RURAL POVERTY IN LATIN AMERICA: RECENT TRENDS AND NEW CHALLENGES

Alberto Valdés
Johan A. Mistiaen

Alberto Valdés is a consultant and was formerly Agricultural Advisor for the World Bank. Johan A. Mistiaen is a consultant with the World Bank and a Ph.D. candidate at the University of Maryland.

1. Introduction: background, issues and objectives

At the dawn of this new millennium, reducing world poverty and eliminating hunger remain among the most fundamental challenges we face. Among other initiatives, the recognition of this problem prompted leaders of all countries at the year 2000 G-8 Okinawa Summit to agree on International Development Goals (IDGs) that include reducing the proportion of people in extreme poverty by half by 2015.[1] Achieving this ambitious goal will require the combined efforts and commitment of both developed and developing countries, the international development agencies, non-governmental organizations (NGOs), and the academic community. Against the backdrop of the newly reinvigorated global commitment reflected by various recent agreements to eliminate this unacceptable human condition, this paper reviews recent trends and emerging challenges for rural poverty reduction in the Latin American region.

The alleviation of poverty in the rural areas of developing countries, which is currently both deep and prevalent—nearly three out of four of the world's poor live in rural areas—continues to be a particularly vexing problem. Because most people in rural developing areas are poor, if we understand the economics of rural development we would know much of the rural poverty economics that really matters. Moreover, the rural poor earn the vast majority of their income from activities related to agriculture. Thus, if we understand the economic role of agriculture we would know a great deal of the economics of rural poverty and rural development. While both the absolute numbers and the proportion of poor people living in urban areas are expected to grow rapidly, the vast majority of poor in many regions will continue to live in rural areas until well into this new century. In the context of rural-urban migration, addressing rural poverty actually presents a formidable opportunity for preventing urban poverty.

[1] For more information on the G-8 Okinawa Summit agreements on global poverty, see the MDBs/IMF Report to the G-8 (July, 2000) on-line at: http://www.worldbank.org/html/extdr/extme/G8_poverty2000.pdf

In general, poor people living in rural areas share several characteristics including: low levels of educational attainment; a relatively large number of children; relatively low access to material resources, social and physical infrastructure; and higher susceptibility to community-wide exogenous shocks (e.g. weather induced crop losses and natural disasters). However, while the bulk of the rural poor share many characteristics, individual countries also vary greatly with regard to the condition of their rural economies and their rural development needs. Even within countries, there is often considerable heterogeneity in asset positions and household characteristics for the poor. Past experience and new evidence essentially suggests that there is no single approach to rural development and poverty reduction that will work for all regions and all countries.[2] Consequently, providing a disaggregated global coverage of rural poverty trends and identifying the emerging issues is a very valuable but challenging exercise.

This paper represents a step towards the larger objective by presenting an analytical framework designed to facilitate a global comparative approach. The empirical focus of this paper is based on the region for which many of the latest data are currently available: Latin America. Nevertheless the empirical findings are expected to be instructive in a more global context because a defining characteristic of the Latin American region is the combination of the region-wide significance of rural poverty and extreme income inequality on the one hand, and the considerable cross-country diversity in terms of rural socio-economic conditions and agricultural practices on the other.

Common characteristics of countries in the Latin American region, other than the prevalence of rural poverty and income inequality, are that despite a rather abundant endowment of land resources:[3]

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[2] The World Bank (1997) echoes this view in an insightful sector strategy report entitled: "Rural Development: From Vision to Action".

[3] In Latin American countries poverty is not only particularly deep and prevalent in rural areas, but; because high proportions of the rural poor have fled to the urban peripheries, it is also a major source of urban poverty.

- the proportion of landless and near landless rural workers are large;
- the share of rural workers in the national labour markets is relatively small;[4] and
- the shares of the agricultural sector in the various national economies are small in comparison to other regions.

The main objectives of this paper are threefold. First, a review is provided of some recent theoretical and empirical literature on the subject of rural development and poverty alleviation. Emphasis is placed on identifying prevailing thinking regarding the measurement, patterns and determinants of rural poverty, and on providing some selected in-depth thematic focus sections. The second objective is to evaluate the implications of these findings for the design of rural development strategies that would be effective in terms of poverty reduction. The final objective is to formulate suggestions for a research agenda that would cover remaining gaps in the understanding of poverty with the ultimate motive of providing signals for policy orientation at regional, national, and international levels.

The structure of this paper is reflective of the step-wise process that characterizes the proposed analytical framework for formulating rural poverty reduction strategies. In section 2 recent trends in poverty measurement and comparisons are examined. While measurement is a first necessary step, for designing effective policy one needs to determine what characterizes the rural poor, where they live and the economic environment of which they are a part. Essentially the poverty profiles

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[4] In their analysis on poverty and the rural economy, Tomich, Kilby and Johnston (1995) focus on a particular subset of developing countries, namely countries with abundant rural labour, low income per capita, and low productivity of farm labor (which they refer to as CARLs). A defining characteristic of the CARLs is that 50% or more of their labor force is engaged in agriculture. Their list of 58 CARLs includes only three Latin American countries, namely Haiti, Honduras and Guatemala. For most countries in Latin America, structural transformation has already reduced the share of agriculture in the labor force below one-third.

described in section 3 provide a snapshot of poverty by correlating poverty measures with economic, geographic, institutional and social indicators. It is also critical to consider inter-temporal changes in poverty characteristics; alas, the time-series data required for such comparisons continue to be available only for a few countries. To exemplify the insights these data can provide, very recent empirical material from diverse countries such as Chile, Nicaragua and Peru is presented.

In section 4 the focus is shifted from descriptive poverty analysis to the identification of poverty determinants. First, an effort is made to distinguish the forest from the trees by sketching the bigger picture of a rural poverty reduction policy framework and the influence of macro-economic and exogenous factors (e.g. exchange rate changes). This overview is then followed by a discussion of micro-level poverty determinants. The production and income function approaches are discussed and recent empirical evidence is provided. Section 5 presents some thematic rural poverty issues including the role of Rural Non-Farm (RNF) employment, natural resource degradation and indigenous groups. The linkages between rural factor markets and poverty are emphasized in a discussion of land markets. Low factor returns and/or factor market imperfections are often associated with poor rural areas. Government policy can address both, respectively via either stimulating technical change and/or improving the factor and product market functioning. Section 5 concludes by reflecting on some key emerging research and policy challenges.

2. Trends in poverty measurement and comparisons: what is poverty and who is poor?

The main objective of this section is to provide some background regarding poverty as a concept and how it can be measured. The body of literature devoted to the methodology for quantifying the extent and severity of poverty is substantial. Given that several excellent reviews of this literature are available, the aim here is not to provide a

comprehensive methodological review, but rather to focus on recent advances, new empirical evidence and issues for the research agenda.[5]

"Poverty" can be said to exist in a given society when at least one person does not have a level of well-being deemed to constitute a reasonable minimum by the standards of that society. Poverty measurement and comparisons are the building blocks for poverty analysis and the design of alleviation strategies. As emphasized by Ravallion (1992), a key reason for measuring poverty is not necessarily the need for a single number for some place and date, but rather to make poverty comparisons. Poverty comparisons can be either qualitative or quantitative. Quantitative poverty comparisons measure by how much poverty has changed. These allow *inter alia* the assessment of past or anticipated impact of a specific policy option on the extent of incidence or poverty.

The poverty line and poverty measures

A poverty line is the starting point for poverty analysis, the yardstick used in assessing well-being and determining who is poor and who is not. People are counted as poor when their measured standard of living (generally in either income or consumption) is below a minimum acceptable level. The poverty line is essentially defined as the value of income or consumption necessary for the minimum standard of nutrition and other necessities.

Poverty lines can be defined in absolute or relative terms. Absolute poverty refers to the position of an individual or household in relation to a poverty line whose real value is fixed over time. Relative poverty refers to their position vis-à-vis the average income in the country. For poverty assessments, the concept of absolute poverty is preferred because it facilitates comparative analysis. However, at the same time, it is unclear whether a "minimum acceptable level" can be given absolute meaning.

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[5] For comprehensive and interesting overviews of this literature see for instance: Ravallion (1992), Ray (1992) and World Bank (1993).

Box 1: Temporary versus chronic poverty

People who live in (or close to) a state of poverty, however that state is measured, often experience significant fluctuations in their income or consumption. This is true particularly for the poor or near-poor in rural areas of developing countries, where large proportions of the population are typically dependent on a relatively low technology agricultural sector whose productivity is heavily influenced by exogenous weather conditions. Drawing on the analogy with Friedman's distinction between temporary and permanent income, when examining a country or region where rural incomes from agriculture fluctuate, using household or individual expenditures might be a more reliable way to assess chronic poverty (Ray, 1992).

This distinction between temporary and chronic poverty, especially in rural agriculture dependent areas, is one area that needs further work to improve our understanding of this issue. Policies tailored to alleviate temporary poverty might be quite different from those that address chronic poverty.

