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Do We Know How Much Poverty There Is?

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Do We Know How Much Poverty There Is?

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Abstract[*]

This paper tests the sensitivity of poverty indexes to the choice of adult equivalence scales, assumptions about the existence of economies of scale in consumption, methods for treating missing and zero incomes, and different adjustments to handle income misreporting. We also perform sensitivity analysis to the use of different poverty lines and poverty indexes, which are issues that have been much more explored in the literature. The sensitivity analysis is applied to household survey data from 17 Latin American countries, which include 92% of the population in the region. By varying these parameters within reasonable boundaries, we find that the proportion of poor could be said to be either 12.7 percent or 65.8 percent of the total population. Additionally, the ranking of countries with respect to poverty is also highly sensitive. This points to the need of justifying and being explicit about the underlying choices and definitions behind poverty statistics, and to the need of performing sensitivity analysis illustrating the menu of options that can answer the question of how much poverty there is.

Keywords: household survey, poverty, equivalence scales, economies of scale, missing values, underreporting, Latin America.

***JEL* Classification: D63, I32, 054.**

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Introduction

In discussions about common variables such as the rate of economic growth, which are widely used to evaluate the performance and economic development of countries, questions about the origin, quality, methodology, and characteristics of the data are rather uncommon because there are international conventions that countries follow to produce these kinds of statistics.

However, for other equally or even more important indicators, such as the level of poverty in a country, this is not the case. Although there has been great improvement in the availability of poverty indicators in recent years, poverty statistics are still far from being produced with similar methods and are far from uniform and consistent in terms of quality and reliability. A standard methodology followed conventionally to produce this information is not available.

For one among many examples, take the case of Mexico in 1994. Using exactly the same household survey data and a similar poverty line, ECLAC (1997) reports a poverty rate of around 46 percent,[1] Londoño and Székely (2000) report that the proportion of poor is 19.7 percent, and Lustig and Székely (1998) report a head count ratio of 31.8 percent. In Wodon *et al.* (2000) it is 25.37 percent, while in the World Bank World Development Indicators (1999) the figure is 42.5 percent.[2] The variability in the estimates is important because a totally different idea about the economic performance and the standard of living in Mexico is obtained according to whether the country is considered to have 19.7 percent or 46 percent of poor—a difference of about 25 million individuals. Depending on which of these numbers is used as a reference, the size of a given budget allocated to social programs can be considered either appropriate or totally insufficient.[3]

[1] The actual figure reported by ECLAC is 36 percent, but this refers to the proportion of households, and not individuals, under the poverty line. According to our calculations using the same Mexican data, 36 percent of poor households corresponds to 45.9 percent of individuals.

[2] In the Mexican press it is possible to find commentators arguing that in 1994 the proportion of poor was about 70 percent. See González Amador and Castellanos (2000).

[3] There are several other countries for which large discrepancies in poverty estimates are found between ECLAC, Londoño and Székely, Wodon *et al.*, and the WDI. For instance, in Brazil in 1990 poverty is estimated to be 42, 46.3, 43.81 and 17.4 percent, respectively, in each of these studies. For Honduras in 1992, the estimates are 73, 66.2, 60, and 50 percent, respectively.

Since poverty is to a large extent a subjective concept that depends on cultural patterns, development levels, and other factors, in some sense it is natural to have a range of values. For instance, given the controversy surrounding the definition of the poverty line, it is now standard practice in the literature to use several poverty lines—which yield different poverty levels—to test the extent to which poverty rankings depend on their definitions. But what is most surprising about the wide range of estimates in the above example is precisely that they are produced with the same data and similar poverty lines. Their differences are due to more subtle methodological differences, which are not always documented, and that depend on specific choices and assumptions made by the researchers computing these figures. Given the possible range of results and the lack of a standard, widely accepted methodology, these statistics become practically meaningless if the user does not have at least some minimum guidance and explicit information on the underlying choices that are necessary to interpret them.

The objective of this paper is to explore which of the choices and assumptions used for producing poverty statistics are most important in terms of their impact on poverty levels. Specifically, we explore the sensitivity of poverty to the following choices: (i) the use of adult equivalence scales, (ii) economies of scale in consumption, (iii) the treatment of missing and zero incomes, and (iv) a range of possibilities for adjusting household survey incomes for misreporting. Our analysis produces a menu of options illustrating that a huge range of poverty statistics can be obtained by varying each of these elements within reasonable boundaries, which makes it clear that poverty rates are only informative when some of these basic elements are made explicit. Since the sensitivity of poverty estimates to the use of a range of poverty lines and to the use of different poverty indexes has been much more widely explored, we also address these issues but do not focus on them as much.[4]

To test for the sensitivity of poverty measures to different choices we use household survey data for 17 Latin American and Caribbean (LAC) countries, which comprise more than 92 percent of the total population of the region. For simplicity we mainly focus on the regional poverty statistics to illustrate the variety of options, but also

[4] For recent discussions on the definition of different poverty lines see Ravallion (1994a), Blackburn (1998), Deaton (2000) and Atkinson (1987). For reviews on the advantages of using different poverty indexes see Foster (1984) and Foster and Sen (1997).

present country-specific data and point out which countries are more sensitive to each assumption.

The paper is divided into five sections. Section 1 presents the data and the poverty statistics that we use as benchmark for comparison. Section 2 evaluates the importance of differences in the definition of poverty across countries and in the characteristics of the raw data from which these statistics are estimated. Section 3 presents the sensitivity analysis to a range of choices. Section 4 discusses ways of organizing the data to simplify poverty comparisons. Section 5 concludes.

1. Benchmarks for Comparison

In their review of 111 papers on poverty and inequality in LAC, Londoño and Székely (2000) show that in an important number of cases poverty estimates are produced with the following choices.[5] The official poverty line of the country (i.e., that provided by the appropriate government agency) is used to determine the cutoff point from which individuals are considered to be poor; total household per capita income is used as a welfare indicator; missing or zero incomes are dropped from the sample; and no adjustment for misreporting or underreporting is performed. Relying on these choices implies assuming that:

a) Country-specific poverty lines reflect accurately what being poor means,
b) Current income is an adequate indicator of the standard of living of individuals,
c) Each individual in the household has the same needs,
d) There are no economies of scale in consumption,
e) Missing values and zero incomes are unreliable information that should be discarded,
f) Non-sampling errors in household surveys are small and the income or consumption measured by them is an adequate measure of standard of living.

[5] The compilations by Ganuza *et al*. (1998) and the case studies in Attanasio and Székely (2000) are other examples of the conventional use of these definitions in Latin America.

Not everybody makes all these assumptions, and it is common to find studies employing combinations of them. For the purposes of our analysis, though, we define poverty estimates that use these assumptions as "*benchmark*" poverty estimates.[6]

Table 1 presents benchmark poverty estimates for 17 Latin American countries by using recent household survey data around the year 1996.[7] As is now standard practice in the literature, in addition to showing the number of poor individuals we report three commonly used poverty indexes belonging to the well-known FGT family of poverty measures. These include the headcount ratio, the poverty gap, and the FGT(2) measure corresponding to the squared poverty gap.[8] We also include LAC population-weighted averages, as well as the number of poor individuals in the whole of the LAC region (including countries that are not in our sample). The number of poor in LAC is computed by multiplying the (weighted) average head count ratio by the total population of the region, which is equivalent to assuming that the 17 countries covered here are representative for the whole of LAC.[9]

Countries in Table 1 are ranked according to their head count ratio, as measured with the benchmark methodology.[10] When poverty is computed under choices (a) to (f) above, the result is that for the region as a whole, 50.7 percent of the population,

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[6] For instance, studies focused on international poverty comparisons, such as ECLAC (1997), Londoño and Székely (2000), Wodon *et al*. (2000) and the WDI adjust incomes for misreporting, and use international rather than country-specific poverty lines.

[7] The only transformation to the original data is that incomes are deflated when necessary by using the CPI. Data sources and some characteristics of the sample are shown in Appendix Table A1. Argentina and Uruguay are the only two countries that have urban rather than national household surveys. In Argentina the survey covers about 70 percent of the total population of the country, while in Uruguay it covers more than 90 percent. For simplicity we refer to the results for these two countries without further clarifying their urban coverage. When the country data is aggregated to produce LAC estimates, for simplicity we assume that in these two countries the urban poverty estimates are representative of the total population of the country. The sample of 17 countries has one observation for 1993 (Nicaragua), five for 1995 (Costa Rica, Ecuador, El Salvador, Paraguay and Uruguay), six for 1996 (Argentina, Bolivia, Brazil, Chile, Dominican Republic, and Mexico), four for 1997 (Colombia, Panama, Peru and Venezuela), and one for 1998 (Honduras).

[8] See Foster *et al*. (1984).

[9] Population figures refer to 1996 and are taken from United Nations (1998). For the countries where a household survey for 1996 is unavailable, we take the closest survey available to us and assume it is a good proxy for poverty in 1996.

[10] In some cases there is no statistically significant difference between countries, but we still preserve the ranking for presentation purposes. We compute standard errors for all the poverty estimates discussed in Table 1 and all those presented later in the paper, but we do not discuss them further. The reason is that, as will become apparent later, the sensitivity of the estimates is so high that the differences are obviously significant in statistical terms given the size of the samples. Whenever possible, the standard errors were computed by taking into account differences in sample design as in Howes and Olson Lanjouw (1998).

equivalent to 243.49 million individuals, are poor around the year 1996. The poverty gap is of 24.1 percent and the squared poverty gap is 14.8 percent. These are our benchmarks for comparison in the rest of the paper.

The results for the head count ratio are much higher than the estimates by Wodon, *et al*. (2000), Londoño and Székely (2000), and ECLAC (1999), which report rates of 36, 33 and 39 percent poor individuals, respectively, and which are three other sources reporting aggregate poverty rates for LAC for around 1996.[11] The difference, however, is not surprising. Column 6 in Table 1 converts the value of each monthly country-specific official poverty line into PPP-adjusted 1987 dollars and shows that the average for the region is $182, while the aforementioned studies typically use much lower poverty lines such as the PPP adjusted two dollars a day per person ($60 PPP base 1985 per person per month).[12]

According to the benchmark poverty estimates, the country with the highest proportion of poor in LAC is Bolivia, where 65.1 percent of the population is below the official poverty line, followed by Nicaragua and Colombia, which also have rates over 60 percent. The countries with the lowest proportions are Costa Rica, Uruguay and the Dominican Republic, with 19, 19.4 and 20.2 percent, respectively.

