4

Inequality of Economic Opportunity in Seven Latin American Countries

This chapter uses a "top-down" approach that decomposes total outcome inequality into two components, one resulting from circumstances beyond the control of the individual, and a residual component that captures rewards to effort as well as luck. The first component can be presented as an indicator of the level of inequality of opportunity, a measure of the *opportunity share of overall inequality*. This is a "consequential" approach, in which inequality of opportunity is defined by the importance of unequal outcomes across groups defined by circumstances. This decomposition is applied to income, consumption, and labor earnings. Chapter 5 uses the same methodology to investigate educational achievement.

Measuring Inequality of Economic Opportunity

To measure inequality of opportunity for a certain outcome, total inequality in the outcome can be decomposed into two parts: one resulting from circumstances beyond individual control and a second part resulting from unequal individual effort and luck.[1] Unequal outcomes resulting from circumstances are generally considered socially unacceptable or, at the very least, undesirable. This chapter reports the results of this decomposition of unequal outcomes for three different indicators of economic welfare: labor earnings, household income per capita, and household consumption expenditure per capita. The rationale for using three variables is to capture the differentiated impacts they have on household welfare and, thereby, gain a more complete understanding of inequality of opportunity.[2]

Methodology

The approach is conceptually simple. First, six variables related to circumstances exogenous to the individual were identified from the most comprehensive data sets available: gender, race or ethnicity, birthplace, the educational attainment of the mother, the educational attainment of the father, and the main occupation of the father. These variables are discussed in more detail below. Then the sample was partitioned (in each country) into groups or "cells," such that all individuals in any given cell have exactly the same combination of circumstances. The resulting subgroups are known in the literature as "types." These cells are then compared with one another. The difference in outcomes between cells can be attributed to inequality of opportunity, while the differences within cells can be considered the result of effort or luck.

Next, an inequality measure was chosen that satisfied two properties:

- It had to be *decomposable*, in the sense that the value of the index for some population is exactly equal to the sum of the value of the index across types (that is, computed over group means) and the (appropriately aggregated) value of the index within all types.
- It had to be *path independent,* in the sense that the decomposition must yield the same result whether the direct or the residual approaches discussed above were used. In other words, the decomposition is invariant on whether within-group inequality is eliminated first and the between-group component computed second, or the reverse.

There is a single index that satisfies both of these requirements: the mean log deviation, or Theil-L index.[3] Because this measure happens to be a member of the generalized entropy class of measures, when its parameter goes to zero, it is also known as E(0). The decomposition can change for other generalized entropy inequality measures that are path-*dependent*, but the discussion in this chapter is confined to E(0).

Caveats

Two potential caveats with estimation should be mentioned. First, finely partitioning the sample into many cells can lead to sample-size restrictions common to most nonparametric methods. Even being parsimonious in subdividing the sample by parental education or occupation, or birthplace, the partition still results in 216 cells. This leads to a nontrivial number of cells with a small number of observations, leading to large sampling variances in mean estimation. This can create an upward bias in the estimate of between-group inequality and decrease precision. To address this problem, the nonparametric approach was complemented with a parametric

estimation procedure proposed by Bourguignon, Ferreira, and Menéndez (2007). Both sets of results are reported here. The main conclusion is that with the exception of Mexico, the parametric and nonparametric estimation results are very close, which reinforces confidence in the estimates.

The second caveat is that although the six variables employed in this chapter are a richer set of circumstances than those used in any previous study known to the authors, it is still possible to think of other relevant variables that are not observed. A "true" measure of inequality of opportunity would require using all relevant circumstance variables to partition the population into types. But this is, of course, extremely unlikely to be feasible in practice for any conceivable data set, and it is certainly impossible for the seven countries examined here. The empirical estimates defined in this chapter—regardless of whether parametric—should therefore be interpreted as lower-bound estimates of inequality of opportunity; including any additional circumstances would cause each cell to be further subdivided. This cannot lower the between-group inequality share and, unless the additional element is orthogonal to the measure of advantage, will raise it. Similarly, in the parametric case, adding another independent circumstance variable to the right-hand side of the reduced-form regression must reduce the variance of the residual and increase the variance of observed circumstances.[4]

A specific—and controversial—example of a circumstance omitted from the set of variables is innate talent. To the extent that genetic or otherwise predetermined differences in skill, strength, and physical and intellectual capacity are correlated with observed circumstance variables (such as family background), these differences are captured by our lower-bound measure of inequality of opportunity. But most variance in innate talent is likely to be uncorrelated with observed characteristics such as parental education, race, or gender and hence is not captured by this decomposition. While views differ on whether talent should be treated as a circumstance, as noted above, the resulting decomposition without including it can be considered a lower-bound estimate of inequality of opportunity related to circumstances. Hence, whichever side of the debate one is on, it can be assumed that including talent as a variable would increase the resulting inequality of opportunity.

Uses for Policy

The decomposition generates two different kinds of output that may be useful to policy makers. The first, of course, is simply a lower-bound measure of the degree of inequality of opportunity in a society. It is not a perfect measure—it provides an assessment of the inequality associated with a set of only six observed circumstances. But it is informative, and can be presented either as an indicator of the *level of inequality of opportunity*, or as a measure of the *opportunity share of overall inequality*. Both

numbers are discussed below for the seven countries for which data were available. If estimated repeatedly over time, these indicators can provide governments and other social actors with a useful diagnostic of the way in which the distribution of opportunity is evolving in their countries.

This chapter also reports on a second output from the decomposition, which may be even more useful for policy making. Because the decomposition relies on the levels of mean advantage (mean income, for example) for each group, it is possible to rank all types (or circumstance groups), from least to most advantaged—an opportunity profile of the population. Such a profile can be used to focus on the bottom of the distribution of advantage, but because types vary widely in population share, comparing the single most-disadvantaged type across countries is less than ideal. Instead, the chapter reports advantage levels for the bottom types accounting for 10 percent of the population in each country. This minimum level of advantage is informative because, like an income-based poverty measure, it contains information on both the level and distribution of advantage. It is, in fact, the concept by which Roemer (2006) suggested that the rate of economic development should be measured.[5] Policy makers can learn much about who has the fewest opportunities in their countries merely by looking at the circumstance types included. The set of circumstances for groups with the fewest opportunities constitutes an opportunity-deprivation profile that identifies those groups least able to share in national prosperity, as defined by predetermined characteristics they inherited through no fault of their own.

