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## CHAPTER 6

# Economic Mechanisms for the Persistence of High Inequality in Latin America

The previous chapter examined how initial factor endowments and early institutional development played a central role in the generation of egregious levels of inequality in Latin America and the Caribbean (hereafter “Latin America”). It was also shown that the interplay between economic and political mechanisms is fundamental in explaining the persistence of inequality. The next two chapters consider the nature of the economic and political processes that continue to shape inequality in the region today.

This chapter focuses on economic mechanisms and on the distribution of household per capita income. Despite the various conceptual and data quality caveats highlighted in Chapters 1 and 2, it remains the case that household per capita income is probably the variable most commonly used to construct a distribution, against which inequality is then measured. In addition, as indicated in Chapter 1, income helps shape personal freedoms and affects political power and patterns of participation, thus feeding back into the broader set of attributes with which this book is concerned.

Household income distributions are not simple constructs, however. They are the result of a complex process, in which initial opportunities available to individuals interact with their personal choices—educational, professional, and personal. Both opportunities and choices are in turn shaped by the institutional environment in which people live, including such aspects as family values; the quality of schools; labor market institutions (for example, hiring and firing rules, the size of the informal sector, the size and role of unions, and the prevalence of minimum wages); and the nature of state taxes and transfers. For given individual trajectories, the household income distribution also depends on the pattern of household formation, from the choice of partner to reproductive decisions.

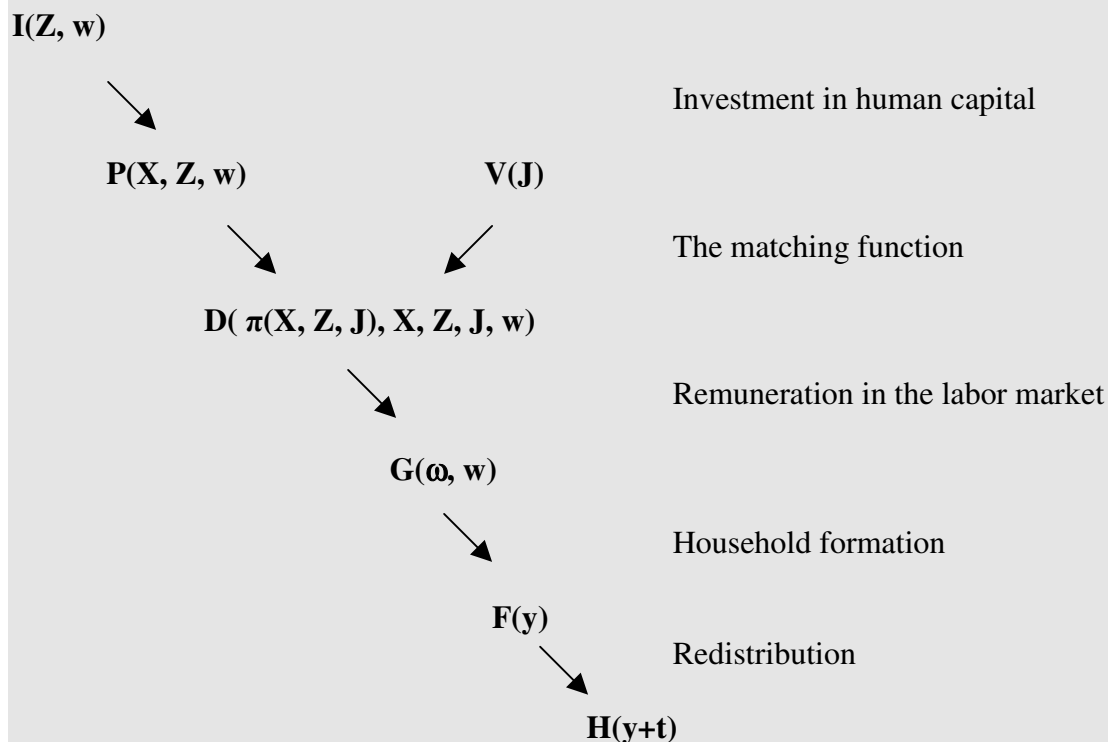
Even though it is essential to acknowledge the complexity of the processes that lie behind an income distribution, headway in understanding can only be made by trying to tackle such complexity analytically. This chapter takes the view that income distributions are determined by the following logical sequence. First discussed are patterns in individual asset accumulation,

which determine the distributions of the assets that people later use to generate income. The second concern is how, given these assets, people choose where to work, that is, sectors of employment, jobs, and types of contracts. Third, the chapter looks at how remuneration rates in these jobs are determined. Fourth, how individual earnings combine into household incomes is examined from the perspective of household formation. The fifth issue considered is nonlabor income, with particular emphasis on the state taxes and transfers that lead from the primary to the secondary income distribution. Box 6.1 lays out this logical sequence schematically. It can be seen as a slightly more detailed version of the link between the “assets and opportunities” and “outcomes and incomes” presented in Figure 1.1 in the conceptual framework section of this report.

This representation can be thought of as a sequence of functionals of distributions, as follows. Think of  $I(Z, w)$  as the joint distribution, over the population, of all relevant innate characteristics ( $Z$ ) and inherited family wealth ( $w$ ). Then let  $X$  denote the set of acquired human capital characteristics, such as health status and educational attainment.  $P(X, Z, w)$  may then represent the joint distribution of family wealth and both innate and acquired human capital characteristics throughout the population. The process through which  $P$  is generated from  $I$  is enormously complex in practice, but can be thought of as a human capital formation functional. In reasonably abstract terms, this depends on  $Z$  and  $w$  and is mediated by a number of family and educational institutions.

## BOX 6.1

## Schematic representation of household income determination



Source:

Once we have a distribution  $P$  of the relevant characteristics of potential workers and a distribution  $V$  of job attributes ( $J$ ) across all potential vacancies, then the process by which labor market institutions allocate workers to vacancies (or to unemployment) is often called a “matching function” (see, among others, Pissarides 1990). Those matches are characterized by sets of attributes of workers and jobs, as well as by the productivity of the match  $\pi(X, Z, J)$ .

The labor market does not only match workers and vacancies—important though that function is. It also generates wage rates. These rates determine how firms remunerate workers, which is generally a function of the productivity of the match. However, if the labor market is segmented, remuneration may also be a function of elements of  $J$ . In addition, if signaling is at play or discrimination of some sort exists, elements of  $X$  and  $Z$  may affect the wage rate  $\omega$  through channels other than productivity. In our simplified scheme, all of these processes are subsumed under the remuneration functional, which leads from the distribution of match attributes among matches ( $D$ ) to an individual earnings distribution  $G$ , which is here written jointly with wealth.

Once a joint distribution of individual wage rates and wealth ( $G$ ) has been determined, the distribution of household incomes is obtained through two processes: (1) the combination of individuals into households, including the outcome of their reproductive decisions, and (2) the return on nonhuman wealth, as nonlabor income. These processes are subsumed here under the household formation functional. Finally, this primary income distribution is converted into the secondary income distribution after we allow for the state’s redistribution through taxes and transfers. When pension incomes are mediated through the state (except when kept in individual accounts), this sort of income will also be included here, given the extent of interpersonal redistribution that generally exists.

This is perforce a synthetic scheme. It does not pretend to do justice to the full complexity of the processes represented. Having focused on labor incomes, this framework was particularly reduced-form with regard to portfolio decisions for physical and financial wealth and the remuneration functions for those assets in capital markets. However, as with more developed models, the essence of analytical tools is often to abstract from details on some fronts in order to shed light on other aspects of reality. This framework is used to build the investigation of some of the mechanisms through which income distributions in Latin America are currently reproduced.

A comparative approach is taken throughout the chapter, drawing both on cross-country correlations and on detailed microeconomic pair-wise comparisons, to shed light on the following question: What factors account for Latin America’s excess income inequality vis-à-vis the rest of the world? For each step in our conceptual framework for income determination (that is, asset accumulation, labor market matching and remuneration, household formation, and government redistribution), how Latin American countries compare with other countries is considered.

There are two reasons why cross-country regressions were not run in order to explain inequality levels. First, the model used here to determine income inequality (which was discussed in Chapter 1) emphasizes circular causality flows between incomes, political power, the distribution of assets, and the nature of institutions. These variables are jointly determined and a single-equation model would be incorrectly specified. Second, cross-country data scarcity would not

allow for a meaningful estimation of a single-equation model even if it were appropriate (which it is not).<sup>1</sup> Instead, we present bivariate scatter-plots and report the associated correlation coefficients. These diagrams offer insight into the position of Latin American nations within the set of observations. They are *not* to be interpreted as being suggestive of causality. This information is complemented with the results of two pair-wise comparisons of income distributions: Brazil and the United States and Chile and Italy. Naturally, given the enormous diversity within Latin America, and the even greater variations outside it, these comparisons are meant to be illustrative rather than comprehensive.

Finally, two important measurement issues are considered that may contribute to the excessively high measured inequality in Latin America: the predominance of income data vis-à-vis expenditure data in the region (and the fact that the pattern is reversed in Africa and Asia) and the high volatility of incomes in most of the countries considered. Considering the schematic representation in Box 6.1 from top to bottom, the following discussion begins by looking at what is known about asset distributions in Latin America.

## 6.1. Asset distributions: education and land

It is possible that one reason why income inequality remains so high in Latin America is that the ownership of assets—which generates incomes—is itself fairly concentrated in the first place. As was shown in Chapter 5, concentration in the ownership of land and other natural resources played a central role in the birth of inequality in colonial Latin America. Today, for the vast majority of the population in the region, total wealth is held predominantly in the form of two assets: education and housing. For residents in rural areas, the distribution of agricultural land is also critical. Housing values are difficult to measure and information about their distribution is very hard to obtain. (Some of what little is known about the distribution of housing assets in Latin America is summarized in Chapter 9.) The bulk of this section focuses on the relationship between the distributions of education and (rural) land on the one hand, and that of income on the other.

It seems natural to start by looking at how inequality measures for education and income are correlated across countries. This can be done using the international set of Gini coefficients for years of schooling compiled by Thomas, Wang, and Fan (2002), based on the Barro and Lee (2000) data on educational indicators. The “income” Gini coefficients are obtained from two sources: Table 3.13 in the Statistical Appendix of this report for the Latin American countries and the *World Development Report* 2003 database for all other countries.<sup>2</sup> Figure 6.1 plots the sample of 68 countries for which information on both dimensions is available. Latin American countries are indicated by their country acronyms.

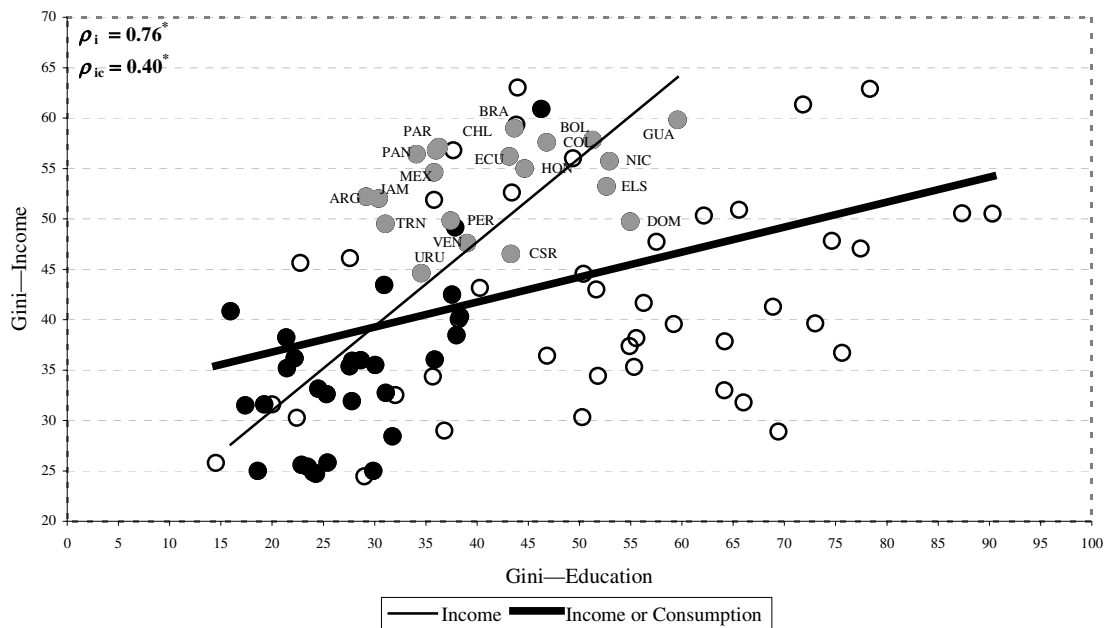
One problem with scatter plots such as this is that, whereas all Gini coefficients in the Latin American database are based on income distributions, those in the *World Development Report* database are based on income distributions and on distributions of consumption expenditure, depending on the country. Since these are obviously not strictly comparable, the indicator on which a country’s Gini coefficient is based is indicated by denoting income Gini countries with full dots and expenditure Gini countries with empty dots. Correlation coefficients are also

reported for the sample that includes all countries ( $\rho_{ic}$ ) and for the sample that includes only countries with Gini coefficients referring to income distribution ( $\rho_i$ ). This latter group is more comparable to the Latin American countries included in the analysis.<sup>3</sup> This convention is followed in a number of figures throughout this chapter.

Another problem with scatter plots is that of interpretation. Figure 6.1, like all other cross-country scatterplots presented in this chapter, shows *covariance patterns* between income inequality (on the vertical axis) and some other variable (on the horizontal axis). As indicated above, we believe that most of these variables are jointly determined. These diagrams should therefore *not* be interpreted as suggesting a direction of causation. Simple regression lines (of the income-related Gini coefficient on the x-variable) are drawn exclusively for purposes of illustration.

The correlation across countries between educational and income inequality is clearly positive and significant. The Pearson correlation coefficient between the Gini indices is 0.76 for the income-only sample and 0.40 for the joint income and education sample. These numbers are significant at the 1 percent level in both cases. They are also somewhat higher than the figure of 0.27 found by Castelló and Doménech (2002), using their own education-related Gini coefficients and the income-related coefficients from Deininger and Squire (1996), although their figure was also significantly positive.

