

Chapter 2

LABOR INCOME INEQUALITY AND EDUCATION

The world's largest per capita income inequalities are found in Latin America. The region's extreme income differences among workers lie at the heart of this inequality. Anywhere in the world, higher wages are paid to workers who are more skilled or occupy management and administrative positions than to workers having little education, who are normally placed in manual production jobs. Globalization and the introduction of new labor-saving technologies have widened these gaps in both industrial and developing countries. The gaps in Latin America, however, have widened even more rapidly.

Figure 2.1 is based on worldwide wage information by occupation, and uses the (relative) wage gap in industrial countries as a basis of comparison. The figure shows that Latin America's gaps are twice as wide as those of the industrial countries. In the Asian "four tigers," wage differentials between office workers and manual laborers are similar to those in industrial countries. Relative wage gaps are larger among other developing countries in Asia and Africa, but they are less pronounced than in Latin America. Further, while the wage differentials in these groups of countries have gradually been approaching those of industrial countries, this trend was interrupted in Latin America at the end of the 1980s, and has been on the rise during the 1990s.¹

These earnings gaps between occupations illustrate why they serve as a conduit for the main factors in

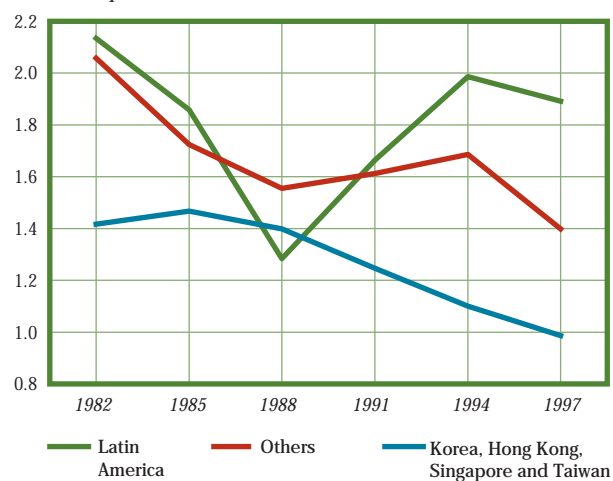
labor income differentiation. The most substantial differences arise from educational levels and from how the market remunerates different types of education. However, these are not the only factors in income differentiation. Persons with more experience earn more; men are

paid more than women; and people with permanent jobs in formal sector enterprises earn more than those working for informal sector businesses or the self-employed. There are also differences between rural and urban areas and between economic sectors. In addition, some differentiation factors may be dependent on others. For example, while women earn less than men, the differences are less substantial in formal sector jobs, while they increase considerably among the self-employed.

This chapter analyzes the various dimensions of

labor income inequality and discusses education's central (although not exclusive) role in explaining these differences.

Figure 2.1. Relative Wages:
White Collar/Blue Collar, 1982-97
(Developed Countries=1)



Source: Lora and Márquez (1998).

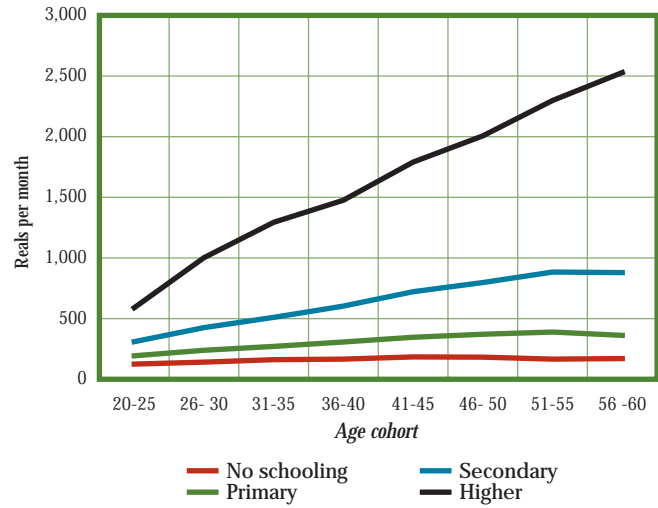
¹ See Lora and Márquez (1998) for a detailed description of these calculations, which compare earnings between workers having the same personal characteristics (education, experience, age and family status) and occupying similar jobs in different countries (department manager of a given size company, secretary, driver, construction worker, etc.). The calculation method ensures that the comparisons are not affected by changes in the composition of the labor supply or in employment, or by price phenomena at the macroeconomic level (inflation, exchange rate fluctuations, etc.).

