THE 1990s IN LATIN AMERICA: ANOTHER DECADE OF PERSISTENT INEQUALITY, BUT WITH SOMEWHAT LOWER POVERTY

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This paper processes 76 household surveys from 17 Latin American countries to document changes in poverty and inequality during the 1990s, and performs an analysis of the effect of economic reforms on inequality and poverty by using an expanded data base of 94 surveys spanning the 1977-2000 period. We show that there is no country in Latin America where inequality declined during the 1990s. Poverty declined in 10 or 11 out of the 17 countries for which household surveys are available to us, depending on the poverty measured used. Persistently high inequality inhibited further poverty reduction. One important factor contributing to the persistently high inequality level is financial liberalization. Trade liberalization and a more stable macroeconomic environment had a slight inequality-reducing effect.

JEL classification codes: D31, O12, O54
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I. Introduction

This paper gathers and processes 76 household surveys from 17 Latin American (LA) countries to document the evolution of poverty and inequality in the region during the 1990s. To the best of our knowledge this is the most

comprehensive and up-to-date set of poverty and inequality estimates for LA for this decade.

Studying the 1990s for Latin American is especially relevant for at least three reasons. The first is that substantial evidence on changes in poverty and inequality exists for the 1970s and 1980s, but the shifts during the 1990s have been explored to a much more limited extent. The 1970s were characterized by macroeconomic stability and high growth rates, while the 1980s were years of volatility and stagnation. It is widely agreed that poverty and inequality were reduced during the 1970s because of the favorable conditions for sustained economic expansion, while it is also agreed that poverty and inequality deteriorated sharply during the 1980s because of the deep recession.[1]

The second is that LA is the most unequal region in the world, and the changes in the 1990s give some indication of prospects for the future. The third is that the 1990s have been years of economic reform, economic recovery and macro stability, as compared to the "lost decade" of the 1980s. So, Latin America is a good case for verifying if there is a tendency for poverty and inequality to decline during favorable macro conditions and after reforms have been introduced.

In order to improve our understanding of the underlying factors behind the poverty and inequality trends, we expand the 1990s data base by including 18 additional household surveys for the period 1977-1988, and link it with information on the intensity of reforms such as trade and financial liberalization, as well as on the macroeconomic environment prevailing in those years.

The rest of the paper is organized as follows. Section II briefly describes the main data. Section III describes the methodology for computing our poverty and inequality indexes and presents the main trends. Section IV presents the associations between poverty and inequality during the 1990s. Section V establishes the statistical link between changes in poverty and inequality and a set of macroeconomic indicators. Section VI concludes.

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[1] See for instance Psacharopoulos et al. (1993), Bulmer-Thomas (1996), Altimir (1994), and Londoño and Székely (2000) among others.

II. Data Description

The best micro data for exploring the dynamics of income distribution are household surveys. Many countries in Latin America have household surveys with information on incomes, but for this work we impose four conditions for including a data set in our analysis. First, the household survey has to be nationally representative. The only exceptions we make are Argentina and Uruguay, where household surveys are restricted to urban areas but still include more than 80% and 90% of each country's population, respectively. This restriction implies discarding a set of surveys that are available to us for several countries with partial (generally urban) geographic coverage, which considerably restricts the sample in terms of the years we are able to cover. This is the case of countries such as Argentina, Ecuador, El Salvador and Paraguay, so it must be kept in mind that although in the text we refer to changes during the decade for these countries, our conclusions are only for the years for which the data is available.[2] However, it should also be mentioned that this comes at the benefit of being able to assure that whatever distributional changes we are able to identify are robust. If within a given country poverty and/or inequality shifts in different ways across regions, a partial view of only some areas may yield misleading conclusions.

Second, the survey questionnaire has to include a breakdown of income by source, with at least three separate questions on income that identify labor income, profits, and capital rents separately. This is to assure lower measurement error in incomes. Third, the recall period for incomes has to be the same (the previous month) in each survey.[3] Fourth, the central purpose of

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[2] It must be borne in mind that limiting the years under analysis imposes the risk of driving general conclusions from what may have been only a transitory event within a tendency that operates in the opposite direction. This is especially so for the case of Argentina, for which we only have data for the 1996-1998 period. Data provided by one of the referees of this paper shows that in fact for Gran Buenos Aires, the decline in poverty between 1996-1998 is a deviation from the increasing-poverty trend observed between 1994 and the year 2001.

[3] Mexico is the country with the longest recall periods. The household survey questionnaire asks about income in each of the previous six months, but we only use information on the previous month for consistency with the other countries.

the survey must be to collect information on the standard of living of the population. This last requirement assures us that obtaining accurate information on incomes is an objective of the survey.