This can vary both across and within countries depending on the characteristics of the society under consideration. For instance, while ownership of a car might be deemed an absolute necessity to live a "full" life in say Iowa, this is unlikely to be so in Rio de Janeiro or even New York city. Within a given country the poverty line in urban areas is likely to differ from that of the rural areas.

When reflecting upon the definition and in light of discussion, the rather arbitrary nature of a poverty line becomes apparent and it is therefore not surprising that several fundamental concerns surround the concept. While the various methods used to define absolute poverty lines and their relative merits are widely discussed in the literature (e.g. Deaton, 1997, and Ravallion, 1992), some of the specific issues emerging on the research agenda are presented in this section.

Once a poverty line is set, the basic measure for counting the poor is called the headcount index defined as the proportion of the population whose measured standard of living is less than the poverty line. While this provides a first impression of the scope of the poverty problem, it does not capture differences among the poor. The poverty gap index provides a good indication of the depth of poverty (i.e., the difference between the poverty line and the mean income of the poor expressed as a percentage of the poverty line). However, this measure is insensitive

to the distribution of income among the poor. For instance, it would be unaffected by a transfer from a poor person to a person who is extremely poor.

Assessing the severity of poverty requires a distribution-sensitive measure. Premised on the assumption that society places greater value on helping the poorest and thus a weight is used to reflect the extent to which living standards fall below the poverty line. A widely used measure of the severity of poverty is the Foster-Greer-Thorbecke (FGT) Index. This index essentially measures the mean of the individual poverty gaps raised to a power reflective of society's valuation of different degrees of poverty. In fact, all three of the measures reported in Table 1 are members of the FGT class of poverty measures.[6]

Turning to some comparative empirical evidence from the Latin American region, Table 1 compares two sources of poverty measures for Chile: the analysis by CEPAL/MIDEPLAN (also used by de Janvry and Sadoulet, 1999) and a recent World Bank (2000b) study. The income measures used in these studies differ in a number of respects. The World Bank (2000b) study: (i) uses income per equivalent adult and adjusts for household size (to take into account economies of scale in consumption), instead of income per caput; (ii) adjusts for regional price differences; (iii) does not lower the poverty line for rural households; and (iv) differs with regard to the adjustments for missing income values. Some adjustments lead to higher estimates of poverty (not adjusting the rural poverty line) and some to lower estimates (adjustment for equivalent adult). Income includes all primary income and monetary transfers (family allowance, assistance pensions, unemployment subsidies, etc) as well as imputed rent and gifts.[7] However, like most of the poverty assessments

[6] For an excellent review of this literature, see Ravallion (1992).

[7] To arrive at the poverty line, the cost of the food basket (of the third decile) is multiplied by the inverse of the food share in total expenditure (i.e. the Engel coefficient of 0.5, using the standard value in Chile) which implies a doubling of the indigence line (extreme poverty). Under indigence, the poverty line represents the income needed to cover food expenditures, based on an adequate diet as defined by FAO/WHO caloric requirements.

Box 2: On the adjustment of welfare measures for in-kind transfers

Most governments make several in-kind transfers to households in the form of programmes in education, health and housing. However, these social services are typically not included in the computation of household income, nor are they included in the computation of the poverty line. Omission of in-kind transfers through social services unambiguously underestimates the real income of the poor. Moreover it renders an incomplete assessment of the relationship between being poor and the extent of the "deficit" in their health, education, and housing status. The problem that arises is how should one convert these in-kind transfers into monetary terms? This problem remains partly unresolved and has recently emerged on the research agenda.

Hitherto, to our knowledge, the only country where researchers have investigated this matter is Chile (see MIDEPLAN, 1996; de Gregorio and Cowan, 1996; Scholnick, 1996; Beyer, 1997; Contreras, Bravo and Millan, 2000; and World Bank, 1997 and 2000b). One key issue refers to the beneficiary's own monetary valuation of the in-kind transfer, which could differ from the cost to the government of providing the service—the proxy used to estimate the value to the beneficiaries. Because the beneficiaries of such transfers do not have the option to sell them (e.g. in a secondary market for vouchers), valuation using the criterion of cost when estimating income could overestimate the perceived value of the transfer. A second major limitation is the lack of detailed information at household level to improve measurements of access to health and education.

A great deal of what the government can do to assist the poor is related to social spending, and such spending is mainly channeled through education, health, and housing. Thus the importance of monitoring what is the evolution of various welfare indicators which are directly influenced by social policies, in addition to the traditional money-metric indicators.

of Latin American countries, the measure of income omits the value of in-kind transfers made to households by the government via subsidized education, health, and housing programmes. The latter point raises a methodological caveat. Namely, the omission of in-kind transfers could significantly underestimate real income for some countries that have an extended safety net which is targeted to the poor. For example, a recent estimate for Chile of the implicit income transfers through in-kind payments for the first quintile (valued at the cost of providing the services) was equivalent to approximately 89% of primary income (40% in 1990) of which approximately 2/3 is not included in the income values used for computing poverty. In light of this evidence, it is paradoxical that while in several countries poverty is attacked mainly through social programmes, the debate on the poverty status of the population remains centred around the "money-metric" measures and gives social programmes such a minor role (see Box 2).

TABLE 1
Trends in rural and urban poverty for Chile[a]

	1987	1990	1992	1994	1996	1998
Poverty						
Headcount[b] Total[c]	40.0	33.1	24.2	23.1	19.9	17.0
Total[d]	39.0	33.0	28.0	23.0	20.0	--
Urban[c]	35.2	29.1	20.7	19.3	15.6	13.5
Urban[d]	38.0	33.0	28.0	23.0	19.0	--
Rural[c]	63.5	50.6	40.1	42.1	42.5	37.3
Rural[d]	45.0	34.0	28.0	26.0	26.0	--
Poverty Deficit[c]						
Total	15.7	12.0	7.8	7.6	6.5	5.7
Urban	13.4	10.2	6.5	6.3	4.8	4.5
Rural	25.3	19.7	13.4	14.2	15.0	12.6
FGT[c]						
Total	8.2	6.1	3.8	3.8	3.2	2.9
Urban	7.0	5.1	3.2	3.2	2.4	2.3
Rural	13.1	10.5	6.4	6.9	7.4	6.1

Notes: (a) All these numbers are based on the data collected by CASEN; (b) The poverty line was set at P$37,889 per month in 1998 pesos; (c) From World Bank (2000b); (d) From de Janvry and Sadoulet (1999) based on CEPAL calculations. The CASEN household survey, with a sample of approximately 40,000 households, is representative nationwide, and it is taken every two years since 1985.

The World Bank (2000b) report confirms that there was a substantial rise in mean income per person for all deciles during 1987-98, illustrating the powerful beneficial impact of a high rate of growth across the Chilean income distribution. According to all three measures of poverty there has been a remarkable reduction in the incidence (headcount) depth (deficit index) and severity (FGT) of poverty (see Table 1). Nationwide, the poverty headcount fell from 40% in 1987 to 17% in 1998.The poverty deficit index fell from 15.7% in 1987 to 5.7% in 1998, and the FGT from 8.2% to 2.9%. Summing up, today there are fewer poor and those poor are less poor. The incidence of rural poverty in 1996 was almost three times higher than in the urban area (42.5% vs.15.6%). Moreover, notice the difference in the magnitude of rural poverty between the CEPAL/MIDEPLAN measures and the World Bank study. In 1996 for example, the incidence of rural poverty was reported to be 26.0% compared to 42.5%, and this is unlikely to be fully explained by the

TABLE 2
Trends in rural and urban poverty for Nicaragua and Peru

	Nicaragua[a]		Peru[b]	
	1993	1998	1994	1997
Poverty Headcount[b]				
Total	50.3	47.9	53.5	49.0
Urban	31.9	30.5	46.1	40.4
Rural	76.1	68.5	67.0	64.7
Poverty Deficit				
Total	21.8	18.3	18.9	16.0
Urban	10.9	9.9	14.4	11.8
Rural	37.1	28.3	27.1	23.5
FGT				
Total	12.1	9.3	18.8	14.8
Urban	5.1	4.5	12.9	9.3
Rural	21.9	14.9	29.5	24.5

Notes: (a) from World Bank (2000c) based on data from the Nicaragua Living Standards Measurement Survey (LSMS) 1993 and 1998; (b) from Hentschel (1999).

lower poverty line for rural households in the CEPAL/MIDEPLAN analysis.

Further evidence from Nicaragua and Peru (see Table 2) is suggestive of a declining trend in rural poverty as reported by de Janvry and Sadoulet (1999) for Latin America based on the CEPAL data. However, despite the declining trend, there is no question that rural poverty in the region remains very high compared to urban poverty and that this represents a large welfare problem. Has the situation of the region as a whole improved? The evidence indicates that these poverty changes have been quite heterogeneous across countries. With the recovery of the economy during the 1990s, rural poverty fell in some countries, notably in Brazil, Chile, Costa Rica, Nicaragua, Guatemala, Panama and Peru. However, in Mexico and Venezuela the incidence of poverty rose, and it remained constant in Honduras.