Figure 2.2. Income Differentials by Education (Noneducated workers = 1)



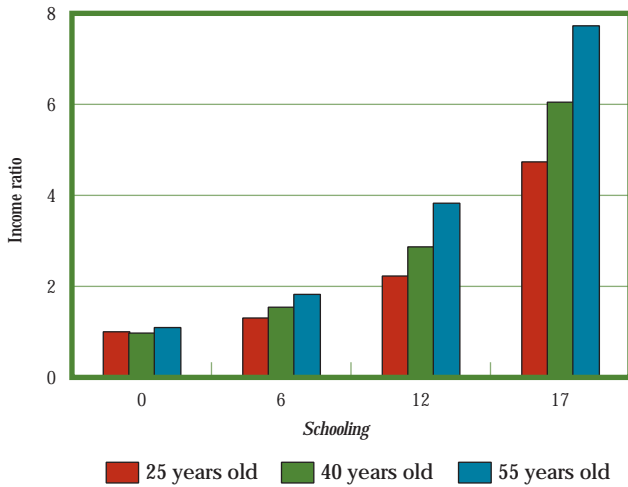
* Countries with urban data only.
 Note: Regressions of returns to education controlling for experience and experience squared.
 Source: IDB calculations based on recent household surveys.

Figure 2.3. Average Income of Earners by Age and Education Level, Brazil



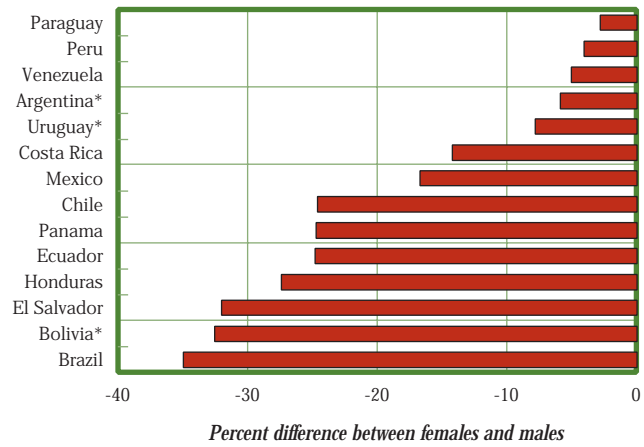
Source: IDB calculations based on household surveys.

Figure 2.4. Income Profiles by Education (Worker, 25 years of age, with no education = 1)



Note: Estimates based on income regressions by education level, controlling for experience.
 Source: IDB calculations based on recent household surveys.

Figure 2.5. Income Gap by Gender (In percent)



* Countries with urban data only.
 Note: Controlling for education, experience and experience squared.
 Source: IDB calculations based on recent household surveys.

DIMENSIONS OF LABOR INCOME INEQUALITY

Major Differences Attributed to Educational Level

A worker with six years of education (equivalent to completing primary school in most Latin American countries), employed for the first time, earns 50 percent more than a worker who has not attended school. The gap widens to 120 percent for a worker with 12 years of education (which normally corresponds to having completed secondary school), while it exceeds 200 percent for those with 17 years of education (university diploma).

These average gaps, calculated for 14 countries during the 1990s, differ widely from country to country (Figure 2.2). While in Brazil and Mexico workers with six years of education earn almost twice as much as those with no education, this gap is reduced to 40 percent in Peru, and to 35 percent in urban Argentina. With 12 years of education, the differences in income compared with workers having no education amount to 170 percent in the first two countries, while in Peru and Argentina the gap declines to about 80 percent. Further, for workers with 17 years of education, the gap is 280 percent in Brazil and 260 percent in Mexico, as compared with approximately 160 percent in Argentina and 145 percent in Peru.