The Data

This study was based on data from seven nationally representative household surveys: the Brazilian Pesquisa Nacional por Amostra de Domicílios (PNAD) 1996; the Colombian Encuesta de Calidad de Vida (ECV) 2003; the Ecuadorian Encuesta Condiciones de Vida (ECV) 2006; the Guatemalan Encuesta Nacional sobre Condiciones de Vida (ENCOVI) 2000; the Mexican Encuesta Nacional sobre Niveles de Vida de los Hogares (MxFLS) 2002; the Panamanian Encuesta de Niveles de Vida (ENV) 2003; and the Peruvian Encuesta Nacional de Hogares (ENAHO) 2001.[6]

These surveys afford the most internationally comparable set of indicators on which to base the estimates of inequality of opportunity for the region. Together, these surveys are representative of more than half of the Latin American population. In all countries, the sample is restricted to individuals ages 30 to 49, which encompasses the cohorts with the highest proportion of employed persons.[7] Sample sizes for each survey, both before and after excluding observations with missing data, are reported in table 4.1.

The surveys contain information on a common set of circumstances: (i) three variables related to family background—father's and mother's

Table 4.1 Survey Characteristics

Survey information	*Brazil*	*Colombia*	*Ecuador*	*Guatemala*	*Mexico*	*Panama*	*Peru*
Survey and year	PNAD 1996	ECV 2003	ECV 2006	ENCOVI 2000	MxFLS 2002	ENV 2003	ENAHO 2001
Sample selection criteria	age 30–49 and head or spouse	age 30–49	age 30–49	age 30–49	age 30–49	age 30–49	age 30–49 and head or spouse
Original sample size	85,692	22,517	12,650	6,956	8,631	6,339	13,947
Observations with both earnings and circumstance data	50,560	16,575	9,671	4,661	4,478	4,127	9,830
Share of original sample	0.590	0.736	0.765	0.670	0.519	0.644	0.704
Observations with income and/or consumption and circumstance data	71,688	22,436	12,643	6,865	6,726	5,653	13,649
Share of original sample	0.837	0.996	0.999	0.984	0.779	0.889	0.979

Source: Authors' compilation.

education and father's occupation during respondent's childhood; (ii) ethnicity (or race); and (iii) birthplace (or type of area of birth). The only exception is that the father's occupation variable is missing for Colombia and Peru. The results in this chapter explicitly note the implications of this exception by comparing the country rankings with those in an alternative set of decompositions that ignore the father's occupation variable for all countries.

Gender is also used as a circumstance variable in the analysis of earnings. Parental education variables are coded into three categories: (i) no education (or unknown); (ii) primary (incomplete or complete, depending on the country), and (iii) complete primary or secondary (or higher). Father's occupation is recoded into two categories: agricultural workers and others. Ethnicity (coded in two categories) is captured either by self-reported ethnicity or by the ability to speak an indigenous language. Birthplace is coded in three broad regions (one being generally the capital area), but is captured by the type of area (urban or rural) for Panama.[8]

The number of categories for each circumstance variable was reduced to no more than three to restrict the number of circumstance-group cells with no or very few observations. This step is important because the nonparametric analysis relies on the quality of the estimates for conditional means in these cells, and their sampling variation may be very high for cells containing few observations. As indicated earlier, that may artificially increase the estimated between-group inequality, thus inducing an overestimation of inequality of opportunity.

Turning to the advantage variables, labor earnings are measured on an individual basis as monthly earnings from all occupations, including the monetary value of various in-kind payments. There are, however, some methodological differences across surveys that may affect comparability. The main example is differences in the reference period for the earnings of self-employed workers, which is the month in Brazil, Colombia, and Peru; a period that depends on the frequency of payments in Panama; and the year elsewhere.

Family income and consumption are measured using per capita household income (from all sources) and per capita aggregate household consumption, respectively. Aggregates for family income (generally constructed by survey providers) are computed as the sum of all household members' individual incomes, and include all labor earnings as well as any other income from assets, pensions, and transfers. The reference period for other incomes again differs somewhat across surveys. Incomes from family (agricultural or nonagricultural) businesses are included.

Consumption expenditure data are available for six of the seven countries; Brazil is the exception. The reference period is the year, but some expenditure is measured on a weekly or monthly basis. Consumption aggregates do differ across surveys in some respects. In particular, income and consumption are adjusted for differences in the local cost of living

in most Living Standard Measurement Study (LSMS) data sets (Ecuador, Guatemala, and Panama, but not Colombia) and in the Peruvian ENAHO. LSMS surveys (Colombia, Ecuador, Guatemala, and Panama) and the Peruvian ENAHO also include imputed rents for owner-occupied housing in both consumption and income aggregates, whereas the MxFLS and the PNAD do not.

Inequality of Opportunity for Earnings

Latin America is well known for having one of the highest levels of earnings inequality in the world, with mean log deviations (Theil indexes in parentheses) ranging from the lowest level of 0.572 (0.485) in Panama to the most unequal score of 0.786 (0.790) in Guatemala.[9] Of this inequality, the data and the parametric and nonparametric techniques described above find that between one-fifth and one-third can be explained by the unequal opportunity associated with six circumstance characteristics: gender, ethnicity, parental education levels, father's occupation, and birthplace (figure 4.1).[10]

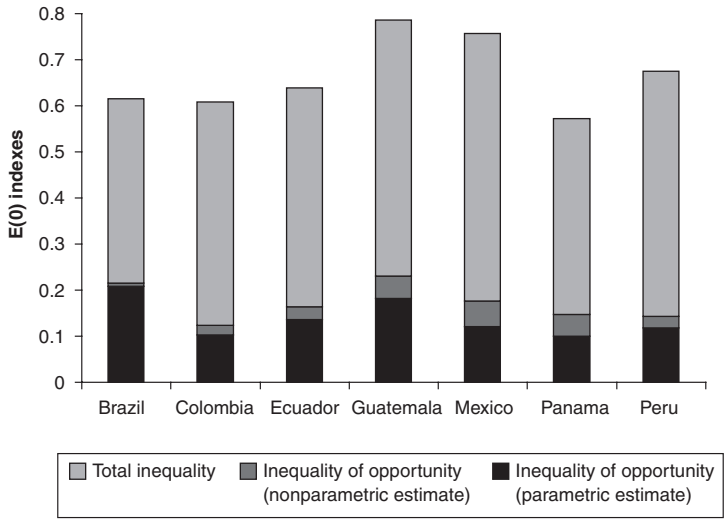
This decomposition of earnings inequality generates two closely related measures of inequality of opportunity. One is simply the level of inequality attributable to circumstances—that is, the height of the bottom (parametric) or bottom plus middle (nonparametric) portions of the bars in figure 4.1. The nonparametric level estimates for earnings range from a mean log deviation of 0.123 in Colombia to 0.230 in Guatemala.[11]