2. Poverty Lines and Differences in Survey Characteristics

There are several surprises in the country rankings in Table 1. Before determining the sensitivity of the estimates to methodological choices, we explore the extent to which the rankings are due to two issues. The first is if there are significant differences in the way in which poverty is defined in each country. The second is whether the cross-country

[11] The result is also far above the 23.5% estimate in Ravallion and Chen (1997) for 1993. Note that the estimates in Table 1 can be very different from those presented elsewhere for the same countries by the authors of this paper. Whenever there are discrepancies, they are due to the fact that the methodology is different from that used in Table 1. See, for instance the poverty rates presented in Mejía and Vos (1997), Londoño and Székely (2000), Attanasio and Székely (1999) and Lustig and Deutsch (1998) for Latin America. In the case of Mexico, the estimates are not comparable with calculations for previous years in Székely (1995, 1998) and Lustig and Székely (1998).

[12] PPP deflators are taken from World Development Indicators (2000). The poverty lines in local currencies are shown in the Appendix. Wherever there exist different poverty lines for urban and rural areas, or for different regions or cities, they are used. Official poverty lines correspond to the poverty line used by the country statistical office. In all cases they are calculated specifically for each individual country and deflated if necessary.

comparisons are blurred by subtleties such as the differences in the types of incomes captured by the household surveys from which the data are drawn.

2.1 Differences in the Definition of Poverty across Countries

One unexpected result is that Mexico and Colombia—which are high-income countries by LAC standards as indicated by the PPP-adjusted GDP per capita figures presented in column 7—are among the four countries with the highest benchmark poverty estimates in Table 1. Part of the explanation is high income inequality. However, in the case of Panama and Venezuela, which also have similar GDP per capita, the reason is that the official poverty line in Mexico and Colombia is much higher (see column 6 in Table 1).[13] This may also be the reason why these two countries appear to have much higher benchmark poverty than Paraguay, Peru, Ecuador and El Salvador, which are countries with much lower income. Similarly, the rather favorable position in which the Dominican Republic appears mainly reflects that in this country the official poverty line is the lowest of the region. The opposite is the case for Argentina, which has the highest PPP-adjusted GDP per capita and one of the lowest inequality levels (see column 5), and it is still not ranked even among the four countries with lowest poverty. The reason is simply that in Argentina, to be classified as poor, an individual needs to have a per capita income below PPP 1987 $229—almost the highest value in the region—while an individual with an income equal to this amount would be far above the PPP 1987 $99 official poverty line in the Dominican Republic.

Table 2 presents the head count ratio calculated in the same way as in Table 1, but by using a poverty line equivalent to PPP 1987 $182 per month per person—which is the average for the LAC region—consistently across countries. The result is presented in column 5, while column 4 shows how each country ranks according to this new estimate. As expected, countries such as Mexico and Colombia would be ranked as ninth and eighth in terms of the proportion of poor, rather than fifth and fourth as before. Brazil, Honduras and Argentina are also ranked in a much more favorable position when applying the same poverty line across countries. In contrast, Costa Rica, the Dominican Republic, Panama, Peru, Venezuela and El Salvador appear to be relatively much poorer

than before. Thus, impressions about the relative performance of countries drawn from Table 1 are to a large extent due to the fact that in different countries being poor means very different things.[14]

2.2 How Important are Differences in Household Surveys?

Apart from the definition of poverty, there are several other important differences across countries, which are less apparent, but which also have the potential for blurring the comparisons in Table 1. For instance, so far we estimate poverty by using income as a welfare indicator mainly because household surveys in LAC do not typically include information on consumption or expenditures, which are regarded as better indicators of the standard of living of individuals.[15] There are only three out of the 17 countries in our sample (Mexico, Peru and Ecuador) where information on household expenditure is available to us.

The third column in Table 2 presents poverty estimates using expenditure rather than income. For Mexico, using either income or expenditure (while holding constant all other choices for the benchmark poverty measure) makes a difference of 3.2 percentage points and almost reverses the ranking with respect to Colombia. In Ecuador, using expenditure rather than income has practically no effect, but in Peru, this change considerably modifies our impression of the relative performance of the country. If poverty is measured with expenditure rather than income, the country would appear to have a poverty rate of 50.5 percent instead of 43.3 percent. This is higher than the proportion in El Salvador, Honduras and Venezuela, which rank as having more poverty with respect to the benchmark index.

Since the three countries with information on consumption are the exception to the rule, in the rest of the paper we focus on income-based poverty, but it is important to bear in mind that comparisons between Latin America and other regions where household

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[13] We present the value of urban poverty lines adjusted for purchasing power parity using the deflators in World Bank (2000). These lines are normally used as reference to calculate rural or regional poverty lines.

[14] Blackburn (1998) performs a similar experiment for measuring poverty in developed countries and concludes that when the same absolute PPP-adjusted poverty line is used, the ranking of countries and the head count ratio also change considerably.

[15] The most common arguments are that consumption is a better indicator of the access to goods and services than income, and that they are less sensitive to short term unexpected variations (Ravallion, 1994).

survey data include mostly information on consumption will tend to underestimate poverty in LAC.[16]

A more subtle difference is that not all household surveys capture the same sources of income. This is a crucial issue for international comparisons because some countries may appear to be poorer than others simply because their household surveys fail to capture in their questionnaires the income sources that are more important for the poor. As shown in Appendix Table 1, household surveys for all countries in our sample include information on labor incomes, but in Argentina, Nicaragua and Peru, information on non-labor incomes is not included. Furthermore, of the 17 countries in the sample, only seven have information on non-monetary incomes (e.g., payments in kind, auto consumption, imputed rents), which are normally more important for individuals at the lower spectrum of the income distribution.[17]

Columns 7 and 9 in Table 2 show the head count ratio for each country, calculated by using only monetary incomes, rather than the most complete income definition in each survey.[18] This income measure is more comparable across countries and allows determining whether the differential coverage of non-monetary incomes makes an important difference in terms of country rankings. To abstract for differences in the value of country-specific poverty lines, these and the other statistics presented in Table 2 are obtained by applying the same PPP 1987 $182 per person per month poverty line consistently across countries. The most important re-rankings (as compared to columns 4 and 5) are, on the one hand, that rather than being ranked ninth, Mexico is ranked fifth,

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However, as noted by Chaudhuri and Ravallion (1994), incomes may still be a better indicator for identifying the chronically poor in some settings.

[16] For instance, LSMS household surveys, which are the most widely used instrument in Africa and Asia, tend to capture only consumption data. Therefore, poverty rates in these regions may apparently be higher than in LAC but to some extent this can simply be because of the different traditions in data collection.

[17] Another potentially important issue is differences in recall periods across surveys (see Deaton, 2000). We do not discuss this issue here because all the surveys used for our analysis have recall periods of 1 month. The Mexican surveys include information for each one of the past six months, but we only use the information for the past month for consistency.

[18] As noted by Olson Lanjouw and Lanjouw (1997), one way to address the non-comparability in the data is to adjust the poverty line in such a way that it only includes items that appear in all household surveys. Since our attempt here is only to illustrate the sensitivity of poverty comparisons to these subtle differences, we do not pursue that option, but rather present poverty statistics using the same poverty line and vary the items included in the definition of income.

and, on the other, that Argentina now appears to be the country with the lowest poverty rate.[19]

If we define income sources to be strictly comparable across countries, the welfare indicator for the measurement of poverty would need to be labor incomes rather than monetary incomes. Poverty rates using the PPP 1987 $182 poverty line and labor incomes as welfare indicator are presented in columns 8 and 9. Several ranking reversals occur when the income definition is restricted to this minimum common denominator. One of the most notable is that Uruguay goes from being ranked as the country with the lowest poverty rate to having more poverty than Costa Rica and Argentina. Another case is Peru, which ranks as the third poorest country when the most complete income definition and the PPP 1987 $182 line are used. When the comparison is restricted only to poverty as measured by labor income per capita, it appears to be the poorest country in the sample. These examples illustrate that subtle differences in survey characteristics may mislead our impression about the performance of one country with respect to others.[20]

3. Sensitivity of Poverty Indexes to Different Choices

This section presents the sensitivity of the benchmark poverty estimates to varying some of the parameters that we have used so far for their computation. The difference with respect to the exercise in Section 2 is that the parameters examined here depend on assumptions and choices made by the analyst, while the survey characteristics and the definition of official poverty lines are rather exogenous to the researcher computing these statistics. The first parameters we consider have to do with the way in which the data is treated. Specifically, we explore the implications of choosing an adult equivalence scale, varying the assumption of no economies of scale in consumption, treating missing and zero incomes in different ways, and performing a range of adjustments for misreporting

[19] Ferreira (2000) shows that poverty estimates for Brazil change substantially if imputed rents are estimated and added to the definition of household income.

[20] Another potentially important issue is that in two countries in our sample (Argentina and Uruguay), household surveys refer only to urban areas. The last columns in Table 2 present urban poverty rates for all countries. Considering only urban areas does not seem to make any difference for the ranking of Uruguay, and it makes little difference for Argentina. Nevertheless, the issue is still relevant because poverty indexes change substantially in several countries, which illustrates that urban-only surveys can lead to very different conclusions about the poverty record of a country. Until very recently many LAC countries had

or under-reporting. The second have to do with normative issues such as the definition of the poverty line and methodologies employed for international comparisons.

There are at least five other important issues, which we do not address here due to data limitations, but that should be borne in mind. The first is the use of income adjustments to correct for price variations across regions. The way these adjustments are performed, or their neglect, can have significant effects on poverty rates.[21] The second is that, as shown by Ravallion and Chen (1999), poverty indexes are highly sensitive to the prices used to estimate the value of owned production for self-consumption. The third is that, as noted by Deaton (2000), the use of purchasing power deflators are subject to a number of qualifications, and depending on which base year is chosen one can obtain very different levels of GDP per capita. This is an important issue for adjustments for under-reporting and the use of international poverty lines, both of which heavily rely on PPP factors. The fourth is that in some cases it is desirable to impute the value of public services or subsidies into the definition of income. This is especially so when incomes are not able to reflect the standard of living accurately because access to goods and services is rather independent from household resources. The fifth refers to the definition of poverty. As argued by Ravallion (1994b), strictly speaking poverty lines should be tailored to the particular case of each individual, since there are normally large differences in person-specific capabilities and needs. Applying the same poverty line to all individuals regardless of the differences among them introduces biases into the measurement of poverty.