It follows that income gaps attributable to educational level are significant, with substantial differences among countries. This implies that income inequality arises from education distribution patterns, as well as from the way the labor market compensates education in each country, and within each country, in light of other characteristics of the individuals, and their integration into the market in question.

Differences Increase with Age

Income gaps between educated and uneducated workers in first-time employment also tend to increase with age. The human capital developed with formal education can be enhanced with experience. This occurs at different rates in individuals with different levels of education. To understand this important point, consider the long-term earning patterns of two individuals—one is illiterate, and the other has completed a university education. At 25 years of age, the income difference between the two will be at a ratio of about four to one, according to the information on Brazil (Figure 2.3). As the workers accumulate years of experience, the skilled individual's income will increase steadily, while the illiterate worker's income will remain virtually unchanged. At 40 years of age, the income difference will be six to one, and at 55 years of age it will exceed

10 to one. Brazil has the largest income differences attributable to educational level and age. However, Latin America's average age profiles show that, at 25 years of age, income differences attributable to education are in the range of five to one, while at 55 years of age they are eight to one (for workers with 17 years of education compared with uneducated workers—see Figure 2.4).

Women Earn Less

Women earn significantly less per hour than men: the average gap for the 14 countries studied is 14 percent, although it exceeds 30 percent in Brazil, Bolivia and El Salvador, and is less than 10 percent (in increasing order) in Paraguay, Peru, Venezuela, Argentina and Uruguay (Figure 2.5).² These differences may be interpreted as the maximum possible effect of discrimination against women in each country, since the labor market does not provide equal pay for different types of employment. To the extent that more women tend to work in low-paying occupations, this is reflected in lower wages for women. Further, women earn less because they acquire less cumulative work experience than men, as a result of breaks in their work histories owing to the demands of motherhood and housework traditionally assigned to them.³ While all this suggests that the effect of discrimination is modest, it can in fact be substantial in specific activities and certain types of work. Discrimination can also cause women to drop out of school or to abstain from participating in the workforce. These possible effects of discrimination are not reflected in the aforementioned income differentials.

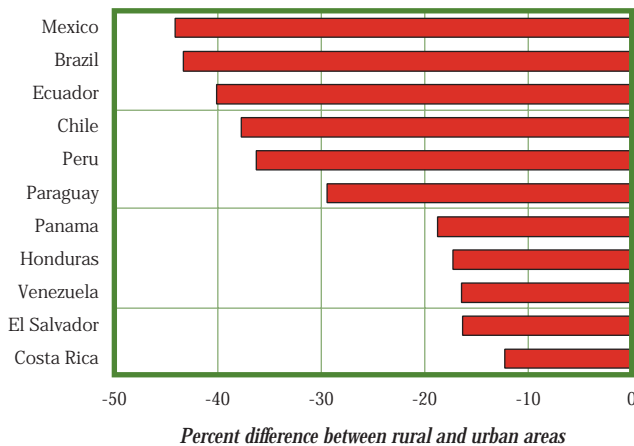
Workers Earn Less in Rural Areas

The gap between rural and urban areas is a significant dimension of inequality in Latin America. Considerable disparities in average income levels in the two areas yield higher national income inequality figures than are found in rural or urban areas considered individually. Some per capita income differences can be attributed to the fact that families are larger in rural areas (see Chapter 3), and

² An earlier study found an average gap of approximately 25 percent, not reflecting differences in education and experience. See Psacharopoulos and Tzannatos (1992).

³ It is difficult to account for women's workforce experience because the variable used as a proxy for experience is not the number of years effectively worked by each person, for which there is no information. Instead, it is an "apparent experience" variable that results when six years (of preschool) and the number of school years attained is subtracted from each person's age. This variable reasonably approximates men's workforce experience, but is much less accurate for women.

