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## *Explaining the Decline in Inequality in Latin America: Technological Change, Educational Upgrading, and Democracy*

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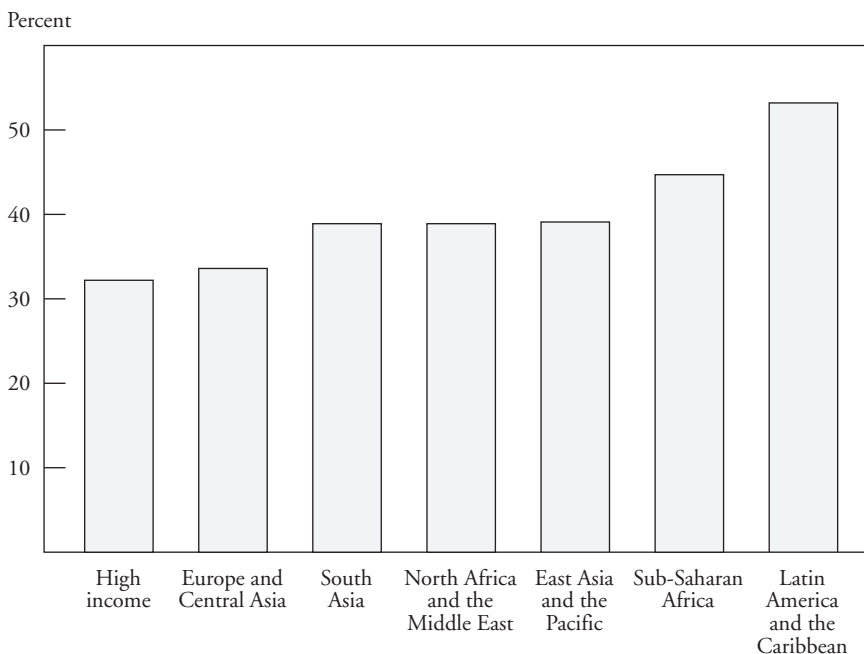
Latin America often is singled out because of its high and persistent income inequality. With a Gini coefficient of 0.53 in the mid-2000s,<sup>1</sup> Latin America was 18 percent more unequal than Sub-Saharan Africa, 36 percent more unequal than East Asia and the Pacific, and 65 percent more unequal than the high-income countries (figure 1-1). However, after rising in the 1990s, inequality in Latin America declined between 2000 and 2007. Of the seventeen countries for which comparable data are available, twelve experienced a decline in their Gini coefficient (figure 1-2). The average decline for the twelve countries was 1.1 percent a year.<sup>2</sup>

The decline in inequality was quite widespread. Inequality declined in high-inequality countries (Brazil) and low-inequality—by Latin American standards—countries (Argentina); fast-growing countries (Chile and Peru) and slow-growing countries (Brazil and Mexico); macroeconomically stable countries (Chile and

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1. Named after its originator, Corrado Gini, the Gini coefficient is commonly used to measure inequality. The Gini coefficient is an index that can take values between zero and one; the closer it is to zero, the less unequal the distribution in question. Ginis are usually never above 0.65 or below 0.20. The figure is for 2004.

2. All the declines except that for Venezuela were statistically significant.

Figure 1-1. *Gini Coefficient by Region, 2004*

Source: Authors' calculations based on Ferreira and Ravallion (2008).

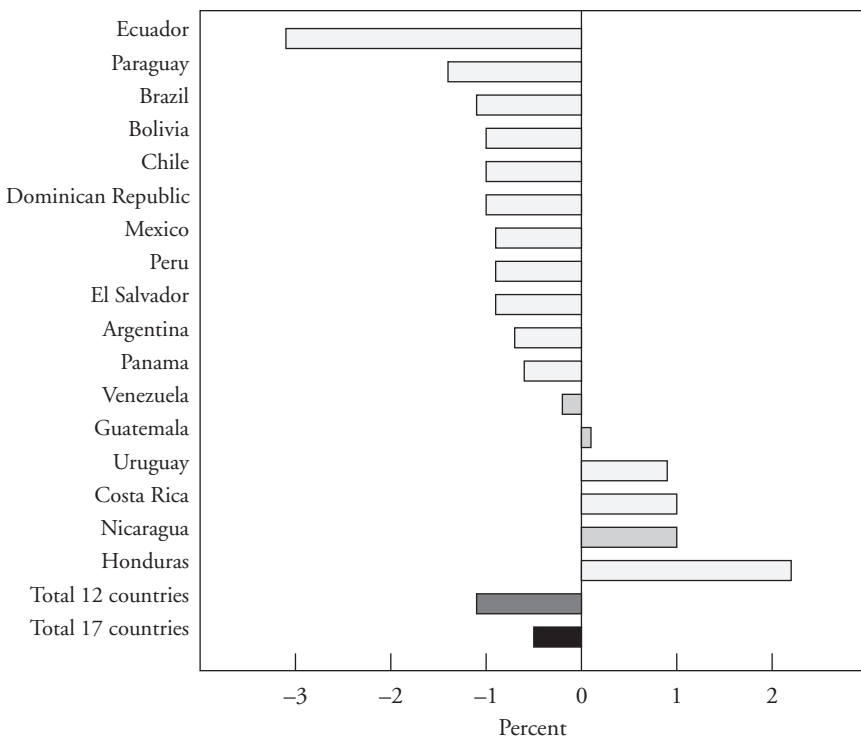
Peru) and countries recovering from economic crisis (Argentina and Venezuela); countries with a large share of indigenous groups (Bolivia, Ecuador, and Peru) and countries with a low share (Argentina); in countries governed by leftist regimes (Brazil and Chile) and in countries governed by non-leftist regimes (Mexico and Peru); in countries with a universalistic social policy (Argentina and Chile) and in countries with a historically exclusionary state (Bolivia and El Salvador).<sup>3</sup> Inequality in Latin America is the result of state capture by elites, capital market imperfections, inequality of opportunity (in particular, of access to good-quality education), labor market segmentation, and discrimination against women and nonwhites.<sup>4</sup> Hence, the observed fall in inequality is good news.

This book is among the first attempts to address the question of why inequality has declined in Latin America during the last decade, through in-depth analyses of Argentina, Brazil, Mexico, and Peru.<sup>5</sup> In all four cases, the data come from

3. This may be changing given the leftist-leaning characteristics of the regimes now in power.

4. See, for example, Atal, N'opo, and Winders (2009); Barros and others (2009); Levy and Walton (2009); and De Ferranti and others (2004).

5. Readers interested in other countries can refer to the UNDP-sponsored studies Bruni, Fuentes, and Rosada (2009), for Guatemala; Eberhard and Engel (2008), for Chile; and Gray Molina, and Yáñez (2009), for Bolivia.