We are able to access the micro data from 76 household surveys fulfilling these requirements (see Appendix, Table A1, for details). The surveys cover various years between 1989 and 2000 for 17 Latin American countries, which include about 95% of the total population of the region. The countries and periods covered are Argentina (1996-1998), Bolivia (1990-1999), Brazil (1992-1999), Chile (1990-1998), Colombia (1991-1999), Costa Rica (1989-1998), the Dominican Republic (1996-1998), Ecuador (1995-1998), El Salvador (1995-1999), Honduras (1989-1999), Mexico (1989-1998), Nicaragua (1993-1998), Panama (1991-1999), Paraguay (1995-1999), Peru (1991-2000), Uruguay (1989-1998) and Venezuela (1989-1999).[4] Altogether, the 76 surveys include 1.7 and 6.8 million household and individual records, respectively. The average number of households and individuals surveyed across all data sets is 21,556 and 90,839, respectively.

Our estimates on poverty and inequality are strictly comparable within each country. To accomplish comparability we make sure that the definition of income sources is the same within each country over time. Whenever there are changes in the survey questionnaire, due, for instance, to a more detailed breakdown of income sources covered, we identify the minimum common denominator in the series for each individual country and use it as welfare indicator for all years. By doing this we are confident that the changes we identify are genuine and are not only due to "noise" introduced by changes in the way in which the underlying data is produced. However, differences across countries remain, so cross-country comparability cannot be guaranteed.

Previous attempts at data compilation have been much more limited in country, year, and population coverage. For instance, Londoño and Székely (2000) cover mostly the early years of the 1990s up to 1993-4, and Morley (2000) includes estimates up to 1996 and 1997, while Wodon et al. (2000) include information up to 1996, all for a smaller number of countries than in

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[4] For El Salvador, Ecuador and Paraguay, data for earlier years of the decade is not included because the surveys only started having national coverage by 1995.

the present study. Furthermore, within-country comparability is not guaranteed in the last 2 studies.

III. Trends in Poverty and Inequality

A. Inequality Trends

Quite a different story emerges for poverty and inequality in LA during the 1990s. For each household survey we compute the Gini coefficient by using household per capita income as welfare indicator.[5] Table 1 summarizes the trends by country by estimating a regression for each country separately, where the dependent variable is the Gini coefficient and the independent variable is a year trend. The Table presents the coefficient for the trend.

The main conclusion is that there is no country in Latin America where inequality declined significantly during the 1990s. The only two countries where the coefficient is negative are the Dominican Republic and Colombia, but in both cases, the reductions are insignificant from a statistical point of view (and of less than one half of a Gini point). The countries with the greatest increases are Argentina, Bolivia, El Salvador and Nicaragua.[6] The last two lines of the Table present the coefficient from regressions on the pooled sample of 76 surveys, with a year trend as independent variable. The coefficient in the first of these two lines is from a fixed effects estimation that can be interpreted as an indicator of the average trend across countries. The coefficient is positive, reflecting a significant average increase in inequality in the LA

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[5] We use household per capita income without adjustments for equivalence scales or economies of scale in consumption, since there are only few cases to our knowledge where parameters tailored to the specific case of a country are available (in fact, the only information for country-specific equivalence scales that we are able to find is Chile). By using per capita incomes we implicitly assume equivalence scales with value of 1 for each age group and gender and no economies of scale in consumption, which has the advantages of having clear implications, a transparent interpretation, and being comparable across countries.

[6] To perform the estimations for Paraguay for 1995 and 1999, we drop the observation with the highest income, since the income reported in this case is implausible (see Székely and Hilgert, 1999, for more details on the 1995 survey). However, our basic conclusion is the same even when we include the highest income in the estimation.

Table 1. Trends in Inequality, Poverty and GDP Growth in Latin America in the 1990s (Coefficient Estimates)

Country	Gini index	Head count ratio	Poverty Gap	FGT(2) index	GDP per capita
		Year coefficient			
Argentina	0,0082	-0,0025	-0,0004	-0,0001	275,34
Bolivia	0,0076	-0,0045	0,0053	0,0091	31,27
Brasil	0,0009	-0,0126	-0,0087	-0,0065	85,49
Chile	0,0037	-0,0170	-0,0066	-0,0035	298,56
Costa Rica	0,0000	-0,0060	-0,0043	-0,0032	86,92
Colombia	-0,0003	-0,0067	-0,0027	-0,0013	43,13
Dominican R.	-0,0004	-0,0178	-0,0169	-0,0136	152,15
Ecuador	0,0005	-0,0051	-0,0059	-0,0058	4,37
El Salvador	0,0123	0,0146	0,0195	0,0164	11,15
Honduras	0,0019	-0,0021	0,0013	0,0035	-3,58
México	0,0003	0,0034	0,0019	0,0012	104,08
Paraguay	0,0046	0,0165	0,0132	0,0114	-34,19
Panama	0,0006	-0,0143	-0,0098	-0,0078	79,30
Peru	0,0036	0,0003	0,0017	0,0021	44,83
Nicaragua	0,0071	0,0040	-0,0005	-0,0015	12,26
Uruguay	0,0026	-0,0120	-0,0349	-0,0144	171,29
Venezuela	0,0043	0,0097	0,0039	0,0023	-2,98
LAC average	0,0024	-0,0039	-0,0038	-0,0009	72,68
LAC pop.-weighted avg.	0,0011	-0,0054	-0,0036	-0,0023	67,14