3.1 Adult Equivalence Scales and Economies of Scale in Consumption

The use of household per capita incomes gives equal weight to each household member and assumes that there are no economies of scale in consumption. Although these two choices are quite standard in Latin America, they are not necessarily the most realistic. For instance, Lanjouw and Ravallion (1995) argue that even in food consumption there can be important economies of scale. To illustrate the implications of these choices, income per capita can be thought of as total household income (y) divided over the

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surveys with urban coverage only, which are still widely used, but these figures provide only a partial view of the poverty problem.

[21] Two illustrations of the importance of this issue are Ravallion and Chen (1999) and Ferreira *et al.* (1999).

number of individuals in the household (n^a), where α is a parameter indicating the extent to which there are economies of scale. The income to which each individual has access becomes y/n^a, and per capita income is obtained when $a=1$.

Similarly, it is common in LAC to apply the same weight to each member in the household even though it is known that there are differences in needs depending on age, sex, and other characteristics. If each member *i* of the household were scaled up or down by an adult equivalence scale β specific to each individual, indicating the share of household resources allocated to *i*, the income accruing to each household member becomes $y/[(Si^{\beta})^a]$ (for i=1 to n).[22]

To test for the sensitivity of poverty indexes to these two choices we experiment with a range of parameters for β and α. There is not much theoretical guidance as for what the values of α should be, so we estimate poverty with three options: α=.9, α=.8, α=.7. These are rather conservative values, since the standard in developed countries is of α=.5.[23] With regards to equivalence scales, we use two options. The first is the one proposed by Contreras (1996) estimated for Chile, and the second is the well-known Amsterdam scale shown by Deaton and Muellbauer (1980), and which is commonly used in the literature for developed countries.[24]

Table 3 summarizes the results. It presents the maximum and minimum value of each poverty index obtained when varying β and α, as specified above, and using country-specific official poverty lines, and the other definitions as in Table 1. In the first column we also present the difference between the maximum and the minimum number of poor individuals obtained through these parameter values. The benchmark poverty measure is also included as one of the options. Appendix Table A2 presents the value of the head count ratio for all five options of varying α and β and shows that poverty rates

[22] β generally varies by age and gender. The extensive literature on the estimation of equivalence scales has been recently reviewed by Deaton (1997) and Cowell and Mercader-Prats (1999).
[23] See, for instance, Blackburn (1998).
[24] Due to the lack of country-specific scales, we apply the same criteria for each of the surveys, but as noted by Lancaster *et al.* (1999), equivalence scales can vary substantially from country to country. For the typical 5-member household in Latin America, defining α=.7 yields a household size of 3.08 individuals rather than 5, while applying the Contreras equivalence scale implies reducing household size from 5 to 3.5.

decline when accounting for economies of scale in consumption and differences in needs among household members.[25]

The last two lines in Table 3 present the aggregate results for LAC as a whole. Different values of α and β yield a maximum head count ratio of 50.7 percent and a minimum of 31.4 percent, which results in a difference of 19.3 percentage points. The absolute number of poor in the region varies between 150 and 243 million individuals only by modifying these two parameters within rather conservative boundaries. The minimum poverty gap is about half of the one in Table 1, and the lowest FGT (2) is also reduced by more than 50 percent.

There are also several country re-rankings when different values are given to β and α, which reveals that some countries are more sensitive to these choices. For instance, the range of values for the head count ratio goes from around 10 percentage points in Costa Rica to more than 25 points in Mexico and El Salvador. Therefore, assumptions about β and α can also affect our impression of how poor countries are relative to each other.

3.2 Treatment of Missing and Zero Incomes

One of the choices for computing the benchmark poverty measure, as defined in Section 1, is to drop the information for individuals declaring zero incomes and for non-respondents. Usually the implicit justification for dropping these missing and zero incomes is that these observations are unreliable information that introduce more noise than signal into the measurement of poverty. However, this particular way of handling the data is not based on theoretical grounds, and it is not obvious whether these observations convey information that may be used for approximating the "real" value of such incomes. The choice can be important for the measurement of poverty because missing values are usually correlated with capital incomes and incomes from informal entrepreneurial activities (as noted by Juster and Smith, 1998), while zero incomes typically refer to unpaid family members at the lower spectrum of the distribution.

[25] As can be seen in Table A2, the sensitivity is much higher with respect to α than to changing β. Poverty rates decline significantly with lower values of α.

The last column in Appendix Table 1 shows that in Venezuela, Costa Rica and Nicaragua, the proportion of missing and zero incomes exceeds 18 percent of the original sample, while in Argentina they represent 11.3 percent. As argued by Little (1988), straightforwardly discarding these observations in cases such as these can entail important information losses. It is not even clear if the remaining observations are still representative of the whole population under analysis. To reduce non-response bias it is possible to apply weighting adjustments or to use information in the household surveys to impute an estimated income for zero and missing incomes (see Gottschalk and Smeeding, 1998). For the purposes of this work we experiment with several combinations for imputing missing and zero incomes to check for the sensitivity of the poverty estimates to the way in which these problematic observations are handled.

To impute values for the problematic observations, we follow Székely and Hilgert (1999), who apply a method in two steps. The first step consists of estimating income regressions for each source separately, where each individual's income is the dependent variable, and the independent variables are all personal and household characteristics in the surveys. The coefficients are used to predict each income-earner's income for that source, including non-respondents. The second step consists of ranking all income earners of the source in question (including non-respondents) according to their predicted income. For non-responses, the error term is calculated by averaging the residual of the observation for respondents immediately above and below, and the total imputed income corresponds to the predicted plus the estimated residual. Household incomes are added up after the procedure. The same method is applied when imputations are performed on individuals reporting zero incomes.[26]

Appendix Table A3 shows the range of values we obtain for the head count ratio for the five different experiments we perform, apart from considering the benchmark measure. In the first we drop missing values and take zero incomes at their face value. In the second we also drop missing values but impute zero incomes rather than discarding them or taking them as such. In the last three we impute missing values, and drop, keep and impute zero incomes, respectively.

[26] See Brick and Kalton (1996), Kalton and Kasprzyk (1986), and Rubin (1987) for a discussion of the advantages and limitations of this procedure.

Table 4 summarizes the results for the three indexes and for LAC as a whole. As in Table 3, we present the maximum and minimum value of each poverty index, as well as the range obtained for the number of poor in each country. At the bottom of the table we show that the aggregate results for LAC hardly change when treating missing and zero incomes in the ways described before, although they do have important implications for the ranking of the four countries where the surveys have higher proportions of these observations. The most extreme case is Nicaragua, where the minimum poverty rate is 63.7 percent, and the maximum, which places it as the poorest country in the region, is 83.7 percent. This huge range of 20 points, added to the fact that the poverty gap varies between 39 and almost 60 percent leads to a very different conclusion about the magnitude of the poverty problem in this country, as compared to the benchmark estimate. In Venezuela the sensitivity of the three poverty measures (with a range of 16 points in the case of the headcount ratio) and of the country ranking is also quite large. The variation in Bolivia, Honduras and Argentina is also considerable.

3.3 Adjustments for Misreporting and Under-Reporting

One of the main concerns when measuring poverty is that if two countries (or the same country in two different years) have the same level of "real" poverty but in one the degree of income misreporting or under-reporting is more severe, poverty may appear to be higher in one of them when in reality it is not. Furthermore, if the extent of misreporting changes over time, a country where poverty declined (increased) may appear as having exactly the opposite outcome only because of this type of statistical error.[27]

Income misreporting or under-reporting is generally caused by three problems. The first is that some incomes are measured with large error because they are particularly difficult to estimate. This is typical of informal sector self-employment and small agricultural businesses. The second is that some individuals may deliberately provide inaccurate information. For instance, households at the bottom of the distribution may deliberately misreport if they perceive that this improves the probability of receiving means-tested benefits, while households at the top of the distribution are typically reluctant to disclosing their wealth. The third is that the richest individuals usually have

[27] See, for instance, Lustig and Székely (1998) for an illustration using Mexican data.

diversified portfolios that are subject to short-term fluctuations (e.g., due to price changes in the stock market), which may make it difficult to value their income flows. Since the first two types of misreporting are correlated with incomes at the lower end of the distribution, they will tend to bias poverty estimates.[28]

The conventional way of dealing with misreporting or under-reporting is by comparing the incomes in household surveys with some aggregates in the National Accounts (NA). This is a natural benchmark, since the NA theoretically include the aggregate income from all households in the economy, and it would be a good choice if it had a separate household account and if each of its items were measured with precision. However, the problem is that this is clearly not the case for developing countries. In these countries the NA rarely have a disaggregation of the household sector. Furthermore, as argued recently by Deaton (2000) and Ravallion (2000), several of the items in the NA that would be natural benchmarks for comparison with the surveys are themselves calculated as residuals subject to errors and are not particularly reliable. An additional drawback is that the NA does not include information on incomes from the informal sector, which is a crucial source of income for the poor. Given these limitations it is not that surprising that discrepancies between the two sources of information are quite large.[29]

Since strictly speaking it is not possible to identify the source of the discrepancy between the NA and household surveys, adjustments can sometimes introduce new biases instead of correcting them. Moreover, since there is little theoretical guidance as for which adjustment methods are adequate, any attempt at correcting for misreporting or under-reporting is inevitably a highly arbitrary exercise. If poverty estimates are sensitive to the specific adjustment performed, knowing what the theoretical grounds are, and

[28] There is substantial evidence on this for LAC. For instance, Székely and Hilgert (1999) find that in 18 LAC countries the 10 poorest households registered in household surveys earn an average income of $7.76 US dollars per month. Furthermore, in Ecuador, Venezuela, Chile and Bolivia, monthly incomes for the poorest households are close to $1 per month, which are also clearly implausible. This by any means is insufficient to cover the minimum necessary for survival, and perhaps it can be better interpreted as an indicator of under-reporting rather than as a measure of the resources available to poor households. Gottschalk and Smeeding (1998) discuss under-reporting problems in more detail and show that this is also a feature of household surveys from developed countries.

[29] Ravallion (2000) discusses more thoroughly the sources of the discrepancies between household survey data and the NA, and measures the extent to which incomes estimated from these sources differ. The difference varies considerably by region, and considerably larger differences are found for surveys reporting income rather than consumption.

which are the assumptions behind the adjustment, will be crucial for interpreting poverty statistics.

Surprisingly, in spite of their high degree of arbitrariness, performing adjustments of household survey data to NA accounts is common in LAC (and other regions), both in country case studies and in international cross-country comparisons.[30] At least four different statistical sources on poverty estimates for LAC with wide systematic coverage of countries in the region use some type of adjustment to NA. In Table A4 in the Appendix we replicate these adjustments to the extent possible to check for the sensitivity of the benchmark poverty estimates to different methods.