Figure 1-2. *Change in Gini Coefficient by Country, circa 2000–06<sup>a</sup>*

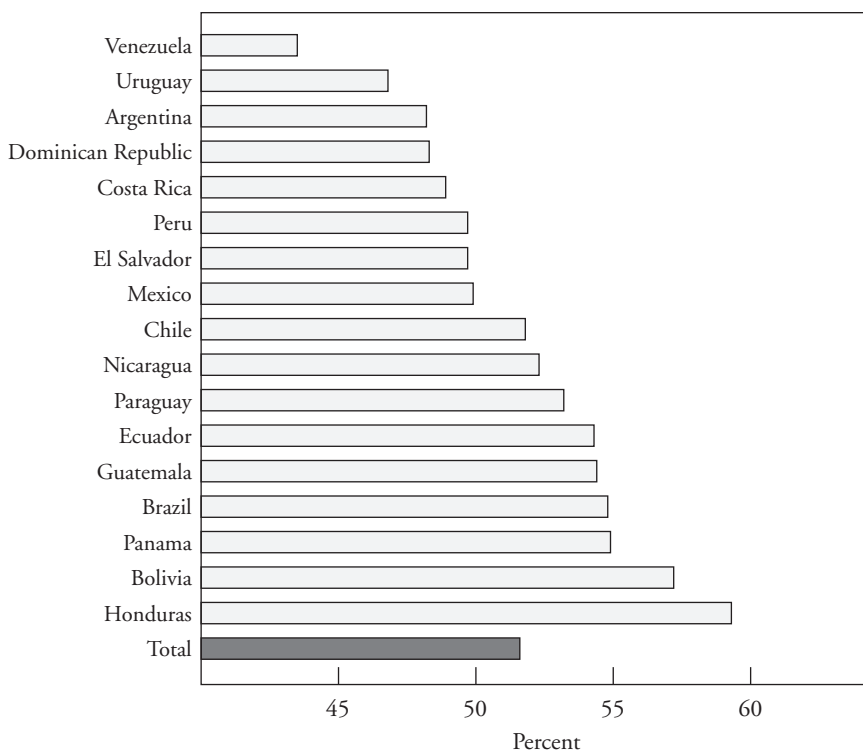
Source: Authors' calculations based on data from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)).

a. Data for Argentina and Uruguay are for urban areas only. In Uruguay, urban areas covered by the survey represent 80 percent of the total population; in Argentina, they represent 66 percent. The average change in the Gini for each country is calculated as the percentage change between the end year and the initial year divided by the number of years; the average for the total is the simple average of the changes by country (twelve countries in which inequality fell). The years used to estimate the percentage change are as follows: Argentina (2006–00), Bolivia (2007–00), Brazil (2006–01), Chile (2006–00), Costa Rica (2007–00), Dominican Republic (2007–00), Ecuador (2007–03), El Salvador (2005–00), Guatemala (2006–00), Honduras (2005–01), Mexico (2006–00), Nicaragua (2005–01), Panama (2006–01), Paraguay (2007–02), Peru (2007–01), Uruguay (2007–00), and Venezuela (2006–00). Using the bootstrap method, with a 95 percent significance level, the changes were not found to be statistically significant for the following countries: Guatemala, Nicaragua, and Venezuela (represented by horizontal lines in bars in the figure).

country-based household surveys and the analyses focus primarily on changes in labor income inequality and changes in the size and distribution of government transfers (and remittances when relevant).<sup>6</sup>

The four countries analyzed here can be considered a representative sample of middle-income countries in Latin America. The sample includes one of the five

6. The reason for this focus is the tendency to underreport property income in household surveys. In Latin America, in contrast to the United States, top incomes come primarily from property, not wages. Therefore, household surveys do not provide reliable data for measuring overall inequality. That fact can

Figure 1-3. *Latin America: Gini Coefficient by Country, circa 2007<sup>a</sup>*

Source: Authors' calculations based on data from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)).

a. In order to make the differences in the Gini coefficients easier to compare, the vertical axis starts at 40 percent instead of zero. The years used to estimate the Gini coefficient are as follows: Argentina (2006), Bolivia (2007), Brazil (2006), Chile (2006), Costa Rica (2007), Dominican Republic (2007), Ecuador (2007), El Salvador (2005), Guatemala (2006), Honduras (2005), Mexico (2006), Nicaragua (2005), Panama (2006), Paraguay (2007), Peru (2007), Uruguay (2007), and Venezuela (2006). The difference between figure 1-1 and this figure in the average for the region is due to the fact that figure 1-1 uses the Gini coefficients for circa 2005 and the coefficients used here correspond to later years.

most unequal countries in Latin America (Brazil) (figure 1-3); a traditionally low-inequality country, which witnessed the largest increase in inequality of the region in the past three decades (Argentina); three of the largest countries in the region in terms of population and GDP (Argentina, Brazil, and Mexico); two countries

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be observed, for example, by looking at the average income of the two "richest" households for each country in this book as recorded in the household surveys used for the analyses. In 2006, the average monthly *total* household income in current U.S. dollars was \$70,357 for Brazil, \$43,148 for Mexico, \$17,563 for Peru, and \$14,779 for Argentina. Clearly, those numbers indicate that the incomes of the rich are not included.

where innovative, large-scale conditional cash transfers have been implemented (Brazil and Mexico); and one country with a large indigenous population (Peru).<sup>7</sup>

All four countries experienced substantial market-oriented reforms in the 1990s (in the case of Mexico, since the 1980s). In particular, trade and foreign investment were liberalized, many state-owned enterprises were privatized, and, more generally, markets were deregulated. The four countries also faced significant macroeconomic crises between 1995 and 2006 and, except for Argentina, have pursued broadly prudent fiscal and monetary policies in particular since 2000. In 2003, following the boom in commodity prices, Argentina and Peru began to benefit from very favorable terms of trade; as a result, both countries enjoyed high per capita growth rates between 2003 and 2006 (7.8 and 5.2 percent a year, respectively). In contrast, GDP per capita growth was modest in Brazil and Mexico (2.7 and 2.8 percent a year, respectively).<sup>8</sup>

Two leading factors seem to account for the decline in inequality in Argentina, Brazil, Mexico, and Peru during the last decade: a decrease in the earnings gap between skilled and low-skilled workers and an increase in government transfers to the poor. The decrease in the earnings gap, in turn, seems to be mainly the result of the expansion of basic education during the last couple of decades;<sup>9</sup> it might also be a consequence of the petering out of the one-time unequalizing effect of skill-biased technical change in the 1990s associated with the opening up of trade and investment. In any case, in the race between skill-biased technical change and educational upgrading, in the past ten years the latter has taken the lead.<sup>10</sup> The equalizing contribution of government transfers seems to be associated with the implementation or expansion of large-scale conditional cash transfer programs in Argentina (*Jefes y Jefas de Hogar*),<sup>11</sup> Brazil (*Bolsa Escola/Bolsa Familia* and *BPC*), and Mexico (*Progres/Oportunidades*) and with in-kind transfers in Peru.<sup>12</sup>

7. Based on Maldonado and Rios (2006); in 2001 around 37 percent of Peru's population was indigenous (30 percent Quechua).

8. The GDP data are from World Development Indicators (WDI) database, World Bank, January 2009. Annual GDP per capita growth was based on GDP per capita at purchasing power parity (PPP) prices in constant 2005 international dollars. The income per capita calculated from household surveys is considerably lower than the GDP per capita, in part because the concept of GDP includes more than personal income. However, surveys also underestimate average income per capita because of underreporting of income at the very top of the distribution, a well-known problem that has plagued household surveys in Latin America since the surveys were first conducted.

9. Basic education includes grades 1–9 in Argentina and Mexico; 1–8 in Brazil; and 1–11 in Peru. The number of grades includes what countries call basic primary and secondary education.

10. Tinbergen (1975) was among the first studies to use the expression "race between education and technology"; more recently, it was the central theme of Goldin and Katz's illuminating analysis of the United States (Goldin and Katz 2008).

11. *Bolsa Familia* and *Progres/Oportunidades* are briefly described in chapters 6 and 7, respectively. Also, see Fiszbein and others (2009).

12. See chapter 8 by Miguel Jaramillo and Jaime Saavedra in this volume.

In this chapter, we discuss the evolution of inequality and its determinants and present a synthesis of the main findings of the chapters included in this book.