FIGURE 6.1  
Income and education inequalities across countries



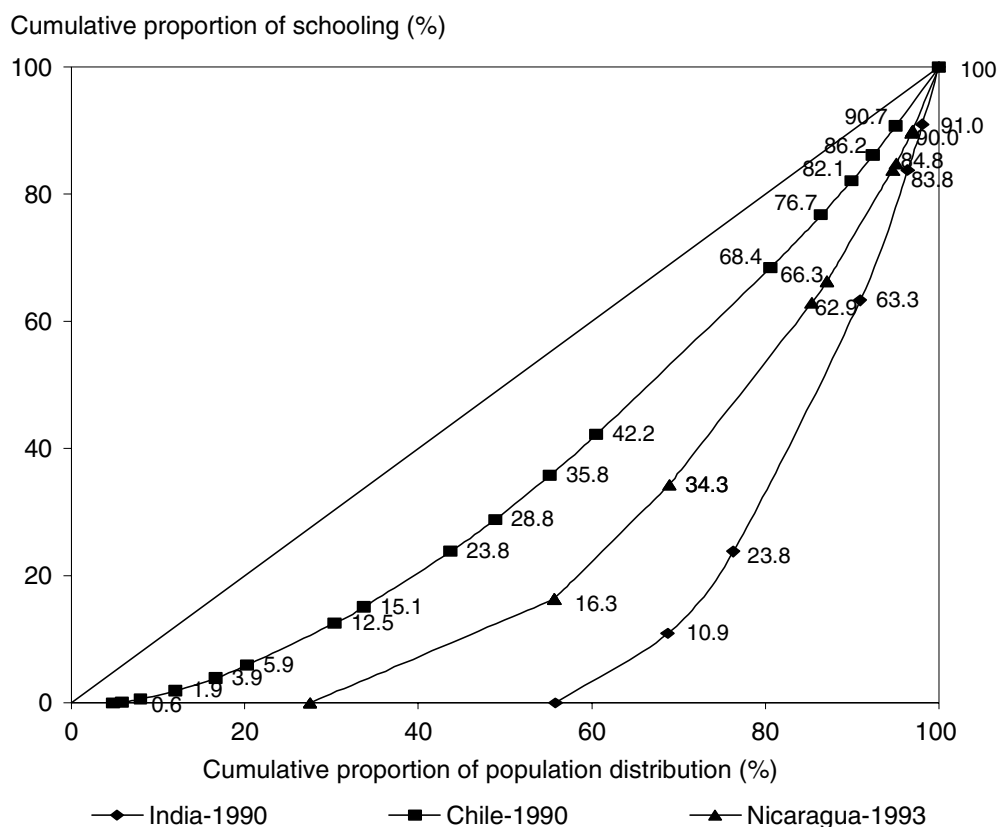
Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income (grey if in LAC); Empty circle—consumption expenditure.

Sources: Chapter 2 for LAC income Ginis; *World Development Indicators* for income and expenditure Ginis elsewhere; and Thomas and others 2002 for Education Ginis.

Figure 6.1 also shows that Latin American countries do not have particularly high levels of educational inequality by world standards. Instead, they are concentrated toward the middle range of the horizontal axis, with educational Gini coefficients ranging between 0.29 (Argentina) and 0.60 (Guatemala). According to Castelló and Doménech (2002), the average Latin American Gini coefficient for education is lower than that for every other developing region, except for the transitional economies. Figure 6.2 further illustrates this by plotting the Lorenz curves of years of schooling for two Latin American countries (Chile and Nicaragua) that are close to opposite ends of the regional spectrum of educational inequality alongside the curve for India. Although income inequality in both Chile and Nicaragua is higher than India’s expenditure inequality, inequality in years of schooling is unambiguously higher in India.

Since they do have high income inequality levels, Latin American countries tend to also have some of the highest levels of income inequality *conditional on* educational dispersion in the world. All Latin American countries in Figure 6.1 lie above the regression line of the joint sample, and most also lie above the regression line of the income-related sample. In other words, in light of the average cross-country relationship, Latin American countries appear to have “too much” income inequality, given their levels of inequality in years of schooling.

FIGURE 6.2  
Lorenz curves of years of schooling, selected countries



Sources: Thomas and others (2000) for India, Gasparini and others (2003) for Chile and Nicaragua.

This finding suggests that other factors may play a greater role in accounting for the region's egregious inequality levels, as discussed further below. However, before jumping to the conclusion that educational disparities are definitely not the reason for high income inequality in Latin America, it should be noted that years of schooling is a very imperfect measure of the value of the human capital stock embodied in a person. In particular, this indicator does not convey the quality of the education undergone during a given period. It is therefore possible that the ratio of income to education inequality in Latin America simply reflects the fact that disparities in human capital accumulation in this region occur to a greater extent (that is, compared to other parts of the world) because of differences in the quality of schooling acquired from various schools, rather than because of differences in the quantity of years of schooling among individuals.

It is difficult to test this hypothesis, however, because the quality of education is very hard to measure in a comparable manner. It is put forth simply as a caveat against concluding that education differentials are unimportant in explaining Latin America's high income inequality, since true human capital inequality may be understated as a result of inadequately capturing quality differentials. Two pieces of evidence suggest that this possibility should not be summarily discarded.

The first comes from the most recent attempt to compare student achievements internationally through the Organisation for Economic Co-operation and Development (OECD) Program for International Student Assessment (PISA 2000). This exercise was undertaken for 31 countries, only 4 of which do not belong to the OECD. One of these was Brazil. Since Mexico belongs to the OECD, there are two Latin American countries in this sample, which otherwise includes rich countries, some transition economies, and Korea. Table 6.1 below reports the means, the coefficients of variation, and the 90<sup>th</sup> to 10<sup>th</sup> percentile ratios for test scores with regard to the three dimensions for which they are reported in OECD (2001): literacy/reading, mathematics, and sciences.

The results are striking. In terms of absolute levels, Mexico and Brazil rank at the bottom of the table on every scale, with the lowest mean scores of all 31 countries. Even the internal ranking is consistent, with Mexico always scoring above Brazil. In terms of the two measures of dispersion in test scores (or "quality inequality") used here, results are more mixed for Mexico, where the 90<sup>th</sup> to 10<sup>th</sup> percentile ratios are the 13<sup>th</sup>, 6<sup>th</sup>, and 21<sup>st</sup> highest in the literacy, mathematics, and scientific scales, respectively. However, they are still rather stark for Brazil, for which the 90<sup>th</sup> to 10<sup>th</sup> percentile ratios rank fifth highest in literacy but first highest in both mathematics and science. The coefficients of variation present a similar picture, as can be easily seen in Table 6.1.

This finding implies, first and foremost, that any comparison of educational distributions across countries that relies on years of schooling as a measure should be treated with considerable circumspection. If test scores are any indication, what students learn in any given year varies considerably across countries. At the same time, looking beyond country means, this finding also suggests that variations in the quality of education *within* countries, while present everywhere, appear to be more pronounced in some Latin American countries than in the OECD.

TABLE 6.1

## Variation in student performance in PISA 2000 examinations

Country	Reading/literacy scale		Mathematical scale		Scientific scale	
	Mean score	Coeff. of var. 90 <sup>th</sup> /10 <sup>th</sup> percentile	Mean score	Coeff. of var. 90 <sup>th</sup> /10 <sup>th</sup> percentile	Mean score	Coeff. of var. 90 <sup>th</sup> /10 <sup>th</sup> percentile
Australia	528	0.19	533	0.17	528	0.18
Austria	507	0.18	515	0.18	519	0.18
Belgium	507	0.21	520	0.20	496	0.22
Canada	534	0.18	533	0.16	529	0.17
Czech Republic	492	0.20	498	0.19	511	0.18
Denmark	497	0.20	514	0.17	481	0.21
Finland	546	0.16	536	0.15	538	0.16
France	505	0.18	517	0.17	500	0.20
Germany	484	0.23	490	0.21	487	0.21
Greece	474	0.20	447	0.24	461	0.21
Hungary	480	0.20	488	0.20	496	0.21
Iceland	507	0.18	514	0.17	496	0.18
Ireland	527	0.18	503	0.17	513	0.18
Italy	487	0.19	457	0.20	478	0.21
Japan	522	0.16	557	0.16	550	0.16
Korea	525	0.13	547	0.15	552	0.15
Luxembourg	441	0.23	446	0.21	443	0.22
<b>Mexico</b>	<b>422</b>	<b>0.20</b>	<b>387</b>	<b>0.21</b>	<b>422</b>	<b>0.18</b>
New Zealand	529	0.20	537	0.18	528	0.19
Norway	505	0.21	499	0.18	500	0.19
Poland	479	0.21	470	0.22	483	0.20
Portugal	470	0.21	454	0.20	459	0.19
Spain	493	0.17	476	0.19	491	0.19
Sweden	516	0.18	510	0.18	512	0.18
Switzerland	494	0.21	529	0.19	496	0.20
United Kingdom	523	0.19	529	0.17	532	0.18
United States	504	0.21	493	0.20	499	0.20
<b>OECD Total</b>	<b>499</b>	<b>0.20</b>	<b>498</b>	<b>0.21</b>	<b>502</b>	<b>0.20</b>
<b>OECD Average</b>	<b>500</b>	<b>0.20</b>	<b>500</b>	<b>0.20</b>	<b>500</b>	<b>0.20</b>
<b>Brazil</b>	<b>396</b>	<b>0.22</b>	<b>334</b>	<b>0.29</b>	<b>375</b>	<b>0.24</b>
Latvia	458	0.22	463	0.22	460	0.21
Liechtenstein	483	0.20	514	0.19	476	0.20
Russian Federation	462	0.20	478	0.22	460	0.22
<b>Mean</b>	<b>493.82</b>	<b>0.19</b>	<b>493.52</b>	<b>0.19</b>	<b>493.12</b>	<b>0.19</b>

Source:



It would be tempting to read into the latter finding that the educational inequality of Latin American countries, measured along the horizontal axis of Figure 6.1, was systematically understated. On the basis of a comparison between a single Latin American country (Brazil) and the OECD sample, however, we cannot rule out the possibility that similar (or even worse) quality differentials exist in other developing countries.<sup>4</sup> In particular, there are no data on quality dispersion for countries in Africa and South Asia, which tend to lie to the right of those in Latin America in Figure 6.1.

The second piece of evidence on the importance of differences in educational quality comes from a study of “educational production functions” in Brazil, which uses test score data from the 1999 wave of the national primary education examinations known as the SAEB. Using hierarchical linear models (which permit an identification of the sources of inter- and intraschool variation in achievement scores), the study found that 28 percent of the total variation in the sample occurred across schools. Most of this variation was accounted for by differences in the mean socioeconomic levels of students in these schools, indicating that sorting plays a large role in the determination of educational outcomes. However, variables related to the quality of school infrastructure (such as whether classrooms are systematically stuffy or noisy) and to the educational attainment of teachers were also significant. This finding indicates that disparities in the quality of educational services being provided throughout Brazil added to disparities in the quality (and value) of those services to students.<sup>5</sup>

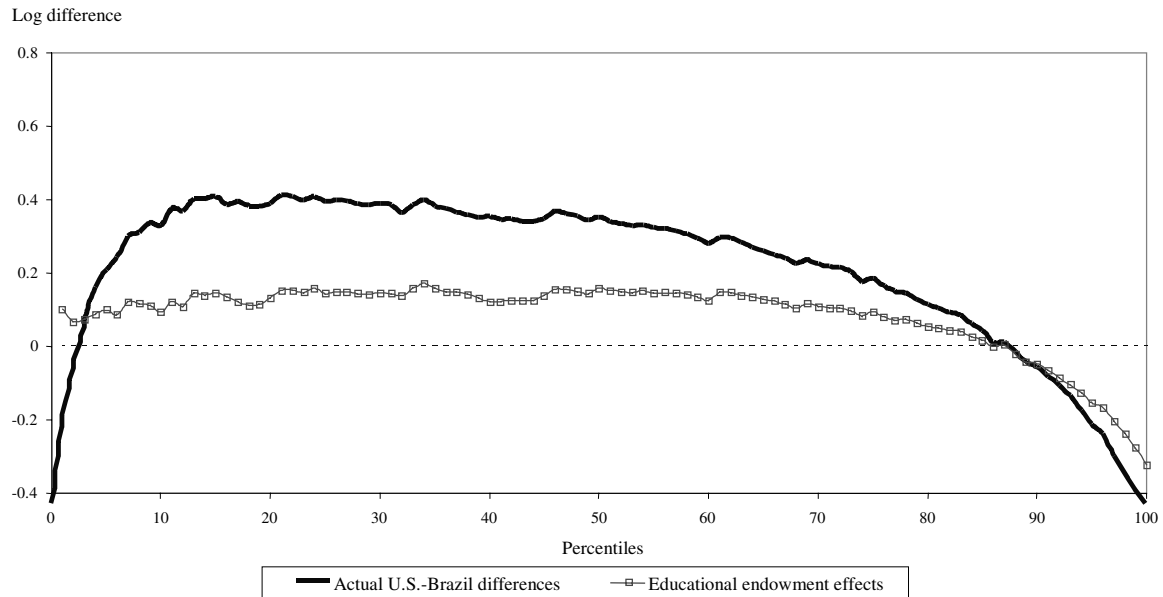
This brief foray into issues pertaining to the measurement of the *quality* of education serves mainly as a caveat to the apparent simplicity of the visual message conveyed in Figure 6.1. The issue of quality is a reminder of how imperfectly information on years of schooling captures human capital accumulation for the purposes of comparisons or aggregation within countries; this is even more evident with regard to international comparisons. It also raises the possibility that educational inequality in Latin America might be understated with respect to countries in other regions. If that is the case, income inequality conditional on education inequality might not be so high for this region. However, this possibility is by no means established, given the severity of the data limitations. The balance of the analysis so far must still be that, since Latin America has very large income-related differentials but not very high education-related ones, educational inequality cannot be the sole source of very high income inequality in the region.

A similar message arises from a rather different type of analysis that compares the microdata on the income distributions of two countries in much greater detail. One recent study (Bourguignon, Ferreira, and Leite, 2002) compared the household income distributions for Brazil and the United States by simulating what the Brazilian distribution might look like if certain aspects of U.S. economic behavior were “imported” into Brazil. It found that replacing the Brazilian conditional distribution of education with that of the United States—but changing nothing else—would reduce the Brazilian Gini coefficient by 6.4 points (from 0.569 to 0.505), which corresponds to just over half of the total Gini gap between the two countries.

Other inequality measures had even more impressive declines in this analysis: The Theil index fell from 0.644 to 0.460, or more than 60 percent of the Brazil-United States Theil gap. Figure 6.3 illustrates this exercise in a more disaggregated manner through plots of the differences in logarithms between the mean incomes of each 100<sup>th</sup> of the Brazilian and U.S. distributions

FIGURE 6.3

**Difference in mean incomes per hundredth of the mean-normalized distribution: U.S.–Brazil and U.S.–“Brazil with US conditional distribution of education”**



Source: PNAD/IBGE 1999, CPS/ADS 2000 and author's calculation.

(normalized to have the same mean) in the solid line, as well as the difference between the counterfactual “Brazil with the U.S. conditional distribution of years of schooling” and the U.S. distribution. Like the comparisons across countries, this more disaggregated exercise suggests that educational disparities account for an important share of Latin America’s high income-related inequality, but are not the only explanatory factor.