Perhaps the source with the longest tradition of adjusting household survey data is ECLAC, which also performs the most elaborate method. As explained by Altimir (1987) and ECLAC (1995), their adjustment consists of four main steps. The first is to create a household account in the NA.[31] The second is to impute values for zero and missing incomes in the original survey (the specific method for imputing is not specified). The third is to aggregate incomes from the NA and the household survey (including those that were imputed in the second step) into: (i) household labor incomes net of (estimated) taxes and social security contributions, (ii) profits, (iii) social security benefits, (iv) property rents, (v) imputed rents from owner-occupied housing, and (vi) transfers and donations. The aggregates are divided over the total population in the country in both cases to obtain a per capita figure for each income source. The fourth step is to compare the per capita figure in the NA for each of the six items with the one from the survey, to obtain an adjustment factor. By multiplying all survey incomes by their respective adjustment factors and adding over all households, the NA aggregate by source is obtained. An exception to this rule is property incomes. For this source, the original household incomes are ordered by quintile and the adjustment factor is obtained by comparing the NA aggregate only with the property rents from the richest quintile in the survey. Then, the incomes in the richest quintile are multiplied by the adjustment factor,

[30] The country studies in Ganuza *et al*. (1998) are a good example.
[31] When the raw data for producing the household account is not available, income sources are estimated through a general equilibrium model.

which assumes that all under-reporting of property rents takes place at the top of the unadjusted income distribution.[32]

The next to last column in Appendix Table A4 presents the poverty estimates that result from applying the ECLAC adjustment to the extent possible, while relying on the rest of the choices and assumptions as for the computation of the benchmark measure as in Table 1.[33] According to the Appendix Table, the head count ratio for LAC is reduced to 34.6 percent when performing this adjustment. This is much smaller than the 50.7 percent estimate obtained by using the benchmark poverty measure.

The second statistical source that uses adjustments to NA to produce poverty statistics for LAC is Psacharopoulos *et al*. (1993). As explained in that study (p. A9.2), for most of the data they compare total household incomes from the surveys with the GDP from the NA to obtain an adjustment factor, and then multiply the survey incomes by this factor to make the aggregate equivalent to GDP.[34] Appendix Table A4 shows that the LAC head count ratio is reduced considerably to 23.3 percent when performing this adjustment.

The third statistical source that uses adjustments is the World Bank's World Development Indicators. These estimates are produced by following the method suggested by Ravallion and Chen (1997), which consists of two steps. The first is to obtain the marginal propensity to consume in the NA (that is, the ratio of private consumption to total GDP) for the countries and years where only information on incomes is available. The second is to multiply household incomes by this factor (which is always smaller than unity), with the idea that by doing this the re-scaled income will be a welfare indicator closer to the value of household consumption. The last column in

[32] Two other assumptions underlie adjustment. The first is that that under reporting is more correlated with income sources than with socioeconomic background, employment characteristics, insertion into the formal or informal sectors of the economy, and most important, than with the wealth or income level of each individual. A second that the NA are more accurate than the survey incomes. Third that all individuals under-report incomes from each source to the same extent. Additionally, it is also important to note that individuals failing to report an income source altogether, rather than under-reporting partially, are implicitly assumed not to under-report at all, since the adjustment factor is multiplied by zero in these cases.

[33] To fully perform the adjustment we would need to have the household account aggregates from the NA, but these are not always available. When ECLAC produces this account it is not made public, so it is actually impossible to replicate their method in all countries. The results we present refer to the closest possible approximation.

[34] Mejía and Vos (1997) also apply this method to a set of LAC countries.

Appendix Table A4 presents the estimates for each country as well as the LAC total. The head count ratio for the whole region is 65.6 percent, which is higher than any other estimate so far.

The fourth source is Londoño and Székely (2000). These authors compare total per capita incomes in the surveys with the value of the PPP-adjusted private consumption per capita from the NA to obtain the adjustment factor. The arguments for doing this are first, that in international comparisons it is more adequate to correct standard of living measures for purchasing power parity. The second is that private consumption per capita is a good approximation of the value of the resources available to households for acquiring goods and services.[35] They then multiply survey incomes by the adjustment factor in order to obtain the NA PPP private consumption per capita.

Columns 3 to 5 in Appendix table A4 present the results from performing the Londoño-Székely type adjustment to our sample of 17 countries, while holding the other definitions for the benchmark measure constant. Three alternative estimates are presented, since there are at least three different data to transform NA aggregates to per capita figures. The first uses the survey population and the second uses the population provided to us by the statistical office of the country, while the third refers to the population in the UN Population Statistics, 1998 revision.[36] The LAC head count ratio varies between 36.3 and 38.7 percent under these adjustments, which are much smaller than the results obtained through the benchmark poverty estimate.

In the literature for LAC countries at least two other methods for adjusting survey incomes to NA aggregates can be identified.[37] The first consists of aggregating NA and survey incomes into labor and non-labor incomes and obtaining an adjustment factor for each of these sources separately. The second consists of comparing household income and GDP by sector of activityand obtaining sector-specific factors. As in the previous cases, household incomes are multiplied by the corresponding factors to obtain the adjusted incomes. Appendix Table A4 presents the results of these two adjustments. When the adjustment is made by separating incomes into labor and non-labor sources, the

[35] Wodon *et al*. (2000) follow a similar approach under the same argument but do not apply the PPP conversion factor to the consumption aggregates in the NA.

[36] Note that in Nicaragua, Venezuela and Costa Rica, the poverty indexes are highly sensitive to this choice. This is because survey populations change substantially when dropping missing and zero incomes.

LAC head count ratio is between 39.3 and 41.1 percent, depending on the statistical source from which the total population is drawn. The adjustment by sector yields a rate for LAC of 22.7 percent, which is the lowest among all options so far.

Table 5 summarizes the results for all adjustments for each of the three poverty measures we consider. The range is striking. The LAC head count ratio varies between 20.7 percent and 65.8 percent of the population depending on how the data is adjusted for miss or under reporting. This yields a difference of 45.1 points, equivalent to a range of 216.5 million individuals.[38] The poverty gap oscillates between 8.9 percent and 35.8 percent, while the FGT(2) measure varies between 5.3 percent and 23.8 percent.

As compared with the other experiments, this is by far the widest range of estimates obtained. Differences in the way in which survey data is adjusted for under or misreporting can make a radical difference and totally change our idea about how poor countries are. The most extreme case is Mexico. Depending on the method for performing the adjustment, the conclusion could be that either 14 percent or 76.6 percent of the population is below the poverty line, which implies a range of more than 62 percentage points, equivalent to 57 million individuals. In Venezuela the head count ranges between 6.4 percent and 57 percent, while in Colombia, Brazil, Peru, Panama and Argentina the proportion of poor changes within a 40-percentage point band. As can be seen in Appendix Table A4, the number of re-rankings that take place when adjusting the survey data in different ways is considerable.

3.4 Choice of Poverty Line

Surprisingly, the range of values obtained for LAC when using different methods for correcting for under-reporting is considerably wider than the range obtained when testing for the sensitivity to the most commonly used poverty lines. Interestingly, the sensitivity to different poverty lines is an issue much widely explored in the empirical literature and its definition is usually regarded as the most sensitive choice that researchers have to make for computing poverty statistics.

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[37] See, for instance, Ganuza *et al.* (1998).

[38] The LAC aggregates do not correspond to those in Table A4 because in Table 5 the 17 countries in our sample are assumed to represent the total population of the region.

Table 6 summarizes our results from applying the six most widely used poverty lines in the LAC poverty literature.[39] The LAC head count ratio is found to vary between 22.8 percent and 56.8 percent. This results in a 34-percentage point band, equivalent to 163.4 million individuals. The poverty gap varies between 9.2 percent and 28.2 percent, while the FGT(2) measure is between 5.2 percent and 17.6 percent. The countries with the widest range of estimates are Mexico, Paraguay and the Dominican Republic. As expected, depending on the way in which poverty is defined—within the boundaries established here—a totally different idea about the absolute and relative magnitude of the poverty problem is obtained.[40]

3.5 International Comparisons

As mentioned in the introduction there is not a widely used and accepted standard methodology to measure poverty. Nevertheless, there are special situations where one methodology can be preferred to another. For instance, studies that perform international comparisons may prefer to apply the same poverty line in all countries to obtain rankings that can be interpreted more easily. Additionally, in spite of their high degree of arbitrariness it may also be desirable to use the same adjustment to address, at least in a very general way, the problem of having different degrees of under-reporting across countries. In LAC, the statistical sources estimating poverty consistently across countries to perform international comparisons actually use the same poverty lines for all countries, and perform one of the methods discussed above to adjust for under reporting. Examples include Psacharopoulos *et al*. (1993) and Mejía and Vos (1997), who combine the use of PPP-adjusted 2-dollar-a-day poverty lines, with adjustment factors that blow up survey

[39] Appendix Table A5 presents the head count ratio for the different lines considered. The only difference with the benchmark measure is the use of a different poverty definition (actual poverty lines appear in Table A6). The poverty lines correspond to the official extreme poverty line provided by the statistical office of the country, the ECLAC poverty line, the PPP-adjusted 2-dollar-a-day poverty line and the poverty line employed in the country case studies compiled by Ganuza *et al.*, (1998), as well as the definition used in the World Bank Poverty Assessment Reports. Londoño and Székely (2000) conclude from their literature review of 111 studies that these are the most commonly used poverty definitions in the region. We updated the literature review by those authors and confirmed that the six poverty lines in Table A5 are the most widely used in the poverty literature for LAC up to date.

[40] Poverty rates for Peru reach up to 83.5 percent when the 1985 PPP adjusted 2-dollar-a-day poverty line is used. This estimate is highly sensitive to the exchange rate used for the conversion from local currency, and may include a large element of measurement error, since 1985 is a year of hyperinflation where exchange rates were particularly volatile.

incomes to be equal to GDP. The second column in Appendix Table A7 replicates this method, but uses PPP GDP as reference rather than GDP in local currency.

A second source is Londoño and Székely (2000), who combine the use of the PPP adjusted 2-dollar-a-day poverty line, with adjustment factors that make survey incomes equivalent to PPP adjusted private consumption in the NA.[41] The third column in Table A7 measures poverty using this same methodology. A third source is ECLAC, which performs the ECLAC adjustment described above and uses the ECLAC poverty line to estimate poverty.[42] As already noted, it is not possible to fully replicate this methodology because the household account in the NA used for the adjustments are not always publicly available, so the fourth column in Table A7 computes poverty by approximating this method to the extent possible. Finally in the last column of the table we include a combination of the adjustment method proposed by Ravallion and Chen (1997) with the PPP adjusted 2-dollar-a-day poverty line. To our knowledge this corresponds to the methodology used to produce the World Development Indicators by the World Bank, which is the fourth statistical source we are able to identify.