Source: Author's calculations from household surveys.

region during the 1990s (the 'z' statistic for the coefficient is equal to 3.7). The last line also refers to country fixed effects regressions, but in this case the regression uses the population of each country as analytical weight. Therefore, this coefficient can be interpreted as a trend for the weighted average. The trend is also positive and significant in statistical terms (the 'z'

statistic is 1.9), but interestingly, it is lower than for the unweighted regression. This suggests that the smaller countries in terms of population experienced more pronounced increases in inequality.

B. Poverty Trends

For poverty we also use household per capita income as welfare indicator. To compute our estimates we follow the methodology proposed by Londoño and Székely (2000) for international comparisons.[7] The methodology consists of: (i) using a PPP $2-dollars-a-day poverty line (1985 prices) as criteria for separating the poor from the non-poor, and (ii) adjusting household per capita incomes to make them equal to PPP-adjusted private consumption per capita (1985 prices) from the National Accounts.[8] The adjustment to private consumption is performed for three reasons. The first is that since the adjustment transforms the welfare indicator into the same units for all cases, cross-country comparability is improved. The second is to acknowledge that income tends to be under-reported in household surveys and that the degree of under-reporting may vary over time. By adjusting incomes to PPP private consumption we impose the same limit on the degree of under-reporting across countries. The third reason is that consumption is normally regarded as a better measure of welfare than income. After performing the adjustment, we compute three poverty indices: the head count ratio, the poverty gap, and the

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[7] As argued by Székely et al. (2000) there is no standard and widely accepted methodology for measuring poverty. In fact, poverty estimates are highly sensitive to the underlying choices made for measurement. We choose the method by Londoño and Székely (2000) to produce our estimates because we believe that this method is well suited for international comparisons. However, it should be stressed that this is only one among several options. In the study by Székely et al. (2000) it is shown that this methodology normally yields reasonable poverty estimates. Estimates of regional poverty from this methodology in Székely et al. (2000) are of around 30 percent, while the methodology that yields the lowest estimate for Latin America is of about 12 percent. The methodology that yields the highest poverty estimates results in 59 percent of poor in the region.

[8] Private consumption per capita figures and PPP conversion factors are taken from the World Development Indicators by the World Bank. Private consumption per capita is further adjusted to take into account that in the National Accounts this variable incorporates household consumption but also consumption by firms.

FGT(2) measure proposed by Foster et al. (1984), which is equivalent to the squared poverty gap.

The second column in Table 1 presents the trends for the head count ratio. As in column 1, the coefficient is computed through a regression where the dependent variable is the proportion of poor in each country-year, and the independent variable is a year trend. Out of the 17 countries considered, there are negative (poverty decreasing) trends in 11 cases and increases (positive coefficients) in six countries (Peru, Mexico, Nicaragua, Venezuela, El Salvador and Paraguay). The largest reductions in the head count ratio are observed in the Dominican Republic, Chile, Panama, Brazil and Uruguay. According to the last two lines of the Table, which show the coefficient for the unweighted and the weighted fixed effects estimations, poverty declined overall, but it did so to a larger extent in countries with larger populations.

The story for the poverty gap (third column in Table 1) and the FGT(2) index (fourth column) is somewhat similar, although progress was more modest than with respect to the head count ratio. In 10 out of the 17 countries the poverty gap and the FGT(2) indices register a negative trend of decreasing poverty. Interestingly, the value of these two indexes increased in spite of reductions in the head count ratio in Bolivia and Honduras. Thus, although there were fewer poor in these countries by the end of the decade, those that remained poor were poorer than in the early 1990s. Furthermore, the poorest of the poor obtained the lowest benefits.