This message arises even more strongly for countries in Latin America with greater average educational attainment (and less educational inequality). A similar microeconomic comparison between Chile and Italy found that “importing” the parameters of the Italian conditional distribution of education into Chile accounted for only 2 of the 20 Gini point difference between the two countries. Chile’s Gini stood at 0.557, Italy’s at 0.357, and Chile with an Italian distribution of education moved to 0.537.

The search for other possible sources for Latin America’s “excess inequality” therefore continues, by considering another asset of great importance for poor people. In Chapter 5, the historical process that led to high inequality in Latin America rested on the fact that some of the products for which the region developed an early comparative advantage (such as sugar and cocoa) were most efficiently produced on large slave plantations. This fact led both to the development of societies polarized between slaves and slave owners and to technologically driven land concentration. Is land inequality still abnormally high in Latin America? Could this factor still be driving income inequality even in today’s mostly urban societies?

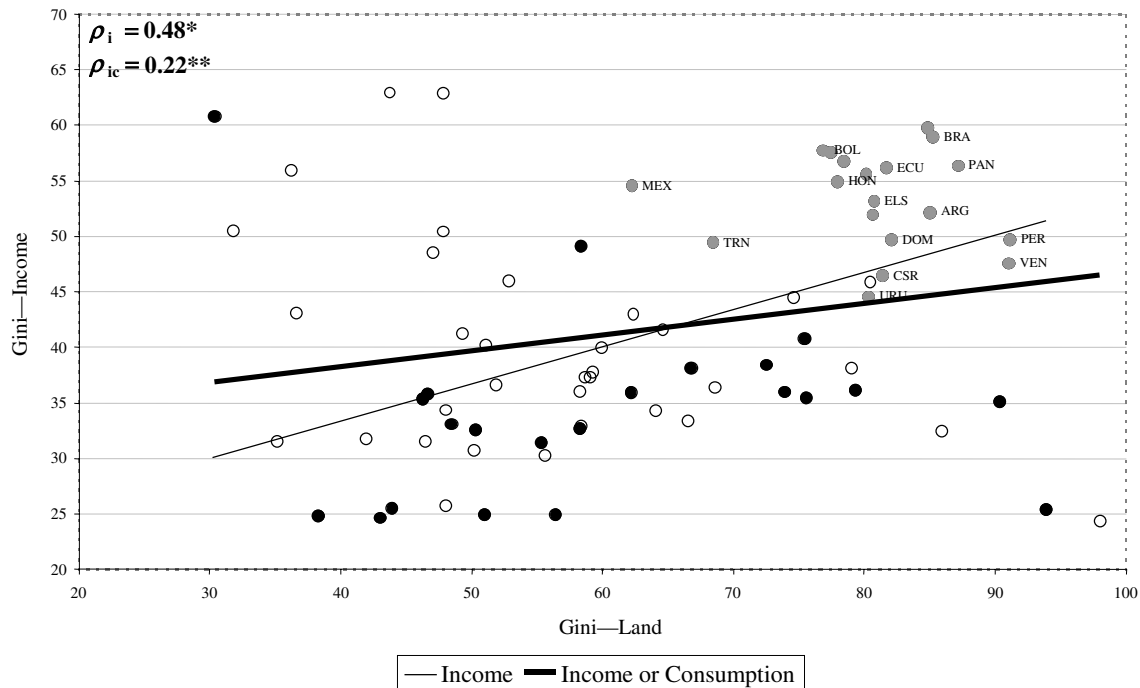
To investigate this possibility, Figure 6.4 plots the income and expenditure Gini coefficients used in Figure 6.1 against land-related Gini coefficients from the Deininger and Olinto (2000) data set. Data are available for both Gini coefficients for 75 countries, all of which are plotted below (those in Latin America are once again denoted by their country acronyms).

Evidence of correlation across countries is a little more mixed with regard to the association between land and income inequality. The simple correlation coefficient for the joint sample is 0.22 and is only significantly different from zero at the 10 percent level. However, for the income-only sample, it is 0.48 and significant at the 1 percent level. All in all, there does appear to be a positive association between land and income inequalities across countries, although it is weaker than the one that exists between education and income inequalities.

In regional terms, however, Latin America's inequality ranks seem to be closer for land and income. The cluster of the region's countries has moved from the upper-middle of Figure 6.1 to the upper-right quadrant in Figure 6.4. Latin America is over-represented among the highest levels of Gini coefficients for both income and land in the world. It is still the case, however, that Latin American income inequality conditional on land inequality is higher than the world average, suggesting that—as is the case for educational disparities—considering land dispersion on its own can result in an underestimation of income inequality in Latin America. The search for the culprits of inequality must continue beyond the realm of asset accumulation and into the functioning of the labor market.

FIGURE 6.4

## Income and land inequalities across countries



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.

Sources: World Development Indicators for income Ginis; Deininger and Olinto 2000 for land Ginis; Gasparini 2002, chapter 2, for income Ginis.

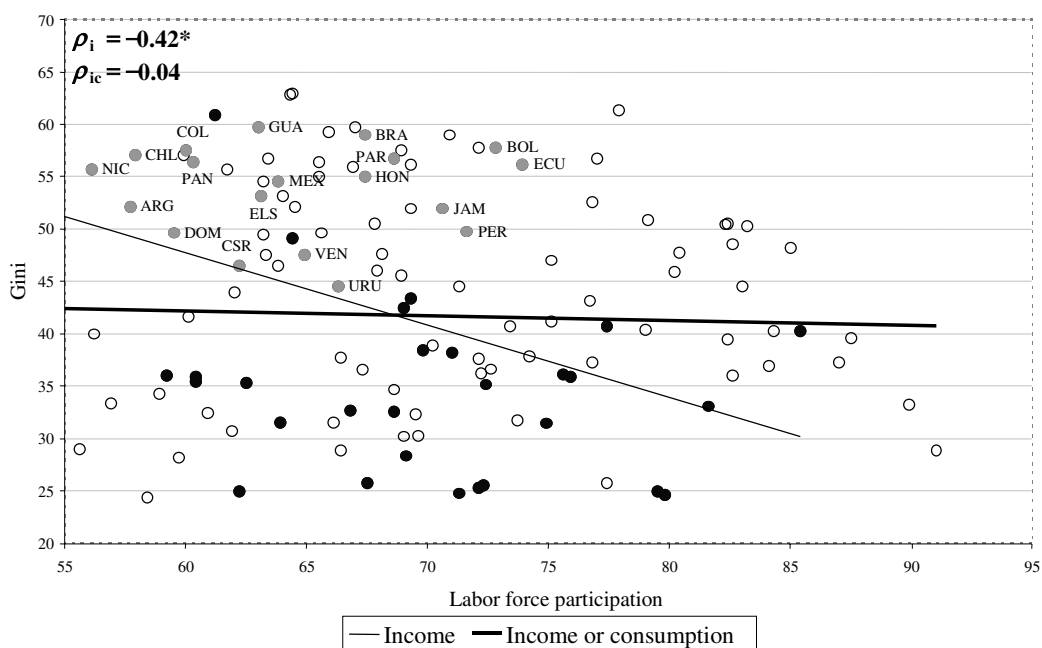
## 6.2. Job match quality

According to the schematic representation of household income determination presented in Box 6.1, once individuals are endowed with a basic allotment of human and other assets, they decide whether or not to participate in the labor market and are matched up with a job vacancy. Their earnings will depend to a large extent on the characteristics of this match. It follows that the distribution of earnings over the population might well depend on the nature of labor force participation, unemployment, and the formal or informal nature of the labor market.

It turns out that total labor force participation, as reported by the International Labor Organization (ILO) for 116 countries, is essentially uncorrelated with inequality in the joint sample. (The correlation coefficient is  $-0.04$ , with a  $p$ -value of 0.66). In the income sample only, however, the correlation is negative ( $-0.42$ ) and significant. It is also the case that this latter result is driven to a rather large extent by relatively low rates of female labor force participation in Latin America compared to more developed countries, which report low income Gini coefficients and have higher overall labor market participation rates. The scatterplot illustrating these patterns is presented in Figure 6.5.

FIGURE 6.5

### Labor force participation and inequality across countries



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.

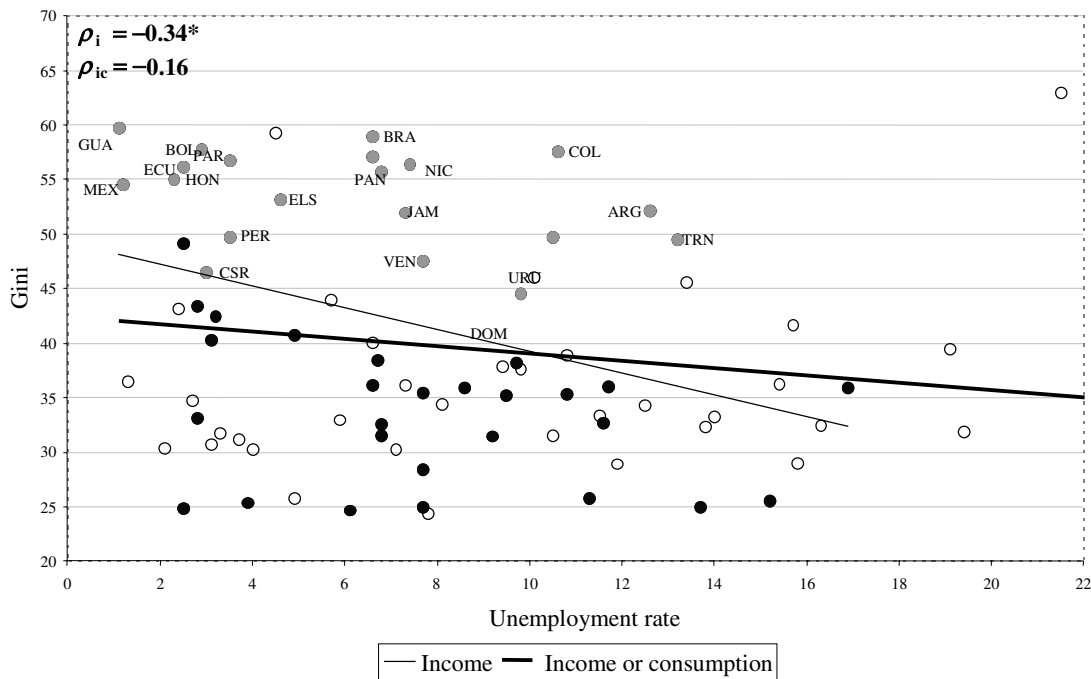
Sources: *World Development Indicators* for income Ginis; Gasparini 2002, chapter 2, for income Ginis and also for Labor Force Participation in LAC and Key Indicators of Labor Market (International Labor Organization) for Labor Force Participation Rates.

Overall, there does not seem to be evidence of a significant covariance pattern between labor force participation and inequality across countries, except when only income-reporting countries are considered, which excludes much of Africa and Asia. Nevertheless, what does remain true is that Latin American countries lie overwhelmingly above both regression lines. In this data set, the coefficient of a Latin American dummy included in a cross-country regression of income inequality on total force participation would be significantly positive, as it would have been on similar regressions using education and land Gini coefficients.

Similarly, no clear pattern of correlation emerges from the joint cross-country distribution of inequality and unemployment rates. Figure 6.6 presents the plot for total unemployment rates, once again drawn from the ILO database. The correlation coefficient is insignificant in the pooled sample and  $-0.34$  and significant at the 5 percent level in the income-only sample. The latter result is likely to be spuriously driven by a positive correlation between unemployment and gross domestic product (GDP) per capita, as well as by the negative correlation between inequality and GDP per capita in the sample. Once again, all Latin American countries lie above both regression lines. This time, however, they are more spread out along the horizontal axis—along which, in this case, the unemployment rate is measured—than was the case in previous graphs, suggesting that Latin American countries have less in common in terms of their unemployment rates than they did, for instance, with respect to patterns of land or education distributions.<sup>6</sup>

FIGURE 6.6

## Unemployment and inequality across countries



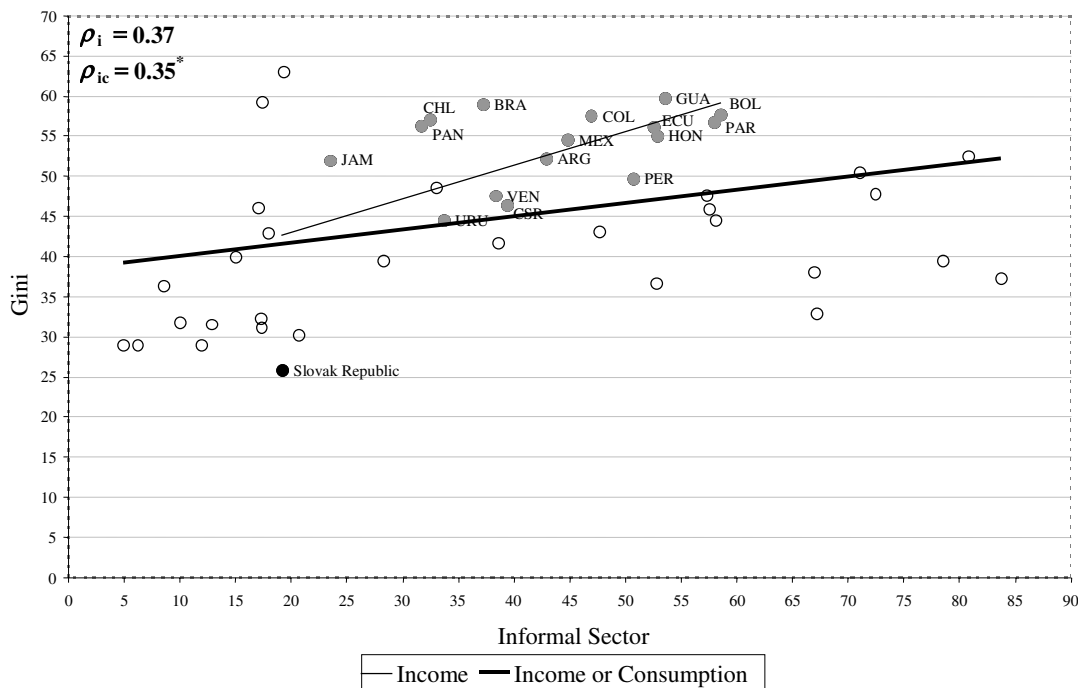
Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.

Sources: *World Development Indicators* for income Gini; Gasparini 2002, chapter 2, for income Gini and also for Unemployment Rate in LAC and International Labor Organization Database for Unemployment Rates.

The situation is somewhat different when we consider the extent of duality in the labor market, measured by the share of informal sector employment in total employment. The scatterplot of this share and the income Gini coefficients is shown in Figure 6.7. The correlation coefficient between the two is 0.35 in the pooled sample and significant at the 2 percent level.<sup>7</sup> Latin American countries lie along the middle ranges of informality, between African countries to the right and more developed countries to the left, and remain above the regression line.