Figure 2.6. Labor Income Gap Between Rural and Urban Areas



Note: Controlling for education, experience, experience squared and gender.

Source: IDB calculations based on recent household surveys.

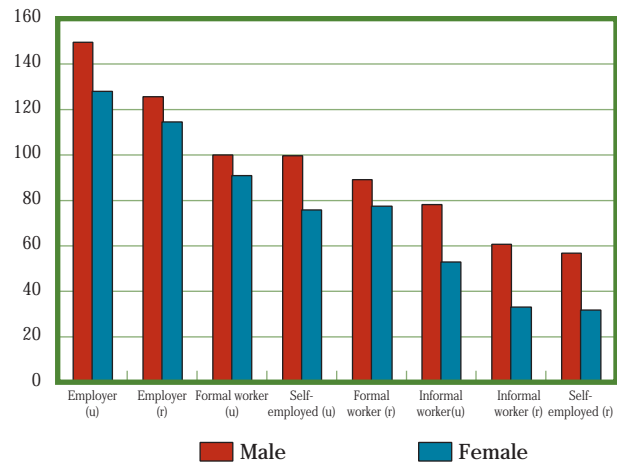
to the fact that rural workers are less educated. However, aside from these differences, workers having similar education, experience and gender characteristics earn an average of 28 percent less (per hour) than their counterparts in urban areas. The differences range from 12 percent in Costa Rica to 44 percent in Mexico (Figure 2.6).

Differences Attributable to Type of Employment

There are also significant differences in both urban and rural areas that can be attributed to type of employment. As can be seen in Figure 2.7, which uses a male wage earner employed by a formal sector enterprise with 10 or more workers⁴ (controlling for differences related to education and experience), the following differentiating features are observed in hourly labor remuneration by type of job:

- Employers in both rural and urban areas are paid an average of 25 to 50 percent more;
- Self-employed workers' earnings do not differ systematically from those of their formal sector counterparts (though there may be differences in either direction, depending on the country);
- In the rural sector, subordinate workers in formal sector enterprises earn 10 percent less;
- In the urban sector, small enterprises (with less than 10 workers) associated with the informal sector pay their workers 20 percent less than formal enterprises;
- In the rural sector, informal workers, including both self-employed and employees in small enterprises,

Figure 2.7. Income by Occupation and Gender (In percent, urban formal male worker = 1)



Note: Controlling for experience, experience squared and years of schooling. (u)=urban and (r)=rural.

Source: IDB calculations based on recent household surveys.

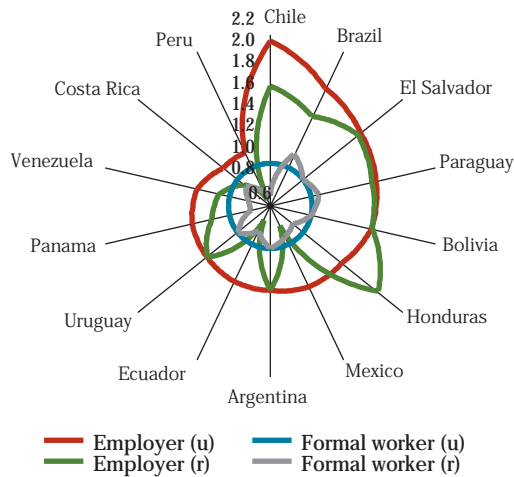
earn approximately 40 percent less than urban formal sector workers.

Women earn less in all employment categories and in both urban and rural areas. The greatest differences are found in informal sector jobs (that is, the self-employed and persons working in small enterprises associated with informal sector activities), both in rural and urban areas. Women in informal sector jobs earn 25 percent less per hour than men having equal age and educational levels. Apparent discrimination against women is less pronounced in formal sector jobs. Women supervisors in urban sectors earn 20 percent less, while women in other formal sector jobs (rural employers or employees in rural or urban formal sector enterprises) are paid only 10 percent less than men. The wage differences for women in the formal sectors are apparently not significant, since, as we have observed, women have less work experience than men.