At first glance, the result that the proportion of poor declined in 11 countries and that the poverty gap and the FGT(2) indices also declined in 10 out of the 17 countries, could be interpreted as a positive outcome for Latin America, especially after the 1980s, which was a decade of stagnation and sharp increases in poverty. However, the conclusion is qualified by the results in the last column of Table 1, which presents the trend coefficient for PPP-adjusted GDP per capita for the same years as those for which a household survey is available. Therefore, the trend covers exactly the same years as in the first four columns. According to these trends, positive economic growth was observed in 14 out of the 17 countries under analysis, and in many cases the increases are substantial. As can be seen in the last two lines of the Table, GDP per capita increased in the region as a whole, and relatively

smaller countries in terms of population size tend to register larger increases in output.[9]

There are several cases where the poverty and the GDP trends are at odds. For instance, even though GDP increased in Mexico and Peru, poverty—as measured by any of the three indices considered—increased (see columns two to four). Other countries with positive growth and increases in poverty at the same time are El Salvador and Nicaragua, although in these countries economic growth was more modest. In any case, these are indications that inequality is inhibiting poverty reduction in these countries. The following section discusses this relation in more detail.

IV. Poverty and Inequality: Still Strongly Linked During the 1990s

There is a clear positive relationship between increases in inequality, measured by the Gini index, and increases in poverty, measured by the head count ratio (the correlation coefficient between the two variables is .72). On the other hand, not surprisingly, there is also a strong inverse relationship between economic growth and poverty.

To illustrate the combined association of inequality and growth with poverty, we use the pooled sample of 76 surveys to run a regression where the dependent variable is the log of the head count ratio, and the independent variables are the log of the Gini index and the log of PPP-adjusted GDP per capita. The coefficients yield the elasticity of the head count ratio to changes in inequality and economic growth.[10] The results we obtain are:

$$\log h = 7.63 + 2.14 \log \text{Gini} - 0.907 \log \text{GDP} \qquad (1)$$
$$(15.56) \quad (7.56) \qquad\qquad (-14.3)$$

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[9] GDP figures are taken from the World Development Indicators by the World Bank, 2000 version.

[10] It should be stressed that these regressions are only for the purpose of showing the associations in the data. Clearly, there are endogeneity, co-lineality and other problems that prevent us from establishing any form of causality in these relations.

which shows that the elasticity of poverty (as measured by the head count ratio) with respect to inequality is more than twice the elasticity with respect to growth. Therefore, inequality had a strong negative association on potential poverty reduction.

The result for the poverty gap is:

$$\log s = 9.70 + 3.1 \log \text{Gini} - 1.2 \log \text{GDP} \tag{2}$$
$$\quad\;\; (17.88) \quad (8.89) \qquad\qquad (-15.6)$$

while for the FGT(2) measure we obtain:

$$\log \text{FTG}(2) = 11.2 + 3.61 \log \text{Gini} - 1.39 \log \text{GDP} \tag{3}$$
$$\qquad\quad (16.84) \quad (9.23) \qquad\qquad (-15.86)$$

Thus, the poverty gap and the FGT(2), which are measures of the intensity of poverty, are much more associated to changes in inequality and somewhat more associated to growth than the head count ratio.

V. Some of the Underlying Factors behind the Trends

The previous section has fleshed out some associations in the data, but since the connections between income inequality, poverty, and economic growth are the focus of major debates, it is necessary to go one step further to uncover some of the underlying factors that explain why growth per se does not bring improved equity and poverty reduction in Latin America. In particular, there has been considerable speculation about the effects that economic reforms have had on poverty and inequality. Here we investigate this question.

In order to pursue our analysis, we expand the data base used so far in this paper, by including 18 additional household surveys for the period 1977-1988, for Argentina, Bolivia, Brazil, Chile, Costa Rica, Mexico, Panama, Peru, Uruguay and Venezuela. All in all, the data base comprises 94 observations. All 18 additional surveys included fulfill the conditions set out in Section II above. Appendix Table A2 specifies the household surveys added. For all these countries, it is possible to obtain a longer time-series of poverty

and inequality measures for years before and after the introduction of the reforms.[11]

To explore the effects of reform, we need to combine our estimates based on the 94 household surveys, with a country and year-specific measure of the intensity of such reforms. For this purpose, we use the reform indices developed by Lora (1997) and extended by Morley et al. (1999). These indices summarize information on trade reform, financial liberalization, tax reform, liberalization of external capital transactions, and privatization for the period 1970-1995, comparable across time and countries.

Because it is not easy to compile an indicator to represent the extent of a government's economic liberalization, the literature has traditionally relied on different proxies.[12] This approach is limited because the proxies often include information that has little to do with the actual decisions of governments, and instead reflects reaction to markets, international prices, or of the domestic private sector. The Lora and Morley variables are based on direct indicators of governmental policies, so they have the advantage of –to the greatest extent possible– representing policy "effort."