Another measure is the share of the total area accounted for by the black and dark gray areas—earnings inequality that is accounted for by these six circumstances. For this sample of countries, the share measure of (nonparametrically estimated) inequality of opportunity is Brazil (35 percent), Guatemala (29 percent), Ecuador (26 percent), Panama (25 percent), Mexico (23 percent), Peru (21 percent), and Colombia (20 percent). The differences between Guatemala, Mexico, Ecuador, and Panama are statistically insignificant.[12]

Opportunity shares are systematically, but not substantially, lower for the parametric estimates in all countries. The difference is only 3 percent (and statistically insignificant) for Brazil. In the other countries the differences are larger but either borderline significant or insignificant at the 5 percent confidence level. This is consistent with the caveat (discussed above) that the large sampling variance within cells with few observations may cause an upward bias in the nonparametric estimates.[13]

Of interest is the fact that a ranking of the countries by the level of inequality of opportunity is strikingly different from the overall earnings-inequality ranking. In particular, Brazil, which has only the fifth highest earnings inequality, has the second highest level of inequality of opportunity and by far the largest opportunity share of that inequality (refer to table 4.5).

Figure 4.1 Decomposing Total Inequality for Individual Earnings



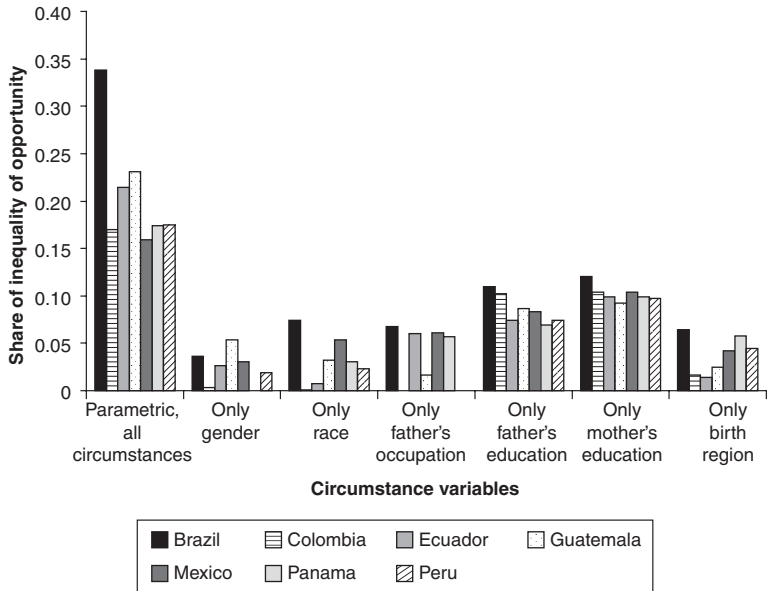
Sources: Authors' computations.

Such rerankings suggest that inequality of opportunity and inequality of outcomes really do measure different aspects of distribution in a society.

Estimates for the partial share of earnings inequality accounted for by each circumstance variable indicate that family background variables are systematically most important (figure 4.2).[14] This is particularly true for mother's education, which is associated with between 9 percent and 12 percent of total inequality. The relative shares of inequality associated with ethnicity and birthplace vary between countries, with ethnicity being more important in Mexico and Brazil (explaining between 5 percent and 7 percent of inequality) and the birthplace having more effect in Brazil, Mexico, Panama, and Peru (explaining 4–6 percent of inequality). Inequality of opportunity related to gender ranges from a low of 0–1 percent in Colombia and Panama to a high of 5 percent in Guatemala. In Brazil, Ecuador, and Mexico, gender accounts for 3–4 percent of overall inequality.

As elsewhere in this book, this section compares measures of inequality of opportunity across countries for a single time. But what about the dynamics? Is inequality of opportunity stable or volatile? Does it move in parallel with overall outcome inequality, or independently? While repeated cross-sections with the required information for Latin America are hard to find, one study, Cogneau and Gignoux (Forthcoming), used four special

Figure 4.2 Overall Inequality of Opportunity in Earnings and Shares of Individual Circumstance Variables



Sources: Authors' computations.

waves of a Brazilian household survey over two decades to ask precisely these questions (box 4.1).

Inequality of Opportunity for Household Income and Consumption

Important as earnings may be as an indicator of economic advantage, any discussion of economic opportunity must also consider the distribution of household welfare, as measured by income or consumption, or both, per capita. Overall household income inequality is generally very high in this sample of countries (table 4.2). In all six countries for which consumption data are available, consumption inequality is considerably lower than either income or earnings inequality.[15] This is consistent with the widely accepted view that income and earnings are not as accurately measured as consumption expenditures (particularly in standard income surveys of self-employed farmers or informal sector workers), and that consumption is likely to be closer than current income to permanent income (provided households have access to some consumption-smoothing mechanisms).[16]

Box 4.1 Inequality of Opportunity Dynamics: Earnings in Brazil, 1976–96

How does inequality of opportunity vary over time, as structural and macroeconomic factors change? Do inequality of opportunity and outcome inequality follow parallel or divergent trends? What effect does an expansion in schooling have on changes in economic opportunities? These were questions addressed by Cogneau and Gignoux (Forthcoming) in their study of the evolution of inequality of opportunity in the distribution of earnings in Brazil between 1976 and 1996.

In 1976, 1982, 1988, and 1996, in addition to the regular information on birthplace and ethnicity, the Brazilian National Household Surveys (PNAD) also asked questions on family background. Using these samples (restricted to employed men between 40 and 49 years old), Cogneau and Gignoux decomposed total earnings inequality into a share attributable to four predetermined circumstances and a residual component. These decompositions are very similar to those presented in this book.

Overall, levels of inequality and inequality of opportunity in earnings displayed a similar historical path, including a peak in the late 1980s at the apex of hyperinflation and a subsequent decline (see table below). Nevertheless, overall inequality rose slightly from the beginning to the

Inequality of opportunity in earnings over two decades in Brazil

	1976		*1982*	
Overall inequality				
Gini index	0.570	(0.009)	0.585*	(0.004)
Theil index	0.625	(0.027)	0.687	(0.017)
Inequality of opportunity				
Theil index with 9 groups	0.212	(0.021)	0.222	(0.009)
Share of overall inequality	0.339		0.323	
Theil index with 128 groups	0.254	(0.023)		
Share of overall inequality	0.406			

Source: PNAD surveys, *Instituto Brasileiro de Geografica e Estatistica.*

Note: Inequality of opportunity indexes calculated for men ages 40 to 49, based on either 9 or 128 groups of social origins constructed from four variables regarding the father's level of education (four categories), the father's occupation (four), birthplace (four), and color (two). The 128-group categorization is not available in 1982 because no information on birthplace was collected.