The positive association between a large informal sector and income inequality across countries may reflect the fact that the informal sector is quite heterogeneous. It includes, among others, unpaid family workers, voluntary owners of small family businesses, street vendors who cannot find work elsewhere, employees in small firms who receive training in their first jobs, young mothers earning pocket money, and well-educated owners of small firms that are just getting started. The heterogeneity of the informal sector contributes to the difficulty in understanding its nature and may explain why it tends to be more unequal than the formal sector.

FIGURE 6.7  
Informality and inequality across countries



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.  
Sources: World Development Indicators for income Ginis; Gasparini 2002, chapter 2, for income Ginis and also for Unemployment Rate in LAC and International Labor Organization Database for Unemployment Rates.

A comparison of mean earnings across sectors reinforces the claim of heterogeneity (Maloney and Cunningham, forthcoming). Clearly, unpaid workers are at the bottom of the earnings distribution.<sup>8</sup> Employees in small firms tend also to earn lower average wages than do formal sector employees. However, average earnings for self-employed workers are very similar to the wages of formal sector employees, although the variance of wages is higher for the former group.<sup>9</sup>

Many factors may explain the higher inequality among the self-employed. First, self-employment is a risky venture, so the self-employed may require a higher wage to compensate for the extra insecurity that they absorb by owning their own business. Second, the selection process for survival in the self-employment sector typically leads to a broader distribution of earnings for any given level of human capital, compared to what would be obtained if workers were all salaried with nonstochastic, smoothly increasing wages relative to human capital. Since the self-employed have full information about their abilities and do not pay efficiency wages, their returns best approximate marginal productivity, unlike employees who are hired based on the few characteristics that employers can observe.<sup>10</sup>

Third, inequality among the self-employed may simply capture measurement error, since regular employees report wages but the self-employed may not accurately report profits. Due to the abstract and difficult task of estimating forgone earnings from capital investments, the self-employed are likely to overestimate their earnings, thus leading to unequal earnings between two particular observations within a sample that actually have the same net earnings.

In Latin America, inequality is greater among the self-employed than among salaried workers. The informal sector comprises 30–70 percent of the labor force and is made up mostly of self-employed individuals. As shown in Table 6.2, evidence from six Latin American countries indicates that earnings inequality in the self-employment sector is double the degree of inequality that exists in the wage sector. Most of this inequality is within groups, while that between groups is very small for all countries except Chile.<sup>11</sup>

TABLE 6.2

**Earnings inequality decomposition for salaried versus self-employed workers, 1995**

	<i>Argentina</i>	<i>Bolivia</i>	<i>Chile</i>	<i>Colombia</i>	<i>Uruguay</i>	<i>Venezuela</i>
<b>Self-employed</b>	26%	56%	29%	33%	26%	37%
	Inequality measures for all workers with non zero wages					
<b>Theil index</b>	0.362	0.642	0.735	0.667	0.398	0.340
	Inequality measures for all self-employed workers with nonzero wages					
<b>Theil index</b>	0.484	0.819	0.867	0.972	0.499	0.470
	Inequality measures for all salaried workers with nonzero wages					
<b>Theil index</b>	0.295	0.430	0.411	0.433	0.350	0.264
	Within- and between-group inequality, with groups defined by type of employment					
<b>Within-group</b>	0.355	0.642	0.639	0.653	0.395	0.340
<b>Between-group</b>	0.007	0.001	0.096	0.013	0.004	0.000

Source: Wodon and Maloney.

These findings suggest that a greater level of labor market informality contributes to higher inequality through a composition effect—that is, greater weight in a sector with higher within-group inequality—rather than through large differences in means between the formal and the informal sector, as a more traditional approach might have predicted. It may also be the case that increases in the share of the informal sector during the 1990s might have exerted some upward pressure on overall inequality in countries such as Colombia, Costa Rica, and Mexico.<sup>12</sup>

Overall, the picture that arises from this analysis of the quality of job matches and income inequality is murkier than the picture from asset distributions. The correlation coefficients between education and land inequalities on the one hand and income inequality on the other are convincingly positive. However complex the process of joint determination might be, the covariance between asset inequality and income inequality does seem to be borne out, both by the cross-country data and by the microeconomic comparisons between Brazil and the United States and Chile and Italy.

On the other hand, no association was identified between labor force participation or unemployment and income inequality. Once again, this is consistent with findings from a microeconomic comparison of Brazil and the United States by Bourguignon and others (2002). Importing the occupational structure from the United States onto Brazil (which is conditional on observed worker characteristics) had very little effect on inequality. A similar result is found when Italy's occupational structure is imported onto Chile.

The microeconomic studies confirm the view that occupational structure variables play a smaller role in accounting for Latin America's excess inequality than do either educational or land endowments. The one exception might be the extent of labor market informality due to the prevalence of greater income disparities within the informal sector, as discussed above. This tentative conclusion suggests that rigid labor market institutions, such as high hiring and firing costs, may contribute to more rather than less inequality.<sup>13</sup> Other labor market institutions also play a role in the context of the determination of labor market remuneration or wage formation, as discussed below.

### 6.3. Remuneration in the labor markets

In addition to its allocative role, through which workers and vacancies are matched, the labor market affects income distribution directly through the determination of wage rates paid to different workers holding different jobs. One standard way in which economists view the determination of earnings is through the human capital model, originally developed by Gary Becker and Jacob Mincer. If education and experience increase a worker's productivity, then earnings ought to vary positively with each of these factors, even when controlling for the other. A standard Mincer equation is therefore as follows:<sup>14</sup>

$$(1) \quad \log(e_i) = b_0 + b_1 s_i + b_2 (age - s_i - 6) + b_3 (age - s_i - 6)^2 + \varepsilon_i$$

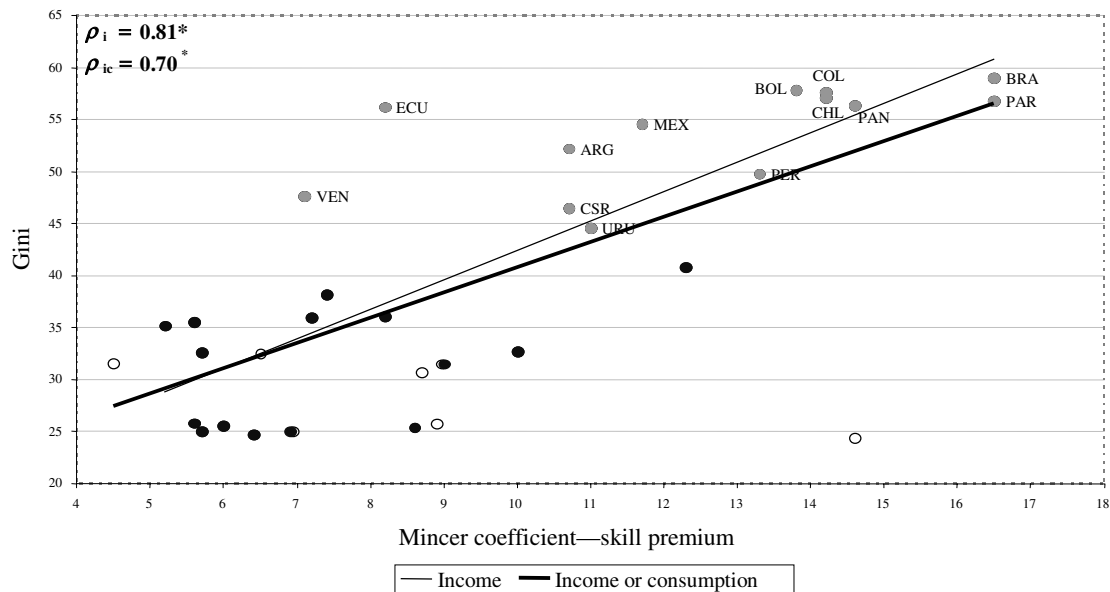


Where  $s_i$  captures the years of schooling of individual  $i$ , and  $e_i$  measures that person's earnings or wage rate. It follows that, for a given distribution of education (the dispersion of which may be measured by the Gini coefficient, as shown in Figure 6.1), earnings inequality should rise with the coefficient  $b_1$  in equation (1) above. In Figure 6.8, the familiar income Gini coefficients are plotted against the Mincer coefficients ( $b_1$ ) for the 33 Latin American and OECD countries, on which Fernandez and others (2001) estimated equation (1) above on household survey microdata. The result is the highest correlation coefficients reported in this chapter: 0.70 in the pooled sample and 0.81 in the income-only sample, with  $p$ -values of 0.000 in both cases. In this (unfortunately small) sample of countries, it seems that returns on education in the labor market are closely associated with income inequality. Latin American countries lie in the upper quadrant of the diagram, with high estimated Mincer coefficients and high income inequality.

The microeconomic comparison of Brazil and the United States provides further support for the conclusion that higher returns to education in Latin America are an important factor in accounting for the region's high levels of inequality. Replacing Brazil's structure of returns with that of the United States led to a reduction of 4 points in the Gini coefficient, or about one-third of the total gap. Even more revealingly, jointly replacing Brazil's conditional distribution of years of schooling and returns structure with those of the United States led to a reduction of 7.5 Gini points, from 0.569 to 0.494. This change represents a full 60 percent of the difference in Gini coefficients between the two countries.

FIGURE 6.8

## Returns to schooling and inequality across countries



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption coefficients of returns to schooling.

Sources: World Development Indicators for income Ginis; Gasparini 2002, chapter 2, for income Ginis; Fernandez and others 2001 for skill premium measured by Mincer.

The disaggregated impact of the simulation on the entire distribution can be gauged from the information provided in Figure 6.9(a), which shows the actual differences between incomes per percentile in the United States and Brazil in the thick solid line. The dotted line represents the differences between the Brazilian distribution and the simulated distribution for Brazil with the U.S. returns and occupational structures, while the thin solid line in between them represents the differences between the Brazilian distribution and the simulated distribution for Brazil with U.S. returns and occupational and educational structures. It is clear that the combination of returns on education and its actual distribution in the population account for an important part of the difference between the income distributions of Brazil and the United States.

An analogous picture for the Chile-Italy comparison is shown in Figure 6.9(b). Here the actual differences between the mean-normalized incomes per percentile between Italy and Chile are represented by the thick, uppermost line. The dotted line represents price effects, that is, the difference between Chile as is and Chile with the Italian structure of labor market returns. Just above it, the thin solid line depicts the differences between Chile with the Italian returns structure and conditional educational distribution. It can be seen that these two elements—essentially the distribution of years of schooling and the associated structure of returns—can account for a substantial share of the distributional difference between the two countries. In fact, the Gini coefficient for that counterfactual distribution (0.445) lies approximately midway between the coefficients for Chile (0.557) and Italy (0.357).<sup>15</sup>

The evidence does provide support for two conjectures: (1) Latin America is characterized by higher than average returns to human capital, particularly education, and (2) this is an important part of the reason for the region's "excess inequality." Why returns to education are so high in Latin America remains something of an open question. To some extent, the obvious but not terribly helpful answer is that the ratio of demand for highly skilled workers to their supply is too high, while the ratio of demand for low-skilled workers and their supply is too low. This conclusion in turn begs the question of why this might be so.

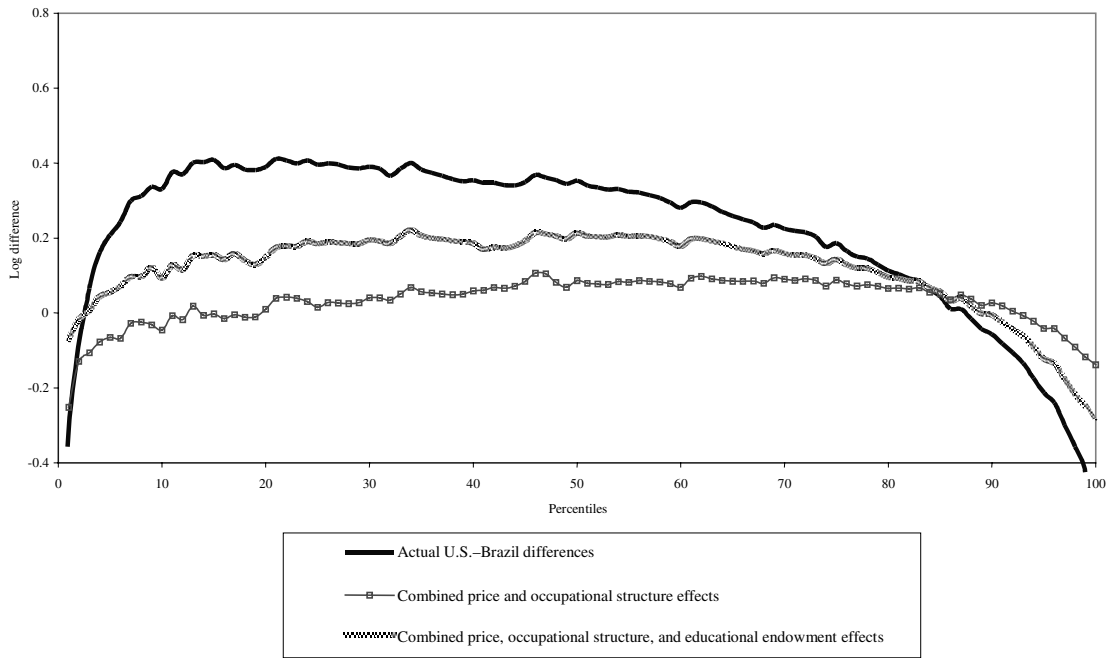
It seems inevitable that part of the reason lies in the changing pattern of comparative advantage for middle-income countries. As Adrian Wood puts it: "The economic world of the 1960s and 1970s consisted effectively only of developed and middle-income countries, and thus the middle-income countries had a comparative advantage in goods of low skill intensity. In the 1980s, when low-income Asia started to realize its own comparative advantage in goods of low skill intensity, the comparative advantage of middle-income countries shifted to goods of intermediate skill intensity."<sup>16</sup> The popular analogy is that the wages of poor Latin Americans are set in Beijing, but those of highly educated Latin Americans are set in New York.