The Lora trade reform index is the average level of tariffs and the dispersion of those tariffs. The index for international financial liberalization averages four components: sectoral controls of foreign investment, limits on profits and interest repatriation, controls on external credits by national borrowers and capital outflows. The index of domestic financial reform is the average of an index that controls for borrowing rates at banks, an index of lending rates at banks, and an index of the reserves to deposit ratio. The tax reform index averages four components: the maximum marginal tax rate on corporate incomes, the maximum marginal tax rate on personal incomes, the value added

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[11] To assure comparability, we obtain poverty and inequality indexes by using the same (comparable) income measure across household surveys. This guarantees within-country comparability in the data. The lack of cross-country comparability that inevitably remains, is taken care of by using estimation in differences in the regressions we present below.

[12] Two examples of common proxies used in the literature are exports plus imports over GDP, used as an indicator of trade liberalization, and M2 over GDP, used as an indicator of financial market reform.

tax rate, and the efficiency of the value-added tax;[13] the higher the tax reform index, the lower the average of the marginal tax rates. The privatization index is calculated as one minus the ratio of value-added in state owned enterprises to non-agricultural GDP.

All the indices are normalized between 0 and 1, where in each case 0 refers to the minimum value of the index across all Latin American countries in the relevant time period (including those that do not appear in our household survey data), and 1 is the maximum registered in the whole sample.

With these indices in hand, the most rigorous way to proceed would be to use a complete model of the determinants of poverty and inequality, from which the econometric equation for estimation could be identified. But it is, of course, impossible to include all variables that affect poverty and inequality so we instead use a specification that minimizes the effects of omitted variables bias.[14] We use a specification similar to that in Behrman, Birdsall and Székely (2001), hereafter BBS, in which the traditional Mincer-type semi-log wage regression is extended to include the differential effects of liberalization and other macroeconomic variables, depending on an individual's position in the distribution of income:[15]

$$\log y = \sum_{j} (\alpha_j + \beta_j L + \gamma_j E)\, j + (\alpha_T + \beta_T L + \gamma_T E) + \delta\, I + \gamma\, C + \varepsilon, \qquad (4)$$

where $j = P, M, R$ are dichotomous variables that indicate if an individual is poor (P), in the middle of the distribution (M), or can be classified as rich (R).

The variable y represents an individual's per capita income. The vector L is a combination of variables that represent the policies of economic liberalization (the reform indices), while E represents a group of

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[13] Efficiency of the Value Added Tax is defined as the revenue collected under the tax as a percentage of GDP, given the tax rate.

[14] The work of Li et al. (1998) is one of the recent attempts to design a model to guide empirical analices, but even this type of work suffers from not being able to put forward a complete model of income distribution.

[15] This equation is not exactly the same as that in BBS. The difference is that BBS concentrates on differences in groups based on their level of schooling, while here the focus is on detecting differences having to do with the position of each individual in the distribution of income. Also, in BBS the critical variables were only L and y, not E.

macroeconomic variables that affect each income group distinctly. I is the vector of individual characteristics (e.g. age, sex, etc.); C is a vector of variables that change over time in each country (e.g. capital per worker or technology), and ε is a stochastic shock. All of these variables could have subscripts for time and country and the individual variables could also have subscripts for individuals, but these are suppressed to lessen clutter.

In relation (4), the effect of liberalization policies and of macro variables for individuals below the poverty line is $\alpha_p + \beta_p L + \gamma_p E$. The impact for the middle class is $\alpha_M + \beta_M L + \gamma_M E$, while for the rich it is $\alpha_R + \beta_R L + \gamma_R E$. Therefore, as well as taking into account the effect on the entire population $\alpha_T + \beta_T L + \gamma_T E$, the specification identifies the differential effect of liberalization and macro variables on individuals depending on their position in the distribution of income and also controlling for personal and country-specific characteristics. The idea is to obtain estimates for the coefficients β_p, β_M, and β_R, and for γ_P, γ_M, and γ_R.

There are a number of problems in obtaining good estimates of the coefficient vectors of interest – β_P, β_M, β_R, γ_P, γ_M, and γ_R – from direct estimates of relation (4). The first is the number of parameters. The second is that the (possibly large number of) economy-wide variables are likely to be fairly highly correlated, leading to further imprecision and possible problems in sorting out the effects of particular variables. The third is omitted-variable bias. If the unobserved variables are correlated with the interaction between the reform indices and income, the result is unobserved variable bias.

The solution proposed in BBS is an estimation strategy that consists of obtaining estimates of the relative impact of the economic reform variables on different incomes. To accomplish this, the information in relation (4) is aggregated by groups, and the difference between groups is estimated in the following manner:

$$\log M - \log P = (\alpha_m - \alpha_p) + (\beta_m - \beta_p)L + +(\gamma_m - \gamma_p)E + (\varepsilon_m - \varepsilon_p) \qquad (5a)$$

$$\log R - \log M = (\alpha_r - \alpha_m) + (\beta_r - \beta_m)L + +(\gamma_r - \gamma_m)E + (\varepsilon_r - \varepsilon_m) \qquad (5b)$$

$$\log R - \log P = (\alpha_r - \alpha_p) + (\beta_r - \beta_p)L + +(\gamma_r - \gamma_p)E + (\varepsilon_r - \varepsilon_p) \qquad (5c)$$

where $\log i$ (for $i = P, M, R$) is the average for each of the three groups. Only

two of these relations are independent, as can be seen by subtracting (5b) from (5c) to obtain (5a).