Table 7 summarizes these results. For LAC as a whole the head count ratio ranges between 12.7 percent and 58.2 percent when using different methods for international comparisons. This is equivalent to a difference of 218.3 million individuals between the maximum and minimum estimate. The poverty gap is also highly sensitive and ranges within the 5.1-30.9 percent band. The FGT(2) measure also varies widely depending on which methodology for international comparisons is employed. With few exceptions, the lowest poverty rates are always obtained with the methodology employed by Psacharopoulos *et al*. (1993), while the method used for producing the World Development Indicators yields the highest poverty measures. The countries where poverty indexes are most sensitive to the use of these methods are Colombia, Mexico, Brazil, Venezuela, and especially, Peru.

[41] Wodon *et al*. (2000) employ a similar approach. Some of the results presented here are not identical to those presented in Attanasio and Székely (1999) by using the same methodology since PPP conversion factors were updated for some countries.
[42] See Altimir (1994) and ECLAC (1995, 1997, 1998, 1999).

4. Poverty Rankings

So far, for each country we compute three benchmark poverty indexes, and then test for the sensitivity of each of them to the use of three values for the parameter α, two options for β, five different ways of handling missing and zero incomes, ten different methods for adjusting survey incomes for under-reporting, five commonly used poverty lines, and four methods for international comparisons. All in all, we have 30 options per index, which yield 90 different measures informing on how much poverty there is.

Table 8 summarizes all the options considered. The head count ratio for LAC varies between 12.7 percent and 65.8 percent—a band of 53 percentage points depending on the method used to measure poverty. Thus, the number of poor is between 60.9 and 315.8 million individuals (a difference of 254.9 million) depending on the choice. The poverty gap goes from 4.5 percent to 37.9 percent, while the FGT(2) measure ranges between 2.5 percent and 25.6 percent. What is most striking is that all the parameters included in the computations vary within reasonable boundaries as judged by their use in the literature. Thus, there is no reason to reject a priori any of those 90 methodologies. All these results are plausible.

Furthermore, if we experiment with all possible combinations rather than testing the sensitivity of one of these choices at the time, we would end up with a list of 6,000 possibilities per poverty index. For practical purposes it is obviously impossible to produce 6,000 poverty statistics every time one tries to answer the question of how much poverty there is, and ultimately it is always necessary to end up choosing one or a few statistics to estimate poverty. Therefore, the main implication for the analysis is *not* that there are 6,000 answers. Rather, we believe that the conclusion is that in order to make poverty estimates meaningful, it is necessary to provide a thorough and explicit account of the methodological choices and assumptions behind the estimation and to perform sensitivity analysis on these choices.

In the poverty literature it is already common to test for the robustness to different poverty lines and to the use of alternative indexes.[43] Also, there have been important

[43] The theoretical grounds for poverty line sensitivity analysis are the stochastic dominance tests by Foster and Shorrocks (1988a, 1988b) and Atkinson (1987). Shorrocks (1995a, 1995b) and Jenkins and Lambert (1994) present some new approaches to poverty measurement and provide robustness tests to the use of different indexes.

theoretical contributions to test for the sensitivity to the choice of equivalence scales.[44] The idea behind these tests is to check whether unambiguous rankings are obtained for all possible parameter values. However, robustness tests to the different options for handling missing and zero incomes and for methods that adjust for under-reporting have been much less discussed. A straightforward way to examine them would be to follow the same principle in stochastic dominance theory and test whether poverty orderings change when varying these methods within reasonable boundaries, or within all possible alternatives.

Figure 1 presents an example of how this can be done. The figure plots the value of the head count ratio from applying each of the 30 methodologies discussed so far, for Costa Rica, Bolivia, Panama and Chile.[45] Since for any of these methodologies the poverty head count is lower in Costa Rica and Chile than in Bolivia and Panama, we can say that Costa Rica and Chile have unambiguously less poverty, at least when the parameters vary within the boundaries used here. Similarly, it can be said that Bolivia has unambiguously more poverty than Panama—as measured by the head count ratio. In the comparison between Costa Rica and Chile, however, an ambiguous conclusion is obtained. According to the twenty-sixth estimation—which adjusts survey incomes to match PPP private consumption per capita in the NA and uses a PPP 2-dollar-a-day poverty line—the proportion of poor in Chile is 9.6 percentage points higher than in Costa Rica, while if poverty rates are computed with the twenty-eighth methodology in the Figure—which uses the benchmark measure but applies the World Bank Poverty Assessment Report poverty lines—the head count is 9 percentage points lower in Chile. According to the thirtieth estimation, these two countries have the same proportion of poor.

The same comparisons can be performed for all 17 countries in our sample. Table 9 summarizes the results in a similar way as when standard stochastic dominance tests are applied. Countries are ordered from highest to lowest benchmark poverty, and each country's 30 head count ratios are compared with another country, one at the time. The

[44] See for instance Atkinson (1992), Atkinson and Bourguignon (1987), and Coulter *et al*. (1992) for theoretical discussions. One recent application of this type of sensitivity analysis is Duclos and Mercader-Prats (1999).
[45] Costa Rica is taken as the benchmark for sorting the 30 indexes from lower to higher.

same can be done for the poverty gap or the FGT(2) measure. An 'x' mark in the table means that the country in the column heading "dominates," or has more poverty in all 30 cases than the country specified in the line with which it is being compared. A blank means an ambiguous ranking where the ordering depends on the specific methodology chosen for the estimation.

The country that dominates the largest number of cases is Bolivia, where all 30 head count ratios are higher than in El Salvador, Venezuela, Panama, Argentina, Chile, Dominican Republic, Uruguay and Costa Rica. The countries that are dominated by a larger number of cases are Costa Rica (11 cases), Uruguay (8), Chile (8), and Argentina (7). Note however, that the number of ambiguous rankings is strikingly large. Of all possible 136 comparisons in the table, an unambiguous ordering is obtained in only 41 cases, which represent 30% of the possible comparisons.

5. Conclusions

So, how much poverty is there in Latin America? The answer is, it depends. It is largely driven by the choice of equivalence scales, assumptions about the existence of economies of scale in consumption, the way in which missing and zero incomes are treated, and by the way in which the data is adjusted or not for misreporting. It also depends on the definition of the poverty line, on the index chosen to summarize the information, and on other choices, which we have not been able to explore due to their data requirements.

If it were believed that poverty should be measured by following the benchmark method, the conclusion would be that there are 243.5 million poor individuals in LAC, equivalent to 50.7 percent of the population. However, if some underlying assumptions vary within reasonable boundaries, the proportion of poor could be said to be either 60.96 or 315.8 million, that is, either 12.7 percent or 65.8 percent of the total population.

The objective of this paper is to test for the sensitivity of poverty measures to some methodological choices, so we do not discuss further the advantages and disadvantages of each method. Some methods may be more appropriate than others depending on the circumstances, and the user of these statistics is the only to judge which is more reasonable for the specific objective with which the figure is drawn. Nevertheless, there are four important conclusions from the analysis. The first is that

poverty statistics are rather meaningless if the underlying choices and assumptions needed for their estimation are not made explicit. Surprisingly, the most sensitive issue identified in this paper is *not* the definition of the poverty line, but how the original data is adjusted for miss or under reporting. This choice is rarely justified or clearly documented in much of the existing analysis.

The second conclusion is that since a conventional or standard widely used and agreed methodology for the measurement of poverty does not exist, statistics should be accompanied by sensitivity analysis to key underlying choices. Even though in practice it is necessary to select one or a couple of the available choices, the interpretation of the specific indicator will be different if it is known that this is one among a menu of options, and if it is located among the lowest, average, or highest estimates. These two conclusions can obviously be extended to the analysis of changes in poverty over time.

The third conclusion is the need for a consensus on a uniform convention for poverty measurement, or at least for agreement in how each of the measurement issues explored here should be dealt with. For other widely used welfare indicators such as the GDP of a country, such conventions have already been adopted. It is time to move along similar lines for the measurement of poverty.

The fourth is that, as we illustrate in Section 2, household surveys still differ widely in terms of income and geographic coverage, and in terms of the importance of non-sampling errors. Greater effort should be placed on standardizing this kind of information through programs such as the Living Standards Measurement Surveys (LSMS) of the World Bank, or the Mecovi program for Latin America and the Carribbean.[46]

In the end, perhaps the main message of the paper is that whenever the reader uses a poverty statistic, it is important to ask what is behind the number. Without some guidance on this it is possible to go to the extreme of saying that the number of poor in Latin America is between 60 and 315 million individuals. While this is a plausible answer, it does not really inform on how much poverty there is.

[46] Mecovi is the Spanish acronym for the program "Improving the Measurement and Analysis of Living Conditions in Latin America and the Caribbean." This initiative is sponsored by the Inter-American Development Bank, the World Bank, and ECLAC.