It is logical to recognize that this intermediate position between countries with an abundance of skilled labor and those with an abundance of unskilled labor must have some bearing on return structures in Latin America. However, doing so does not imply that the following views should be rejected:

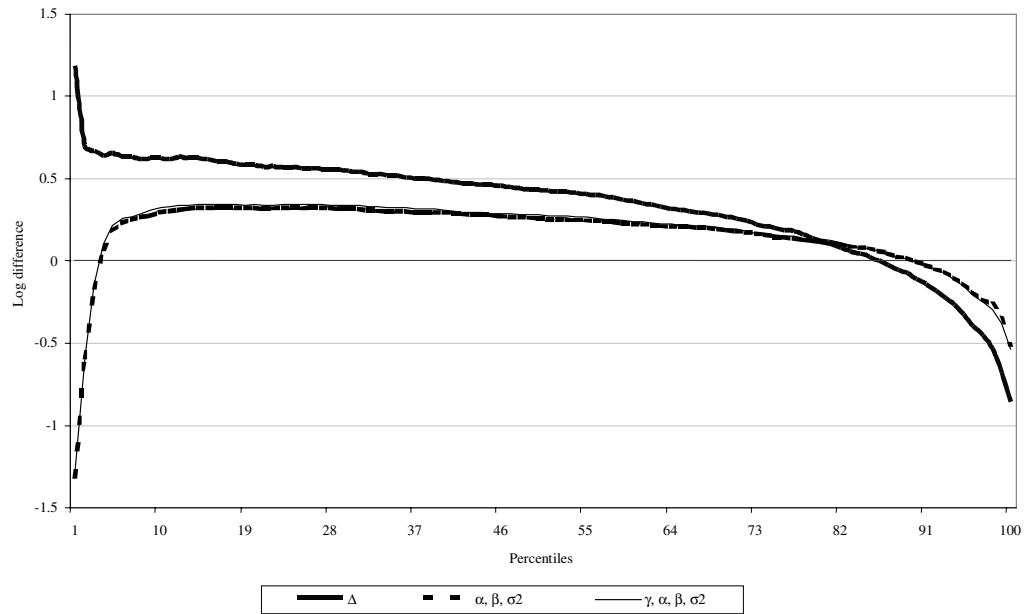
FIGURE 6.9

Distribution of and returns on education explain some of the differences between income distributions.

(a) United States and Brazil



(b) Italy and Chile



Source: PNAD/IBGE 1999, CPS/ADS 2000, and author's calculation.

- The political economy of high agency inequality throughout the history of Latin America had an impact by limiting the supply of schooling, which thus resulted in a lower ratio of skilled to unskilled labor supply than would otherwise have been the case.<sup>17</sup>
- Most of the recent increases in wage differentials by skill in Latin America (as elsewhere) appear to be driven by skill-biased technical change, rather than by static trade effects of the type usually associated with the Stolper-Samuelson theorem in Heckscher-Ohlin trade theory. Our views on that debate do in fact generally favor this interpretation, as is comprehensively set out in De Ferranti and others (2003).<sup>18</sup>

In fact, the authors agree with both of these views. The higher than usual rates of return on human capital in Latin America seem to arise from a historical pattern of underinvestment in education combined with an intermediate position in the world trading system, which implies that most sectors in the region involving low-skilled, intensive labor are “pricetakers.” The way in which these differentials between wages and skill levels have evolved recently appear to be driven predominantly by process, managerial, and technical innovations, which in many cases have been mediated through international trade and foreign direct investment.

Before concluding this section, it is important to say a word about labor market institutions in Latin America. Even though wage rates, like all prices, ultimately depend on demand and supply conditions, these interact through institutions. In addition, since labor markets are particularly complex (because of heterogeneity and information asymmetries), related institutions are particularly important.<sup>19</sup> This chapter has already argued that hiring and firing costs, as well as other regulatory features, may affect workers’ decisions about whether to enter the formal or informal sectors, which has implications for the overall distribution of incomes.

Wagesetting is also affected by other institutions, such as labor unions or the prevalence of minimum wages. Whereas in most OECD countries, unions succeed in compressing wage scales and reducing overall wage inequality in covered sectors (and often throughout the economy, through collective bargaining spillovers), this effect is not robust in Latin America. In some countries, such as Brazil, unions actually appear to have the reverse effect: unionized workers appear to have greater wage disparities than nonunionized workers, and unionization appears to contribute to greater wage dispersion in the economy as a whole.

Arbache (2002) argues that this trend arises largely from the fact that Brazilian unions, unlike those in most other countries, are organized according to professional categories. Employers thus bargain separately with various unions that represent different grades of employees and are concerned only with their own salaries. Unlike in more integrated labor movements, there is little pressure to have compressed wage scales. More generally across Latin America, the limited impact of unions appears to largely be a result of both low union densities and the fact that the spillover effects from unionized to nonunionized workers (the so-called bargaining coverage rates) are small.<sup>20</sup>

Minimum wages, on the other hand, do appear to have the potential to generate equalizing effects on wage distributions in Latin America. In Colombia and Brazil, for example, a 1 percent increase in the minimum wage leads to increases along the formal sector wage distribution, with effects greatest below the minimum wage and diminishing across the wage distribution (Maloney and Núñez 2000, Neri and others 2000). Although the spillover (or “lighthouse”) effects of

minimum wage rises can be felt quite far up the wage distribution in these two countries, they are much larger among low-wage workers. The overall effect of this pattern is clearly to reduce inequality.

It should be noted, of course, that the scope for the minimum wage to be used as a policy variable to reduce inequality is obviously limited by the fact that at some point employment effects may become too great (see Angel-Urdinola 2003). In addition, if the minimum wage is used to index public sector liabilities (such as pension outlays, in the case of Brazil), the opportunity costs of public funds in terms of other forgone equitable expenditures may outweigh any equity gains in the wage distribution.

## 6.4. Household formation

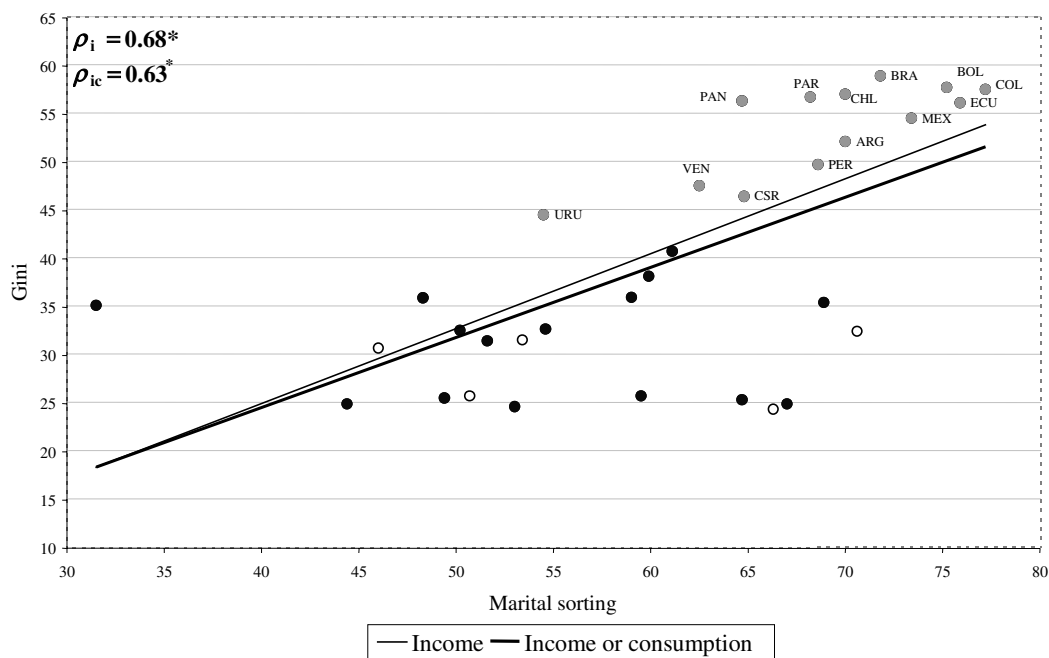
Latin America's position in the world has now been considered in terms of a number of covariates of income inequality levels: dispersion in asset distributions (education and land); indicators of labor market matching (participation, unemployment, and informality rates); and a key indicator of returns to human capital (estimated Mincer coefficients). Moving further along the schematic determination of household incomes depicted in Box 6.1, we suggest that the way in which households form affects how earnings distributions are transformed into household income distributions.

In particular, how men and women sort themselves into couples matters a great deal. Consider two societies with identical earnings distributions. Household income inequalities would clearly be different if in one of them the highest-earning woman married the lowest-earning man (and so on), while in the other the highest-earning woman married the highest-earning man (and so on). Income inequality would be much higher in the latter society than in the former. More generally, this example simply suggests that when shifting from earnings distributions to distributions of household income per capita, marital sorting may be an important factor.

Figure 6.10 plots Gini coefficients related to both income and marital sorting for all 33 countries (once again only in Latin America and the OECD), which were computed by Fernandez and others (2001). The marital sorting coefficients are defined as the Pearson correlation coefficients between the years of schooling of husbands and wives among couples within a country. The correlation coefficients between marital sorting and income inequality in this sample are high: 0.63 in the pooled sample and 0.68 in the income-only sample (with  $p$ -values of 0.000 in both cases). As before, most plausible models of household formation and income determination would suggest the existence of considerable simultaneity in this relationship: In more unequal societies, men may be likelier to marry women from the same social stratum and with similar education levels. At the same time, if education increases labor market participation and earnings, this will likely contribute to the persistence of income inequality in the future.

FIGURE 6.10

## Marital sorting and inequality across countries



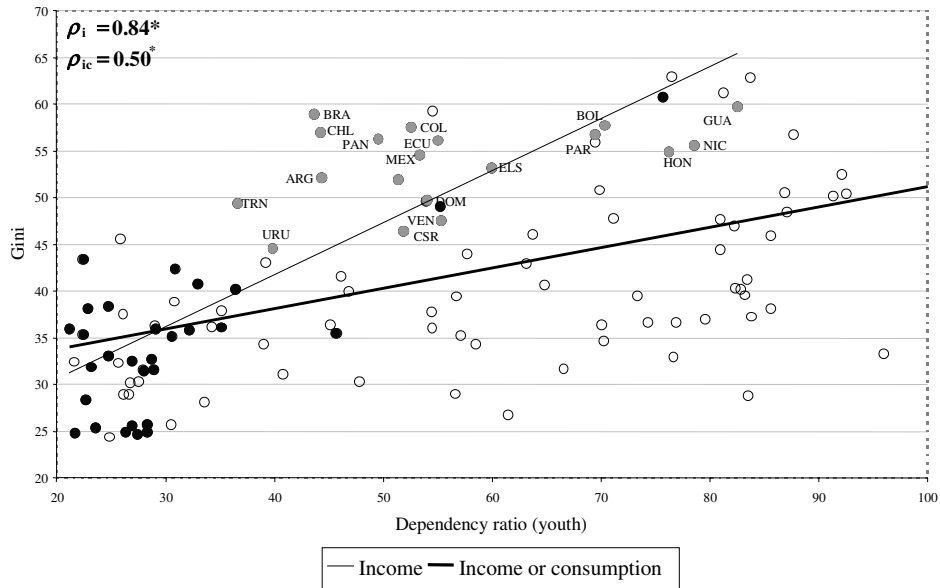
Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.

Sources: *World Development Indicators* for income Ginis; Gasparini 2002, chapter 2, for income Ginis; Fernandez and others 2001 for marital sorting Pearson correlation coefficients.

Although whom a person lives with is important, it does not fully determine household composition. Income per capita will also depend on how many children a person has and on the age structure in the household. Figures 6.11 and 6.12 capture these two dimensions, albeit imperfectly, through two commonly used demographic variables: the youth dependency ratio (defined as the ratio of the number of persons ages 0–15 to the number of persons ages 16–64) and the old-age dependency ratio (defined as the ratio of persons ages 65 or over to the number of persons ages 16–64).

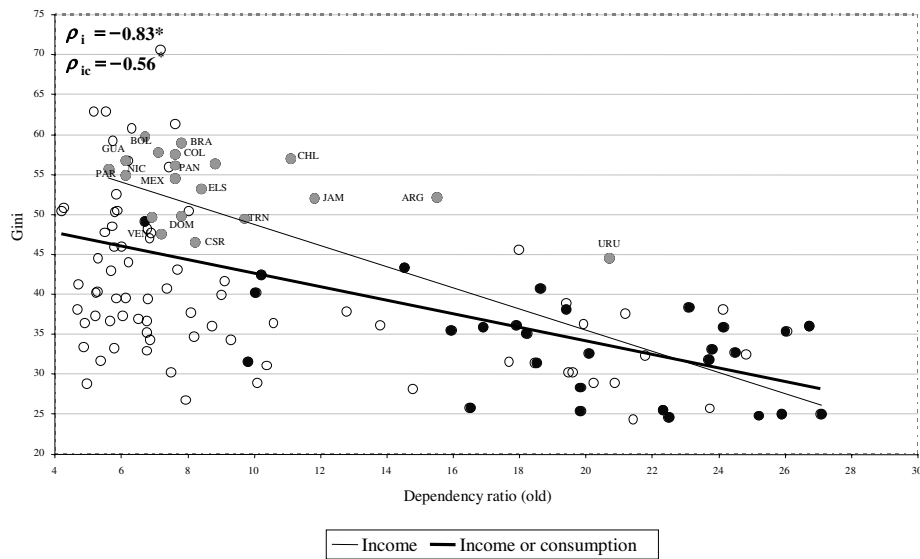
These ratios are very imperfect measures, since they represent simple population shares that do not take into account the correlation between total household size and total household income. The latter clearly matters for how dependency ratios affect the distribution of household per capita income. Be that as it may, the correlation coefficients considered here are still significant in both cases: 0.50 in the pooled sample and 0.84 in the income-only sample for youth dependency and  $-0.56$  in the pooled sample and  $-0.83$  in the income-only sample for old-age dependency.<sup>21</sup> In this sample of 121 countries, a larger share of youth in a population is associated with higher inequality—largely because of a negative correlation between the number of children in the household and household per capita income—while a larger share of the elderly in a population is associated with lower inequality.

FIGURE 6.11  
Youth dependency and inequality across countries



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.  
Sources: World Development Indicators for income Ginis and dependency ratios; Gasparini 2002, chapter 2, for income Ginis. Dependency ratios of youth are defined as 0- to 15-year-old population as a proportion of total workforce, that is, total population—16- to 64-year-olds.