Measurements of inequality

Poverty and inequality are two altogether different concepts. Inequality measures are concerned with the variance as opposed to the mean of welfare distributions. In other words, inequality is a measure of the

dispersion of a distribution that is, by construction, insensitive to its mean. Emphasizing this difference is important because the concepts of poverty and inequality are often confused and misconceptions are common. For instance, a reduction in poverty does not imply a reduction in inequality per se. There are some countries in Latin America that have achieved remarkable progress in reducing poverty, while at the same time making little or no improvements with regards to the distribution of income as usually measured.

As with poverty measures, a vast number of different inequality measures have been developed. The key difference among these is how sensitive they are to the spread in various parts of the distribution. Four widely used measures are: (a) the Gini Coefficient (which is most sensitive to income changes in the middle of the distribution); (b) the Mean Log Deviation (which is most sensitive to incomes in the middle of the distribution); (c) the Theil Index (whose sensitivity is constant across the distribution); and (d) the Coefficient of Variation (which is most sensitive to incomes at the top and bottom of the distribution). The last three belong to a group of inequality measures known as the Generalized Entropy Class.

Table 3 presents an example of the preceding discussion. In Chile, throughout the period rural poverty was higher than urban poverty; the incidence of rural poverty is typically twice the incidence of urban poverty, and the depth and severity of poverty is also greater in rural areas (Table 3). Furthermore, although mean incomes increased substantially in both rural and urban areas between 1987 and 1998, incomes in urban areas rose proportionately more than rural incomes and this led to a widening of the income gap between rural and urban areas. However, the very bottom 2-3% of the population in Chile is comprised predominantly of urban households. Applying a decomposition analysis (the mean log deviation) to examine how much of the total inequality is due to differences between the two sectors, Litchfield (see World Bank, 2000b) concludes that differences in mean incomes between the rural and urban sectors account for less than 8% of overall inequality.

1997

49.0
40.4
64.7

16.0
11.8
23.5

14.8
9.3
24.5

andards

TABLE 3
Trends in rural and urban inequality for Chile[a]

	1987	1990	1992	1994	1996	1998
Gini						
Total	0.5468	0.5322	0.5362	0.5298	0.5409	0.5465
Urban	0.5436	0.5207	0.5328	0.5229	0.5319	0.5507
Rural	0.4521	0.5464	0.4837	0.4816	0.4692	0.4895
Mean Log Deviation						
Total	0.5266	0.4945	0.4891	0.4846	0.5139	0.5265
Urban	0.5241	0.4723	0.4816	0.4714	0.4939	0.5332
Rural	0.3534	0.5303	0.4019	0.4006	0.3849	0.4237
Theil Index						
Total	0.6053	0.5842	0.6151	0.5858	0.6058	0.6264
Urban	0.5856	0.5477	0.5975	0.5647	0.5818	0.6323
Rural	0.4868	0.7459	0.5847	0.5650	0.4986	0.6018
Coefficient of Variation						
Total	1.3007	1.3992	1.505	1.5634	1.4123	1.6172
Urban	1.1771	1.2368	1.3926	1.4586	1.3215	1.5858
Rural	1.8291	2.6180	2.1205	2.0709	1.2661	3.4177

Notes: (a) From World Bank (2000b). Adding the imputed value of in-kind transfers reduces the Gini coefficient for 1998 from 0.54 to 0.50. See volume II, chapter 3 by Contreras *et al*.

Inter-temporal welfare comparisons

To assess whether measures of poverty and/or inequality have changed over time, one can use the concept of stochastic dominance. This involves comparing cumulative welfare distributions at different points in time. Two different criteria are being used. First Order Stochastic Dominance (FOSD) refers to the case when one distribution lies entirely above or below another one, indicating respectively that poverty has unambiguously risen or fallen. When distributions cross, then FOSD applies only when the crossover(s) does not occur at an income level strictly below the poverty line. For all other situations, the comparison boils down to which distribution has the larger cumulative frequency. To test for this one can use the concept of Second Order Stochastic Dominance (SOSD). Inter-temporal comparisons of poverty are of critical importance, as the very recent work on Chile (World Bank, 2000b) and Nicaragua (World Bank, 2000c) shows. Unfortunately, lack of reliable data severely limit the possibility for similar studies in other countries.

1998

0.5465
0.5507
0.4895

0.5265
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1.6172
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Some caveats regarding welfare measures

There is a substantial literature on welfare measurement adjustments. One aspect concerns measurement of individual versus household welfare. While in one sense this bears on intra-household inequality (see Box 3), another set of concerns arises from the fact that larger households typically have more children. Households in rural areas are typically larger; hence a brief discussion of this issue seems warranted. Some correction for the presence of children is desirable, because they consume somewhat less than adults. This is typically achieved via "adult equivalence" adjustments that weigh the consumption of children as a fraction of a representative adult (for further discussion see for instance Deaton, 1997, and Ray, 1992). The measurement of income is thus somewhat more cumbersome than might appear at first glance. Income data definitions should incorporate all primary incomes, cash transfers from government programmes (e.g. family allowance, assistance pensions, family subsidies, and unemployment subsidies), as well as imputed rents, gifts and remittances. In addition, the data must be corrected for regional price differences. This definition, however, does not include in-kind transfers made to households by the government through programmes in education, health, and housing. The issue of in-kind transfers has been addressed in Box 2 and, as should become apparent from the discussion, it is important and there remains considerable research to be carried out on this subject.

Box 3. Intra-household allocations

This question becomes important when one is concerned about possible inequality of expenditure allocation within households. Potential victims of these inequalities are typically females, children and the elderly. Hitherto, intra-household inequality has not been systematically measured, but evidence points to its existence. One study suggests that by not accounting for heterogeneity in allocation among household members, one could underestimate poverty by more than 25% (Haddad and Kanbur, 1990). Given that rural households are typically larger than urban ones, this is certainly an area that warrants further research.

3. Rural poverty profiling: what patterns characterize the rural poor?

Poverty measurement is only a first step. Designing effective policy requires knowledge of what characterizes the rural poor, where they live and the economic environment of which they are a part. The poverty profile is an analytical devise that provides a snapshot of the poor in their economic, geographic, institutional and social context. The main objective of this chapter is to identify and discuss key poverty characteristics and to present some empirical evidence from recent poverty profiles.

Location: what do we mean by rural?

Geographical mapping of poverty is a rapidly emerging issue. Countries are typically not spatially homogeneous and simple regional or dichotomous rural-urban comparisons appear to conceal much of what is of interest. Furthermore, the definition of what is an urban versus a rural area is inevitably subjective and typically based on country-specific administrative/political criteria. Recent findings suggest that to characterize poverty, we need to move beyond the country and dichotomous rural-urban dimensions. For instance, work on Brazil by Ferreira, Lanjouw, and Neri (2000) concludes that the incidence of poverty in small urban areas is typically higher compared to larger cities and metropolitan areas. This is significant in the context of rural poverty alleviation because it is considerably more likely that the economies of smaller towns are linked more closely to the rural economy than they are to the economies of larger urban areas.

A very recent report on Brazil (World Bank, 2000a) observes that, contrary to popular opinion, poverty in Brazil is *not* an overwhelmingly urban phenomenon. In fact, despite the considerably larger urban population, poverty is so widespread in northeastern and southeastern rural areas that, in absolute numbers, approximately 43% of the

population in poverty are actually rural.[8] From a regional perspective, rural poverty is concentrated in the more populated northeast where the preliminary headcount index estimates range between 47% and 51% (in the southeast this ranges from 22% to 26%). While the relative regional difference between the northeast and southeast was previously known (World Bank, 1995), the overall magnitude of rural poverty in Brazil appears to have been underestimated. By further disaggregating beyond this regional level, the recent World Bank (2000a) report uncovered several additional new findings.

Firstly, of the total estimated number of poor in the northeast and southeast, about 83.6% and 90.3% respectively reside in remote 'rural exclusive' areas. The latter are defined as areas that do not meet any of the criteria defining a rural agglomeration (i.e. very few or no permanent structures, little or no infrastructure, and low population densities). Secondly, headcount poverty measures are among the lowest in rural areas directly adjacent to, but not formally incorporated into the urban perimeter of municipalities. In fact, in the northeast, headcount poverty measures in these locations are lower compared to those in urban areas.

While the considerable heterogeneity of poverty in a large country such as Brazil might not strike most of us as surprising, the same appears to be true in several countries that are much smaller. For instance, in the considerably smaller country of Ecuador, Hentschel *et al.* (2000) found that rural communities with the same characteristics (e.g. land and soil quality) are actually very heterogeneous in many respects (e.g. their command of land resources and well-being). Consequently, the recommendations for what is necessary to overcome poverty vary as well.

There has for some years been a growing consensus that there is simply no such thing as a "typical" developing country. The updated

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[8] The poverty line was set at R$65.07 in 1996 São Paulo Reais. See chapter 6 in World Bank (2000a) for more details regarding this work in progress and the preliminary results.