Estimation of relation (5) yields direct estimates of the parameters of principal interest, and direct statistical tests of the statistical significance of these differences. These estimates have a number of advantages over efforts to estimate relation (4). First, the number of the parameters is much lower, and there are no restrictions on the degrees of freedom of the coefficients. Second, there are many fewer variables for estimating relations (5) than relation (4) so the problems of co-linearity are reduced. Third, this specification controls for all unobserved country characteristics, whether fixed over time or time-varying, so there are no problems with omitted variable bias.[16]

Before presenting our results, we need to define the three groups P, M, and R. R (rich) refers to those individuals in the top decile of the distribution of income per capita.[17] For the case of inequality (log R – log P), P refers to individuals in the bottom three deciles. Table 2 shows the correlation (.925) between the resulting variable and the Gini coefficient.

For the case of poverty, P (poor) refers to the same definition of poor as in the previous sections. The middle group (M) refers to the rest of the population that is not included in R. Table 2 shows the correlations between various poverty indices and our variables (log R – log P) and (log M – log P). Given that the correlation between (log M – log P) and the poverty variable is strong (close to 0.8 for the three indices) we use this variable as our proxy to establish a relationship between poverty and economic reforms.

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[16] Furthermore, whether relation (5) is estimated in first differences or fixed effects, it resolves another not yet mentioned problem. If one of the motives for a country to initiate or intensify structural reforms is precisely the level of inequality or poverty that exists at time 0, then there will be a problem of endogeneity. Nonetheless, as we see in Table 1, income inequality did not change dramatically from one year to the next in any country. One could argue that the elevated level of inequality in Latin America is a phenomenon that has characterized the region for many years, and could be seen as a historical characteristic of these countries. If high inequality is, in some senses, a characteristic fixed across time, the first differential estimation of the relation eliminates the problem.

[17] This definition comes from the argument presented in IDB (1999), that there is a disproportionate difference between the 10% richest individuals of each country in Latin America and the rest of the population.

Table 2. Correlation between Inequality and Poverty Indicators

	Poverty and inequality indicators			
	Gini index	Poverty headcount	Poverty gap	Pov. intensity FGT(2)
Variables correlated with inequality				
log R - log P (income poorest 10%)	0,726	0,569	0,633	0,673
log R - log P (income poorest 30%)	0,925	0,645	0,682	0,700
Variables correlated with poverty				
log R - log P	0,576	-0,094	-0,004	0,046
log M - log P	-0,219	-0,815	-0,785	-0,754

Source: Author's calculations.

Tables 3 and 4 present the results of the application of relation (5) using the aforementioned definitions. The estimations refer to OLS first-differences regressions, where the standard errors are robust and where they are corrected to eliminate biases introduced by correlation between observations of the dependent variable.[18] The reform variables are lagged four years to take into account that the reforms have a lagged effect on income distribution. To simplify presentation, we focus on trade and financial sector liberalization, and combine the other three reforms into a single index (the simple average). Lagging the reform variables also increases the number of observations in the regression and allows for the incorporation of changes in poverty and inequality until 1999.[19]

Table 3 presents the results for inequality. The first column uses (log R –

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[18] The technique used is the Huber Correction.

[19] The lag increases observations because the reform variables are available until 1995 and the household data analyzed for the dependent variables cover the period up until 2000. In the case of Peru, no observation for 1999 is available, so the 2000 data is used as a proxy for conditions in 1999. Note that the exclusion of this observation has no impact on the regression results.

log *P*) where *P* is defined as individuals in the lowest three deciles of the distribution. The two most interesting results are that financial liberalization has had a significant positive impact on inequality, and that trade liberalization does not appear to have affected inequality. The coefficient of trade liberalization is negative (reducing income inequality) but insignificant. There