FIGURE 6.12  
Old-age dependency and inequality across countries



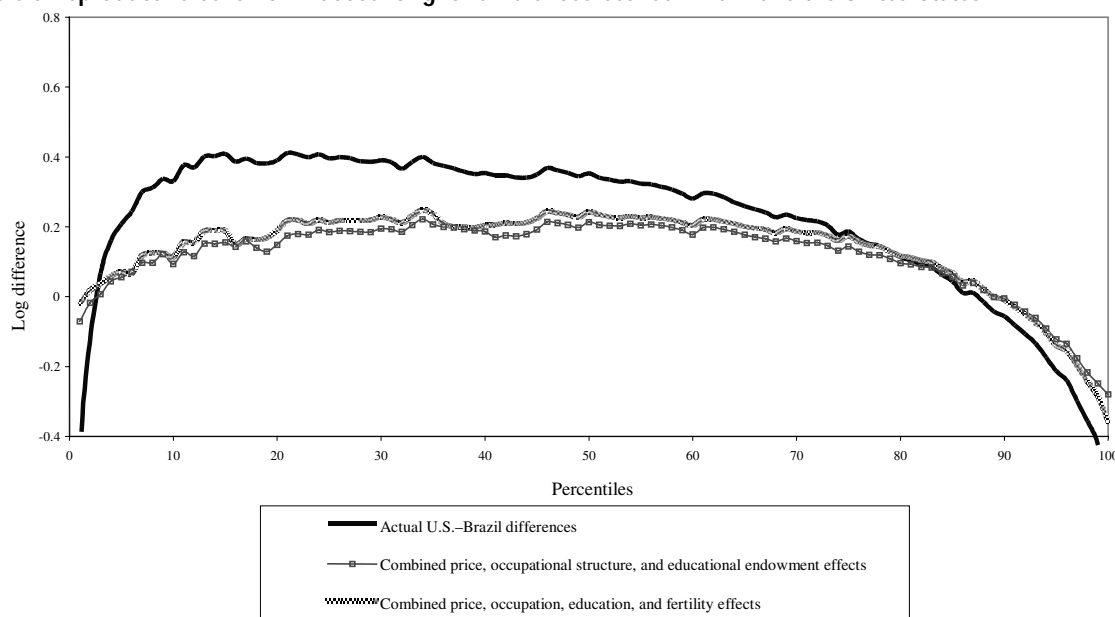
Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.  
Sources: World Development Indicators for income Ginis and dependency ratios; Gasparini 2002, chapter 2, for income Ginis. Dependency ratios of elderly are defined as 65+ year-old population as a proportion of total workforce, that is, total population—16- to 64-year-olds.

The detailed Brazil-United States comparison by Bourguignon and others (2002) also found that replacing Brazil's larger family sizes with those from the United States helped reduce inequality, although not by very much. When combined with the changes reported in Figure 6.8, importing the parameters from a multinomial logit model for the number of children in U.S. households into the Brazilian model led to a further decline of 1 point in the Gini coefficient. Figure 6.13 once again plots the differences between incomes in Brazilian and U.S. households, with the thick solid line referring to actual mean-normalized differences. The dotted line refers to the counterfactual distribution for Brazil with U.S. educational, occupational, and returns structures. The solid line between these two lines corresponds to the simulation that incorporates demographic effects. It can be seen that the effect is to further reduce Brazil's inequality and to bring the simulated distribution closer to that of the United States. In this specific case, it is also apparent that the effect of demographic behavior is not as quantitatively important as the effects related to both the distribution of and returns to education.

Because the incidence of this aggregate spending is likely to matter a great deal for the relationship between public intervention and inequality, it would be ideal to examine more disaggregated categories of spending. Since internationally comparable data on the incidence of public programs are scarce, however, it is difficult to disaggregate too much. Here only one category of public spending is considered, which due to its commonly universal coverage is not usually regressive: public expenditure on primary education. Figure 6.15 plots the income-based Gini coefficients against the ratio of this expenditure per student to per capita GDP. As one would expect, the correlation coefficients are even lower ( $-0.51$  in the pooled sample and  $-0.67$  in the income-only sample) and remain significant. A similar result is obtained if, instead of considering public expenditure on primary education, the ratio between government transfers to nonprofit institutions and households and GDP is used (International Monetary Fund Government Finance Statistics database). This correlation is shown in Figure 6.16.

FIGURE 6.13

#### The role of reproductive behavior in accounting for differences between Brazil and the United States

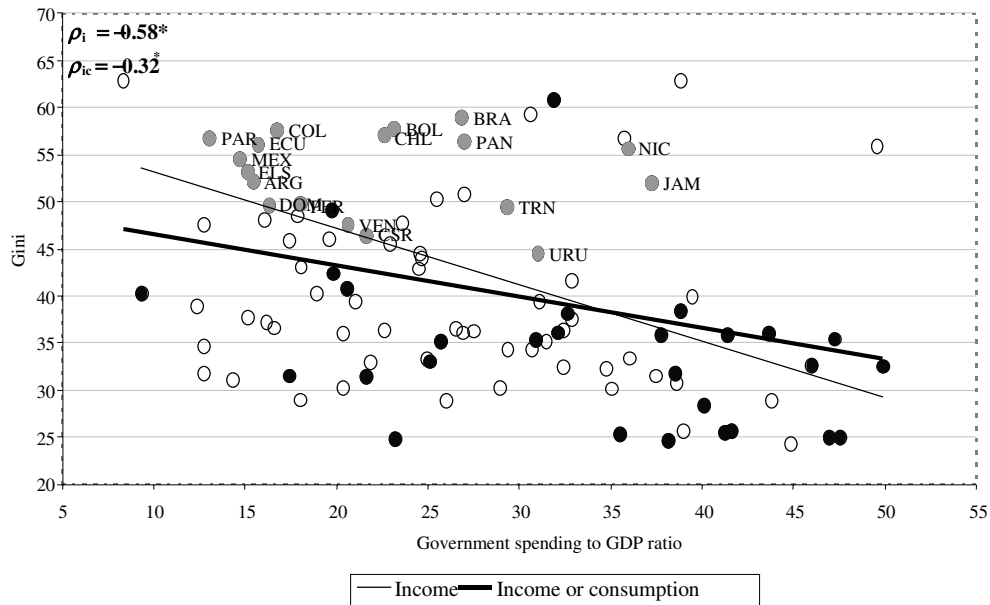


Source: PNAD/IBGE 1999, CPS/ADS 2000 and author's calculation.



FIGURE 6.14

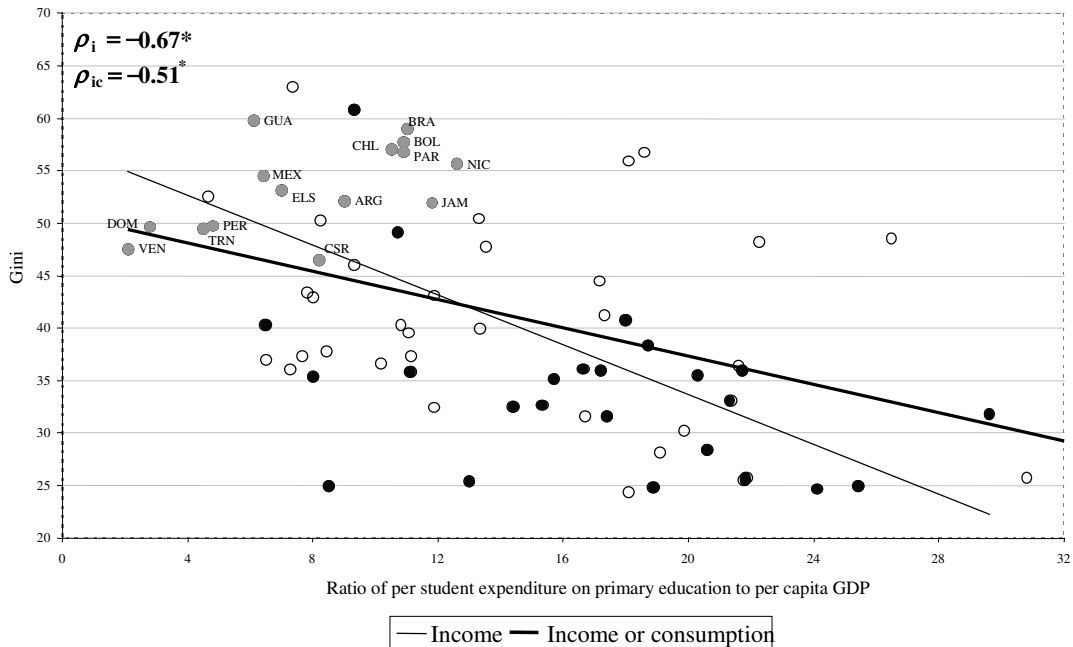
Total public spending and income inequality



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.  
Sources: World Development Indicators for income Ginis and government spending-to-GDP ratios; Gasparini 2002, chapter 2, for income Ginis.

FIGURE 6.15

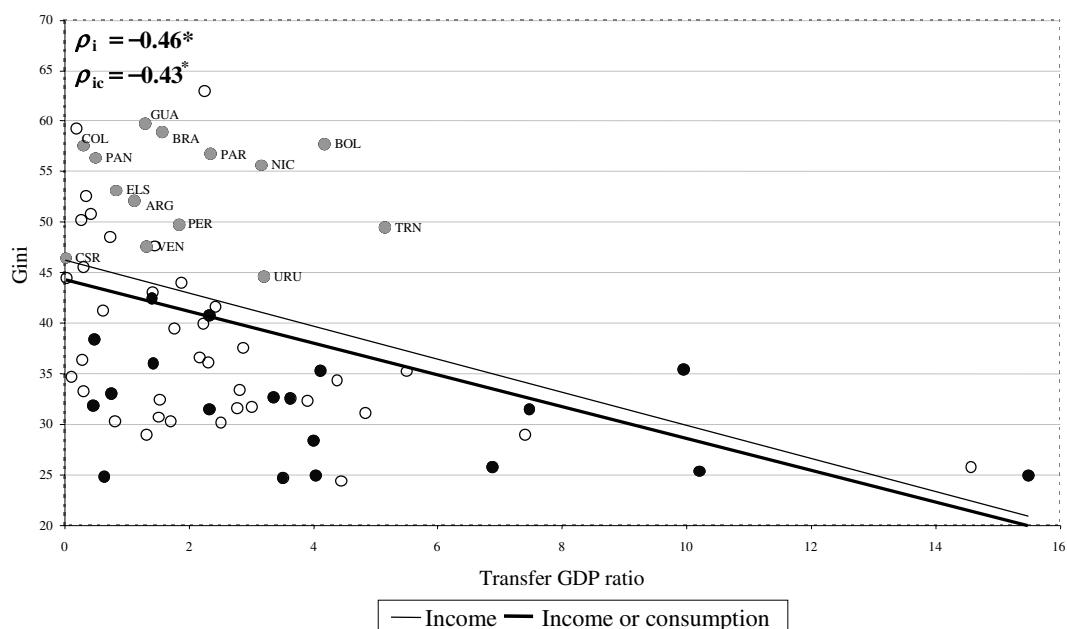
Public expenditure on primary education and income inequality



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.  
Sources: World Development Indicators for income Ginis and per student expenditure on primary education-to-per capita GDP ratios; Gasparini 2002, chapter 2, for income Ginis.

FIGURE 6.16

## Public transfers to households and income inequality



Note: \* Significant at 5 percent level; \*\* Significant at 10 percent level; Full circle—income; Empty circle—consumption.

Sources: *World Development Indicators* for income Ginis and dependency ratios; Gasparini 2002, chapter 2, for income Ginis and government financial statistics (International Monetary Fund) for transfers (nonprofit institutions and households)-to-GDP ratios.

Figures 6.14–6.16 suggest that states do in fact play an active role in affecting the distribution of disposable household income through their basic taxation and public expenditure choices. This is not to suggest that the influence of the state on distributional outcomes is limited to taxation and spending levels, or even on patterns of incidence of these aspects. There clearly are a number of other important channels through which state institutions affect the distribution of power and income (such as how democratic and participatory decisionmaking processes are). Nevertheless, the main impact of the state as an economic actor is indeed felt through the raising and spending of revenue. In addition, although the direction of causation is once again impossible to ascertain from these figures, it is clear that at least some categories of public expenditure (such as on primary education and transfers) are negatively correlated with income inequality.

Interestingly, whereas Latin American countries are reasonably spread out along the horizontal axis in Figure 6.14—indicating a large variation across the region in ratios of total public expenditure to GDP—they are rather concentrated toward the left in Figures 6.15 and 6.16. This suggests that the region tends to lie toward the low end of the international range of public spending per student in primary education and transfers, relative to GDP.

The cross-country nature of these comparisons means that they are limited to aggregate indicators of public spending. The incidence patterns of the aggregate amounts spent are not taken into account, even though the impact of the state on distribution can clearly vary enormously among countries with the same expenditure-to-GDP ratio. This depends on who receives the benefits of such spending. Latin America has often been singled out as a region

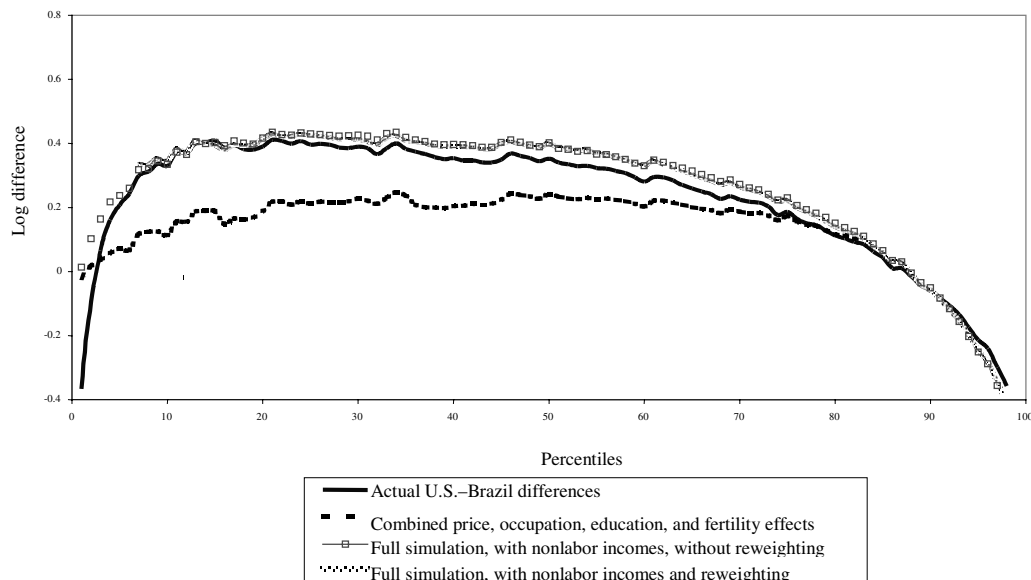
where the richer and more powerful segments of society appropriate large shares of the benefits of public programs for themselves (see, for example, International Development Bank 1998 and United Nations Economic Commission for Latin America and the Caribbean 2001). This pattern would tend to increase the importance of the public expenditure component in accounting for the region's high levels of inequality beyond what is suggested by Figures 6.14–6.16.

This conclusion is confirmed by what Bourguignon and others (2002) found in terms of the comparison between Brazil and the United States discussed above. In that study, when the impact of importing to Brazil the parameters of the U.S. conditional distribution of nonlabor incomes is simulated, the Gini coefficient is reduced by more than 3.5 points. When combined with the other effects previously discussed (that is, the distribution of education, the structure of returns, and occupational and demographic structures), the distribution of nonlabor incomes practically closes the inequality gap: The simulated Brazilian Gini coefficient (incorporating all the changes) now comes within 1.7 points of the United States. Other measures of inequality are also comparably near their U.S. “target levels.”