Income differences by type of job are not uniform between countries, or even between some formal sector occupations (Figures 2.8a-2.8d). Urban employers (both men and women) in Chile earn more than twice the wages of their counterparts in formal sector enterprises. This ratio is much higher than observed in most countries, with the exception of Brazil, where it is 1.8 times higher for supervisors. In Costa Rica and Peru, urban male employers earn only 1.2 times the pay of formal sector wage

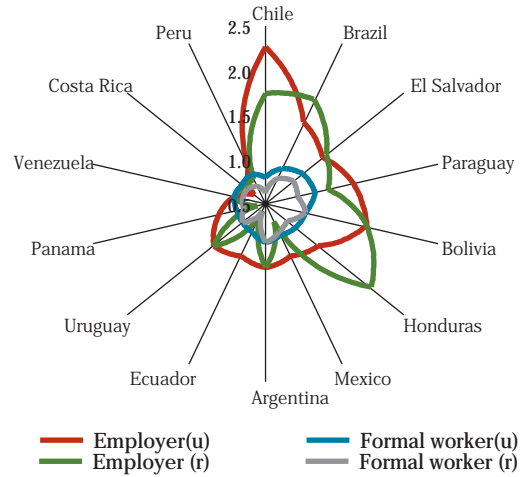
⁴In some countries, a different number is used to define formal sector enterprises.

Figure 2.8a. Income of Formal Occupations
(Urban formal male worker = 1)



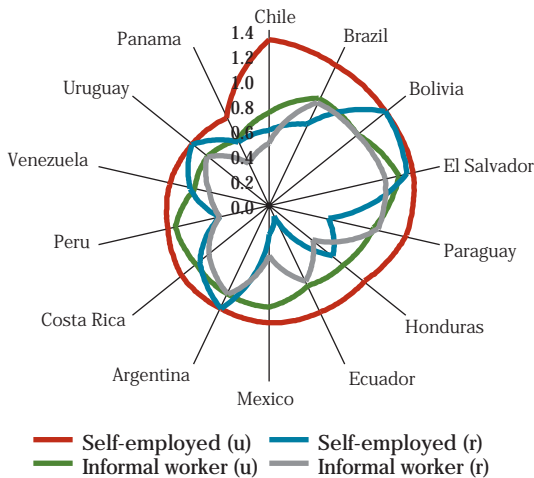
Note: Controlling for experience, experience squared and years of schooling.
Source: IDB calculations based on recent household surveys.

Figure 2.8b. Income of Formal Occupations, Women
(Urban formal male worker = 1)



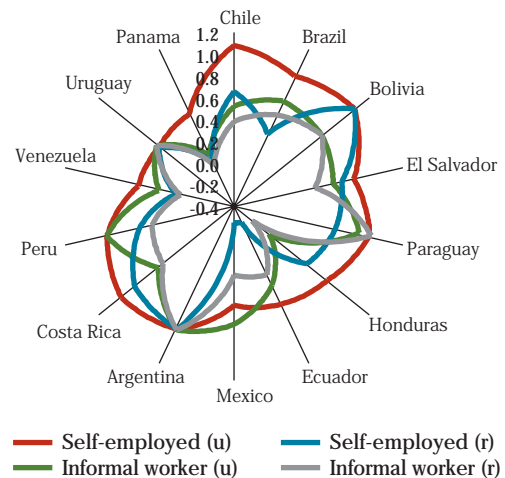
Note: Controlling for experience, experience squared and years of education level.
Source: IDB calculations based on recent household surveys.

Figure 2.8c. Income of Formal Occupations, Men
(Urban formal male worker = 1)



Note: Controlling for experience, experience squared and years of schooling.
Source: IDB calculations based on recent household surveys.

Figure 2.8d. Income of Informal Occupations, Women
(Urban formal male worker = 1)



Note: Controlling for experience, experience squared and years of schooling.
Source: IDB calculations based on recent household surveys.