Table 3. Inequality, Liberalization and Macroeconomic Context

	Preferred estimation	Other estimations	
	log R - log P	log R - log P	Gini index
	(P = poorest 30%)	(P = poorest 10%)	
Trade liberalization	-0,39	-0.60	-0,43
	-1.32 ***	-0,91	-2.40
Financial liberalization	0,16	0,18	0,06
	2.33 *	1.60 ***	2.91 *
Other reforms	-0,09	-0,12	0.40
	-0,41	-0,41	2.06 **
Macroeconomic volatility	0,13	0,14	0,04
	2.65 *	1.66 **	3.47 *
Inflation	0,09	0,12	0,02
	2.43 *	1.52 ***	3.24 *
Terms of trade	-0,35	-0,31	-0,14
	-1.47 ***	-0,86	-2.38 *
Real rate of change	-0,3	-0,4	-0.10
	-6.17 *	-4.27 *	-7.58 *
Constant	2,16	2,57	1,34
	6.95 *	4.25 *	15.01 *
Number of observations	75	75	75
F (7 , 46)	15,22	8,53	20,31
Prob > F	0.000	0.000	0.000
R-squared	0,297	0,141	0,485

Note: * t-statistic significant at 1%, ** at 5%, *** at 10%. Source: Author's calculations from households' surveys.

is no evidence of the widespread belief that trade openness is the principal reason why the distribution of income has worsened in Latin America.[20]

The regression also tests the effect of other reforms and controls for various other variables that represent the macro economy as a whole.[21] Other reforms do not appear to have had any impact on inequality. Volatility and inflation show a significant positive effect (worsening inequality). An improvement in the terms of trade and appreciation of the real exchange rate seem to make the distribution of income more equal, though the coefficient of the former variable is not significant in our preferred column 1.

In the last two columns, we have included results for the Gini coefficient, and also those using the bottom decile for P (instead of the bottom 30%) in the $(\log R - \log P)$ variable. Using the Gini, trade openness has a significant negative effect on inequality, and financial liberalization and the other reforms a significant positive effect. Notwithstanding, we cannot be sure if these differences are genuine or are simply representing problems of omitted variables that weaken the third regression.

Table 4 presents the results for the relationship between liberalizing reforms and poverty. In the third column, we use poor people ratio as the dependent variable. The results indicate that trade openness has no effect on poverty. The coefficient is negative, but insignificant. Financial liberalization, on the other hand, has a positive effect on poverty, though not significant, as we have defined it here.

Volatility in per capita GDP also has significant positive effects on poverty. This result is not surprising; it is well known that the poor have less capability to weather shocks and have fewer mechanisms to protect their liquid assets from depreciation. The terms of trade does not have any effect on poverty and appreciation in the real exchange rate appears to reduce poverty.

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[20] This result is consistent with that of other studies, in particular, BBS and Spilimbergo et al. (1999), who obtain a similar result using a panel of countries from various regions of the world.

[21] Inflation and (PPP adjusted) GDP per capita indicators are from the World Bank World Development Indicators for 2000. The index for terms of trade and the real exchange rate are from the IMF's Global Development Finance 2000. The volatility index is constructed by computing the coefficient of variation of GDP per capita growth from the three previous years of each observation.

As in Table 3, we present in Table 4 the results for other dependent variables. Of special consideration are results in the first column, where we use (log R – log P) as the dependent variable, where P is the income of the poor. This specification corrects the omitted variable bias. In this column we

Table 4. Poverty, Liberalization and Macroeconomic Context

	Preferred estimation	Other estimations		
	log M - log P	log R - log P	Poor people ratio	Poverty gap	Index FGT (2)
Trade liberalization	-0.03	-0.12	-0.38	-0.43	-0.60
	-1.21	-1.68 **	-1.18	-1.53 ***	-1.66 **
Financial lib.	0.27	0.21	0.26	0.26	0.34
	2.54 *	2.02 **	1.25	1.70 **	1.75 **
Other reforms	-0.03	-0.04	0.46	0.33	0.38
	-1.64 **	-0.73	1.21	1.03	0.92
Macroeconomic vol.	0.18	0.23	0.26	0.42	0.51
	2.10 *	1.79 **	3.62 *	5.42 *	4.83 *
Inflation	0.21	1.16	0.05	0.08	0.09
	2.99 *	3.88 *	0.91	1.83 **	1.71 **
Terms of trade	-0.22	-0.38	-0.60	-0.83	-1.05
	-0.10	-0.19	-1.98 **	-2.22 *	-2.32 *
Real rate of change	-0.37	-0.35	-0.20	-0.25	-0.32
	-2.23 *	-4.38 *	-2.13 *	-3.53 *	-3.57 *
Constant	1.09	1.25	1.39	1.83	2.17
	29.90 *	12.77 *	3.06 *	3.45 *	3.30 *
Number of obs.	75	75	75	75	75
F (7, 46)	4.82	7.65	10.51	13.01	11.49
Prob > F	0.000	0.000	0.000	0.000	0.000
R-squared	0.321	0.395	0.363	0.459	0.437

Note: $P = 2$ daily dollars. * t-statistic significant at 1%, ** at 5%, *** at 10%. Source: Author's calculations from households' surveys.

can see that the effect of financial liberalization is significant from a statistical standpoint. On the other hand, inflation seems to increase poverty.