Box 4: Small-to-large survey imputation methods

The analysis of poverty, particularly in rural areas, continues to be greatly constrained by a lack of adequate data. Hentschel *et al.* (2000) provide an excellent overview of data sources for poverty analysis. More often than not, data sets with adequate coverage and sample sizes do not provide information on variables that one would like to use (e.g. expenditures). Sometimes this information is available from smaller household survey samples but these data are not representative beyond a certain level of disaggregation. Recently, a group of researchers (see Elbers *et al.*, 2000) have developed a small-to-large survey imputation technique that enables one to combine more detailed but smaller data sets (e.g. LSMS household surveys) with less detailed but larger and more representative surveys (e.g. census data). This allows one to extrapolate the disaggregated household level spatial data to the larger coverage and subsequently estimate spatially disaggregated poverty measures. Elbers *et. al.* (2000) demonstrate that this merging process yields an estimator that can be aggregated to any aggregate welfare measure (e.g. poverty measures) and can be assessed for statistical reliability. Recent results from Ecuador (World Bank, 1999) and preliminary results from Brazil (World Bank, 2000a) indicate this is a promising approach to circumvent data problems and provide poverty measures that are geographically further disaggregated. For an overview of the methodology and a summary of empirical results from several countries, see Lanjouw, Mistiaen and Ozler (2000). Further research in this area could provide us with more information from many countries.

picture emerging from these recent studies is that likewise, there is no such thing as a "typical" rural or urban area in developing countries. We need to move beyond simple breakdowns and towards a more disaggregated geographical approach when analysing rural poverty and contemplating poverty alleviation strategies. This also calls for better and more disaggregated data. While this continues to be a problem, some recent advances have enabled researchers to make the most out of what is currently available (see Box 4).

Occupation and income sources

In Latin America the vast majority of the rural poor continue to depend heavily on the agricultural sector for occupation and income. However, in some countries, the rural poor are predominantly small farmers, while in others labour income represents the main income source, and thus one would expect marked differences in the emphasis of policy-oriented

analysis. A non-trivial weakness of the literature on rural poverty in Latin America is that it has often down played the rural labour market's capacity—through employment and wage effects—to transmit the benefits of agricultural growth. Traditionally, most rural poverty programmes have emphasized the development of small-holder agriculture, to the neglect of the off-farm income opportunities and salaried work by landless workers.

Recent evidence from Brazil (World Bank, 2000a) suggests that in the northeast and southeast of Brazil (where the majority of rural poor are located), rural household income from farm related activities (farmers and labour income in agriculture) represents not less than two thirds of total household income from all sources. Moreover, agricultural income (self and salaried income) is more important than non-agricultural income. The importance of the agricultural sector is underscored by the fact that the bulk of rural poor in both the northeast and southeast of Brazil (83.6% and 90.3% respectively) live in low density, remote rural areas, and those that receive their main income via farming or agricultural labour are consistently the poorest groups.

The findings in El Salvador are similar (World Bank, 1998a). In rural areas, the poorest derive approximately 50% of their household income from agricultural wage labour in contrast to the higher income households which only obtain 18% from this source. On average, landless rural workers employed mainly in agriculture are the poorest segment of the rural population, while farmers and even the landless employed in some non-farm occupation earn more than twice the per caput income of landless agricultural workers. These findings hint at the potential of non-farm employment as one possible route out of poverty, a thematic issue that will be addressed in greater detail later in the chapter.

In terms of non-labour income in Brazil, public pensions are by far the main source, contributing about 95% of the total non-labour income. The average proportion of total income from public pensions is 15% in the southeast and 18.1% in the northeast. Thus, public pensions constitute a key income source for the rural population. However, the middle income

quintiles actually have the highest share of pension in total income and the richest households receive the highest pension values in absolute terms. The proportion of households receiving a pension follows the same pattern, with a higher percentage in the mid-quintiles (World Bank, 2000a).

Demographic and other key characteristics of farmers

Overall, throughout the region, the rural poor tend to be less educated, have less access to services (electricity, safe water, health care, sewage disposal), and worse health indicators than poor households in urban areas. For example on education, in Brazil, Honduras, and Ecuador individuals in rural areas have about half the average years of schooling than those in urban areas (López and Valdés, 2000). Within agriculture there are of course considerable differences in such characteristics among farmers (and landless workers) according to farm size and geographic location.

In their study on rural poverty López and Valdés (2000, chapter 1) present certain key characteristics of households in small farms in six countries based on recent household surveys (Colombia, Chile, El Salvador, Honduras, Paraguay, and Peru). Focusing on a cross-country comparison (reporting the lowest and highest values) of the lowest income tercile group in each country, the following characteristics stand out:

- Family size: 5.2 (Chile) to 7 (Honduras);
- The number of children: 2.6 (Chile) to 3.8 (Peru);
- The dependency ratio: 0.5 (Honduras) to 2.5 (El Salvador);
- Years of schooling of the household head: 1.7 (El Salvador) to 4.4 (Peru);
- Land size operated: 2 ha (El Salvador) to 15 ha (Paraguay);
- Proportion of off-farm income in total household income: 6.8% (Peru) to 67% (Chile);
- Proportion of farmers that receive technical assistance: 4.4% (Colombia) to 36% (Chile);
- Proportion of farmers receiving credit: 7.6% (Peru) to 36% (Chile).

These statistics are indicative of the hardship in which a large fraction of the small farmers lives and suggestive of the ineffectiveness of government programmes in assisting small poor farmers. For example, the very low proportion of farmers that have access to either credit or technical assistance is quite surprising, particularly considering the various allegedly effective government programmes. Moreover, farmers in the lowest income groups have less access to credit than the non-poor.

4. Determinants of rural poverty: what causal forces underlie rural poverty?

> "In general it is easier to identify people who are poor than it is to bring relevant parts of economics to bear on their circumstance." *T.W. Schultz*

There are four key steps in the design of an effective anti-poverty policy. Measuring poverty is a crucial first step; but designing an anti-poverty policy requires analysis going beyond counting the poor. It is necessary also to assess where the problem is greatest, whether poverty is increasing or decreasing, and to develop a poverty profile—identification of poverty patterns via correlation relationships between key characteristics. As shown by various authors, the lack of good poverty measures and profiles help explain the weaknesses of antipoverty policies in some regions.[9] A third key input into policy design, and the focus of this chapter, aims at uncovering the determinants of rural poverty via statistically based estimation of causal relationships. The final step is an assessment of the effectiveness of proposed cures—the remedies for reducing poverty. This will be addressed in section 5.

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[9] See for example M. Lipton and J. van der Gaag (1993), where they refer to this problem in much of Africa, in contrast with India where, even crude measurement has helped guide transfer policies.

Focusing on the determinants of poverty allows one to assess the possible effects of certain policies ahead of time. The production function approach is the traditional bread and butter of such causal analysis. The more recently developed income function approach (i.e. income as a function of household and production characteristics) is another example of such a causal relationship. This latter approach had not been applied to case studies in the Latin American region until very recently.

This chapter will first discuss both approaches. Following the theoretical discussion, a summary of very recent empirical findings from selected countries (Brazil, Chile, Colombia, El Salvador, Honduras, Nicaragua, Paraguay, and Peru) will be presented. The main findings regarding the impact and contribution of various key factors (e.g. land size, education, hired and family labour, own capital, access to credit and technical assistance, land titles, geographic location, family size, age/gender of household head, etc.) to total per caput income will be evaluated on a cross-country bases.

When discussing the determinants of poverty one inevitably returns to the key question: why are the poor poor? As discussed in López and Valdés (2000, chapter 1), in the context of rural poverty in Latin America, "Most basically it is because they have few assets (both human and physical, including social capital) and also because the productivity of their assets is low. The assets are meagre not only in quantity but also in quality (e.g. low levels of schooling are usually combined with poor quality of schooling). The low productivity of assets results from a combination of government failures and imperfect or incomplete markets".

This taxonomy helps in guiding the analysis of rural poverty determinants by distinguishing those factors that contribute or constrain the building of the assets of the poor (education, demographics, land, and others) from those influencing the productivity of such assets (the incentive framework, financial policies, overall economic growth, and others). Traditionally, the bulk of the literature on agricultural development and poverty in Latin America has emphasized control over assets (land in particular) as the *key* factor in explaining rural poverty.

Why the "low productivity of assets" effect on rural poverty has been practically ignored in a region with such a history of poor policies is puzzling.

In addition to these two major determinants of rural poverty, two other critical factors should be considered. First, the role played by geography—which, surprisingly, is a factor that until recently was mostly excluded from the rural poverty debate in the region (see López and Valdés, 2000). As shown by Krugman (1991), economic growth triggers an increasing regional concentration of economic activities (due to the fall in transportation costs and the presence of economies of scale in manufacturing and services) and an increasing penetration of rural markets. This process gradually dislodges local (rural) industries which reduces the non-farm employment opportunities for the rural population. As argued by López and Valdés (2000), by contrast an important fraction of the rural population is rather immobile (due to low skills, age distribution and in some cases due also to ethnic characteristics and language barriers), while the young and more educated are bound to migrate following the dynamic sectors. Thus, rural poverty is to some extent associated with the structural dynamics of an economy in the process of growth, generating increasing geographic concentration of the most dynamic industries and skilled labour.