## Rising Inequality: The 1980s and Early 1990s

Income inequality increased in most Latin American countries during the so-called “lost decade” of the 1980s and structural reforms of the early 1990s.<sup>13</sup> Although data availability constrains comprehensive comparison,<sup>14</sup> the evidence suggests that the effects of the debt crisis during the 1980s were unequalizing. In particular, because the poor were less able to protect themselves from high and runaway inflation and orthodox adjustment programs frequently resulted in overkill,<sup>15</sup> those in the poor and the middle-income ranges were hurt disproportionately while the income share of the top 10 percent rose.<sup>16</sup> The unequalizing effect of the crisis was compounded because safety nets for the poor and vulnerable were conspicuously absent (or poorly designed and inadequate) in the Washington-led structural adjustment programs in the 1980s.<sup>17</sup>

The pattern of inequality for the four countries analyzed here is shown in figure 1-4. Both Argentina and Mexico show a clear inverted U. That is not the case for Brazil, and comparable data for Peru do not go far enough (Ginis for 1984 and 1991 are not strictly comparable). However, as Jaramillo and Saavedra argue in chapter 8 of this volume, there are indications that income inequality increased during the period of reforms in the early 1990s (1991–93 in figure 1-4).

In the early 1990s, as governments turned to market-oriented reforms to pull their economies out of crisis, inequality continued to increase, driven in part by a significant increase in the relative returns to tertiary education (figure 1-5). What was behind the sharp increase in returns to education? Figure 1-6 shows that the supply of skilled and semi-skilled workers rose in the 1980s and 1990s; therefore the increase in returns to education must have been driven by skill-biased changes in the composition of demand for labor. There is evidence that both the sectoral

13. See, for example, Altimir (2008) and Londoño and Szekely (2000).

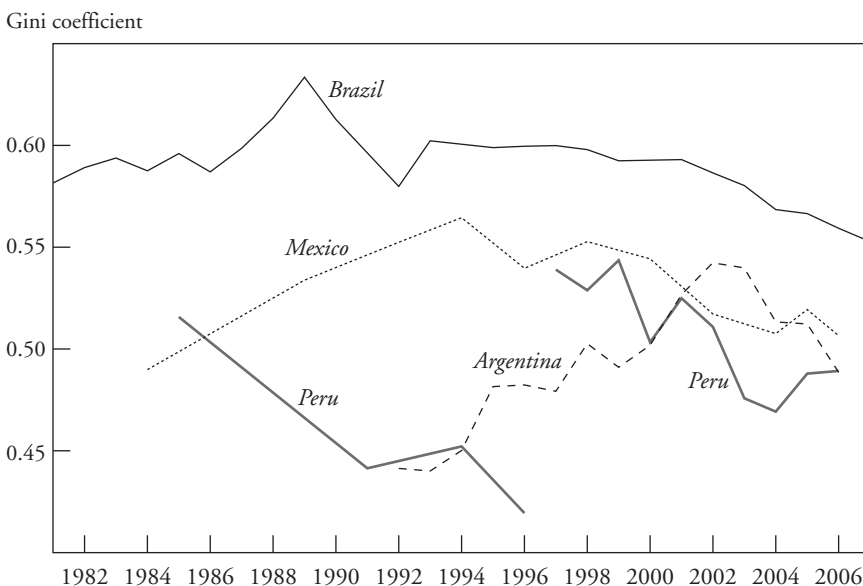
14. Before-and-after analysis of inequality in the 1980s could be done at the national level for few countries. Eleven countries had at least one national-level survey in the 1980s. Among those, a strict before-and-after adjustment comparison could be made for only four: Brazil, Costa Rica, Panama, and Venezuela. Surveys from Argentina, Bolivia, Colombia, Ecuador, El Salvador, Paraguay, and Uruguay did not include the rural sector. Only three countries had at least one survey that recorded total income (including nonwage and nonmonetary income): Chile, Mexico, and Uruguay (Lustig 1995, table 1A-1, p. 37). It should be mentioned that even in the countries in which surveys collect information on nonwage income, there is every reason to believe that there are gross underestimations, particularly with respect to property income. A quick look at the top income levels recorded in the surveys demonstrates that the rich are not counted. Hence, existing measures may underestimate the true level of inequality in a nontrivial way.

15. That is, the reduction of fiscal deficits went beyond what was necessary to restore equilibrium in the external accounts and that over-adjustment had counterproductive effects on stabilization itself. For a discussion of overkill in Mexico see, for example, Lustig (1998).

16. See Lustig (1995).

17. Lustig (1995).

Figure 1-4. *Gini Coefficients for Argentina, Brazil, Mexico, and Peru, 1981–2006<sup>a</sup>*



Sources: Argentina: Gasparini and Cruces, chapter 5 in this volume; Brazil: Barros and others, chapter 6; Mexico: Esquivel, Lustig, and Scott, chapter 7; and Peru: Jaramillo and Saavedra, chapter 8. Gini coefficients for Peru in 1985–96 and 1997–2006 are not comparable.

a. Data for Argentina include urban areas only, representing about two-thirds of the population. Ginis are calculated for total current household income per capita. The income concept used is as follows:

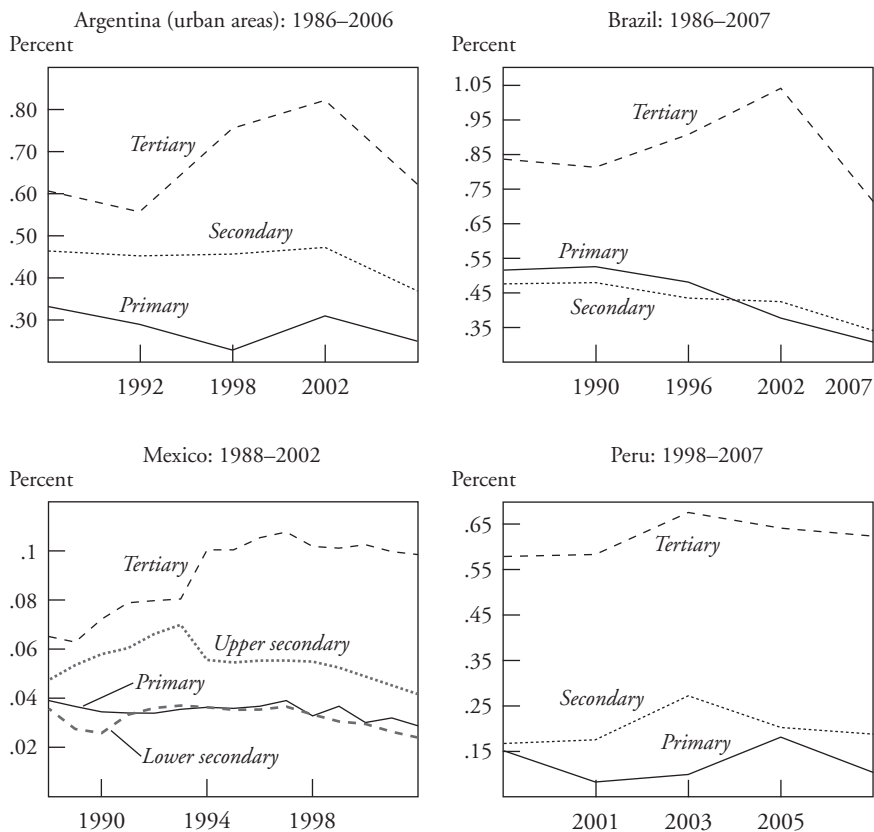
—Argentina: current monetary income (does not include imputed value of owner-occupied housing or auto-consumption), after taxes for wage earners and before taxes for other categories and after monetary government transfers.

—Brazil: current monetary plus imputed value of income in kind (but does not include imputed value of owner-occupied housing), before taxes and after monetary government transfers.

—Mexico: current monetary income (does not include imputed value of owner-occupied housing or auto-consumption), after taxes and after monetary government transfers.