In summary, our preferred estimates suggest that except for financial sector reform, the economic reforms of the last two decades have not contributed to increased poverty and inequality. On the other hand, it is also clear that these reforms have not made much contribution to reducing poverty and inequality. Increasing reliance on the market apparently has not created new income opportunities for the poor. Financial sector liberalization in particular appears to have made the poor worse off, at least relative to the rich and the middle groups.

One possible interpretation of the results is that financial sector liberalization reduces the cost of borrowing and improves access to financing, which in turn favors skilled labor possibly because skilled labor is complementary to capital.

VI. Conclusions

Perhaps the best way of characterizing the changes in poverty and inequality in Latin America during the 1990s decade is to state that the region still registers persistent and growing inequality levels, and that in terms of poverty, some progress has been made due to positive economic growth during the decade. However, the gains in terms of poverty reduction are rather modest because of the increases in inequality.

Thus, a favorable macro economic context such as the one experienced by Latin America during the 1990s, does create favorable conditions for poverty reduction. But a significant proportion of the gains for the poor can be swept away by increases in inequality. One important factor behind the lack of improvement in income distribution is the speed of financial liberalization in the region. Thus, the main challenge is to design policies that balance both, growth and reform on the one hand, and inequality concerns on the other. This may make improvements in the conditions of the poor more likely.

Appendix

Table A.1. Household Surveys

Country	Surveys	Years	Survey name
Argentina	2	1996, 98	Encuesta Permanente de Hogares
Bolivia	6	1990, 93, 95	Encuesta Integrada de Hogares
		1996, 97	Encuesta Nacional de Empleo
		1999	Encuesta Continua de Hogares (condiciones de vida)
Brazil	7	1992, 93, 95, 96, 97, 98, 99	Pesquisa Nacional por Amostra de Domicilios
Chile	5	1990, 92, 94, 96, 98	Encuesta de Caracterización Socioeconómica Nacional
Colombia	6	1991, 93, 95, 97, 98, 99	Encuesta Nacional de Hogares - Fuerza de Trabajo
Costa Rica	6	1989, 91, 93, 95, 97, 98	Encuesta de Hogares de Propósitos Múltiples
R. Dominicana	2	1996	Encuesta Nacional de Fuerza de Trabajo
		1998	Enc. Nacional sobre Gastos e Ingresos de los Hogares
Ecuador	2	1995, 98	Encuesta de Condiciones de Vida
El Salvador	4	1995, 97, 98, 1999	Encuesta de Hogares de Propósitos Múltiples
Honduras	6	1989, 92, 96, 97, 98, 99	Enc. Permanente de Hogares de Propósitos Múltiples
México	5	1989, 92, 94, 96, 98	Encuesta Nacional de Ingreso y Gasto de los Hogares
Nicaragua	2	1993, 98	Enc. Nac. de Hogares sobre Medición de Niveles de Vida
Panamá	5	1991, 95, 97, 98, 99	Encuesta Continua de Hogares

Table A.1. (Continued) Household Surveys

Country	Surveys	Years	Survey name
Paraguay	3	1995	Encuesta Nacional de Empleo
		1998, 99	Encuesta Integrada de Hogares
Perú	4	1991, 94, 97, 2000	Encuesta Nacional de Hogares sobre Medición de Niveles de Vida
Uruguay	5	1989	Encuesta Nacional de Hogares
		1992, 95, 97, 1998	Encuesta Continua de Hogares
Venezuela	6	1989, 93, 95, 97, 98, 99	Encuesta de Hogares por Muestra

Table A.2. Additional Household Surveys for Regression Analysis

Country	Surveys	Years	Survey name
Argentina	1	1980	Encuesta Permanente de Hogares
Bolivia	1	1986	Encuesta Permanente de Hogares
Brazil	4	1981, 83, 86, 88	Pesquisa Nacional por Amostra de Domicilios
Chile	1	1987	Encuesta de Caracterización Socioeconómica Nacional
Costa Rica	4	1981, 83, 85	Encuesta Nacional de Hogares - Empleo y Desempleo
		1987	Encuesta de Hogares de Propósitos Múltiples
México	2	1977	Encuesta de Ingreso y Gasto de los Hogares
		1984	Encuesta Nacional de Ingreso y Gasto de los Hogares

Table A.2. (Continued) Additional Household Surveys for Regression Analysis

Country	Surveys	Years	Survey name
Panamá	1	1979	Encuesta de Hogares y Mano de Obra
Perú	1	1985	Enc. Nac. de Hogares sobre Medición de Niveles de Vida
Uruguay	1	1981	Encuesta Nacional de Hogares
Venezuela	2	1981, 86	Encuesta de Hogares por Muestra

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