* Indicates significance at 5 percent compared with the previous year; bootstrapped standard errors, obtained using 100 replications, in parentheses.

end of the period, while inequality of opportunity posted a slight drop. Even though indexes of inequality of opportunity at the end of the period (1996) are not significantly different from the indexes at the beginning of the period (1976), they decline slightly, and significantly, from 1982 and 1988 to 1996. Because overall earnings inequality rose over the period, even though the levels of inequality of opportunity were largely stable, the inequality-of-opportunity share in total inequality fell from the mid-1970s to the mid-1990s.

Unequal access to education was one of the main channels explaining the effects of circumstances such as family background on labor market outcomes. Moreover, educational policies may be the main public intervention for fostering equal opportunity. Cogneau and Gignoux (Forthcoming) found that educational inequality increased for the older cohorts (the ones going to school in the 1940s and 1950s) and then diminished for the younger ones (at school in the 1960s and 1970s), and that these educational changes contributed to the subsequent increase (in the 1980s) and decrease (1990s) of inequality in economic opportunity. Moreover, changes in educational intergenerational mobility were limited over the period and did not significantly affect earnings inequality.

1988		*1996*	
0.623*	(0.005)	0.599*	(0.005)
0.772*	(0.018)	0.719	(0.028)
0.239	(0.013)	0.173*	(0.008)
0.310		0.241	
0.280	(0.012)	0.213*	(0.009)
0.363		0.296	

A decomposition parallel to the one undertaken for earnings allows an estimation of the share of inequality in household per capita income (figure 4.3) and consumption (figure 4.4). Gender is now excluded from the set of circumstance variables because these indicators (income and consumption) are defined at the household level, and the gender of the household head is endogenous (and thus not a circumstance). Endogeneity arises both because in some countries reported headship is an interviewee choice and because household formation (for example, whether one marries) is endogenous. Thus, five circumstances are used (race, father's and mother's education, father's occupation, and birthplace) as they pertain to the reported head of the household.[17] Income results are reported for all six countries, but consumption data was not available for Brazil.

The nonparametric estimates of inequality of opportunity levels for household incomes range from 0.121 in Ecuador to 0.231 in Guatemala. The opportunity shares of inequality range from 21 percent in Mexico to 37 percent in Guatemala. Although the levels are broadly similar, the shares tend to be higher for incomes than for the corresponding estimates for earnings in most countries.[18] This tendency could be because, in addition to earnings capacity, circumstances may affect three other important household income determinants: capital incomes or transfers; the choice of one's partner; and the composition of the rest of the household (including, most important, the number of children).

Parametric and nonparametric estimates are generally closer for both income and consumption than they are for earnings, and the differences are

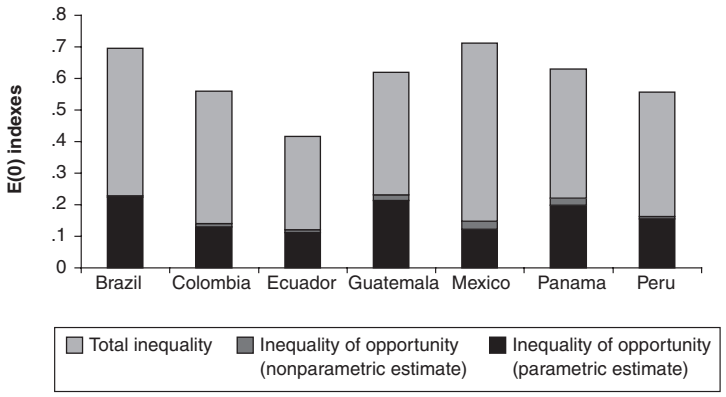
Table 4.2 Gini Coefficient and Mean Log Deviations for the Distributions of Income and Consumption per Capita

Inequality measures	*Brazil*	*Colombia*	*Ecuador*	*Guatemala*	*Mexico*	*Panama*	*Peru*
Income per capita							
Gini coefficient	0.6	0.555	0.487	0.577	0.587	0.566	0.55
Mean log deviation	0.695	0.559	0.417	0.619	0.711	0.63	0.557
Consumption per capita							
Gini coefficient	—	0.506	0.455	0.49	0.593	0.459	0.45
Mean log deviation	—	0.449	0.354	0.409	0.635	0.381	0.351

Source: Authors' calculations based on samples of individuals ages 30 to 49 from the following household surveys: Brazilian PNAD 1996, Colombian ECV 2003, Ecuadorian ECV 2006, Guatemalan ENCOVI 2000, Mexican MxFLS 2002, Panamanian ENV 2003, and Peruvian ENAHO 2001.

Note: — = Not available.

Figure 4.3 Decomposing Total Inequality: Household per Capita Income



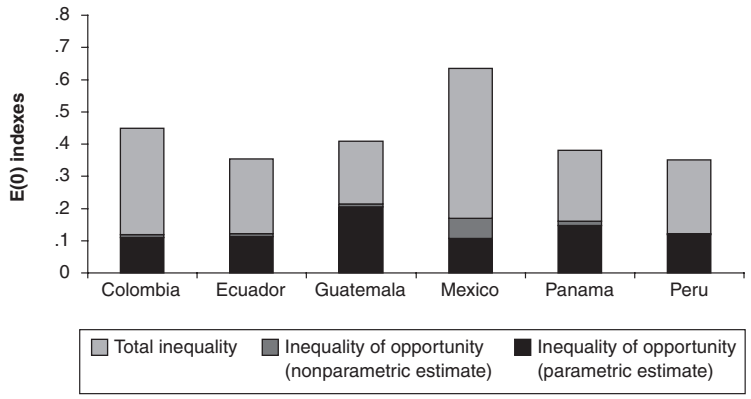
Sources: Authors' computations.

seldom statistically significant.[19] This convergence likely reflects, once again, the fact that the proportion of cells with very few observations is lower for the income and consumption samples than for the earnings samples.