Social spending is a second critical determinant of the welfare level of the poor. This includes government subsidies on education and health (these enhance the ability of poor people to accumulate human capital and hence, increase their future earning capacity) as well as cash transfers, pensions, unemployment compensation, and other safety net components designed to reach the rural poor. For example, the objective of social programmes such as PROGRESA in Mexico, FONCODES in Peru, IRD in Nicaragua, and PREVIDENCIA RURAL in Brazil, is to cover basic needs rather than facilitating income generation in the near future. Funding for these social programmes has increased substantially during the last decade and some of these appear to have a significant impact on the household income of the poor. For example, in Brazil in 1996, rural pensions alone represented between 15% and 18.1% of household per caput income among the poorest quintile (World Bank, 2000a). In Chile,

as percent of autonomous family income for the first (poorest) quintile, the implicit transfer of social spending (cash plus imputed value of subsidies on education, health and housing) increased from 49% in 1990 to 89.1% in 1998 (World Bank, 2000b).

While the emphasis on producing poverty profiles has increased in recent years, little empirical work has been undertaken to identify the causal mechanisms of poverty. Why so many rural development programmes have not succeeded in reducing rural poverty could be due to this gap in knowledge. In order to understand what causes rural poverty and which of these causes can be influenced by policy reforms, it is essential to distinguish between the overall performance of the economy—and thus the effect of economy-wide policies—and the micro-level determinants of poverty (e.g. at the household level).

Macro-economic policies affecting growth and the demand for labour: effective for poverty reduction?

Much of the literature on rural poverty in Latin America emphasizes primarily microeconomic factors, including access to land and credit, the impact of schooling, and cash transfers. However, the broader literature on poverty recognizes that one of the most important determinants of poverty is economic growth itself. Most development economists today would agree that sustained poverty reduction demands both economic growth and specific anti-poverty policies. In Latin America, growth is on aggregate effective for poverty reduction (Morley, 1995) but, is it sufficient to reach those in extreme poverty? Some authors have questioned the effectiveness of growth below certain levels of education and in conditions of high inequality (e.g. de Janvry and Sadoulet, 2000). However, as Harberger (1999) pointed out: "most of the policies that aim in the direction of making society more equitable can be equally well if not better pursued in a growing economy than in a stagnant one." In fact, more rapid growth would also allow for but not necessarily result in higher levels of public spending on social programmes.

Also important in this context is that in some countries labour earnings have contributed more to poverty reduction than non-labour income (transfers and returns to own capital). This was found to be the case in the handful of countries for which data availability made inter-temporal poverty analysis possible. For example, since the mid-1980s in Chile, remarkable progress in reducing poverty was to a large extent fueled by the sustained and rapid overall economic growth (about 6.5% per annum for ten or more years) which induced an increase in employment and eventually in real wages. Moreover, the latter was not a so-called "trickle-down" effect (i.e. this was not a case where the rich got richer and afterwards the poor did better as well).

An increasing body of empirical evidence is demonstrating that (in contrast to the sluggish increase in real wages experienced with annual overall growth rates of only 1 or 2 percent) under faster overall economic growth the incomes of the poor are rising significantly. Hence, in most of Latin America, particularly in the larger countries (where the shares of rural workers in the labour market and of agriculture in GDP are small), fast growth in the overall economy can go a long way in reducing rural poverty, even if the agricultural economy does not grow very fast. The role of agriculture is presumably more influential in the case of the smaller economies (El Salvador, Guatemala, Paraguay, and Jamaica) in which at 45% of the population still lives in rural areas.

From a global vantage point, one expects the relationship between agricultural growth and poverty reduction to be clear and strong in some regions, South Asia for example (e.g. in India, see Ravallion and Datt, 1996), but less so in others.[10] For instance, in Latin America, the strength of this relationship is mixed. This is in part because of the smaller share

[10] In their study on growth and poverty in India, Ravallion and Datt (1996) conclude that since about 1970 the bulk of the income gains of poor people in India are attributed to the direct and indirect impacts of agricultural growth. Higher yields helped reduce poverty through induced wage effects, as well as more direct channels, including effects on both employment and own-farm productivity.

of agriculture in total income and also due to the relatively higher level of mechanization in farming (e.g. vis-à-vis India). However, for the landless and small-holders with surplus labour, employment in commercial agriculture is unquestionably their principal source of income (e.g. see López and Valdés, 2000; and World Bank, 2000a) thus, growth rates of the labour intensive commercial sectors are important for rural poverty reduction.

Dollar and Kraay (2000) recently examined the relationship between growth, incomes, and a variety of other variables for a sample of 80 developing countries spanning over four decades. They find that on average, incomes of the poor increased parallel to overall incomes, with relatively little variation around the mean. They also examine whether particular policies and institutions have systematically different effects on the poor. For instance, they report that trade liberalization spurs growth to a statistically significant extent without having a discernible effect on distribution. Regarding inflation, the study finds it to cause a proportionally bigger drain on the incomes of the poor than on the incomes of the rich. Ferreira and Litchfield (1997) report a similar significant strong adverse effect of inflation on poverty and income distribution in Brazil. The comprehensive empirical study by Dollar and Kraay (2000) refutes the view that growth serves the interests only of the rich; growth is not disadvantageous for the poor. Finally, their study also confirms the earlier results from several comparative studies showing that poor countries which isolate themselves from global markets and fail to establish a platform for growth do indeed stay poor. Achieving poverty reduction without rapid growth would be virtually impossible in Latin America.

An important empirical finding by de Janvry and Sadoulet (2000) is that rural-urban migration appears to be a major factor explaining the observed reduction of rural poverty during the 1990s in most Latin American countries. They attribute approximately 74% of the observed poverty reduction to migration. The urgent need to improve the access and quality of education in rural areas is, in our view, an important policy implication of this finding. There is clear evidence that the returns to

schooling in urban areas are higher in the region (e.g. Psacharopoulos, 1997; World Bank, 2000a), hence the need to improve educational levels to facilitate migration to higher paying jobs in urban areas. However, another factor should be considered. Rural-urban migration is costly not only for the migrants but also for the recipient urban areas in terms of additional pressure on urban infrastructure, social services, and externalities (e.g. air pollution and traffic). As stated by D.Gale Johnson (1996): "in many cases, the least costly way to assist the adjustment process is to make the countryside attractive for non-farm activities that provide alternative opportunities for those who no longer find employment in agriculture an acceptable use of their human capital." For many, the adjustment will take the form of part-time farming. For others, it might imply migration to rural cities or small towns. Together with out-migration, growth of non-farm incomes appears as one of the key factors explaining rural poverty reduction. These non-farm employment issues will be examined in more detail momentarily.

Two central concerns of the analytical work done for Latin America on the incentive framework relate to agricultural growth and employment. From a rural poverty reduction perspective, important issues are the impact of agricultural price and trade policies on: (a) farm employment (hired labour and self-employment), (b) the prices of products produced by the poor, (c) the prices of products consumed by the poor, and (d) aggregate output growth performance. In most developing countries, the rural poor are farmers (small-holders or tenants of some sort) but agricultural labourers also represent a large segment of the rural poor in several Latin American countries. Policies directly affecting relative prices of output and factor markets involve agricultural trade, taxation, and pricing schemes.

Until the mid-1980s, agricultural economists analysing the impact of policies have traditionally focused on sector specific programmes. From the early-1980s onwards, agricultural economists have been widening the scope of their analysis to consider the effect of economy-wide policies on the sector. This is premised on the hypothesis that production and investment decisions of farmers are influenced by more than agricultural

price policy alone. Agricultural growth is strongly affected by developments in other sectors of the economy, particularly trade and macroeconomic policies of the governments concerned. For instance, if taxing agriculture reduces rural labour demand, then rural employment and real wages will fall, leading to increased migration to the cities and increased competition for employment, and thus resulting in overall lower incomes (or an increase in unemployment) including those generated by the informal urban sector. This interaction is of special significance in many developing countries where agriculture is the backbone of the economy (especially in terms of share in total employment) and a highly tradable sector. Changes in industrial protection, international capital flows, wages, and nominal exchange rates can reinforce or neutralize such sector-specific policies as can government expenditure and investment programmes. Sustained sectoral growth requires resource flows between sectors that inter-temporally adjust to the relative opportunities. Thus, an economy-wide view of returns is necessary for an understanding of the dynamics of agricultural growth. Schiff and Valdés (1998) present a survey of the theory and evidence of the interactions between agriculture and economy-wide policies.