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Table 1

Benchmark Poverty Estimates

Country	Year	Poverty Measures: Number of Poor (Thousands)	Head-Count Ratio	Poverty Gap	FGT(2) Index	Gini Index	Urban Poverty Line $US PPP 1987	PPP GDP Per Capita 1987 Prices**	Total Population (Thousands)+
Bolivia	1996	4,826	65.1	37.5	26.3	58.77	$126	$2,292	7,414
Nicaragua	1993	2,818	63.7	39.5	28.7	56.69	$266	$1,563	4,426
Colombia	1997	24,097	62.5	31.7	20.4	57.58	$218	$5,357	38,542
Mexico	1996	53,597	58.8	25.6	14.3	52.76	$193	$6,041	91,145
Ecuador	1995	6,528	57.0	27.3	16.8	56.00	$176	$3,838	11,460
Brazil	1996	83,881	52.6	26.9	17.3	59.06	$186	$4,911	159,346
El Salvador	1995	2,853	50.3	21.3	12.2	50.50	$143	$2,155	5,669
Honduras	1998	2,583	45.7	24.7	16.9	58.76	$217	$1,653	5,654
Venezuela	1997	9,818	44.9	21.1	12.7	49.63	$135	$6,527	21,844
Peru	1997	10,192	43.3	16.9	9.0	50.55	$100	$3,596	23,532
Panama	1997	1,083	41.2	20.7	13.6	57.55	$124	$5,602	2,631
Paraguay	1995	1,936	40.1	19.1	11.7	62.03	$134	$2,719	4,828
Argentina*	1996	12,901	37.1	15.2	8.4	47.02	$229	$7,299	34,768
Chile	1996	3,259	22.9	7.6	3.7	56.38	$140	$9,089	14,210
Dominican Republic	1996	1,582	20.2	7.1	3.6	48.10	$99	$3,426	7,823
Uruguay*	1995	624	19.4	6.3	2.9	42.09	$188	$5,587	3,218
Costa Rica	1995	675	19.0	7.1	3.9	45.71	$137	$5,111	3,554
LAC Total (weighted avg.)			50.7	24.1	14.8		$182		440,064
LAC including all countries			243,490						479,954

Source: Authors' calculations from household survey data.
*Surveys only cover urban areas
**From World Development Indicators. When not available, we take the last figure reported in the WDI and extrapolate to the relevant year by multiplying by the growth rate of real GDP per capita in US Dollars.
+Population figures are taken from United Nations Population Statistics, 1998 revision

Table 2

Head Count Ratio Using Different Welfare

Country	Benchmark Poverty		Poverty Using Consumption	Same Poverty Line Used for all Countries: All Sources Covered		Monetary Incomes Only		Labor Incomes Only		Urban Areas	
	Rank	Index		Rank	Index	Rank	Index	Rank	Index	Rank	Index
Bolivia	1	65.1		1	79.1	1	79.1	2	78.0	1	72.0
Nicaragua	2	63.7		5	63.1	6	63.8	6	63.8	4	50.5
Colombia	3	62.5		8	51.3	9	52.0	9	53.4	10	37.7
Mexico	4	58.8	62.0	9	50.9	5	66.0	5	67.3	7	43.5
Ecuador	5	57.0	56.5	4	66.9	4	69.0	4	69.7	6	44.0
Brazil	6	52.6		10	50.7	10	50.7	10	51.5	8	43.1
El Salvador	7	50.3		6	58.0	7	63.0	7	57.8	5	47.6
Honduras	8	45.7		13	40.7	13	41.5	13	41.0	12	36.9
Venezuela	9	44.9		2	69.8	3	69.8	3	70.2	2	69.8
Peru	10	43.3	50.5	3	69.1	2	76.0	1	79.0	3	60.3
Panama	11	41.2		7	55.9	8	55.9	8	53.6	9	41.1
Paraguay	12	40.1		11	48.7	11	48.7	11	50.1	13	30.6
Argentina	13	37.1		16	27.1	17	27.1	17	28.2	15	27.1
Chile	14	22.9		15	29.7	14	33.4	14	38.6	14	28.1
Dominican Republic	15	20.2		12	42.0	12	42.0	12	45.5	11	37.4
Uruguay	16	19.4		17	15.3	16	27.1	15	34.0	17	15.3
Costa Rica	17	19.0		14	31.3	15	31.3	16	31.5	16	25.9

Source: Authors' calculations from household survey data.

Table 3

Sensitivity of Poverty Indexes to Different Equivalence Scales and Economies of Scale in Consumption

Country	Range Individuals (Thousands)	Head Count Ratio			Poverty Gap		FGT(2) index	
		Range	Min	Max	Min	Max	Min	Max
Bolivia	1,298	17.5	47.6	65.1	24.9	37.5	16.7	26.3
Nicaragua	665	15.0	48.6	63.7	26.1	39.5	17.4	28.7
Colombia	8,189	21.2	41.3	62.5	18.2	31.7	11.1	20.4
Mexico	23,952	26.3	32.5	58.8	10.6	25.6	5.0	14.3
Ecuador	2,584	22.6	34.4	57.0	14.1	27.3	8.2	16.8
Brazil	25,652	16.1	36.5	52.6	16.2	26.9	9.5	17.3
El Salvador	1,450	25.6	24.7	50.3	9.4	21.3	5.2	12.2
Honduras	867	15.3	30.3	45.7	15.3	24.7	9.9	16.9
Venezuela	3,878	17.8	27.2	44.9	10.6	21.1	5.7	12.7
Peru	5,606	23.8	19.5	43.3	6.2	16.9	3.0	9.0
Panama	412	15.7	25.5	41.2	12.4	20.7	8.0	13.6
Paraguay	833	17.2	22.8	40.1	9.6	19.1	5.5	11.7
Argentina	5,831	16.8	20.3	37.1	7.0	15.2	3.5	8.4
Chile	1,999	14.1	8.9	22.9	2.6	7.6	1.3	3.7
Dominican Republic	944	12.1	8.2	20.2	2.6	7.1	1.2	3.6
Uruguay	398	12.4	7.0	19.4	1.9	6.3	0.8	2.9
Costa Rica	372	10.5	8.5	19.0	3.1	7.1	1.6	3.9
LAC Total (weighted avg.)		19.3	31.4	50.7	12.8	24.1	7.2	14.8
Individuals all LAC countries		92,629	150,861	243,490				

Source: Authors' calculations from household survey data.

Table 4

Sensitivity of Poverty Indexes to Different Ways of Dealing with Missing and Zero Incomes

Country	Range Individuals (Thousands)	Head Count Ratio			Poverty Gap		FGT(2) index	
		Range	Min	Max	Min	Max	Min	Max
Bolivia	495	6.7	65.1	71.8	37.5	42.7	26.3	30.9
Nicaragua	887	20.0	63.7	83.7	39.5	59.5	28.7	48.7
Colombia	449	1.2	62.5	63.7	31.7	32.9	20.4	21.6
Mexico	30	0.0	58.8	58.8	25.6	25.7	14.3	14.4
Ecuador	357	3.1	57.0	60.1	27.3	29.5	16.8	18.4
Brazil	4,096	2.6	52.6	55.2	26.9	29.1	17.3	19.3
El Salvador	201	3.6	50.3	53.9	21.3	24.5	12.2	14.9
Honduras	307	5.4	45.7	51.1	24.7	28.5	16.9	20.0
Venezuela	3,525	16.1	31.1	47.2	19.1	22.6	11.3	13.8
Peru	13	0.1	43.3	43.4	16.9	17.0	9.0	9.1
Panama	84	3.2	41.2	44.4	20.7	23.1	13.6	15.7
Paraguay	52	1.1	40.1	41.2	19.1	20.0	11.7	12.6
Argentina	1,674	4.8	37.1	41.9	15.2	18.4	8.4	11.2
Chile	23	0.2	22.9	23.1	7.6	7.8	3.7	3.8
Dominican Republic	37	0.5	20.2	20.7	7.1	7.6	3.6	4.1
Uruguay	1	0.0	19.4	19.4	6.3	6.3	2.9	3.0
Costa Rica	116	3.3	19.0	22.2	7.1	9.2	3.9	5.6
LAC Total (weighted avg.)		2.8	50.0	52.8	24.0	25.8	14.7	16.3
Individuals all LAC countries		13,465	240,187	253,652				

Source: Authors' calculations from household survey data.

Table 5
Sensitivity of Poverty Indexes to Different Adjustments to National Account Aggregates

Country	Range Individuals (Thousands)	Head Count Ratio			Poverty Gap		FGT(2) index	
		Range	Min	Max	Min	Max	Min	Max
Bolivia	1,942	26.2	46.8	73.0	23.7	45.3	15.4	32.9
Nicaragua	768	17.3	58.5	75.8	31.4	58.0	20.8	47.4
Colombia	18,177	47.2	29.9	77.0	13.4	44.4	8.4	30.4
Mexico	57,044	62.6	14.0	76.6	4.1	40.1	1.9	25.1
Ecuador	3,699	32.3	40.5	72.8	18.7	42.7	11.1	31.4
Brazil	65,498	41.1	25.6	66.7	12.1	38.3	7.5	26.4
El Salvador	2,107	37.2	19.8	57.0	7.3	25.4	4.0	14.8
Honduras	1,273	22.5	45.7	68.2	24.7	44.9	16.9	34.2
Venezuela	11,088	50.8	6.4	57.1	2.2	31.4	1.2	20.6
Peru	11,340	48.2	13.2	61.4	4.2	27.3	2.0	15.7
Panama	1,171	44.5	21.2	65.7	9.5	38.6	5.7	27.2
Paraguay	1,236	25.6	28.8	54.4	11.8	30.3	6.6	20.7
Argentina	15,081	43.4	8.2	51.6	2.8	24.1	1.3	14.3
Chile	4,713	33.2	6.3	39.5	1.9	15.3	1.0	7.9
Dominican Republic	1,746	22.3	9.6	31.9	3.2	12.4	1.5	7.7
Uruguay	401	12.5	14.9	27.4	5.2	9.6	2.5	4.7
Costa Rica	1,247	35.1	4.1	39.2	1.5	16.2	0.7	9.1
LAC Total (weighted avg.)		45.1	20.7	65.8	8.9	35.8	5.3	23.8
Individuals all LAC countries		216,527	99,306	315,833				

Source: Authors' calculations from household survey data.

Table 6
Sensitivity of Poverty Indexes to Different Definitions of Poverty Line

Country	Range Individuals (Thousands)	Head Count Ratio			Poverty Gap		FGT(2) index	
		Range	Min	Max	Min	Max	Min	Max
Bolivia	2,088	28.2	40.9	69.0	20.5	40.9	13.6	29.1
Nicaragua	1,017	23.0	40.7	63.7	9.1	39.5	5.4	28.7
Colombia	14,442	37.5	27.6	65.1	12.4	33.7	7.8	21.8
Mexico	39,119	42.9	20.5	63.4	7.0	28.9	3.5	16.6
Ecuador	3,600	31.4	25.5	57.0	10.8	27.3	6.4	16.8
Brazil	43,904	27.6	28.0	55.6	12.1	28.0	7.0	17.6
El Salvador	1,977	34.9	19.0	53.9	7.3	23.2	4.1	13.3
Honduras	1,383	24.5	26.2	50.7	13.0	28.2	8.3	19.6
Venezuela	7,628	34.9	20.1	55.0	7.7	29.3	4.1	18.9
Peru	14,876	63.2	20.3	83.5	7.4	49.4	3.7	34.3
Panama	458	17.4	23.7	41.2	11.6	20.7	7.5	13.6
Paraguay	1,951	40.4	19.1	59.5	7.9	32.1	4.5	21.4
Argentina	9,142	26.3	10.8	37.1	3.6	15.2	1.8	8.4
Chile	3,831	27.0	5.4	32.3	1.7	11.9	0.9	6.1
Dominican Republic	3,218	41.1	5.4	46.5	1.7	19.3	0.8	10.7
Uruguay	569	17.7	1.7	19.4	0.5	6.3	0.2	2.9
Costa Rica	634	17.8	6.1	23.9	2.2	9.2	1.2	5.0
LAC Total (weighted avg.)		34.0	22.8	56.8	9.2	28.2	5.2	17.6
Individuals all LAC countries		163,418	109,263	272,681				

Source: Authors' calculations from household survey data.