While overall inequality is lower in consumption distribution than in income distribution, the opposite is true for estimates of inequality of opportunity. The opportunity shares of inequality are systematically higher for all six countries (20–30 percent), regardless of estimate method (figure 4.4). This supports the hypothesis that earnings and income-based measures of inequality of opportunity tend to underestimate permanent income inequality of opportunity.[20] The nonparametric estimates of inequality of opportunity for consumption expenditures are 27 percent in Colombia and Mexico, 34 percent in Ecuador, 35 percent in Peru, 42 percent in Panama, and 52 percent in Guatemala.

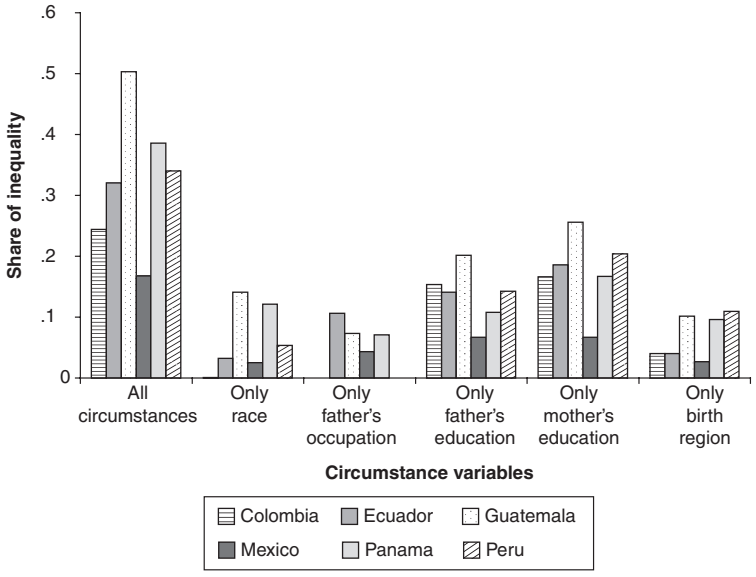
Turning to the analysis of individual circumstance variables, parental background characteristics are once again associated with the largest share of inequality of opportunity (figure 4.5). The share of inequality related to mother's education is as high as 25 percent in Guatemala and higher than 15 percent in most countries. The share of inequality associated with the other variables is usually higher than for earnings, with the same ranking of each circumstance (parental background most important, followed by ethnicity or birthplace). Both ethnicity and birthplace are particularly important in Guatemala and Panama, and birthplace is important in Peru.

Figure 4.4 Decomposing Total Inequality: Household per Capita Consumption



Sources: Authors' computations.

Figure 4.5 Overall Inequality of Opportunity and Inequality by Circumstance in Consumption per Capita



Sources: Authors' computations.

The Opportunity Profile: Identifying the Most-Disadvantaged Groups

The analysis has so far focused on measures of overall inequality of opportunity in each country. But the partition of the population into types used for the decompositions reported above can also be used to identify individually the groups that are the most disadvantaged in the distribution of opportunity in each society. This section of the chapter seeks to identify the most-disadvantaged groups and the extent of the disadvantages they face. The type's mean outcomes are used as the ranking criterion for the type-specific opportunity sets.[21] All types, in each country, are ranked in increasing order of mean outcome, and the most-disadvantaged groups are identified as the bottom *m* groups of that country's opportunity profile, where the population share over *m* sums to 10 percent.

The analysis thus targeted the groups with combinations of circumstance types that were worst off in per capita consumption (per capita income in the case of Brazil, where consumption information was not available), that cumulatively totaled the most-disadvantaged 10 percent of the population (table 4.3). The number of disadvantaged groups varies across countries: 5 in Guatemala and Peru, 6 in Brazil, 16 in Ecuador, 20 in Mexico, and 25 in Panama. Some represent large populations—more than 2 million for two groups in Brazil—while others represent only a few hundred individuals. For instance, the group of black and mixed-raced individuals, born in the North or Northeast regions, whose fathers were uneducated agricultural workers and whose mothers did not go to school, form the most-disadvantaged type and accounts for 6.8 percent of the population in Brazil. This table thus provides a profile of opportunity deprivation, highlighting those groups of individuals most affected by circumstance in their economic outcomes.

This is not the same as a poverty profile because it does not rank individuals or households by their income levels, but only by types. Individuals from very disadvantaged backgrounds who have escaped poverty through their own efforts or luck are included. Individuals from more advantaged backgrounds, who did poorly either through bad luck or poor performance, are not. This is not, therefore, the sort of profile to be used for targeting remedial transfers intended to alleviate the hardships of those with very low consumption levels. It is, instead, the sort of profile to be used to identify broad groups, defined by economically exogenous characteristics that are, on average, not sharing in social prosperity. Both profiles are useful and informative, but serve different purposes.[22]

A number of common trends are salient. First, members of ethnic minorities form the vast majority of the population in these disadvantaged groups. In two out of seven countries, these groups are composed exclusively of members of these minorities: black and mixed race in Brazil, and native

Table 4.3 Characteristics of the Most Economically Disadvantaged Groups

Characteristic	*Brazil*	*Colombia*	*Ecuador*	*Guatemala*	*Mexico*	*Panama*	*Peru*
Member of ethnic minority	100	33	61	100	65	76	100
Father's occupation in agriculture	88	—	93	100	94	84	—
Father's occupation not in agriculture	12	—	7	0	6	16	—
Father without education	89	77	87	99	72	58	100
Father's education primary	10	23	11	0	16	37	0
Father's education secondary	0	0	2	0	11	5	0
Mother without education	91	96	98	99	94	93	99
Mother's education incomplete or complete primary	9	4	1	0	5	6	0
Mother's education complete primary or secondary	0	0	1	1	1	2	1
Regions with the largest share of most-disadvantaged individuals (and share in percent)	Northeast and north regions (100%)	Peripheral departments (65%)	Coastal and insular regions (51%), highlands and Amazonia regions (48%)	North and northwest departments (99%)	South-central and south regions (68%)	Rural areas (96%)	South and coastal departments (58%), inland departments (42%)

Source: Authors' calculations based on samples of individuals ages 30 to 49 from the following household surveys: Brazilian PNAD 1996, Colombian ECV 2003, Ecuadorian ECV 2006, Guatemalan ENCOVI 2000, Mexican MxFLS 2002, Panamanian ENV 2003, and Peruvian ENAHO 2001.

Note: — = Not available.

speakers of indigenous languages in Guatemala. In four of the five remaining countries, ethnic minorities are still a majority: 76 percent of native speakers of indigenous languages in Panama and 56 percent in Peru; 65 percent of self-reported indigenous ethnicity in Mexico; and 61 percent of self-reported indigenous, black, or mixed-race ethnicity in Ecuador. Colombia is the only country in the sample in which ethnic minorities are not the majority in the most-disadvantaged groups, but even there, the proportion of members of minorities, 15 percent, is still higher than in the total population.