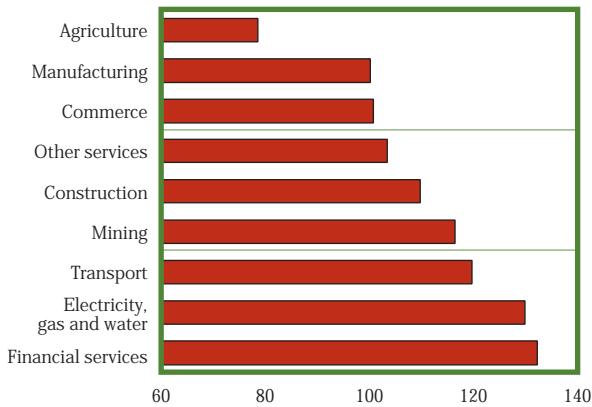
earners, while rural employers earn less. Wages paid to male rural workers in the formal sector are much more similar to those of urban workers having similar characteristics, with differentials ranging from 14 percent (Brazil) to -30 percent (Chile).

Income differentials for women with formal sector jobs are similar to those of men in most countries. However, premiums for women employers (as compared with male formal sector employees in urban areas) are considerably lower than those paid to men (except in urban

areas of Chile and Bolivia, and in rural areas of Honduras and Peru).

Where informal sector activities are concerned, only Chilean women in urban areas and self-employed Bolivian women receive pay comparable to male formal sector employees. Other women in the informal sector earn substantially less, and the gaps are generally more pronounced than for men. The greatest apparent discrimination against women in the informal sector is found in El Salvador, Honduras, Panama and Venezuela.

Figure 2.9. Labor Incomes by Sector
(In percent, manufacturing = 1)



Note: Controlling for experience, experience squared, education, gender, and type of employment.

Source: IDB calculations based on recent household surveys.

Differences Due to Economic Sector

More formal sector workers are employed in industry than in agriculture, more women are employed in trade than in the transportation sector, and the financial sector has more stringent education requirements than any other sector. As a result, we might expect these conditions to be reflected in a typical worker's wages in each sector. However, even after taking into account all of the earnings differences attributable to education, experience, gender and type of occupation, workers in different sectors are not paid equally. The same individual employed as a formal sector worker in agriculture would be paid 20 percent less than in industry or trade, while in the transportation, public services and financial sectors, the individual could earn 20 percent or more than in industry (Figure 2.9).

However, it is difficult for any individual to be so versatile. Each sector might recognize and compensate some skills differently than others, and there is abundant proof that larger enterprises in all countries tend to pay their workers more in order to provide incentives, reduce supervision costs, and recognize the individual's investment in company-specific training, among other reasons.⁵ As a result, sectors that require more specialized skills and in which larger enterprises operate tend to pay higher wages to workers having apparently similar years of education and experience and class characteristics, from the statistical standpoint. In any case, the differences by sector constitute an additional dimension of labor income inequalities.

The behavior of sectoral remuneration in Figure 2.9 is an average, from which some countries diverge appre-

ciably. Although the agricultural sectors in all countries pay workers less than the industrial sectors, the difference is only slight in Panama, less than 10 percent in Honduras, and exceeds 40 percent in Peru and Mexico. At the other end of the scale, the financial and public service sectors (electricity, gas and water) compete as the highest paying sectors. Public services offer better jobs in Bolivia and Paraguay, with pay exceeding levels in the industrial sectors in these countries by 40 percent and 70 percent, respectively. By contrast, in Chile, Mexico and Venezuela, public service wages exceed industrial ones by more modest figures (between 3 and 10 percent). Brazil, Ecuador, Mexico and Uruguay offer much higher pay in the financial sector, with premiums of about 50 percent over industry.