By the late 1980s a substantial body of research findings began to emerge presenting evidence that countries which adopted outward-oriented strategies had been more successful than countries that sought to build their economies through inward-oriented strategies. At the same time, a number of studies began assessing the effects on agriculture of both direct (agricultural specific) and indirect (economy-wide) interventions affecting price incentives in agriculture. A World Bank comparative study of agricultural pricing policies in developing countries examined both types of agricultural price interventions in 18 developing countries for the period 1960-85 (Schiff and Valdés, 1992). On average, total interventions for these countries taxed agriculture at a rate of about 26%, resulting in an average annual loss in GDP growth of 1.1%, or 23% over a twenty-year period. In sub-Saharan Africa, the rate of (implicit) taxation was considerably higher. In the context of rural poverty alleviation, the study concluded that: (a) the income transfers out of agriculture during this period have been enormous, averaging 45% of

agricultural GDP annually, (b) economic growth was slowed significantly because of agricultural taxation, (c) the short-term income losses of the rural poor were substantial, and (d) the poor have probably suffered disproportional high losses in the long-run relative to better-off households. Such enormous transfers must have severely depressed private investment in agriculture and agricultural growth, reducing farm income and rural employment. Urban households probably captured the benefits of the cheap food policies at the expense of rural ones.

Jaramillo (1998), in an insightful country case study of the Colombian agriculture and rural sector, examines the economic impact of policy reforms and the mediocre economic performance of agriculture during the 1990s on the incomes of the rural poor. Jaramillo reports that, as a result of trade liberalization, currency appreciation, and lower border prices, the returns to farming in most of the tradable activities fell substantially, especially import-competing crops. On the other hand, those of home goods (non-tradables) increased. Among the tradable crops only two (rice and sugar) also experienced increasing returns as the result of special support measures. Particularly relevant in the context of rural poverty is Jaramillo's conclusion that while aggregate rural income fell, the living standards of the poorest rural inhabitants actually improved. The decline in income was concentrated in the upper income groups. These findings suggest that, in certain conditions such as those in Colombia where tradables are produced primarily by commercial farmers and home-goods by small farmers, the fate of agriculture (particularly tradables) does not necessarily determine the welfare of poor small farmers, but can negatively affect poor rural people that are landless or agricultural workers.

Why has the income of the poorer rural groups in Columbia increased? Jaramillo suggests four important factors. First, the tight labour markets after 1992, consequence of fast-growing employment in urban areas, increased rural-urban migration, and possibly the growing employment in illegal crop cultivation in the south. Second, most small farmers are producers of non-tradables for the domestic market (benefited from higher relative prices related to the currency appreciation), and landless workers

in oil palm, sugar and cattle production which fared well after 1990. Third, poorer rural families seem to enjoy greater income diversification opportunities as a result of the expansion of rural non-farm employment. Fourth, the rural poor benefited from the large increase in local government expenditures since 1990, the consequence of the transfers from the central government for social investments, as dictated by the 1991 Constitution.

The situation of Colombia , in that small farmers are oriented primarily towards the domestic market and do not compete directly with imports, cannot be generalized for Latin America. For example in Dominican Republic, small farmers are involved in the production of rice, beans, sugar, coffee, and other products which are highly tradable. Similarly, in some Mexican and Chilean regions, wheat, corn, rice, milk and other tradables are important small farm income sources and hence, the latter are directly affected by currency developments, trade and price policies.

Micro-level determinants of poverty: a quantitative approach

Although poverty profiles provide a fairly accurate characterization of the rural poor, they do not provide a quantitative understanding of rural poverty determinants. In the first place, identifying rural poverty determinants necessitates an understanding of the main income sources, including farm and off-farm (including non-labour) sources for all members of the household. With respect to farm income, a detailed description is necessary of the revenues and costs of farm activities, and the value of goods produced and consumed by the household. Second, considering that households have very different social and economic characteristics, it is crucial that the data provide information on both quantity and quality attributes such as: farm characteristics (e.g. size, geographic location, and infrastructure), access to factor markets (e.g. land and credit), demographic characteristics (e.g. age, family size, and education), and public infrastructure (e.g. access roads, electricity, and water supply). Data on these attributes are not only critical to examine the extent to which they affect rural incomes, they also provide the opportunity to distinguish among different groups (e.g. small and medium

size farmers, landless farm workers, and rural non-farm workers) for which the importance of various determinants is likely to differ.

Traditionally, the analysis of rural poverty determinants in Latin America has been predominantly qualitative. Quantitative approaches, when adopted, typically focused on the effects of a specific factor such as access to land or credit. The methodological approaches could not examine the possible interactions among the various factors in a quantitative fashion, nor could they reveal the relative impact (partial elasticities) of changes in specific factors conditional on the level of others. Some of the analytical approaches that have recently emerged involve estimation of income functions drawing upon a variety of econometric techniques including simple Ordinary Least Squares (OLS), instrumental variables and Tobit models. These estimated income functions, in addition to identifying statistically significant determinants of poverty, subsequently allow for an evaluation of the partial income effects of various determinants and the effects of the potential interaction among them.

An application of the income function approach for several countries in Latin America is presented in López and Valdés (2000). For example, a farmer's household income can be defined as:

$$Y = w \cdot L_o + Z + p \cdot f(L\text{-}L_o, x, T) - q \cdot x,$$

where Y is household income (net value added per caput from all sources from all members of the household), $w \cdot L_o$ represents labour income from off-farm work (w is the off-farm wage rate, L_o are off-farm hours worked by the household members), Z is non-labour off-farm income, p is agricultural output price, L are the total hours worked by household members (thus, $L\text{-}L_o$ represents farm labour), x are purchased inputs, T is land, q is the price of purchased inputs, and $f(.)$ is the farm production function. The net marginal effect of land or other factors can then be obtained by standard derivation, obtaining the marginal products of land, labour, and purchased inputs. Expressed in logarithmic form one obtains the partial "elasticities" for each factor, i.e., the net percentage effect of changes in land, labour, and capital on household income.

One strength of this approach is that one can distinguish between the potentially critical second-order impacts of changes in determinants via household reallocation of labour between farm and off-farm activities. For instance, consider the effect of increasing land on net household income versus its effect on farm value of production. The impact on household income would capture the second-order effect of a decline in income from off-farm work associated with expansion of the farm's land area and hence, the elasticity of land expansion to household income would be lower than that on farm income. Similarly, when evaluating the impact of extension, one can distinguish between its direct positive effect on farm income—which would reflect the impact on yields—from its potentially negative second-order impact that involves labour reallocation away from off-farm employment. An actual example of this process is reported by López (2000) in a study of poverty among small farmers in Chile. Despite finding a positive and significant effect of the (subsidized) government extension programme on small farm production, participation in the extension programme had no significant effect in increasing total net household income of small farmers because of a reduction in off-farm income. In other words, the rural household income function approach is flexible enough to adjust for potentially binding liquidity constraints and various labour market "imperfections" (e.g. significant differences between off-farm and on-farm labour returns at the margin).

The study by López and Thomas (2000) on Paraguay illustrates how the use of panel data—as opposed to cross-sectional—analysis improves the ability to quantify the household income determinants more accurately. A sample of 286 farmers with very different socio-economic characteristics were surveyed in two rounds, first in 1991 and again in 1994, to provide a data panel. A panel data approach considers the effect on income of changes in land farmed or owned through time for the same households or the same individuals, thereby controlling for the managerial ability factor. Cross sectional studies usually identify large and significant correlation between quantity of land farmed and income but, since the quantity of land is likely to be correlated with the farmer's

managerial ability, this correlation may overestimate the causal effect of land on income. López and Thomas (2000) estimate an income function where total net household income is expressed as:

$$Y = Y_f + W_o \cdot L_o + N$$

where W_o is the off-farm wage rate, L_o is the level of off-farm work, N is non-labour off-farm income. Y_f is net farm income defined as a function of output and input prices, as the factor endowments of the household (education, age, family size, and the dependency ratio), land owned and rented, a vector of variable purchased inputs, the stock of capital owned by the household, location, and the infrastructure available to the household (roads, electricity).

Using a variant of the income function approach, in their study on rural poverty in Colombia, López and Valdés (2000) applied a two-stage least square regression of per caput income of farmers, landless workers employed mainly on agriculture, and landless employed in rural non-agricultural activities. In addition to estimating the income effects associated with changes in various determinants (e.g. land, capital, demographic characteristics, and location) the econometric approach allows one to capture the mutually interdependency (rather than one-way causality) between education and income by separating the effects of education on income from the effect of income on the demand for education. They conclude that, although education has some significant effect on income, the effect of income on education is much greater than the effect of working members' education on income. Thus, in Colombia, a policy of investing in the supply of education alone is likely to cause only modest effects on income. The conclusions of a comparative study by López and Valdés (2000) on the determinants of rural poverty in six Latin American countries studies are summarized in Box 5.

Box 5: The income function approach: some comparative results from six Latin American countries

The returns to education in farming are surprisingly small in most cases. An increase of one year in the average level of schooling typically raises per caput annual income of the family by less than US$ 20 per person. The main contribution of education in rural areas appears to be to prepare young people to emigrate to urban areas and towns.

There is a strong negative effect of family size and dependency on per caput income. The evidence for developed countries suggests that family size is demand-determined, in which case this high negative effect may have few policy implications. However, in rural areas of developing countries one would expect that family size has an important exogenous component, and hence there may be important policy implications thus far neglected in rural poverty alleviation strategies.