The interesting thing is that the bulk of this effect is due to pensions, which account for 83 percent of total reported nonlabor income in Brazil. Figure 6.17 reproduces the main curves shown in Figure 6.13, that is, the actual Brazil-United States differentials and the intermediate simulated distribution corresponding to Brazil with imported U.S. parameters for educational endowments, returns, and occupational and demographic structures. Figure 6.17 adds the curve that combines all of the imported U.S. parameters with those for nonlabor incomes. This curve comes quite close to the actual differences between mean-normalized Brazil and the United States. Most of this effect is due to replacing the conditional distribution of retirement pensions in Brazil (most of which are publicly funded, at least in part) with that of the United States.

FIGURE 6.17

#### Brazil-United States differences, actual and simulated, nonlabor incomes and reweighting

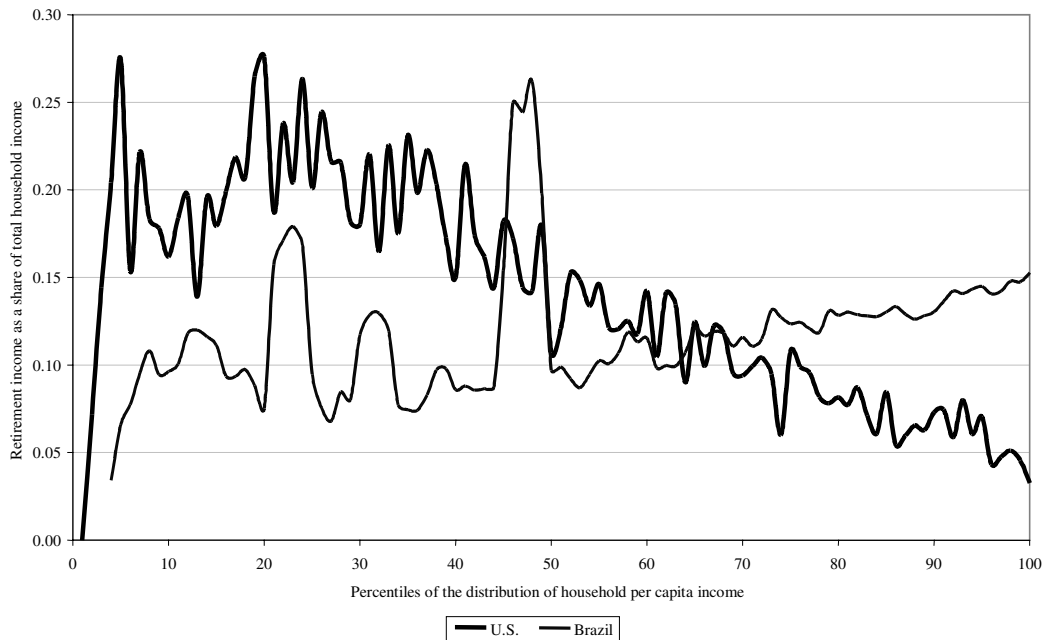


Source: PNAD/IBGE 1999, CPS/ADS 2000 and author's calculation.

Whereas retirement pensions as a share of total income decline with household income per capita in most countries (including the United States), they make up a rising share of the total in Brazil (see Figure 6.18).

FIGURE 6.18

### Retirement income as a share of total household income, Brazil and the United States



Source: PNAD/IBGE 1999, CPS/ADS 2000 and author's calculation.

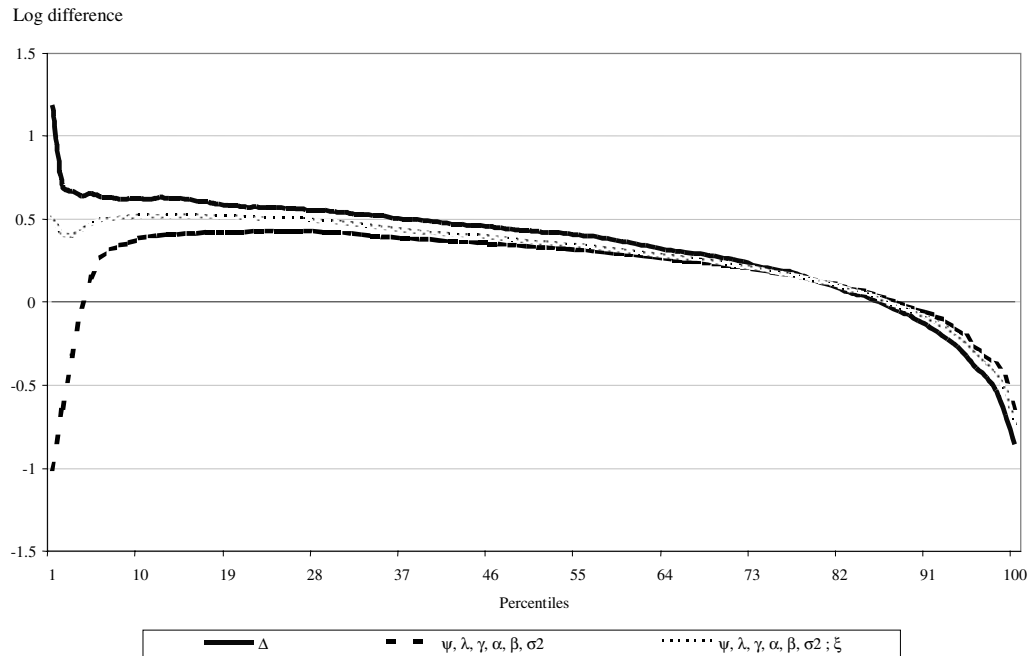
A similar (although somewhat weaker) equalizing effect of nonlabor incomes is observed in the comparison between Chile and Italy. As counterfactual income distributions for Chile are simulated by importing various elements of the Italian distribution, the inequality gap between the two countries progressively narrows. Importing just the conditional distribution of nonlabor income (which includes all public transfers) contributes 2 Gini points, or one-tenth of the gap between the two countries. When this simulation is combined with all other simulated parameters (that is, for the structure of returns, the distribution of education, occupational behavior, and reproductive choices), it adds almost 3 Gini points. This complete simulation changes the Chilean Gini coefficient from 0.557 to 0.391, not too far from the Italian “target” of 0.357.

Figure 6.19, which is analogous to Figure 6.18, picks up the Chile-Italy comparison represented in Figure 6.9(b). The thick solid line at the top represents, once again, differences in the logarithm of incomes accruing to corresponding percentiles of the Italian and Chilean distributions after means were equalized. The dotted line at the bottom represents the same differences between Italy and a counterfactual distribution for Chile after the Italian returns and occupational, educational, and reproductive structures were imported. Finally, the light-shaded line between them represents the same differences when the conditional Italian distribution of

nonlabor incomes (including public transfers) is also incorporated into the simulated Chilean distribution.

FIGURE 6.19

### Nonlabor incomes account for some of the differences between Italian and Chilean income distributions



Source: PNAD/IBGE 1999, CPS/ADS 2000, and author's calculation.

It is interesting to note that although the impact of the Italian conditional distribution of nonlabor incomes on the Gini for Chile was not large, it had a pronounced effect on the lowest relative incomes in that country. Whereas the previous stages of the simulation succeeded in making the top 80 percent of the Chilean income distribution look more similar to that of Italy, they failed to raise the incomes of people at the bottom of the distribution. The Italian structure of nonlabor incomes had a substantial positive impact on the bottom 20 percent of the Chilean distribution.

Since most income from self-employment among the poor is usually reported as labor income, this is unlikely to represent the effect of capital incomes. It is more likely to represent the effect of larger and better targeted public transfers and benefits. As in the case of the Brazil-United States comparison, this microeconomic evidence supports the view—suggested by the pattern of correlations across countries—that Latin American states are relatively unsuccessful at transferring resources to their poorest citizens and that this is one factor behind the region's excess inequality.

## 6.6. Measurement-related issues

This chapter has so far sought to improve our understanding of the difference between income inequality in Latin America and in other regions in terms of differences in several income determinants, such as asset distributions, labor market institutions, returns to worker characteristics, patterns of household formation and composition, and the extent of redistribution undertaken by the state. One alternative explanation is that Latin America appears to be more unequal because countries in the region measure individual welfare in terms of an indicator that is more unequally distributed everywhere than are other indicators.

Specifically, it may be that Latin America appears to be more unequal than other regions because most of its countries report inequality in *incomes*, rather than in *consumption expenditures*. There are two reasons why, in any given country, incomes are generally more unequally distributed than consumption expenditures financed by those same incomes, as follows:

- Households dislike sudden variation in their consumption patterns, and thus tend to smooth consumption patterns over time. For a given individual, consumption flows therefore behave almost like the averages of income streams over time (see Friedman 1957). The law of large numbers implies that the cross-sectional dispersion of the distribution of consumption will thus be smaller than that of the distribution of income at any point in time.
- In addition, it is generally argued that incomes are recalled and measured with a greater level of error than is consumption (see Deaton 1997). Greater measurement error also adds to variance (and inequality) in the distribution of current incomes.

A number of figures in this chapter (for example, Figures 6.1 and 6.4) indicate that countries in Latin America do have greater levels of inequality than most countries in other regions that also measure inequality in terms of income rather than consumption expenditures.<sup>22</sup> What about those countries that measure inequality in terms of consumption? Figures 6.11 and 6.12 reveal the existence of a number of countries (represented by empty dots close to the Latin American countries) that have consumption inequality levels close to the Latin American income inequality levels. How would Latin America compare with these countries if its inequality were measured in terms of consumption (or, conversely, the inequality levels of other countries were measured in terms of income)?

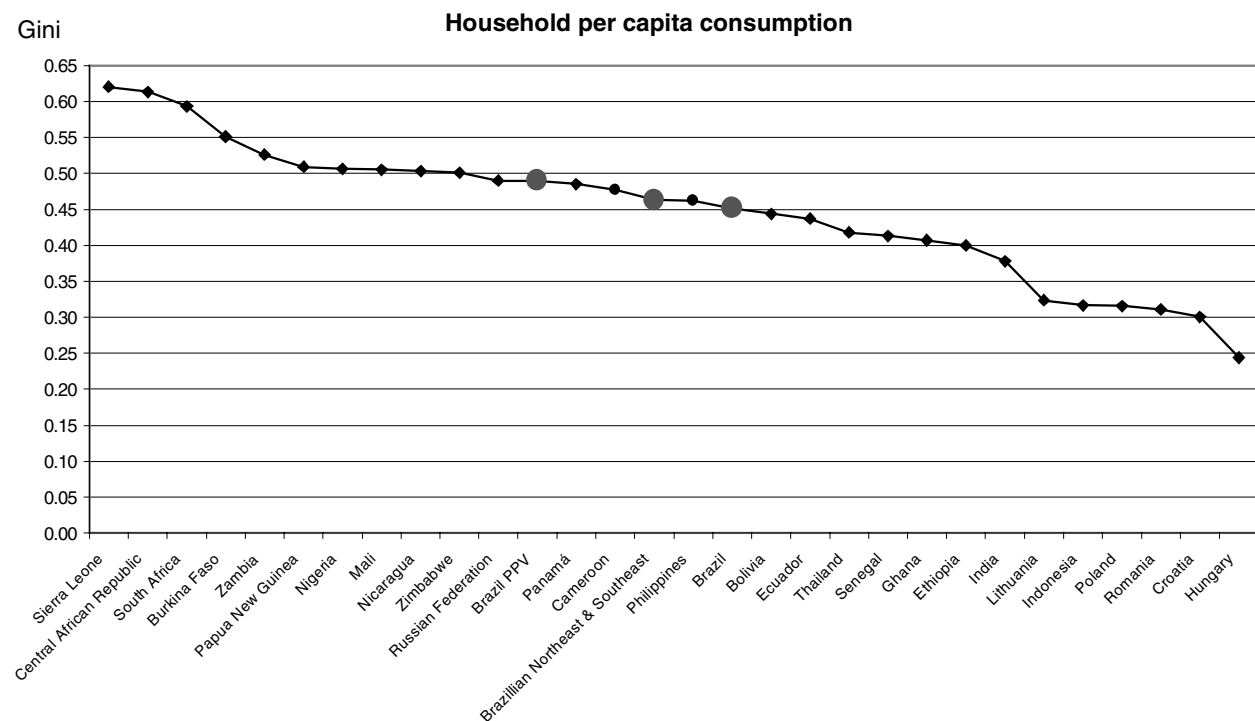
A new study by Elbers, Lanjouw, Lanjouw, and Leite (2003) sheds some initial light on these questions. The study takes advantage of a 1996 pilot household survey conducted in Brazil's northeastern and southeastern regions. That survey, known as the *Pesquisa sobre Padrões de Vida* (PPV), is modeled on the World Bank Living Standard Measurement Survey (LSMS). The PPV is a multimodule integrated survey that collects data on both household consumption and income. Fairly detailed information on consumption expenditures is also collected, making it possible to impute values of consumption streams from items such as housing and food products made at home. While generally viewed as a high-quality survey, the PPV has a small sample size and limited geographic coverage, and is therefore not widely used to study inequality at the national level.

Elbers and others (2003) employ a recently developed methodology to impute consumption from the PPV survey into Brazil's traditional (income-based) PNAD survey.<sup>23</sup> This approach allows the authors to estimate consumption (rather than income) inequality in Brazil, based on the same underlying data from the PNAD household survey. Figure 6.20 indicates that when inequality is measured on the basis of the Gini coefficient of imputed consumption in the PNAD, Brazil is less obviously an outlier in comparison to other countries for which consumption inequality has been measured.

This new Gini coefficient in Brazil as a whole is measured at around 0.45. If attention is given only to the northeastern and southeastern regions, inequality is a bit higher, at 0.46. Inequality in these two areas, measured directly with the PPV household survey data, is a bit higher still, at 0.49. All three of these measures are, however, significantly below those observed in a number of other countries. (It is interesting to note that with the exception of Russia and Nicaragua, most of the countries with high levels of consumption inequality are in Africa.)

The analysis by Elbers and others (2003) suggests that levels of inequality in Brazil may not, in fact, be all that different from what is observed in other countries. Indeed, to the extent that similar concerns can be raised about the quality of income data in other Latin American countries, inequality in the whole region may be lower than has traditionally been assumed.

FIGURE 6.20

**Brazil's consumption inequality in international perspective**

Source: Elbers and others (2003).