Second, family background is strongly associated with membership in the most-disadvantaged groups. In the five countries for which this information is available, no less than 84 percent of those in the most-disadvantaged groups are daughters and sons of agricultural workers, and this proportion reaches 100 percent in Guatemala. Almost the same holds true for parental education. In six out of seven countries, more than 80 percent of individuals in the most disadvantaged groups are daughters and sons of women who did not go to school—99 percent in Guatemala, 98 percent in Ecuador, 94 percent in Mexico, 93 percent in Panama, 91 percent in Brazil, and 82 percent in Peru. Colombia is once again the exception, with a little more heterogeneity—the proportion is "only" 58 percent. Similar results hold for father's education, although less strongly, in Ecuador, Mexico, Panama, and Peru.

Third, a majority of disadvantaged individuals are often natives of the same geographic regions. In Brazil, all persons included in this profile were born in the northeast or north regions; in Guatemala, 99 percent in a north or northwestern department; in Panama, 97 percent in a rural area (the geographical regions are not identified for this country). Colombia, Ecuador, Mexico, and Peru have more heterogeneity in the geographic origins of individuals in the most-disadvantaged groups: in Mexico, 68 percent were born in the south-central and southern regions and 31 percent in the southern region; in Colombia, 65 percent in one of the country's outlying departments; in Peru, 59 percent in the southern and other coastal departments and 40 percent in the other inland (Sierra and Selva) nonsouthern departments; and in Ecuador, 51 percent in the Costa and Insular regions and 48 percent in the Sierra and Amazonia regions.

These findings suggest that the most-disadvantaged types, from the perspective of equality of opportunity, can be easily identified by a common set of characteristics. In the seven Latin American countries examined here, the most-disadvantaged types tend to be members of ethnic minorities, or to hail from agricultural families with low levels of education, living in poor regions.

A similar exercise offers a portrait of the most-advantaged groups in all seven countries (table 4.4). These are the members of types accounting for 10 percent of the population, starting from the type with highest mean consumption and working down. Almost no members of ethnic minorities belong to the most-advantaged groups, except in Colombia, where members of minorities form 6 percent of these types.[23] There are also

Table 4.4 Characteristics of the Most Economically Advantaged Groups

Characteristic	*Brazil*	*Colombia*	*Ecuador*	*Guatemala*	*Mexico*	*Panama*	*Peru*
Member of ethnic minority	0	4	0	0	1	0	0
Father's occupation in agriculture	3	—	6	8	0	1	1
Father's occupation not in agriculture	97	—	94	92	100	99	99
Father without education	3	0	0	1	0	0	0
Father's education primary	30	12	0	6	0	0	0
Father's education secondary	66	87	100	94	100	100	100
Mother without education	1	0	0	0	8	0	0
Mother's education incomplete or complete primary	35	1	10	20	4	0	0
Mother's education complete primary or secondary	64	99	90	80	88	100	100
Regions with the largest share of most-advantaged individuals (and share in percent)	Southeast, center-west and south (46%), Sao Paulo and federal district (44%)	Central departments (37%), Bogota and islands (32%)	Pichincha and Azuay provinces (44%)	Guatemala city, northeast and El Peten (67%)	Federal district and north (88%)	Cities and intermediate urban centers (99%)	Lima, Callao and Arequipa departments (96%)

Source: Authors' calculations based on samples of individuals ages 30 to 49 from the following household surveys: Brazilian PNAD 1996, Colombian ECV 2003, Ecuadorian ECV 2006, Guatemalan ENCOVI 2000, Mexican MxFLS 2002, Panamanian ENV 2003, and Peruvian ENAHO 2001.

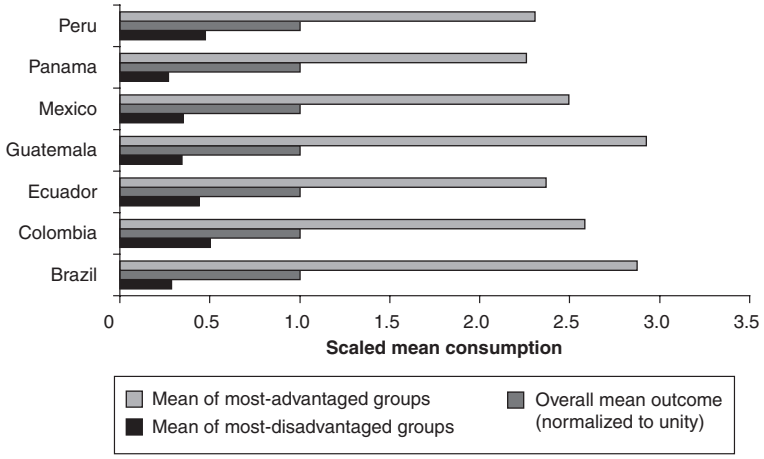
Note: — = Not available.

few children of agricultural workers (8 percent in Guatemala, 6 percent in Ecuador, 3 percent in Brazil, 1 percent in Panama, almost none in the other countries) or of parents with no education (almost no individuals with noneducated mothers in Brazil, Ecuador, Guatemala, and Panama, and less than 10 percent in Colombia, Mexico, and Peru).

The geographic origins of individuals in the most-advantaged groups tend to be more varied than those of individuals in the disadvantaged groups. In general, it appears that good opportunities are not as geographically concentrated as lack of opportunity. Still, a majority among the advantaged were born in the capital city or one of the richer regions: 44 percent from São Paulo and the Distrito Federal in Brazil; 31 percent from Bogotá and 46 percent from the central departments in Colombia; 44 percent from Quito and Cuenca provinces in Ecuador; 67 percent from Guatemala City and northeastern and El Petén departments in Guatemala; 88 percent from the federal district or a northern department in Mexico; 99 percent from an urban center in Panama; and 46 percent from the Lima, Arequipa, or Callao departments in Peru.

Another way to examine relative advantages is to compare the mean levels of consumption of the most-disadvantaged and -advantaged groups as proportions of the national means (figure 4.6).[24]

Figure 4.6 Opportunity Gap: Mean Consumption per Capita in the Most-Disadvantaged and Most-Advantaged Groups, Relative to National Means



Source: Authors' computations.

Note: Mean outcome of 10 percent most-disadvantaged and 10 percent most-advantaged groups, scaled by the overall mean. The partition for Brazil is based on income data because consumption data were not available.