Table 7
Sensitivity of Poverty Indexes to Different Methods for International Comparison

Country	Range Individuals (Thousands)	Head Count Ratio			Poverty Gap		FGT(2) index	
		Range	Min	Max	Min	Max	Min	Max
Bolivia	2,279	30.7	34.3	65.1	18.2	37.5	12.5	26.3
Nicaragua	1,056	23.9	39.8	63.7	20.1	39.5	13.1	28.7
Colombia	18,389	47.7	14.8	62.5	6.9	31.7	4.6	20.4
Mexico	52,381	57.5	4.3	61.8	1.3	31.9	0.6	20.9
Ecuador	4,438	38.7	18.2	57.0	7.7	27.3	4.6	16.8
Brazil	69,985	43.9	16.4	60.3	6.2	33.0	3.3	22.0
El Salvador	1,905	33.6	22.4	56.0	8.6	26.1	4.8	15.8
Honduras	1,382	24.4	44.6	69.1	24.7	42.9	16.9	32.0
Venezuela	9,305	42.6	2.3	44.9	0.9	21.1	0.5	12.7
Peru	17,231	73.2	17.8	91.0	6.3	60.6	3.2	45.0
Panama	865	32.9	17.2	50.1	7.5	26.3	4.3	17.6
Paraguay	1,356	28.1	35.0	63.1	16.7	35.4	10.3	24.3
Argentina	13,065	37.6	2.9	40.5	0.9	16.8	0.4	9.4
Chile	2,995	21.1	2.9	24.0	1.0	8.2	0.6	4.0
Dominican Republic	2,122	27.1	17.5	44.6	6.1	21.8	3.1	14.7
Uruguay	555	17.2	2.2	19.4	0.6	6.3	0.2	2.9
Costa Rica	812	22.9	6.1	28.9	2.1	11.9	1.0	6.7
LAC Total (weighted avg.)		45.5	12.7	58.2	5.1	30.9	2.9	20.5
Individuals all LAC countries		218,262	60,958	279,220				

Source: Authors' calculations from household survey data.

Table 8
Sensitivity of Poverty Indexes to Poverty Lines and Different Ways of Treating the data (All Combinations)

Country	Range Individuals (Thousands)	Head Count Ratio			Poverty Gap		FGT(2) index	
		Range	Min	Max	Min	Max	Min	Max
Bolivia		38.7	34.3	73.0	18.2	45.3	12.5	32.9
Nicaragua		43.9	39.8	83.7	9.1	59.5	5.4	48.7
Colombia		62.2	14.8	77.0	6.9	44.4	4.6	30.4
Mexico		72.2	4.3	76.6	1.3	40.1	0.6	25.1
Ecuador		54.6	18.2	72.8	7.7	42.7	4.6	31.4
Brazil		50.3	16.4	66.7	6.2	38.3	3.3	26.4
El Salvador		37.9	19.0	57.0	7.3	26.1	4.0	15.8
Honduras		42.9	26.2	69.1	13.0	44.9	8.3	34.2
Venezuela		54.8	2.3	57.1	0.9	31.4	0.5	20.6
Peru		77.8	13.2	91.0	4.2	60.6	2.0	45.0
Panama		48.5	17.2	65.7	7.5	38.6	4.3	27.2
Paraguay		44.0	19.1	63.1	7.9	35.4	4.5	24.3
Argentina		48.7	2.9	51.6	0.9	24.1	0.4	14.3
Chile		36.6	2.9	39.5	1.0	15.3	0.6	7.9
Dominican Republic		41.1	5.4	46.5	1.7	21.8	0.8	14.7
Uruguay		25.7	1.7	27.4	0.5	9.6	0.2	4.7
Costa Rica		35.1	4.1	39.2	1.5	16.2	0.7	9.1
LAC Total (weighted avg.)		53.1	12.7	65.8	4.5	37.9	2.5	25.6
Individuals all LAC countries		254,875	60,958	315,833				

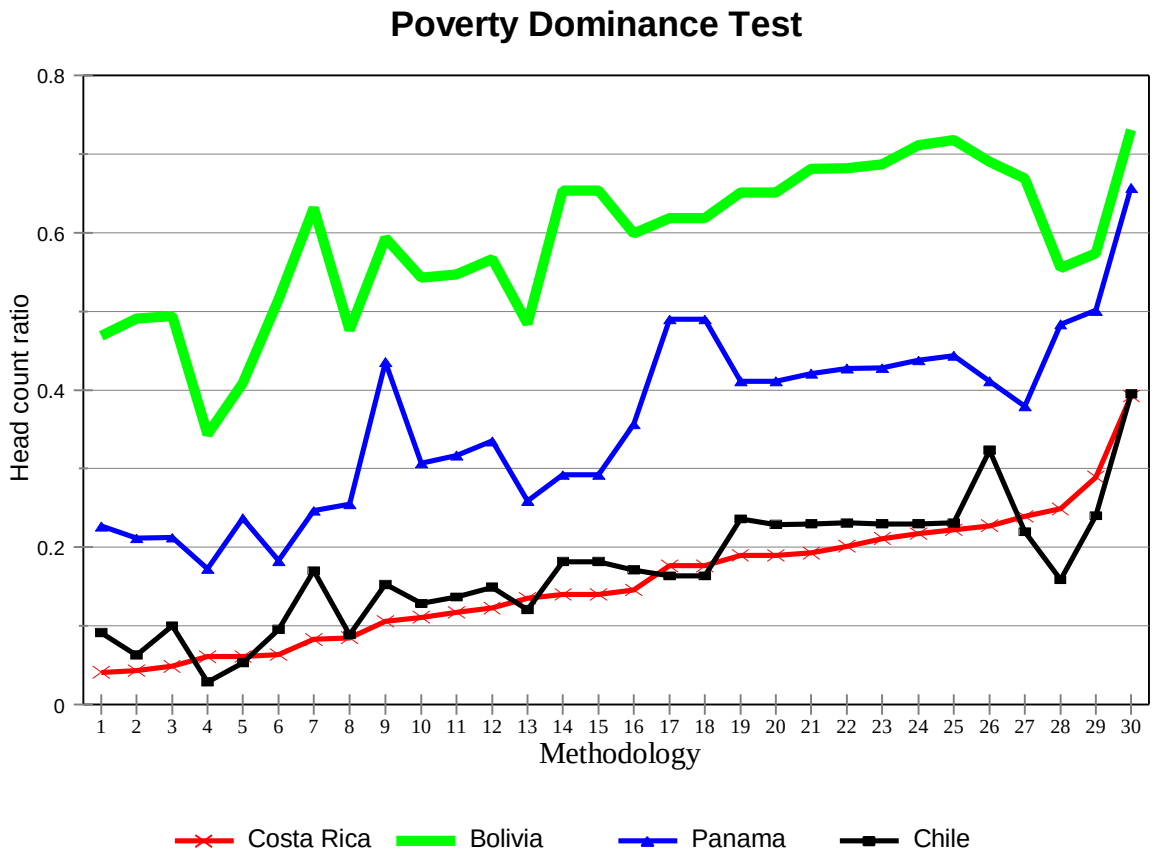
Source: Authors' calculations from household survey data.

Table 9

Dominance Tests for Poverty Measures

	Bol	Nic	Col	Mex	Ecu	Bra	ElS	Hon	Ven	Per	Pan	Par	Arg	Chi	DR	Uru	Cri
Bolivia																	
Nicaragua																	
Colombia																	
Mexico																	
Ecuador																	
Brazil																	
El Salvador	X																
Honduras																	
Venezuela	X			X													
Peru																	
Panama	X																
Paraguay																	
Argentina	X	X	X			X	X	X			X						
Chile	X	X	X	X	X		X				X	X					
Dominican Republic	X	X						X									
Uruguay	X	X	X		X	X		X			X	X					
Costa Rica	X	X	X	X	X	X	X	X		X	X	X					

Figure 1



Appendix Table A1

Survey Characteristics

Country	Year	Survey Name	Geographic Coverage	Income Source Coverage: Labor Income	Income Source Coverage: Non-labor Income	Income Source Coverage: Non-Monetary	Consumption Data	% Missing and Zero Incomes
Argentina	1996	Encuesta Permanente de Hogares	Urban	*				11.3
Bolivia	1996	Encuesta Nacional de Empleo	National	*	*			8.0
Brazil	1996	Pesquisa Nacional por Amostra de Domicilios	National	*	*			4.3
Chile	1996	Encuesta de Caracterizacion Socioeconomica Nacional CASEN	National	*	*	*		0.5
Colombia	1997	Encuesta Nacional de Hogares - Fuerza de Trabajo	National	*	*	*		3.3
Costa Rica	1995	Encuesta de Hogares de Propósitos Múltiples	National	*	*			18.6
Dominican Republic	1996	Encuesta Nacional de Fuerza de Trabajo	National	*	*			0.5
Ecuador	1995	Encuesta Condiciones de Vida	National	*	*	*	*	5.9
El Salvador	1995	Encuesta de Hogares de Propositos Multiples	National	*	*	*		0.7
Honduras	1998	Encuesta Permanente de Hogares de Propósitos Múltiples	National	*	*			7.4
Mexico	1996	Encuesta Nacional de Ingreso-Gasto de los Hogares	National	*	*	*	*	0.0
Nicaragua	1993	Encuesta Nacional de Hogares sobre medicion de nivel de vida EMNV	National	*	*			22.6
Panama	1997	Encuesta de Hogares	National	*	*			7.1
Paraguay	1995	Encuesta Nacional de Empleo	National	*	*			1.9
Peru	1997	Encuesta Nacional de Hogares sobre Medición de Niveles de Vida	National	*		*	*	0.6
Uruguay	1995	Encuesta Continua de Hogares	Urban	*	*	*		0.0
Venezuela	1997	Encuesta de Hogares por Muestreo	National	*	*			23.3

Appendix Table A2

Head Count Ratio for a Range of
Equivalence Scales and Economies of Scale in Consumption

Country	Benchmark Poverty	Economies of Scale in consumption: e=.9	e=.8	e=.7	Equivalence Scales: Contreras	Amsterdam
Bolivia	65.1	59.9	54.3	47.6	54.7	56.6
Nicaragua	63.7	59.4	54.1	48.6	55.4	57.1
Colombia	62.5	55.9	48.7	41.3	52.0	54.1
Mexico	58.8	50.4	41.4	32.5	44.7	47.3
Ecuador	57.0	49.4	42.1	34.4	43.7	46.2
Brazil	52.6	47.7	42.2	36.5	44.8	45.8
El Salvador	50.3	41.5	32.6	24.7	34.5	37.0
Honduras	45.7	40.3	35.2	30.3	36.2	37.6
Venezuela	44.9	39.2	32.8	27.2	35.2	37.2
Peru	43.3	34.2	26.2	19.5	27.1	30.7
Panama	41.2	35.7	30.6	25.5	31.7	33.5
Paraguay	40.1	34.3	28.0	22.8	28.2	30.3
Argentina	37.1	30.9	25.1	20.3	27.7	28.9
Chile	22.9	17.1	12.8	8.9	13.6	14.9
Dominican Republic	20.2	15.6	11.1	8.2	12.0	13.3
Uruguay	19.4	14.3	10.2	7.0	11.7	12.6
Costa Rica	19.0	14.6	11.1	8.5	11.7	12.3
LAC Total (weighted avg.)	50.7	44.4	37.8	31.4	40.3	42.0

Source: Authors' calculations from household survey data.