A second, related concern arises from the fact that, as indicated above, there is considerable income volatility within Latin America. De Ferranti and others (2000) showed that aggregate volatility of real private consumption in Latin America was almost three times as high as in the industrial economies between 1960 and 1999. During the same period, it was slightly higher than in most countries in Asia, but lower than in Sub-Saharan Africa. This aggregate volatility translates into high levels of risk and uncertainty at a more disaggregated level. In Brazil, for instance, the mean income of the poorest fifth of the population fell by more than 30 percent during the 1982–83 recession, rose by more than 30 percent during the 1984–86 boom, fell by some 12 percent in 1990–91, and then rose again by 15 percent in 1994–1995. Under the standard assumption that consumers are averse to intertemporal volatility in their consumption path (or averse to risk), this sort of rollercoaster clearly reduces social welfare.

Income variations over time are caused by a number of factors. As discussed above, a large self-employed sector is usually characterized by more volatility than is the formal sector, since profits adjust to changes in demand and cost conditions directly but wages are usually more protected. The rate at which firms fold tends to be much higher among small firms in the informal sector than among large firms in the formal sector (see Levenson and Maloney 1998). However, in Latin America real wages have often oscillated quite dramatically as a result of high and often unstable inflation rates combined with imperfect indexation mechanisms. In addition to wages, income may also be affected by changes in employment status. Unemployment risk is of increasing concern in Latin America, particularly for young people and women, as reviewed in De Ferranti and others (2000).

In rural areas, climatic events represent an additional source of risk, beyond those which arise from terms-of-trade and other macroeconomic shocks. A study of household strategies for coping with the downturn in agricultural production in El Salvador in 1997 (Conning, Olinto, and Trigueros 2000) found that landless workers, who tended to rely on agricultural employment prior to the crisis, were hit the worst.

What does the evidence of large income volatility in Latin America (reviewed in more detail in De Ferranti and others 2000) imply in the context of a study of inequality? There are three basic implications, as follows.

- As the volatility of current income increases, so does the gap between inequality in current income and inequality in permanent income. This is one factor behind the large difference between income inequality and consumption inequality measures in Brazil, which was discussed above. In the final analysis, consumption is probably a better indicator of permanent income.
- To the extent that people are risk-averse, volatility is costly in terms of social welfare. On the one hand, long-run interpersonal inequalities may be overestimated by focusing on current incomes. On the other hand, some of this measurement reflects inequality in the incomes of the same people over time, which is detrimental to individual (and thus social) welfare for other reasons that have to do with preferences for lower risk. Although this is less of a problem to the extent that people can smooth out patterns of



consumptions, it is only cost-free if capital markets (including, importantly, insurance markets) are perfect.

- Some of what appears to be intragenerational short-term mobility is simply volatility by a nicer name. Some of the evidence on mobility in Latin America is discussed in Box 6.2, but the point here is that evidence of large short-term disruptions in wage or income distributions is likely to reflect high risk and volatility.

The absence of multiyear panel data in the region means that very little is actually known about intragenerational mobility in Latin America. If and when more becomes known, it is likely that analysts will face trade-offs between welfare gains (arising from lower multiperiod inequality when later incomes are less predictable on the basis of earlier incomes) and welfare losses (arising from aversion of income fluctuation over time). These trade-offs will be the same as those that result from mobility and volatility trends observed in more developed countries. Peter Gottschalk and Enrico Spolaore, for instance, find that “When aversion to income fluctuations and (beyond-the-veil) risk are introduced, those larger costs offset the benefits stemming from reduced multiperiod inequality. Consequently, Germans and Americans end up obtaining similar net benefits from mobility, although for very different reasons.”<sup>24</sup> Recently, this sort of careful thinking about mobility challenged earlier facile assertions that higher inequality in the United States than in Europe was not problematic, since mobility was also higher there.

#### BOX 6.2

##### **Mobility in Latin America: what little is known?**

Since the idea of intragenerational short-term mobility is strongly related to volatility—or at least the two concepts are not easily separable—the literature usually focuses more on intergenerational long-term mobility. The main variables used in this kind of analysis are generally assets or choices related to education and occupation, which can be good proxies for permanent income. With these two variables, Pero (2003) studied the Brazilian case and showed that the country does not have significant educational or occupational intergenerational mobility.

In fact, Brazil has one of the lowest levels of intergenerational educational mobility in the world. According to Behrman, Gaviria, and Szekely (2001), Latin American countries have lower intergenerational educational mobility than developed ones. Furthermore, comparing Brazil and the other Latin American countries, there is evidence that Brazil has an even lower level of mobility (Menezes-Filho 2001). The main reason for this phenomenon is the fact that educational performance in Brazil is associated more with family background—in particular the schooling of parents—than it is in other countries.<sup>25</sup>

The educational levels of individuals and their parents are highly correlated, in the sense that sons of parents with little education would also have little education. According to Barros and others (2001), the schooling of parents appears to be the most important variable to explain educational performance in Brazil. Moreover, the schooling of mothers seems to have a stronger effect than that of fathers on educational performance. Based on the literature, Valeria Pero goes further, concluding that “The influence of parents’ schooling on educational performance is stronger for men than women, for black than nonblack, and for residents in the Northeast than in the Southeast.”<sup>26</sup>

Nevertheless, Bourguignon, Ferreira, and Menendez (2002), as well as others, point to an increase in educational mobility over time. According to this conclusion, an additional year of schooling for parents

means a larger increase in schooling for older cohorts than for younger ones. A complementary analysis (Pero 2003) indicates that it is possible to find evidence that educational mobility is more noticeable among less educated individuals. Thus, indications that educational mobility is rising for young cohorts could be related to the fact that educational policy is closing the gaps related to family background in Brazil.

In keeping with points presented above, the younger generation should be able to achieve better positions in the labor market in comparison to their parents. In other words, an increase in occupational mobility could be expected as each generation becomes more educated. Although the data suggest this pattern—since more than half of sons in Brazil are in different occupational classes from those of their fathers—the occupational mobility rate in that country seems to be very low compared with other countries, most of which are developed (Scalon and Ribeiro 2001).

In some sense, the occupational mobility rate can be considered a good indicator of development. According to Valeria Pero, mobility can result from “economic growth and its impacts on job creation and on sectoral and occupational composition and demographic aspects” and be a consequence of “distribution of opportunities, which the society builds mobility channels to match people efficiently in the social structure in fair system.”<sup>27</sup>

This perspective is corroborated by analyses of different Brazilian states, since there is greater mobility in more developed areas. The literature concerned with educational and occupational mobility in Brazil indicates that during the 1970s, mobility was the result of industrialization and urbanization processes. On the other hand, this does not appear to be true with regard to the distribution of opportunities. Silva and Roditti (1988)—using a log-linear model to test the hypothesis of constant circular or relative mobility patterns over time—argue that the distribution of opportunities have not changed significantly. However, Scalon and Ribeiro (2001) assert that there is a trend toward a more even distribution of the achievement of social positions, even though Brazilian society is rigid in comparison to other countries.

In conclusion, Pero (2003) finds that occupational mobility increased in Brazil between 1973 and 1996. Pero also suggests that other channels of mobility were more important factors in determining position in the social structure than occupation or class inheritance. The Brazilian data also indicates that mobility currently tends to be more related to positional changes than to creation of new positions.

## 6.7. Conclusions

Drawing on a schematic representation of the determinants of household incomes, this chapter considered Latin America’s position in the world in terms of six broad groups of factors: (1) the distribution of the assets that underlie income generation; (2) the structure of occupation and employment across the labor force and the labor market institutions that influence them; (3) the structure of remuneration in the labor market and, in particular, returns to education; (4) patterns of household formation and composition; (5) the level and incidence of taxes and public spending; and (6) measurement-related issues.

This discussion was framed in terms of the correlation between indicators pertaining to each of the first five areas and income-based Gini coefficients, and complemented by two specific country comparisons of disaggregated income distributions: Brazil and the United States, and Chile and Italy. These two comparisons are clearly not representative of Latin America as a

whole, but interestingly the information that they provide resonated well with the patterns emerging from correlations across countries.

Cross-country diagrams provided illustrations of joint distributions, or patterns of correlation. These cannot be interpreted in causal terms, since in general both variables are determined jointly through economic and political processes. An additional caveat is that the correlations presented were all pair-wise, and hence did not control for other attributes. Multivariate regressions on the cross-section were run, but in addition to the usual problems of data comparability and interpretation often ascribed to them, this analysis suffered from the fact that two of the variables that were most closely correlated with income inequality (namely the Mincer and the marital sorting coefficients) were only available for a nonrandom sample of 33 countries. The results of these regressions were therefore so problematic that they were left unreported.

The balance of the evidence presented—whether from the international correlations or from the more detailed comparison between Brazil and the United States—suggests that four factors are jointly responsible for Latin America’s high income inequality. These are: (1) a moderately unequal distribution of educational endowments; (2) the prevalence of high rates of return to education in the labor market, which may operate through specific institutions; (3) household formation patterns with high levels of marital sorting and a large, negative correlation between the number of children and household income per capita; and (4) the role of high but badly targeted public spending. In addition to these four key factors, it was also found that some of Latin America’s excess inequality may be illusory and result from comparison biases in the way that inequality is measured in the region, compared to some other regions.

Strikingly, there is apparently no single culprit that could be blamed for Latin America’s inequality. It is the interaction among all four factors that reinforces each one’s individual role and generates the final outcome. This is particularly clear in the case of the distributions of years of schooling, which are not extremely unequal by developing country standards. It is only when these distributions interact with unusually high returns on education (particularly post-secondary education) and with higher than average correlation coefficients between spouses that they lead to high earnings—and income—inequalities.

Finally, both the cross-country correlations and the Brazil-United States comparison also pointed to the role of the regressive incidence of public finance in failing to reduce—and indeed in some cases in exacerbating—inequality in the secondary distribution of income. (The magnitude of this phenomenon and the areas in which it is most pronounced are discussed in Chapter 4.) The general picture that arises is therefore consistent with a view of the world in which wealth and educational inequalities are self-perpetuating, often through decisions taken within political systems. The pattern of taxation and public expenditure is not exogenously determined in a social and political vacuum. It is also likely to be influenced by the distributions of education, income, and political power. With this in mind, the next chapter turns to a closer investigation of the role of political processes in shaping inequality in Latin America.

## Notes

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<sup>1</sup> Since data for Mincer coefficients and marital sorting coefficients (see below) are only available in comparable form for 33 countries, and some of these have no reliable Gini coefficients, the best cross-country regression model would have had 19 degrees of freedom. We did run these regressions, and found almost no significant partial correlations. Given the variety of omitted variable, simultaneity, and attenuation biases from which the specification might have suffered, we were unable to conclude much from those results, and present the bivariate correlations merely as a descriptive tool.

<sup>2</sup> In all cases, the Gini coefficient used was for the latest available year in the respective database.

<sup>3</sup> This is clearly a relative statement. Income variables collected from different survey instruments across countries are not strictly comparable either. However, they are generally held to be more closely comparable among themselves than in relation to consumption expenditure variables, given that sources of measurement errors are quite different across the two concepts and agents tend to choose consumption streams that are intertemporally smoother than income streams.

<sup>4</sup> This is the case particularly because quality dispersion in Mexico, the other Latin American country in the sample, was rather average in relation to the OECD sample.

<sup>5</sup> The study also found that, even when controlling for socioeconomic status, black students performed worse than did nonblack students (see also Chapter 3). In addition, even after controlling for a number of attributes related to family and education, students in private schools significantly outperformed those in the public school system. See Albernaz, Ferreira, and Franco (2002).

<sup>6</sup> It should be noted, however, that both this greater dispersion in Latin American countries and the low correlation coefficients might be the consequence of large measurement error in the unemployment variable, which in turn could result from the fact that statistical agencies and labor ministries in different countries define and collect data on unemployment rates in widely disparate ways.

<sup>7</sup> The pooled sample is the only relevant one in Figure 6.7, since there is only one country in the income-only sample that is not in Latin America: the Slovak Republic.

<sup>8</sup> The category of “unpaid” workers may simply reflect a misreporting of income, particularly if the worker is a relative of the “employer.” Most unpaid workers are the spouses of a firm owner. In Mexico, for example, 10 percent of married women are unpaid workers, compared to the members of almost no other family group (Cunningham 2001). With this in mind, unpaid workers may actually receive their income “in-kind” if the firm owner shares the income throughout a household.

<sup>9</sup> The comparison of these two groups is difficult since it is nearly impossible to quantify the value of the social security benefits that formal sector workers will receive, the value of “being one’s own boss,” or the value of low job security.

<sup>10</sup> This difference also implies that standard wage regressions will have less explanatory power in the self-employment sector, as found by Rees and Shah (1986) and Borjas and Broners (1989). In fact, Rees and Shah found that in the United Kingdom there is no significant relationship between self-employed earnings and human capital variables.

<sup>11</sup> If the level of self-employment in Latin American countries was similar to that encountered in most OECD countries (at about 10 percent versus an average of more than 30 percent in the countries included in Table 6.2), the

within-group component of the inequality indices would be much lower because within group inequality is lower among salaried workers. As a result, the inequality indices for Latin America would also be lower.

<sup>12</sup> See Cunningham and Santamaría (2003).

<sup>13</sup> See Heckman and Pagés-Serra (2000).

<sup>14</sup> This equation can, of course, be augmented to allow for other determinants of earnings in segmented markets (such as sector or region of activity) or where there is discrimination (such as that related to race and gender).

<sup>15</sup> Note that the impact of adding the educational effects to the price effects is much larger in the Brazil-United States case than in the Chile-Italy case. This arises from the fact that the Chilean distribution of years of schooling is much closer to that of Italy than the Brazilian distribution is to that of the United States.

<sup>16</sup> Wood 1997, p. 49.

<sup>17</sup> See Bourguignon and Verdier (2000) for a model where high inequality slows down educational expansion through a political channel.

<sup>18</sup> As one would expect, this is not clear for every country. The pattern of wage differentials in Brazil during 1988–1995, for instance, is quite consistent with a standard Stolper-Samuelson interpretation. See Gonzaga and others (2002).

<sup>19</sup> See Blau and Kahn (1996) and DiNardo, Fortin, and Lemieux (1996) for discussions on labor market institutions in developed countries.

<sup>20</sup> See Cunningham and Santamaría (2003).

<sup>21</sup> The  $p$ -values were 0.000 in all four cases.

<sup>22</sup> Note, however, that even income data are collected very differently by different statistical agencies, so that comparisons across countries are not strictly feasible even within this subset. Income-related questionnaires differ considerably between the Latin American tradition and, for example, the Thai Socioeconomic Survey.

<sup>23</sup> See Chapter 2 and Table A1.1 in the Statistical Appendix for more details on the PNAD survey.

<sup>24</sup> Gottschalk and Spolaore 2002, p. 193.

<sup>25</sup> Contrary to common sense, variables such as the training of teachers and infrastructure (for example, books, computers, and night courses) are not that important in explaining educational performance. The key point is that although these variables have a positive effect, they count just for a small part of the level of education as a whole.

<sup>26</sup> Pero 2003, p.

<sup>27</sup> Pero 2003, p.