The levels of welfare attained by the 10 percent of the population in the most-disadvantaged groups lie between 27 percent (Panama) and 50 percent (Colombia) of the mean national level of welfare. At the opposite end, the levels of welfare of the 10 percent of the population in the most-advantaged groups lie between 230 percent (Panama and Ecuador) and 290 percent (Brazil and Guatemala) of the national mean level of welfare. The comparison indicates that a larger disadvantage of economic opportunities for the low-opportunities groups is generally associated with a larger advantage for the high-opportunities groups. Nevertheless, this relationship is not systematic: in Panama, the relative disadvantage of the worst-off group is higher than in other countries, whereas the relative advantage of the better-off group is not. The opposite situation is found in Colombia.

Summary

This chapter describes the results of a comparative assessment of inequality of economic opportunity in seven Latin American countries. The analysis was top-down: total inequality in earnings, income, and consumption was decomposed into a share resulting from observed predetermined circumstances—associated with inequality of opportunity—and a second share encompassing effort, talent, and luck. The predetermined circumstances considered were mother's education, father's education, father's occupation, race or ethnicity, and birthplace. In the analysis of labor market earnings, gender was added.

Inequality of economic opportunity was found to account for between one-fifth and one-third of overall earnings inequality, as lower-bound estimates. Inequality of earnings opportunity in the seven Latin American countries considered was highest in Brazil and lowest in Colombia. The ranking for share of inequality of opportunity was quite distinct from the ranking in overall earnings inequality (table 4.5). Inequality of opportunity for household welfare was generally greater than for earnings. When household welfare is measured by household income per capita, lower-bound estimates range from 21 percent in Mexico to 37 percent in Guatemala. When household consumption per capita is used, the share of total inequality is even higher than for income: 27 percent in Colombia and Mexico, 34 percent in Ecuador, 35 percent in Peru, 42 percent in Panama, and 52 percent in Guatemala.[25]

The share for inequality of opportunity of income tended to be higher than for earnings, while estimates for consumption were higher than for income or earnings in every country, and by virtually every method. This finding lends support to the notion that measurement error and transitory components add to the non-circumstance-driven variance in the earnings and income measures. The consumption-based measure might, therefore,

be preferable, if one is interested in inequality of opportunity for long-term welfare, or permanent income.

The rankings depicted in table 4.5, summarizing the main findings described in the chapter, must be interpreted with care for two reasons. First, many differences in rank across countries are not statistically significant. For instance, the differences in shares of inequality of opportunity in earnings between Ecuador and Panama, or between Mexico, Peru, and Colombia, are not significant. Neither are the differences in shares of inequality of opportunity in consumption per capita between Peru and Ecuador, or between Mexico and Colombia. Second, the comparability of earnings, income, and consumption across countries is plagued by discrepancies originating from differences in the welfare aggregate and other aspects of survey methodology.

That being said, it is interesting to note that country rankings for outcome inequality and for inequality of opportunity are never the same. As expected, there is a fairly high rank correlation between outcome inequality and the level of inequality of opportunity in all three measures. When inequality of opportunity is expressed as a share of outcome inequality, however, the correlation is considerably weaker. For per capita income, for instance, Mexico appears to be the most outcome-unequal country, but the least opportunity unequal. Guatemala, which is the most opportunity unequal, has the fourth highest level of outcome inequality. The correlation between outcome rankings and opportunity-inequality rankings is a little higher for earnings, but even there, differences are substantial: Brazil has the fifth-highest level of overall observed earnings inequality, but appears to be the most opportunity unequal.

These low correlations suggest that inequality of opportunity, measured in this way, really picks up something quite different from outcome inequality. There may be a positive correlation between inequality of outcomes and of opportunities, and indeed the mechanisms of intertemporal reproduction of inequality would lead one to expect this.[26] But they are different concepts.

Also reassuring in this regard is the close rank correlation between income and consumption for the measures of inequality of opportunity for household welfare. Among the six countries for which data are available for both concepts, the opportunity share ranking differs only for one pair of countries—whereas Colombia appears to be the least opportunity unequal when consumption is used (below Mexico), the order is reversed for income. Both concepts yield precisely the same ranking over the other four countries: most opportunity unequal is Guatemala, followed by Panama, Peru, and Ecuador.[27] In fact, that reranking vanishes when the father's occupation variable is omitted from the analysis so that, when the set of circumstances is made as comparable as possible for this sample of countries, the share measures of inequality of opportunity yield precisely the same country ranking for income and consumption.

Table 4.5 Inequality of Economic Opportunity: Country Rankings

Indicator	*Brazil*	*Colombia*	*Ecuador*	*Guatemala*	*Mexico*	*Panama*	*Peru*
Earnings							
Overall inequality	0.617	0.608	0.638	0.786	0.756	0.572	0.675
Rank	5	6	4	1	2	7	3
Levels of inequality of opportunity	0.215	0.123	0.164	0.230	0.177	0.140	0.143
Rank	2	7	4	1	3	6	5
Share of inequality of opportunity	0.349	0.203	0.256	0.293	0.234	0.245	0.212
Rank	1	7	4	2	5	3	6
Per capita income							
Overall inequality	0.695	0.559	0.417	0.619	0.711	0.63	0.557
Rank	2	5	7	4	1	3	6
Levels of inequality of opportunity	0.228	0.140	0.121	0.231	0.148	0.218	0.163
Rank	2	6	7	1	5	3	4
Share of inequality of opportunity	0.329	0.25	0.29	0.373	0.208	0.346	0.292
Rank	3	6	5	1	7	2	4
Per capita consumption							
Overall inequality	—	0.449	0.354	0.409	0.635	0.381	0.351
Rank		2	5	3	1	4	6
Levels of inequality of opportunity		0.119	0.122	0.214	0.17	0.159	0.122
Rank		6	4	1	2	3	4
Share of inequality of opportunity		0.265	0.344	0.524	0.267	0.417	0.348
Rank		6	4	1	5	2	3

Source: Authors' calculations based on samples of individuals ages 30 to 49 from the following household surveys: Brazilian PNAD 1996, Colombian ECV 2003, Ecuadorian ECV 2006, Guatemalan ENCOVI 2000, Mexican MxFLS 2002, Panamanian ENV 2003, and Peruvian ENAHO 2001.

Note: — = Not available. Inequality measured by the mean log deviation. Inequality of opportunity shares are nonparametric estimates.

Across all indicators of economic welfare, the circumstances that had the greatest impact on opportunity shares were family background variables: education levels of both parents (with the mother's having a stronger effect) and occupation of the father. Race or ethnicity and birthplace had smaller effects, but they were still sizable, particularly in Central American countries. Indeed, the importance of an indigenous background in Guatemala and Panama help account for the overall higher levels of inequality of opportunity in those countries.