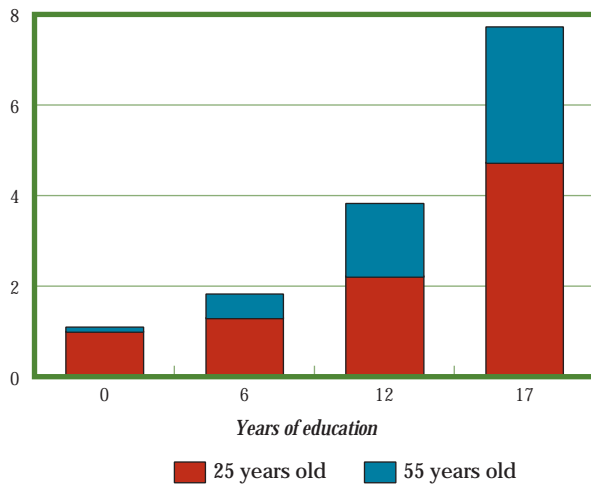
Differences, Large and Small

We have described the income differences related to workers' different individual and labor characteristics; however, the relative importance of these factors should be considered along with a number of stylized figures for Latin America's average (Figure 2.10). From among all the angles of inequality considered, those associated with education are most significant. A 25-year old worker who has a university education earns four times more than a worker with only a primary education, and five times more than an illiterate worker. These gaps widen with experience—a delayed form of the influence of education on income. At 55, a worker who has a university education will earn 4.5 times more than a worker with a primary education, and eight times more than an illiterate worker of the same age. Owing to the effect of education through experience, there is also a generational dimension to inequality: older generations (of working age) earn more than younger ones, and these gaps widen in direct proportion with education at all levels.

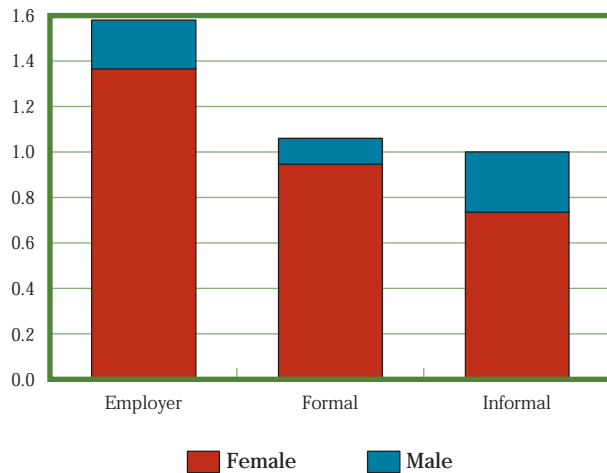
Compared with inequalities associated with education and experience, those attributable to other factors are smaller, though not negligible. There is a gap of about 40 percent between supervisors and workers, and between the latter and their informal sector counterparts (employees and self-employed workers) the gaps are 20 percent for men and approximately 40 percent for women. Apparent discrimination against women seems to be concentrated in the informal sector, possibly owing in part to less cumulative experience, while reflecting the fact

⁵ See Krueger and Summers (1988), Hamermesh (1998), and Raj Mehta (1998).

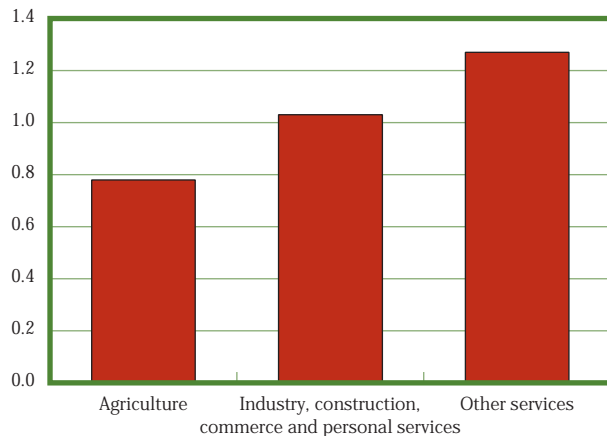
Figure 2.10. Labor Inequality
a. Between Workers with Different Schooling and Age
(Noneducated 25-year old worker = 1)



b. Between Workers with Different Types of Employment, by Gender
(Noneducated 25-year old male worker = 1)



c. Between Sectors
(Manufacturing = 1)



Source: IDB calculations based on recent household surveys.

that it is more difficult for women to access formal sector jobs because of the stringent requirements associated with these positions and the rigidities imposed by labor legislation (see Chapters 3 and 6).