—Peru: current total income (includes imputed value of income in kind, auto-consumption, owner-occupied housing, and some in-kind government transfers such as food and health care services), after taxes and after monetary government transfers.

reallocation of production and employment and the skill intensity within sectors changed in favor of skilled workers, in particular college graduates. Results, therefore, are consistent with the presence of skill-biased technological change, in particular after the opening up of the economies in the 1980s and 1990s. While for Argentina (Gasparini and Cruces, chapter 5 in this volume), Mexico (Cragg and Eppelbaum 1996 and Esquivel and Rodríguez-López 2003), and Peru (Jaramillo and Saavedra, chapter 8 in this volume) there is evidence that the direct effect of trade liberalization on wage inequality seems to have been small, the indirect effect of trade and of capital account liberalization through their impact on adoption of new skill-intensive technologies of production and organization might have been

Figure 1-5. *Ratio of Returns to Education for Argentina, Brazil, Mexico and Peru<sup>a</sup>*

Source: Ratios for Argentina, Brazil, and Peru are from authors' calculations based on data from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)); ratios for Mexico are based on Lopez-Acevedo (2006).

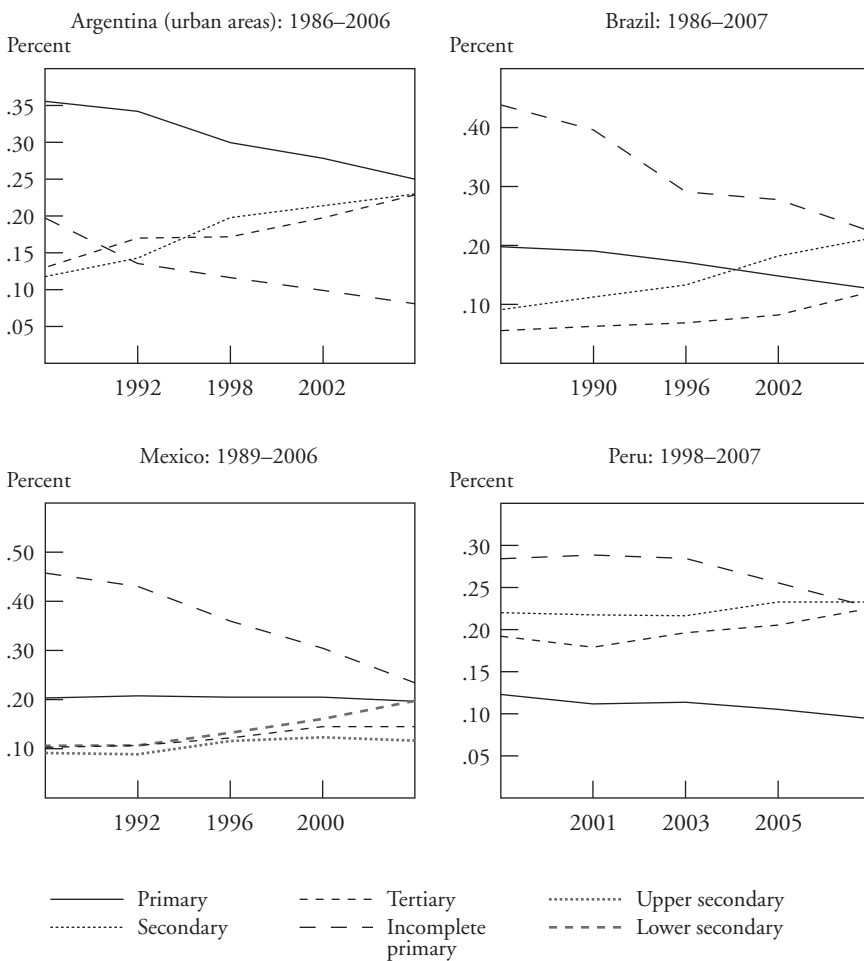
a. Ratios for returns to education were calculated from educational dummy coefficients of Mincer equations, using wages from main occupation for men only. Variables of education level (college, secondary school, and primary school), potential experience, and geographic regions were included. Omitted variable was no schooling or incomplete primary school. Remunerations for men are for all workers, including wage earners, self-employed workers, and employers. Population considered was the age group from 25 years to 55 years. Data for Argentina are for urban areas only; urban areas covered by the survey represented 66 percent of the total population. Surveys before 1991 covered Gran Buenos Aires; surveys from 1992 to 1997 covered fifteen cities; and surveys from 1998 to 2006 covered twenty-eight cities.

substantial. That is not the case for Brazil, where trade liberalization seems to have caused a reduction in skill premiums and wage inequality, as suggested by Ferreira, Leite, and Wai-Poi (2007). That may be the main reason why inequality in Brazil did not increase during the reform period and did not show the inverted U found in other countries.<sup>18</sup>

18. The inverted U pattern in reference to the evolution of income inequality was first posited by Kuznets (1955).



Figure 1-6. *Composition of Adult Population by Educational Level for Argentina, Brazil, Mexico, and Peru<sup>a</sup>*



Source: Authors' calculations based on data from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)).

a. Skill groups are formed by level of formal education. Educational levels correspond to completed primary school, lower- and upper-secondary school, and tertiary education. In Argentina, complete primary school is achieved at 7 years, complete secondary school at 12 years, and tertiary education at 15 or more years of formal education; incomplete primary includes 6 years or less of education and no education. In Brazil, complete primary is achieved at 4 years, complete secondary at 11 years, and tertiary at 15 or more years of formal education; incomplete primary includes 3 years or less of education and no education. In Mexico, complete primary is achieved at 6 years, complete lower secondary at 9 years, complete upper secondary at 12 years, and tertiary at 15 or more years of formal education; incomplete primary includes 5 years or less of education and no schooling. In Peru, complete primary is achieved at 5 years, complete secondary at 11 years, and tertiary at 14 or more years of formal education; incomplete primary includes 4 years or less of education and no schooling. For 1997 completed secondary school in Peru is achieved at 10 years. Shares were calculated for adults only (the age group from 25 years to 65 years).

## Declining Inequality: The Mid-1990s Onward

The rising trend in inequality came to a halt in the second half of the 1990s or in the early 2000s, depending on the country (figure 1-4). From then until the global financial crisis in 2008–09 (for which data on income distribution are not yet available), inequality declined in most countries in Latin America. In particular, inequality declined in the four countries analyzed here, beginning in 1994 in Mexico, 1997 in Brazil, 1999 in Peru, and 2002 in Argentina (figure 1-4). Income inequality as measured by the Gini coefficient fell by 5.9 percentage points in Mexico (1994–2006), 5.4 percentage points in urban Argentina (2002–06), 5 percentage points in Peru (1999–2006), and 4.8 percentage points in Brazil (1997–2007).<sup>19</sup>

Why did inequality decline in these four countries during the last decade? Have the changes in inequality been driven by market forces, such as the demand for and supply of labor with different skills? Have labor market institutions such as the strength of unions or minimum wages changed? Or have governments redistributed more income than they used to? We attempt to answer those questions here.

Specifically, the studies for Argentina, Brazil, Mexico, and Peru ask what the contribution was of demographic factors (changes in the proportion of adults in the household, for example) to the observed change in inequality in household per capita income. Were changes in the distribution of labor income an important equalizing factor? If so, were those changes, in turn, driven by changes in the distribution of personal characteristics (in particular, in the distribution of educational attainment), changes in returns to personal characteristics (returns to education, in particular), or changes in employment, hours worked, or occupational choice (wage labor or self-employment, for example)? If changes in all three were relevant, what caused them to change in turn? Was it increased coverage of basic education, the mix of production skills generated by technological change, macroeconomic conditions, or stronger labor unions? What has been the role of changes in the distribution of nonlabor income? Do changes in government transfers account for a significant part of the change in inequality in nonlabor and overall income inequality?