The empirical evidence in the analysis suggests that the contribution of land to total household income per caput, with the exception of El Salvador and Paraguay, is small. The elasticity of income with respect to land in Chile, Colombia, and Peru in all cases is below 0.15. That is, a 10% increase in land would raise income by less than 1.5%. This is in sharp contrast to the elasticity of farm output to land, which fluctuates between 0.36 and 0.46. The analysis suggest that returns to scale are mostly constant, and the marginal product of land is higher among small farmers. However, for Honduras and Paraguay where data for the comparison of total factor productivity were available and López and Valdés (2000) find that small, medium and large farms exhibit no statistically significant differences in total factor productivity. This contradicts the commonly held view of an inverted U-shaped relationship between farm size and total factor productivity (e.g. Binswanger, Deininger and Feder, 1995).

A controversial question in Latin America is whether small farmers are better or worse off than landless farm workers? Due to database limitations the study could examine only a subset of the countries and thus the evidence is not conclusive. For El Salvador, the evidence shows that landless workers are not significantly worse off than small farmers. However, evidence for Peru shows lower per caput income and expenditures for landless workers.

Source: López and Valdés (2000)

Unable to work with income functions due to lack of the required data, some authors have estimated revenue functions for farmers. A very innovative and relevant quantitative estimation of revenue functions was recently applied to Brazilian data (World Bank, 2000a, Chapter 5). Farm revenue was defined as a function of land, labour, farm equipment, a dummy for technical assistance, purchased inputs, education, family size and other variables including age of the farmers and location. Using a flexible functional form specification, they obtain elasticities that vary

according to the size and specific characteristics of the farm, and thus the quantitative effect of various factors on revenue can be analysed according to farm size.

A significant finding in this study on Brazil is that several of the parameters associated with determinant interactions are statistically significant. For example, the marginal returns to individual assets are highly dependent on the levels of other assets, and on human capital and demographic characteristics of the household. This suggests that factors such as age, education, and wealth strongly affect the rate of return of factors such as farm size, and labour. While these interactions are economically intuitive, to date few studies have explicitly attempted to develop an appreciation for their relative magnitudes. Moreover, many of the interactive terms involving prices and assets are significant, suggesting that the returns to assets are quite dependent on prices. For example, the study concludes that a 10% increase in export prices increases the marginal value of labour by about an equal percentage and while farm revenues respond positively and strongly to land size for farmers who operate large size farms, for small farms the impact is minimal. This suggests that without significant endowments of complementary assets, such as credit and capital, the returns to land by itself can be very small.

The effects of what has been called the "bundling" of services on returns to education and social services, similar to the interactive terms in the Brazil study, also appear strong in a study on poverty in Peru (World Bank, 1998b). The policy issue is that the additional, positive impact of one new service increases with the total number of services available. The underlying logic is that the joint provision of services, such as clean water, will improve household's well being more if it comes together with other services (e.g. sanitation). The real benefits might only materialize if the services are provided together. In the study on Peru, electrification and sanitation services were also found to increase the returns to education significantly in rural and urban areas alike, as children could read and study longer at night. Similarly, better rural roads and rural transport were shown to have a very positive impact on the return to rural education.

5. Some key thematic rural poverty issues

Rural non-farm (RNF) employment and poverty: a review of facts and policies

Non-agricultural employment is large and growing in Latin America, currently representing over one-third of total rural employment and 40% of the total income of rural families (Berdegue *et al.*, 2000). Among small farmers, the contribution of off-farm income to total household income varies considerably. In Chile the share is around 60%, while in Paraguay, Honduras, Colombia and El Salvador it ranges between 28% and 36%, and in Peru it is around 6%. (López and Valdés, 2000).

Klein (1992) produced the first systematic study of RNF employment in Latin America (for 18 countries) during the 1970s. More recent significant efforts on this topic include the studies by Berdegue *et al.* (2000), the studies on Ecuador and El Salvador by Lanjouw (2000), and the work on Brazil (World Bank, 2000a). It is by now universally recognized that RNF activities are desirable and that they could represent a critical component of a rural poverty reduction strategy. The question has since become a pragmatic one: what is required and who pays to make rural areas more attractive for the creation of RNF employment? The above studies provide useful starting points to address this question.

For Ecuador and El Salvador, Lanjouw (2000) reports that most rural enterprises are small family-based firms (two to three workers each). In general, the ratio of women to men employed in the RNF sector is higher than in agriculture. Gender seems to be an important determining factor for access to RNF employment, and thus policies geared towards supporting women: education, child-care centres, access to financing are all factors that could strengthen the capacity of women in accessing higher paying jobs. Lanjouw (2000) cites evidence of greater RNF activities in areas that are better served by rural infrastructure (e.g. roads, electricity and communications). His findings suggest that more schooling

and access to such rural infrastructure significantly increase the likelihood of a household operating a home-based enterprise.

Berdegue *et al*. (2000) and Reardon *et al*. (2000) review information from a large number of studies on RNF in the region conducted since 1994. They find no evidence of significant correlation between the trends in RNF employment and overall growth in agricultural GDP. This leads to the hypothesis that the trends reflect rather specific patterns of changes in agriculture (e.g. intensification and diversification) and non-agricultural activities based in the rural sector (e.g. agro-industrialization and tourism (Berdegue *et al*., 2000). Another salient finding is that a significant percentage corresponds to RNF jobs of low quality and productivity that, while contributing to increasing family income and offsetting seasonal income fluctuations, do not provide a real lever for overcoming poverty and for sustainable development.[11]

Overall, a review of this literature suggests several practical working hypothesis. One is that RNF activities tend to develop in areas where agriculture is more prosperous and with better access to infrastructure. The puzzle is what to do for the poorest agricultural regions, especially if they have low levels of infrastructure and where agricultural income is low. There is also a need to examine more closely if there are systematic characteristics (e.g. education) that determine which individuals participate in higher versus lower paying RNF employment. The dynamic markets are not the poorest "municipios". A second consideration is how to identify the potentially dynamic markets and what it would take to link the poorest producing areas to such markets. Clusters, contract farming, and other avenues have been discussed and many of them have been tried. These do not seem to survive for very long in the poorest agricultural regions, in part because the scattered small producers in low productivity areas are costly to organize. Third, local and regional governments in cooperation with the private sector may identify critical 'public goods' including investments that contribute to strengthening the connection between agro-industry, agriculture, commerce and trade.

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[11] Similar findings are reported in the World Bank (2000a) study of RNF employment in rural Brazil.

Rural poverty, women and indigenous groups in Latin America: market or government failure?

While it is widely recognized that the incidence of poverty is especially high among indigenous people and women, hitherto no systematic empirical analysis has identified the major determinants explaining this. There is great truth in the saying that not all rural people who are poor are indigenous, but nearly all the indigenous are poor. Why?

Korzeniewics (2000) reviews the existing literature on gender and indigenous groups and arrives at a number of striking conclusions. First, there is no evidence of market-determined gender discrimination in the labour market. Female labour participation remains low, but its proportion has grown significantly. Second, wage differentials were less pronounced in Latin America compared to many industrial countries. He concludes that: "Most of the disadvantages women experience in their income generation activities relate to government failures, including discriminatory regulations (for example restrictions on the number of hours a female is permitted to work, restrictions on their participation in various activities, and on land titling), discriminatory allocation of public land, and under-investment in social programmes such as child care for the poor and extension programmes which target women" (Korzeniewics, 2000). These conclusions provide clear guidelines as to which are the main areas in which the government can intervene on behalf of women workers.

By the early 1990s, indigenous Latin Americans represented slightly less than 10% of the total population, with the bulk concentrated in Mesoamerica and the Andes. Their cultural diversity is striking with more than 400 indigenous languages spoken. As with women, the disadvantages suffered by indigenous people appear to result primarily because of government failures and a lack of education, rather than market-induced discrimination. Indigenous people in rural areas are typically self-employed, have little education, they are isolated from social services, and often living in marginal areas. Evidence from Peru shows that although wage differentials are large, most of the differentials

with the non-indigenous population can be explained by lower levels and quality of education of the indigenous people (López and della Maggiora, 2000).

Increasingly, grassroots indigenous movements led by a new generation of articulate representatives are giving the indigenous people a stronger voice in the political arena and this could induce significant changes in the legal and policy frameworks of their countries (Partridge, Uqillas and Johns, 1998). A more proactive social strategy is needed to reduce poverty among the indigenous populations in rural areas including social assistance programmes tailored to particular cultural conditions and with effective participation by indigenous people in the design and implementation of these programmes. Better quality education, basic health and nutrition programmes, titles to land, improved market and infrastructure access (e.g. electricity, irrigation, and roads) are all priorities on the agenda for reducing poverty among the indigenous people in the region.