Appendix Table A3

Head Count Ratio for a Range of
Methods for Dealing with Missing and Zero Values

Country	Benchmark Poverty	Drop miss. Keep zero	Drop miss. Impute zero	Impute miss Drop zero	Impute miss Keep zero	Impute miss Impute zero
Bolivia	65.1	68.2	68.1	68.7	71.8	71.1
Nicaragua	63.7	83.7	81.2	63.7	83.7	81.2
Colombia	62.5	63.7	63.3	62.5	63.7	63.3
Mexico	58.8	58.8	58.8	58.8	58.8	58.8
Ecuador	57.0	57.1	57.0	60.0	60.1	58.0
Brazil	52.6	54.3	53.7	53.6	55.2	54.5
El Salvador	50.3	50.5	50.4	53.7	53.9	50.5
Honduras	45.7	47.3	47.1	49.5	51.1	50.3
Venezuela	44.9	45.3	47.0	31.1	31.1	47.2
Peru	43.3	43.4	43.3	43.3	43.4	43.3
Panama	41.2	42.7	42.1	42.8	44.4	43.8
Paraguay	40.1	40.7	40.5	40.6	41.2	40.8
Argentina	37.1	39.4	38.0	39.7	41.9	40.5
Chile	22.9	23.1	23.0	22.9	23.1	23.0
Dominican Republic	20.2	20.7	20.4	20.2	20.7	20.4
Uruguay	19.4	19.4	19.4	19.4	19.4	19.4
Costa Rica	19.0	20.1	19.3	21.1	22.2	21.8
LAC Total (weighted avg.)	50.7	52.0	51.6	50.8	52.0	52.3

Source: Authors' calculations from household survey data.

Appendix Table A4

Head Count Ratio for a Range of
Adjustments to National Accounts Aggregates

Country	Benchmark Poverty	GDP Current Prices	Private Consumption			Wage GDP-Non Wage GDP			Sector of Activity	Eclac-Type Adjustment	World Development Indicators
			Survey Population	Official Population	UN Statistics Population	Survey Population	Official Population	UN Statistics Population			
Bolivia	65.1	49.0	59.3	61.9	61.9	63.2	65.4	65.4	46.8	49.4	73.0
Nicaragua	63.7	58.7	61.2	68.5	68.5	72.7	75.8	75.8	58.5	60.2	65.3
Colombia	62.5	32.7	49.7	51.8	48.1	53.2	54.4	52.1	29.9	35.6	77.0
Mexico	58.8	14.0	29.7	29.5	29.5	41.4	41.3	41.3	19.3	57.7	76.6
Ecuador	57.0	47.6	64.0	68.3	68.3	63.9	64.8	64.8	40.5	54.0	72.8
Brazil	52.6	31.0	45.0	48.2	49.1	42.4	44.0	44.6	25.6	33.4	66.7
El Salvador	50.3	20.2	25.3	27.1	27.1	29.3	31.1	31.1	19.8	23.9	57.0
Honduras	45.7	50.4	64.0	67.8	67.8	64.6	68.2	68.2	51.5	55.3	59.3
Venezuela	44.9	6.4	13.0	20.3	20.3	24.2	33.2	33.2	10.8	9.4	57.1
Peru	43.3	13.2	24.5	24.6	24.6	41.0	41.1	41.1	19.7	17.8	61.4
Panama	41.2	21.2	43.5	49.0	49.0	24.6	29.2	29.2	22.7	21.2	65.7
Paraguay	40.1	35.1	46.6	46.6	46.6	54.4	54.4	54.4	28.8	35.3	51.6
Argentina	37.1	8.2	16.1	18.6	18.6	12.7	16.3	16.3	10.1	8.5	51.6
Chile	22.9	6.3	15.3	16.3	16.3	17.0	18.2	18.2	9.1	10.0	39.5
Dominican Republic	20.2	11.9	19.7	21.8	21.8	9.6	11.6	11.6	10.3	25.5	31.9
Uruguay	19.4	18.2	26.0	24.3	24.3	20.3	19.3	19.3	14.9	18.1	27.4
Costa Rica	19.0	4.4	10.6	17.7	17.7	8.3	14.0	14.0	4.1	4.8	39.2
LAC Total (weighted avg.)	50.7	23.3	36.3	38.7	38.7	39.3	41.0	41.1	22.7	34.6	65.6

Source: Authors' calculations from household survey data.

Appendix Table A5

Head Count Ratio for a Range of Poverty Lines

Country	Benchmark Poverty	Official Extreme Pov	ECLAC	2-dollars a day PPP	Country Studies	WB Poverty Assesment
Bolivia	65.1	40.9	66.9	48.4	65.1	69.0
Nicaragua	63.7	51.5	56.3	48.7	63.7	40.7
Colombia	62.5	30.0	60.4	27.6	65.1	51.4
Mexico	58.8	27.7	63.4	20.5	58.8	58.0
Ecuador	57.0	27.1	42.8	25.5	57.0	34.6
Brazil	52.6	28.0	40.6	45.0	55.6	29.6
El Salvador	50.3	19.0	48.5	49.6	50.3	53.9
Honduras	45.7	26.2	50.7	33.1	45.7	30.9
Venezuela	44.9	21.5	55.0	20.1	44.9	44.9
Peru	43.3	21.0	43.6	83.5	20.3	32.2
Panama	41.2	23.7	37.9	25.9	41.2	41.2
Paraguay	40.1	19.1	59.5	25.7	40.1	41.7
Argentina	37.1	10.8	34.3	25.5	37.1	23.6
Chile	22.9	5.4	22.0	12.1	23.6	32.3
Dominican Republic	20.2	5.4	46.5	26.9	20.2	20.4
Uruguay	19.4	1.7	8.9	3.4	19.4	2.3
Costa Rica	19.0	6.1	23.9	13.5	19.0	22.7
LAC Total (weighted avg.)	50.7	24.7	47.6	34.9	50.8	38.9

Source: Authors' calculations from household survey data.

Appendix Table A6

Poverty Lines in Local Currency by Country (Survey years)

Country	Official Poverty Line				ECLAC Poverty Line		Country Studies		World Bank Poverty Assesment Report	
	Moderate		Extreme							
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Bolivia	156		67		147		156		110	
Nicaragua	283	205	141	102	301	218	283	205	319	231
Colombia**	132	132	65	65	101	74	142	67	68	68
Mexico	34.3	23.1	17.4	11.7	33.4	22.5	34.8	23.5	39.6	39.6
Ecuador	11,229	7,599	5,151	3,857	12,953	8,929	11,229	7,599	9,682	9,682
Brasil	107,521	90,604	46,468	45,306	105,217	75,977	115,568	90,849	76,163	76,163
El Salvador	538	471	269	236	1,130	741	538	471	523	494
Honduras	223,364	169,006	111,682	84,503	162,148	122,687	223,364	169,006	117,323	117,323
Venezuela	518	344	259	172	506	327	518	344	589	345
Peru**	1,040	491	520	245	1,066	657	n.a.	n.a.	669	272
Panama	715	465	358	266	790	512	715	465	636	548
Paraguay*	362	362	181	181	338	159	362	362	215	101
Argentina	75	75	43	43	81	55			75	75
Chile	106,907	89,873	53,454	44,937	184,148	154,807	106,907	89,873	111,987	94,143
Dominican Republic	158	122	85	81	184	115	80	80	127	101
Uruguay*	855		314		687				366	
Costa Rica	41,832	41,832	20,916	20,916	57,981	57,981				

Sources: Official poverty lines are from country statistical offices. Country studies poverty lines are from Ganuza, et.al. (1998).
ECLAC poverty lines are from the Social Panorama, (1998). World Bank poverty assesment poverty lines were obtained from the original official World Bank documents.
*Countries with poverty line for main metropolitan area. This poverty line is not presented, but is used to compute poverty.
**Countries with specific poverty lines for each region. These poverty lines are not presented, but is used to compute poverty.

Appendix Table A7

Head Count Ratio for a Range

Methods for Performing International

Country	Benchmark Poverty	PPP GDP Per Capita Base 1987	PPP, 1987 Private Consumption	ECLAC-Type Adjustment	World Development Indicators
Bolivia	65.1	34.3	65.5	51.5	57.4
Nicaragua	63.7	39.8	67.4	51.0	50.9
Colombia	62.5	14.8	31.0	33.2	43.6
Mexico	58.8	4.3	23.1	61.8	37.2
Ecuador	57.0	18.2	44.6	42.2	39.6
Brazil	52.6	16.4	40.4	22.3	60.3
El Salvador	50.3	22.4	56.6	22.4	56.0
Honduras	45.7	45.1	62.1	57.2	44.6
Venezuela	44.9	2.3	15.8	16.4	33.5
Peru	43.3	17.8	40.2	18.6	91.0
Panama	41.2	17.2	48.4	18.3	50.1
Paraguay	40.1	38.4	63.1	55.4	35.0
Argentina	37.1	2.9	17.2	7.5	40.5
Chile	22.9	2.9	17.9	9.6	24.0
Dominican Republic	20.2	17.5	44.6	39.4	39.6
Uruguay	19.4	2.2	18.7	8.3	5.8
Costa Rica	19.0	6.1	22.9	6.4	28.9
LAC Total (weighted avg.)	50.7	12.7	31.3	31.5	49.3

Source: Authors' calculations from household survey data.