In each chapter, the authors estimate the contribution of proximate causes,<sup>20</sup> relying on parametric and nonparametric methods to decompose changes in

19. The Gini coefficients are equal to .564 and .505 (Mexico 1994 and 2006); .541 and .487 (Argentina 2002 and 2006); .54 and .49 (Peru 1999 and 2006); and .600 and .552 (Brazil 1997 and 2007). The declines are statistically significant at the 95 percent level of significance. According to Gasparini and Cruces in chapter 5, trends in urban Argentina are representative of changes for the country as a whole. Those Ginis may differ from those presented in the individual chapters because of rounding or because the chapters use a different concept of income or a different data source. Discrepancies among inequality indicators depending on the source are a fairly common phenomenon.

20. Typical proximate causes are changes in the distribution of educational attainment, returns to personal characteristics, access to employment, and hours worked. For example, inequality may fall because

household income inequality.<sup>21</sup> The empirical analysis is combined with circumstantial (that is, indirect) evidence and historical narratives to put together the multidimensional “jigsaw puzzle” of the fundamental determinants of inequality over time.

Several patterns recur throughout the four case studies. First, in all four countries changes in the distribution of the dependency ratio were equalizing. The proportion of dependents fell more in poorer households, but the contribution of that factor was far less important than the contributions of the reductions in labor income inequality and nonlabor income inequality. Also, the equalizing contribution of demographic changes was already under way in the 1990s, reflecting the reduction in fertility rates that has characterized the region in the past two or three decades. It is not a new phenomenon. The two most important differences between the 2000s and the 1990s (and 1980s too, depending on the country) are the observed declines in both labor income inequality<sup>22</sup> and nonlabor income inequality.

*Determinants of the Decline in Labor Income Inequality:  
The Race between Education and Technology*

Declines in labor income inequality appear to be associated with the educational upgrading of the labor force, which resulted in a more equal distribution of schooling attainment in the four countries, above all in Brazil, Mexico, and Peru. Figure 1-7 shows the Gini coefficients for years of schooling of the population between 25 and 55 years of age. The Gini for educational attainment declined by 5 percentage points in Brazil (1998–2007), 7 percentage points in Mexico (1996–2006), and 4 percentage points in Peru (2001–07). In Argentina, the decline was almost negligible for the period in which earnings inequality began to fall (2003–06). However, that should come as no surprise since the period was much shorter and Argentina’s population had more years of schooling to begin with.

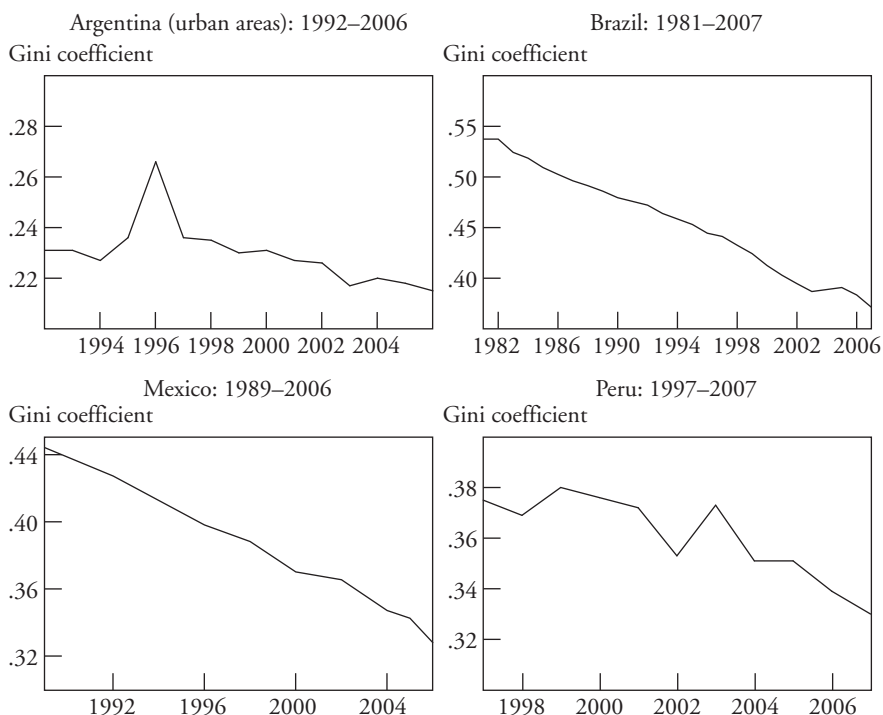
Thus, the quantity effect of education on labor income inequality resulting from a more equal distribution of the stock of education (years of schooling) was

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the skill premium—return to education—declines. That is a proximate cause that can result from both demand (a relative expansion of labor-intensive industries) and supply factors (a change in the composition of the labor force by skill). Changes in output in labor-intensive industries, in turn, can be associated with a depreciation of the currency, which is the fundamental cause. Changes in the composition of the labor supply by skill can result from government policy to increase coverage in education and from individuals’ decision to acquire more years of schooling in response to the higher earnings that more years of schooling commands. The political economy dynamics that shape public policy and individuals’ response to incentives are examples of fundamental causes.

21. The methods vary across chapters. More formal descriptions of the methods can be found in the sources cited in the chapters.

22. In the case of Peru, the result is found at the individual but not at the household level, indicating that assortative matching dampens the equalizing effect at the individual earnings level.

Figure 1-7. *Gini Coefficients for Education for Argentina, Brazil, Mexico, and Peru*<sup>a</sup>

Source: Authors' calculations based on data from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)).

a. Data are for the age group from 25 years to 55 years. Data for Argentina are for urban areas only; urban areas covered by the survey represent 66 percent of total population. Surveys for Argentina from 1992 to 1997 covered fifteen cities; surveys from 1998 to 2006 covered twenty-eight cities. Education is measured in years of formal schooling.

an equalizing factor. However, the Gini for years of schooling had been falling for quite some time before labor earnings inequality started to decline. In fact, in Argentina and Mexico previous studies observed that the Gini for educational attainment declined while earnings inequality increased (!).<sup>23</sup> As discussed in Bourguignon, Ferreira, and Lustig (2005), that apparently paradoxical result is a consequence of the fact that the returns to education curve exhibits increasing returns: that is, additional years or levels of education command a proportionately higher return.<sup>24</sup> Did returns to schooling become less steep during the period in

23. During the 1980s and early 1990s, that happened in Argentina (Gasparini, Marchionni, and Sosa Escudero 2005) and Mexico (Legovini, Bouillón, and Lustig 2005).

24. Note that when the returns to education are convex (the returns increase proportionately more for higher levels of schooling), an equalization of the distribution of years of schooling does not necessarily translate into an equalization in the distribution of earnings. Bourguignon, Ferreira, and Lustig (2005) called that the "paradox of progress."

which inequality declined? The answer is yes: the returns to tertiary education as a ratio of the returns to incomplete (and in some cases complete) primary schooling or no schooling declined (figure 1-5)

That is big news because it signals a reversal of a trend. As can be observed in figure 1-5 also, in the previous decade returns to skill had been on the rise. Why did the reversal take place—did the relative supply of unskilled labor shrink or did the demand for skilled workers subside? The chapters do not analyze that question in the context of a full model of labor demand and labor supply. However, as shown in figure 1-8, in the period of declining (increasing) inequality, an increase in the relative supply of workers with tertiary education was accompanied by a decline (increase) in the relative returns to tertiary education (relative to primary levels), except for in Mexico, where the relative returns to schooling for tertiary levels continued to rise during the period of declining inequality, albeit at a slower pace than during the period of rising inequality.<sup>25</sup> Thus the data suggest that while during the 1990s the demand for skills dominated the effect, in the last ten years the growth in the supply of skills outpaced demand and the college premium consequently shrank. Or, to use Tinbergen's language, in the race between skill-biased technological change and educational upgrading, the latter took the lead.