Finally, opportunity-deprivation profiles identify the most-disadvantaged types in each country and describe their aggregate characteristics. As expected, the most-disadvantaged groups can generally be identified as members of ethnic minorities, daughters and sons of agricultural workers, with low levels of education and generally living in specific poor regions. The circumstances most important in ranking groups at the very bottom of the opportunity scale are not necessarily the same as those accounting for the largest shares of inequality in the overall decomposition. In particular, race and ethnicity are more important determinants of severe opportunity deprivation than of opportunity shares of overall inequality. Family background variables, like parental education and occupation, are salient for both.

Notes

1. This chapter is based on Ferreira and Gignoux (2008). The reader is referred to that work for technical details.

2. There are two additional steps in the mapping from household income or consumption to individual welfare that are overlooked here by using income or consumption per capita. First, an extreme assumption is made about the inexistence of economies of scale in consumption within the household. Second, an assumption is made that household resources are shared equally, which may well not be the case.

3. Among inequality measures anchored by the arithmetic mean income (which includes almost all measures ever used in practice) and that satisfy the Pigou-Dalton Transfer Principle (which requires that inequality fall if a richer person transfers one unit to a poorer person), only the mean log deviation is decomposable and path independent. This result was established by Foster and Shneyerov (2000), and first applied in the context of inequality of opportunity by Ferreira and Gignoux (2008).

4. A possible misunderstanding would be to argue that, because certain omitted circumstances might be negatively correlated with the observed circumstances, the parametric measure need not be a lower bound. It is, of course, possible that the share of inequality attributed to a specific set of (observed) circumstances is overestimated. This might happen if omitted circumstance variables are negatively correlated with observed ones. But the R^2 of the relevant regression cannot fall by including these other circumstance variables, so the estimate *is* a lower-bound for the share of inequality attributed to *all* circumstances (rather than to the observed subset), analogous to the nonparametric case.

5. Reviewing the *World Development Report 2006*, Roemer proposed that "the rate of economic development should be taken to be the rate at which the mean advantage level of the worst-off type grows over time" (Roemer 2006, 243).

6. For a comprehensive discussion of the data set and variables for this methodology, see Ferreira and Gignoux (2008). PNAD and ENAHO are original national household surveys, MxFLS is a Rand-type survey, and the others are Living Standards Measurement Study surveys.

7. Employment rates for men and women, respectively, ages 30 to 49, are 0.90 and 0.55 in Brazil, 0.91 and 0.62 in Colombia, 0.97 and 0.72 in Ecuador, 0.96 and 0.51 in Guatemala, 0.96 and 0.46 in Mexico, 0.91 and 0.53 in Panama, and 0.94 and 0.72 in Peru. For Brazil and Peru, the sample is further restricted to household heads and spouses because the family background information was collected only for these individuals.

8. Ferreira and Gignoux (2008) contains tables that describe the specific definitions of the circumstance variables in each survey and the corresponding descriptive statistics.

9. The differences between Brazil, Colombia, and Ecuador, and between Ecuador and Peru, are insignificant at the 5 percent level on the basis of the bootstrapped standard errors.

10. Ferreira and Gignoux (2008) also contains each individual estimate (and bootstrapped standard errors) for two alternative nonparametric estimators, the parametric estimate, and three different generalized entropy measures.

11. These results should be interpreted as lower-bound estimates for inequality of opportunity for earnings among the population of employed workers. The unemployed and those outside the labor force are excluded from the analysis, and extrapolation of these shares to the overall population would imply a sample selection bias.

12. The precision of each estimate, using bootstrapped standard errors, is documented in Ferreira and Gignoux (2008). If the father's occupation variable is omitted in all countries to make the set of circumstance variables more comparable, Mexico's opportunity share drops below Peru's and Colombia's (although the differences between them remain insignificant).

13. Given the methodological trade-offs between parametric and nonparametric methods, which are discussed in greater detail in Ferreira and Gignoux (2008), we recommend that (i) where possible, surveys that might be used to estimate inequality of opportunity should use larger sample sizes; and (ii) where that is not possible, researchers should report both parametric and nonparametric estimates to get a sense of the plausible range of true inequality of opportunity.

14. These are estimated through the parametric method and are essentially estimates of the share of inequality attributable to an individual variable (for example, place of birth) when controlling for all other observed determinants.

15. With the exception of Mexico.

16. See, for example, Deaton (1997) on both of these reasons to prefer consumption to income data in assessing the distribution of welfare in developing countries.

17. A separate set of regressions was run on the same data, but without including father's occupation, and the differences in results were statistically insignificant in all cases.

18. The reverse is true only in Brazil and Mexico, where the differences are small (and in the Mexican case, statistically insignificant).

19. Mexico is once again an exception, probably because the Mexican survey does not include imputed rent for owner-occupied housing and does not adjust for spatial differences in the cost of living. Moreover, the MxFLS has a small sample,

and correspondingly large sampling weights, which may affect the precision of nonparametric estimates.

20. This point is analogous to the well-known fact that intergenerational mobility estimates are much higher when based on single-period wages for parents and children, than when based on longer earnings histories. See, among others, Solon (1999) and Mazumder (2005).

21. A stochastic dominance approach would be more satisfactory but would provide only a partial and incomplete ranking and would suffer from sample-size limitations. Note also that other first-order moments, such as the median or another quantile, could alternatively be used. Ferreira and Gignoux (2008) lists the most-disadvantaged groups in each country by their defining characteristics, as well as their mean per capita consumption (in levels and as shares of the national means) and population share.

22. Identifying the overlap between the two profiles would be an interesting subject for further analytical work.

23. Nevertheless, in both Guatemala and Panama, the groups with the highest mean income are formed of native speakers of indigenous languages. However, these groups represent only a very small share, much less than 1 percent, of the population in advantaged groups.

24. An attempt to present similar results in comparable currency units (rather than in relation to national means) was foiled by difficulties with purchasing power parity (PPP) exchange rates and the national Consumer Price Indexes used to deflate national currencies back to 1993, which is the year for which the latest consumption PPPs are available.

25. These indexes are a little smaller for the parametric estimates, but with the exception of Mexico, the differences are not statistically significant. Consumption data for Brazil are not available.

26. See Bourguignon, Ferreira, and Walton (2007) for a discussion.

27. Brazil, for which there are no consumption data, lies between Panama and Peru in the income-based ranking.

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