On rural poverty and natural resource degradation in Latin America

Most of the rural poor farm on highly erodable land. Rural poverty and soil erosion are highly correlated. Rural poverty, although not necessarily the primary cause, will often lead to resource degradation. In their discussion of the vicious circle involving poorer farmers, López and Valdés (2000, chapter 1) conclude that: "As population grows, particularly in areas with few off-farm employment opportunities, a process of farm intensification is triggered. Intensification under soil fragility conditions, a substantial fraction of hillside areas in the tropics, usually leads to rapid soil degradation unless significant investments in soil protection are implemented." However, poverty reduces the capacity to undertake soil degradation management by limiting spare savings for on-farm soil protection investments. This situation is further aggravated by a lack of access to credit, the long gestation period of most of these soil protective investments, and by policy failures, particularly those that induce land tenure insecurity and those that restrict access to land for the rural poor (Barbier, 2000). This is admittedly an incomplete overview of the link

between rural poverty and resource degradation; the literature on environmental issues is expanding rapidly in Latin America, in part because governments and the general public are becoming increasingly more aware and concerned about environmental issues such as the native forest and water management. However, the specifics on how to deal with the poorer farmers in fragile ecosystems remains an underdeveloped area of research in Latin America.

Land

Historically, many economists in Latin America believed that the chronic nature of poverty in the region's agriculture was a direct consequence of land tenure arrangements. This view held that the prevailing land market structures had not provided opportunities for the rural poor to gain access to land. These views have been evolving for a number of reasons. On the one hand, several countries have undertaken massive land reforms and the situation of their beneficiaries did not improve as expected. Starting with Mexico many decades ago, other countries which implemented massive land reforms include Bolivia, Cuba, Nicaragua, El Salvador, Peru, and Chile, while smaller scale land reforms were implemented in Colombia, Venezuela, Brazil. On the other hand, because in the context of a policy framework which is basically market oriented, with a relatively open trade regime, and in which private investment is the engine of agricultural growth, expropriations of land and assets attached to the land without full compensation could trigger a substantial reduction in private investment and jeopardize the entire economic reform package. Of course, massive land reforms paying the full value of land would be extraordinarily expensive for the governments, exceeding the available fiscal resources. The ex-post evaluation of the strategy is well synthesized by Binswanger and Elguin (1989) when they state that previous strategies to improve land access by the poor via expropriation under government managed land reforms have proven expensive, contentious and non-viable in many countries.

Now that the era of massive land reforms based on government expropriations with partial or no compensation to the landowners has

ended, the landless poor for which access to land would offer a road out of poverty must resort to land markets instead. Paradoxically, while there is an extensive body of research on land reform in Latin America, the literature analysing alternatives to land reform for promoting greater access to land via rentals, share-cropping, long-term leases, and contract-farming, remains very thin. More recently, pilot projects based on the so-called "market-based land reform" approach (premised on voluntary sales by landowners) are gaining popularity in some countries, particularly in the north east of Brazil, where land values are exceptionally low, and in Colombia, as a consequence of the guerrilla induced insecurity (e.g. kidnapping for ransom) in rural areas particularly afflicts owners of large farms.

Direct access to land can be critical as a means to fully employing labour, especially when other sources of employment and income are weak. Carter and Zegarra (2000) survey the theoretical and empirical evidence concerning land market functioning, the competitiveness of various types of producers within it, and the linkages between labour, poverty and land access indicating that the "underutilized labour that characterises rural poverty would seem to provide poor individuals with a potential competitive advantage in the land markets". However, this hypothesized natural process of land subdivision providing access to the poor landless (premised on a low labour supply) is not taking place presumably because of: (a) high land prices (above the present value of returns to farming) and, (b) transaction costs associated with farm subdivisions make the cost of increasing the number of small units expensive.

An important consideration regarding the land-poverty relationship is whether the value of land as a source of family income is larger or smaller than its value as source of farm output. This issue was recently first addressed by López and Valdés (2000) who find that the contribution of land to income per caput is small, as measured by the elasticity of income with respect to land which is below 0.20, in sharp contrast to the elasticity of farm output to land, which in the sample of Latin American countries studied fluctuated between 0.36 and 046.

Should land redistribution be the main instrument for reducing rural poverty in Latin America at the dawn of the new millennium? Probably not. As noted by de Janvry and Sadoulet (1993), "with the phase of large-scale land reform virtually ended, less adversarial strategies can be exploited." Among others, these could include the enhancement of rental markets, land titling and registration for small farmers and squatters, contract farming and joint ventures with small-holders. Why is there a failure in the institutional development that would reduce the transaction costs of information, monitoring, negotiations, and enforcement of land rental contracts? This question should be examined further. One hypothesis, in agreement with de Janvry and Sadoulet (1993), is that the failure is largely the consequence of weakness of property rights, an obsolete legal framework, a lack of legal enforcement of contracts and the high transactions costs in land and credit markets via overburdening formal procedures. Essentially this is more of a government failure than a market failure *per se*. Moreover, note that in some countries such as Brazil, the labour code and the way it is enforced also seems to be a major constraint to the development of rental land markets because it provides legal rights for the tenant to stay on the rented farm (World Bank, 2000a).

Finally, a caveat regarding land distribution comparisons in Latin America. When interpreting census figures on land distribution by size, one needs to make comparisons based on effective land units (i.e., adjusted for differences in productive capacity). To date, the coefficients needed to adjust for productivity differences between the various regions are available only for a few countries. Alas, these differences are often enormous. In terms of land of equivalent productive capacity, a farm of 20 hectares in one region can be equivalent to a farm of 80 or more hectares in other regions. Despite the fact that the lack of these data to adjust for productivity differences greatly limits the analysis of the farm structure by size in most of Latin America, researchers and agencies alike are publishing numerous tables of farm land redistribution based on unadjusted land units. This gap in the data needs to be corrected if meaningful analysis of land redistribution is to be carried out, and certainly if a fair land tax system is to be development.

Decentralization and the rural poor: building up social capital

Due to the heterogeneous nature of rural poverty and its characteristics (e.g. differences with respect to access to assets, household characteristics, institutional context, regional specificity, etc.) exit paths out of rural poverty are equally diverse. This would suggest that rural development programmes and rural poverty alleviation strategies should be demand driven and tailored to meet these heterogeneous local needs. In this context, in addition to abstracting from community level heterogeneity, the failure of numerous rural development projects since the 1970s can be partially linked to inadequate community participation and local capacity, as well as the excessive centralization of decision making—a common source of politically induced resource misallocation (e.g. van Zyl *et al.,* 2000). This warrants going beyond merely considering the heterogeneity of the poor and to actually encourage the poor to actively share in the identification of their needs and organize themselves so they can press effectively for their fulfilment (Lipton and van der Gaag, 1993). In other words, one key objective in a poverty reduction strategy should be to encourage poor people within communities to build up the social 'grassroots' capital that simultaneously gives them a collective political voice and provides them the basis for involvement in the management of their own local development efforts.

Past approaches such as the so-called Integrated Rural Development Projects (IRDPs) while premised on the need for more localized operations, failed both to properly involve local poor people in a participatory process and to build local social capital (van Zyl *et al*., 2000). Recent experience from an increasing number of developing countries suggests that properly decentralised development programmes that are accompanied by parallel efforts to promote greater involvement and autonomy in decision making for local communities can offer genuine opportunities to improve rural development outcomes.

These redesigned community based programmes can be particularly effective with respect to the provision of a wide variety of public goods infrastructure. For instance, a recent comprehensive evaluation (van Zyl

et al., 2000) of the so-called Rural Poverty Alleviation Projects (RPAPs) introduced in cooperation with the World Bank in eight states in the northeast of Brazil, concluded that these have achieved the objectives and, to a large extent, the targets established at the start of the projects in 1995. Among the public goods infrastructure sub-projects, rural electrification and water supply dominated the profile of community demands but the wide range of other infrastructure demanded (e.g. road improvements, small bridges, and public telephones) are reflective of the anticipated heterogeneity in development priorities across different communities. The success of the productive sub-projects (meaning those requiring direct investment into production or processing of agricultural and non-agricultural goods) that are typically demanded after the infrastructure needs of the communities are met, depended on the complexity of the productive process (simple projects included "casas de farinha", small irrigation schemes, and agricultural mechanization) and the extent to which the activity was exposed to market risks. More complex undertakings (e.g. clothing, ceramic and community brick factories) had some success but required a significantly greater provision of technical support.

6. Looking ahead: emerging research and policy challenges

In conclusion, based on the previous sections and other studies, we identify areas that traditionally have been inadequately addressed in most countries:

- Understanding the nature and determinants of rural poverty—understanding better who and where the poor are and what prevents them from coming out of poverty.
- The situation of indigenous groups and gender considerations. The need to distinguish between market and government failures from a policy perspective.

- Ditto with respect to environmental degradation—the poverty and environmental linkages—the reinforcing cycle between poverty and resource degradation in certain areas.
- The institutional challenges and opportunities for improving access to and quality of education for the poor in rural areas
- The need for a broader based and integrated rural perspective as opposed to a narrow agricultural focus, with special attention to the economics of the rural non-farm employment sector.
- Insufficient attention to decentralization and the role of local governments, community institutions, and the private sector. Decentralization toward local governments for the delivery of public goods is a priority.
- The development of modern factor markets (land, financial, labour) should be at the core of a rural development strategy for the future. For example, labour market integration, a field underappreciated by rural development specialists, is a predominant factor in the improvement of the economic conditions of the landless and low-income farmers.

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