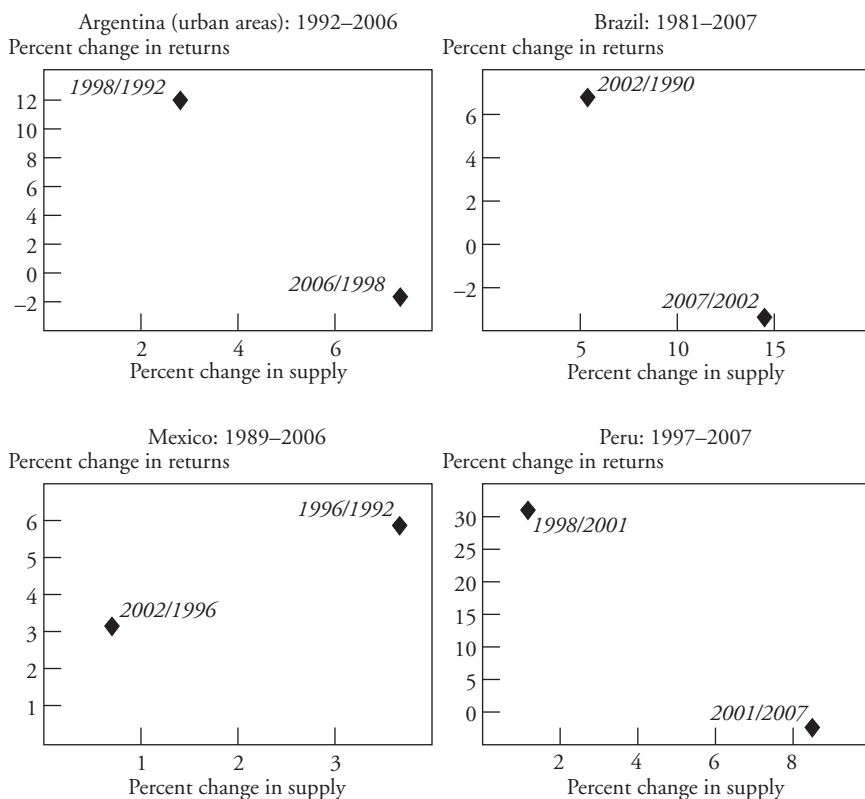
Did the returns to schooling change because educational upgrading caught up with the increase in the demand for skilled labor or because the demand for skilled labor subsided as the effects of technological change petered off?<sup>26</sup> As Jaime Kahhat shows in chapter 2, in theory the presence of either factor can result in a decline in wage inequality. A review of existing models of exogenous and endogenous technological change reveals that more often than not, the effects of technological change are unequalizing at first but not in the long run. For example, after the learning phase is over and workers become fully efficient in using the new technology, firms substitute relatively expensive skilled labor with more economical unskilled labor.<sup>27</sup> These models assume perfect capital markets, allowing the supply of skills to adjust to increases in demand. Even if the demand for skilled labor did not decline, wage inequality would fall if the supply of skilled

25. Results for Argentina, Brazil, and Peru are from authors' calculations based on estimates on returns to education from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)). For Mexico, results are from authors' calculations based on estimates on returns to education from López-Acevedo (2006). Ratios for returns to education were calculated from educational dummy coefficients of Mincer equations (using wages from main occupation for men only). Variables of education level (college, secondary school, and primary school), potential experience, and geographic regions were included. An omitted variable was no schooling or incomplete primary school. Remunerations for men are for all workers including wage earners, self-employed workers, and employers. Population considered was the age group from 25 years to 55 years.

26. That does not need to be an "either/or" question. It is quite possible that both were present.

27. Other models assume different processes of adjustment but the results are similar: earnings inequality follows an inverted U.

Figure 1-8. *Changes in Supply of Workers with Tertiary Education and Returns to Tertiary Education (Relative to Primary Education) for Argentina, Brazil, Mexico, and Peru<sup>a</sup>*



Source: Results for Argentina, Brazil, and Peru are from authors' calculations based on data from SEDLAC, July 2009 ([www.depeco.econo.unlp.edu.ar/sedlac/eng/](http://www.depeco.econo.unlp.edu.ar/sedlac/eng/)); results for Mexico are based on Lopez-Acevedo (2006).

a. Ratios for returns to education were calculated from educational dummy coefficients of Mincer equations using wages from main occupation for men only. Variables of education level (college, secondary school, and primary school), potential experience, and geographic regions were included. Omitted variable was no schooling or incomplete primary school. Remunerations for men are for all workers including wage earners, self-employed workers, and employers. Population considered was the age group from 25 years to 55 years. Ratios for education supply groups are formed by level of formal education. Educational levels correspond to completed primary, secondary, and tertiary education. Complete primary school is achieved at 6 years, complete upper-secondary school at 12 years, and complete tertiary education at 15 or more years of formal education. Incomplete primary includes 5 years or less of education and no schooling. Population considered was the age group from 25 years to 65 years. Percentage changes were divided by the number of years for each period. Years considered for calculations were those included in the figure. Data for Argentina are for urban areas only; urban areas covered by the survey represent 66 percent of total population. Surveys for Argentina from 1992 to 1997 covered fifteen cities; surveys from 1998 to 2006 covered twenty-eight cities.

workers caught up with demand. But what would happen if capital market imperfections impede or slow down the acquisition of skills?

Using a stylized model of capital market imperfections, Kahhat shows that when unskilled workers cannot borrow all that they want to invest in acquiring more skills, the share of skilled workers in the steady state is suboptimal: income per capita is lower than it would be if capital markets were perfect and no credit constraints existed. More important for our analysis, in the steady state with capital market imperfections, an economy that starts with an unequal distribution of wealth (and binding credit constraints) will have wealth inequality in the long-run equilibrium. In such a world, a redistributive policy that increases the share of skilled workers (for example, a substantial expansion in educational access that leads to an increase in the supply of skills) would increase the relative wage for unskilled labor. In turn, the higher wage for unskilled labor would provide greater opportunity for unskilled workers to invest in education. Consequently, both the wage premium and the inequality in educational attainment fall, reducing labor earnings inequality. Therefore, policies that enhance equality of opportunity in the present by extending subsidized educational services to underserved areas (rural areas and urban slums), improving the quality of education, and/or establishing conditional cash transfer programs (such as Brazil's Bolsa Familia or Mexico's Progreso/Oportunidades) allow larger fraction of the population to accumulate enough wealth to invest in upgrading its skills and improve its earnings in the future. That process can generate a virtuous circle leading to greater equity and growth in the long run.

We do not have precise estimates of the extent to which the observed reduction in the skill premium in Argentina, Brazil, Mexico, and Peru is the result of supply-side or demand-side factors.<sup>28</sup> Nonetheless, it is clear that during the last 20 years, educational upgrading received a push, particularly as democracy returned to countries in the region<sup>29</sup> and macroeconomic disequilibria disappeared or became more manageable. As a result there was a significant increase in coverage of basic education, and as low-skilled workers became relatively scarce (figure 1-6), they were able to command relatively higher wages. As Barros and others; Esquivel, Lustig, and Scott; and Jaramillo and Saavedra suggest in chapters 6, 7, and 8 of this volume respectively, higher spending per student in basic education and an effort to make education accessible in rural areas in Brazil, Mexico, and Peru eased supply-side constraints. In Argentina the picture is more mixed. Gasparini and Cruces argue that the reduction in the wage gap between low-skilled and skilled labor seems to be associated with several events: the post-2002 commodity boom, which increased total employment; the 2002 devaluation of the peso, which shifted demand in favor of intensive low-skilled labor sectors; government-mandated wage

28. In addition, there are no empirical studies that show whether the acquisition of skills is constrained by credit supply.

29. For a discussion, see James Robinson, chapter 3 in this volume.

increases (including the minimum wage); and stronger labor unions. In Brazil, higher minimum wages appeared to play a role as well. However, that was not the case in Mexico and Peru.

