Baltimore, MD: Johns Hopkins University Press.

Londoño, J. L., and M. Szekely (1997), Persistent Poverty and Excess Inequality: Latin America, 1970-95, Working Paper Series 357, Inter-American Development Bank, Washington, D.C.

Lustig, N. (1995), editor, *Coping with Austerity: Poverty and Inequality in Latin America*, The Brookings Institution, Washington, DC.

Lustig, N. (1999), Crisis and the Poor: Socially Responsible Macroeconomics, Presidential address to LACEA 1999, Santiago, Chile.

Mejía, J. A., and R. Vos (1997), Poverty in Latin America and the Caribbean: An Inventory, 1980-95, Working Paper Series I-4. Inter-American Development Bank, Washington, D.C.

PROGRESA (2000), *¿Está dando buenos resultados Progresa? Informe de los resultados de una evaluación realizada por el IFPRI*, Secretaría de Desarrollo Social, México D.F.

Ravallion, M. (1999), Appraising workfare, *World Bank Research Observer*, 14: 31-48.

Ravallion, M., and Q. Wodon (1999), Poor Areas, or Only Poor People?, *Journal of Regional Science*, 39: 689–711.

Szekely, M.; N. Lustig, M. Cumpa, and J. A. Mejía (2000), Do We Know How Much Poverty There Is?, Working Paper Nº 437, Inter-American Development Bank, Washington, D.C.

Revenga, A.; M. Riboud, and H. Tan (1994), The Impact of Mexico's Retraining Program on Employment and Wages, *World Bank Economic Review*, 8: 247-277.

Wodon, Q. (1997), Targeting the Poor Using ROC Curves, *World Development*, 25: 2083–92.

Wodon, Q., with contributions from R. Ayres, M. Barenstein, N. Hicks, K. Lee, W. Maloney, P. Peeters, C. Siaens, and S. Yitzhaki (2000), *Poverty and Policy in Latin America and The Caribbean*, World Bank Technical Paper Nº 467, World Bank, Washington, DC

Wodon, Q., V. Foster, and J. Ph. Tre, with contributions from M. I. Ajwad, K. Lindert, C. Siaens, and C. Sobrado (2001), Guatemala: A Preliminary Poverty Diagnostic Based on the 1998/99 ENIGFAM, mimeo, World Bank, Washington, D.C.

Wodon, Q., and M. Minowa (2001), Training for the Urban Unemployed: A Reevaluation of Mexico's Training Program, Probecat, in Devarajan, S., F. H. Rogers, and L. Squire, eds., *World Bank Economists' Forum,* Volume 1, World Bank, Washington, D.C.

World Bank (2001), *Bolivia: Poverty Diagnostic 2000*, Report Nº 20530-BO, Washington, D.C.

World Bank (2001), *Global Economic Prospects and the Developing Countries*, Washington D.C.