Before we turn to the analysis of changes in the distribution of nonlabor income, one interesting question remains to be answered. A decline in earnings inequality does not necessarily translate into a decline in the inequality of labor at the household level. In the cases of Argentina, Brazil, and Mexico, both moved in the same direction: that is, both earnings and per capita household labor income inequality declined. However, that was not the case in Peru. Although the changes in returns to schooling were equalizing at the level of the individual worker, they were unequalizing at the household level. That means that in Peru there probably was a change in assortative matching (more educated women increasingly marrying more educated men, for example) that increased labor income inequality in the household.

*Determinants of the Decline in Nonlabor Income Inequality:  
The Political Economy of Redistribution*

The reduction in the inequality of nonlabor income was the second major factor in the fall in inequality. Nonlabor income includes quite disparate income sources: returns to physical and financial capital (interest, profit, and rent); private transfers (for example, remittances); and public transfers (monetary and, in the case of Peru, some public transfers in kind). The contribution of changes in returns to physical and financial capital tended to be small and unequalizing. However, as mentioned above and shown by Alvaredo and Piketty in chapter 4 of this volume, incomes from property are grossly underestimated, so those results cannot be taken at face value.<sup>30</sup> It is hard to know what happened with property incomes, so the case studies do not delve into that issue. In terms of private transfers, remittances in Mexico, for example, were equalizing and became even more so in the 2000s because they closed the gap between rural and urban household per capita incomes.

As mentioned previously, the four case studies found a significant increase in the importance of the equalizing contribution of public transfers in the 2000s. In the four countries, government spending on transfers (monetary and in-kind) became more progressive in the 2000s. The contribution of programs such as Bolsa Familia (Brazil) and Progresa/Oportunidades (Mexico) shows the remarkable power of well-targeted cash transfers to the poor in redistributing income and reducing inequality (and, of course, poverty). Those programs are a small share of total government redistributive spending (and GDP),<sup>31</sup> but they go a long way

30. See, for example, the comparison of Gini with and without top incomes presented by Alvaredo and Piketty for Argentina.

31. In the case of Oportunidades, for example, the budget is around 0.5 percent of GDP.



toward redistributing income to the bottom of the distribution. In the last ten years, the generosity and coverage of cash transfers increased; the design of the programs, particularly in Brazil and Mexico, improved; and targeting methods were fine tuned. Those efforts have clearly paid off in both Brazil and Mexico in terms of reducing income inequality and poverty. As shown by Esquivel, Lustig, and Scott in chapter 7, impact evaluation studies of Progres/Oportunidades suggest that the program also had a positive impact in improving health outcomes and educational attainment. The trend toward more progressive public spending went beyond targeted cash transfers: as the analyses for Argentina, Mexico, and Peru suggest, the relative progressivity of spending on health, education, nutrition, and basic infrastructure (electricity and water and sanitation, for example) increased.<sup>32</sup>

Why has public spending in Latin America become more progressive in the last ten years? The analysis presented by James Robinson in chapter 3 on the political economy of redistribution may provide some clues. If political power is concentrated among a small group of elites, the political system will tend to generate unequalizing forces. Democratization should reduce the concentration of power. The last two decades in Latin America were characterized by a return to and strengthening of democracy. In advanced nations, democratization had a large effect on labor market institutions and redistributive policies and played a key role in reducing inequality over more than a century. While still imperfect in many Latin American countries, democracy also has been accompanied by a transition from clientelistic toward nonclientelistic politics.<sup>33</sup> In addition, transfers that targeted the poor may also have given traditionally disenfranchised groups more voice in the political process.

Furthermore, there is evidence that suggests that social democratic left-leaning governments (for example, in Brazil and Chile)—after controlling for factors such as terms of trade and income per capita—have been more redistributive than non-left or populist and radical-left governments.<sup>34</sup> While the relationship is not automatic, the emergence of more democratic institutions and a social democratic agenda may explain why government spending has become more progressive. At the same time, the surge of populist or more radical-left regimes in other countries (Argentina, Bolivia, Ecuador, Nicaragua, and Venezuela) may make elites in countries in which they exercise oligarchic control more willing to pay more taxes and support initiatives that make government spending more redistributive to the poor as “insurance” against the emergence of such regimes.

32. There are no data on the distribution of in-kind transfers for Brazil.

33. See, for example, Diaz-Cayeros, Estevez, and Magaloni (forthcoming).

34. See Lustig (2009) and Lustig and McLeod (2009). Lustig and McLeod (2009) documents the econometric results reported in Lustig (2009). See also Cornia (2009).

## Will Inequality Continue to Decline?

The results presented above suggest that in a number of countries in Latin America, the government has been moving in the right redistributive direction—that is, allocating more of its public spending to the poor than it did before. In particular, governments have been making a greater effort to correct for inequality in the distribution of opportunities such as access to basic education. Moreover, governments have actively reduced poverty through direct transfers to the poor, thus making distributive outcomes, not just opportunities, more equal. Changes in the labor market—partly a result of governments' greater emphasis on expanding basic education—have contributed to a decline in earnings inequality and, except for Peru, in household per capita income inequality. Thus, for a few years (a decade or more in Brazil and Mexico and less in the case of Argentina and Peru), there was progress in making these countries more equitable.

However, the good news may not last. The redistributive momentum is likely to face obstacles. The upgrading of the educational attainment of the labor force will face a tough barrier in terms of postsecondary education. While educational attainment undoubtedly has become significantly more equal, the same cannot be said regarding the distribution of the quality of education. The poor and middle ranges of the distribution receive an education of significantly lower quality than the top 10 percent, members of which usually attend better-quality private schools. That reduces the probability that poor children—even those who complete secondary education—will be able to access tertiary education, because they cannot compete with the better-prepared children from richer households. In addition, compensating for the opportunity cost for poor children of attending postsecondary school is more expensive than compensating for the opportunity cost for children attending lower-level schools. If the state wants to continue equalizing opportunities through education as a way to equalize the distribution of income, it must give priority in the public policy agenda to addressing the inequality in quality of basic education and to finding ways to compensate for the opportunity costs of young people from poor backgrounds so that they can attend tertiary schools.

In addition, the incidence analyses presented in the country studies and elsewhere reveal that a large share of public spending is still neutral or regressive from the distributive point of view. It also reveals that taxes, in particular personal income taxes, are severely underused as an instrument of redistribution in a region characterized by having a substantial number of ultra-high net worth (that is, super-rich) individuals.<sup>35</sup>

35. See, for example, Breceda, Rigolini, and Saavedra (2008) and Gofí, López, and Servén (2008).

In other words, the extent of redistribution so far has been small, especially in comparison with redistribution through taxes and transfers in advanced countries. That may be due to state capture by Latin America's wealthy and powerful elites, who historically have been able to tilt government interventions in their favor more often than not. Proof of such capture is seen in the low level of taxes—personal income and wealth taxes in particular—prevalent in most Latin American countries and in regulations that create artificial monopolies and concomitant rents in key sectors of the economy.<sup>36</sup> Wealthy elites are hard to combat. Whether fear of the surge of Chavez-like figures in other countries or the power of the newly enfranchised might change the extent of state capture is unknown.

The entrenched power of elites might be a problem for the redistributive agenda even under democracy.<sup>37</sup> In chapter 4, Alvaredo and Piketty suggest that the large decline in inequality in advanced countries throughout most of the twentieth century was due to two factors: the Great Depression and war. Income inequality fell because capital owners—the very top tier of the wealthy in particular—were hurt by major shocks to their capital holdings (destruction, inflation, bankruptcy, the manner in which war debts were financed). Those were historical accidents as far as the fate of income inequality was concerned, not the result of deliberate policy. It is important to stress that the decline in the concentration of capital in advanced countries during the period between the world wars does not seem to have had negative effects on growth. On the contrary, it coincided with a period in which growth rates were substantially higher than in the previous century. It would seem that the shocks that occurred over 1914–45 allowed a new generation of “modern” entrepreneurs to replace old-style capitalist, rent-seeking dynasties. But what prevented the large fortunes from recovering after World War II? Alvaredo and Piketty attribute that to the introduction of high and progressive income and estate taxes, which prevented powerful elites from recapturing the state. The authors note that more equality, again, was consistent with prosperity, as the postwar period was characterized by especially high growth.

The lesson from advanced countries discussed in Alvaredo and Piketty appears to be that persistent and high levels of inequality will not necessarily be reversed without including substantial tax reform—in particular, progressive taxation—on the menu of redistributive policies. Progressive income taxation and estate taxation are two of the least distortionary ways to raise badly needed additional resources for the provision of public goods and to redistribute the gains from growth. This has an important implication for policymakers in Latin America: the agenda for tax reform needs to include more progressive tax systems and to ensure that they are enforced.<sup>38</sup>

36. See, for example, Levy and Walton (2009).

37. For a discussion of how, even after democratization, social welfare policies in Latin America evolved under exclusionary lines, see Haggard and Kaufman (2008).

38. For the case of Mexico, see the recommendations from Sobarzo (2010).

## Organization of the Book

In addition to this chapter, this volume comprises two conceptual chapters; a chapter on the evolution of top incomes in advanced and developing countries; and four chapters on country case studies: Argentina, Brazil, Mexico and Peru.

In chapter 2, Jaime Kahhat presents an analysis of how the evolution of labor earnings inequality is heavily influenced by the pace of technological progress and the rate of growth of educational attainment. While new technologies tend to increase employers' demand for skills, improvements in educational attainment increase the supply of skills. Hence, earnings inequality tends to increase when the pace of technological progress exceeds the rate of growth of educational attainment and to decrease when the pace of technological progress falls below the rate of growth of educational attainment. The chapter reviews the literature exploring the role of technological progress on the demand for skills. Subsequently, using a stylized model, it examines how the interaction between capital market imperfections and wealth inequality may influence the allocation of investments in education in households and the supply of skills. Finally, it briefly discusses the effects of other factors, such as population growth and discrimination, on the supply of skills. The theoretical framework in this chapter fits the empirical findings on the evolution of earnings inequality in the four country case studies.

In chapter 3, James Robinson delves into how the proximate determinants of inequality—the distribution of assets and their rates of return—are heavily determined by a society's institutions and policies. From a comparative politics perspective, Robinson explains some salient cross-national patterns of inequality in middle-income countries, discussing in particular how they depend on differences in political institutions. The author argues that the advent and strengthening of democracy presents a potentially optimistic scenario in which middle-income countries finally move on to the virtuous circle of falling inequality and rapid growth that characterized advanced countries for most of the past century. This seems to have occurred with respect to education and targeted transfers in the country case studies included here. However, Robinson also sees the danger of an alternative scenario—one in which elites continue to control policy outcomes—in which that does not continue to happen. The author argues that to avoid the latter, international institutions have much to do in terms of strengthening grassroots democratic movements and promoting equality.

Chapter 4, by Alvaredo and Piketty, offers an overview of the main findings of a collective research project on the long-run dynamics of top incomes in developed and developing countries. The authors argue that the decline in income concentration that took place during the first half of the twentieth century in advanced countries was mostly accidental and does not seem to have much connection with a Kuznets-type process. Top capital incomes were hit by major shocks between 1914 and 1945 (World War I, the Great Depression, World

War II), and they were not able to recover fully in the postwar decades primarily because of progressive taxation. The pattern among rich countries diverged in the latter part of the twentieth century. In continental Europe and Japan, top income shares remained relatively stable while in the English-speaking countries there was a substantial increase in top shares beginning in the 1980s. As for developing countries, the authors found substantial heterogeneity among the countries for which top share estimates have been produced. No systematic patterns emerged. One important lesson for Latin America is that to make the reduction in equality sustainable, progressive income and wealth taxes were key.

In chapter 5, Leonardo Gasparini and Guillermo Cruces analyze the changes in Argentina's income distribution from the mid-1970s to the mid-2000s, a period of substantial increase in inequality. The authors argue that the upward trend was shaped by deep macroeconomic crises and periods of rapid opening up of the economy to external trade and investment flows. In the 1990s, economic openness led to a shift in resource allocation away from unskilled labor-intensive sectors and to skilled-biased technological change within most sectors. Those two factors—resource reallocation and skilled-biased technological change—pushed up the returns to skills, and they seem to be associated with a sizable increase in overall inequality. The depth and speed of economic reforms and the absence of public policies to ease the transition contributed to the severity of the income distribution changes. Later, a series of macroeconomic crises and subsequent recoveries contributed to the volatility of inequality along the upward trend. The latest macroeconomic crisis, in 2001–02, triggered a large jump in inequality, but income disparities returned to pre-crisis levels because the economy recovered quickly and large cash transfer programs were implemented. In addition, Gasparini and Cruces find that after a period of rising returns to skill, the trend was reversed. The petering off of the unequalizing effects of skill-biased technological change and economic openness combined with changes in labor demand and institutions to diminish the returns to skill.

Chapter 6, by Ricardo Barros, Mirela de Carvalho, Samuel Franco, and Rosane Mendonça, seeks to estimate the contribution of key aspects of Brazilian public policy and labor market performance to reducing income inequality. The chapter focuses on government transfers; earnings differentials by educational level; spatial and sector labor market integration; and minimum wage. The decomposition analysis suggests that the decline in inequality observed in Brazil since the end of last decade can be accounted for by a sharp fall in earnings inequality and nonlabor income inequality. The authors suggest that half of the decline in labor earnings inequality was caused by the acceleration of educational progress that occurred over the last decade in Brazil and that the other half resulted from labor market integration. The decline in nonlabor income inequality was driven by changes in its various components, in particular, public transfers. The authors find that increases in the coverage and generosity of the transfers as well as improvements in

targeting cash transfers were key contributors to the decline in nonlabor income inequality.

In chapter 7, Gerardo Esquivel, Nora Lustig, and John Scott use decomposition techniques to identify the factors behind the decline in inequality in Mexico since the mid-1990s. The authors argue that the higher relative wages of low-skilled workers, a rise in the share of remittances, and expansion of government monetary transfers to the poor are the main factors. In turn, the fall in the skill premium appears to be associated with a reduction in the share of unskilled workers in Mexico's labor force. That change in the composition of the labor force coincided with—and probably was caused by—a significant expansion of government spending on basic education. In addition, the equalizing effect of transfers, driven mainly by the conditional cash transfer program *Progresa/Oportunidades*, rose over time. Benefits incidence analysis demonstrates that government redistributive spending on education, health, and nutrition also became more progressive over the last decade. In order for inequality to continue to fall in the future, Mexico needs to phase out regressive transfers and improve the quality of education, particularly for the poor.

Finally, chapter 8, by Miguel Jaramillo and Jaime Saavedra, attempts to identify the proximate determinants of the decline in inequality between 1996 and 2007 and discusses the market and policy forces behind them. Using a parametric decomposition method, the authors find that returns to experience, educational structure, and unobservable factors had an equalizing effect, while returns to urban residence and hours worked had an opposite effect. Returns to education had an equalizing effect at the individual level but were unequalizing at the household level. Market dynamics have kept returns to education on hold and, aided by demographic factors, have also caused a decline in returns to experience. They also suggest that the decline in inequality is associated with a fall in non-labor income inequality, a reflection of the expansion of government transfers to the poor. Past and present policies have played a key role in the expansion of access to basic education and the consequent rise of overall educational attainment, and they have contributed to reducing the urban-rural gap in access to basic infrastructure. Jaramillo and Saavedra recommend that government actions in the future foster inclusive growth in three areas: improving the quality of education, promoting small businesses, and developing rural infrastructure.

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