Earnings for workers having similar characteristics and types of jobs, but in different economic sectors, differ by approximately 25 percent between agriculture and sectors such as industry, construction, trade and personal services. Between this group and the “modern” service sectors (transportation services, electricity, gas, water, and financial activities), there is an additional difference of about 25 percent.

How Much Do These Differences Explain?

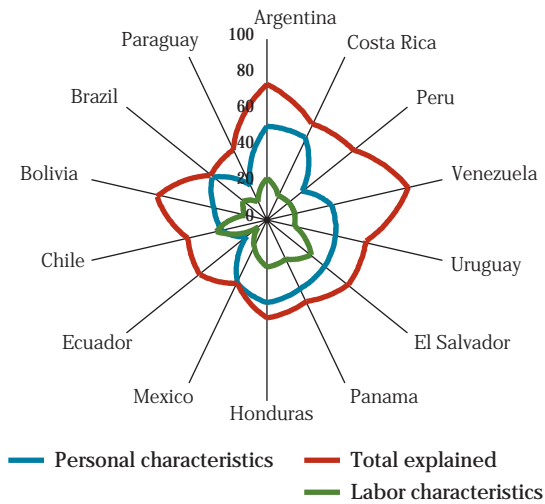
All of these differentiation factors combined account for 55 percent of the labor income concentration in the typical Latin American country. The proportions are higher in Venezuela and Argentina, accounting for more than three-fourths of the concentration, while they explain just under half of the concentration in Brazil, Chile, Ecuador, Mexico and Paraguay (Figure 2.11). The unexplained share of income concentration is attributable to individual differences in talent, educational quality or other personal circumstances, or to differences in productivity conditions, and in how enterprises and businesses compensate their workers within each sector.⁶

Differences in the Characteristics of the Individual or the Job

Each individual’s educational level, work experience and gender are associated with major labor income differences. These individual factors combined explain an average of 35 percent of the labor income concentration in the region, and approximately half of the concentration in Argentina, Costa Rica, El Salvador, Panama and Honduras (Figure 2.11). However, individuals are not the source of this inequality; it is instead the way in which the labor market compensates their characteristics and makes distinctions according to individual characteristics and labor market integration potential. Two individuals with different educational levels may earn much more unequal wages in a society in which education is a scarce commodity than in another society where the average educational level is high.

⁶ However, income measurement errors and problems in defining observable characteristics also account for unexplained inequality.

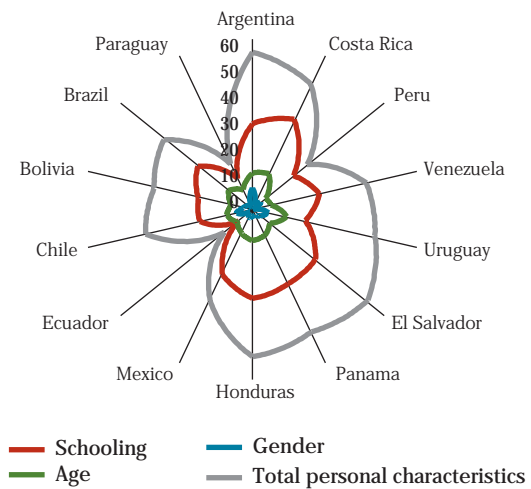
Figure 2.11. Sources of Inequality
(Percent of the Gini coefficient of labor income)



Note: Regressions of income mixing all personal and labor characteristics.

Source: IDB calculations based on recent household surveys, and Barros, Duryea and Székely (1998).

Figure 2.12. Inequality Associated with Personal Characteristics
(Percent of the Gini coefficient of labor income)



Note: Regressions of income mixing all personal and labor characteristics.

Source: IDB calculations based on recent household surveys, and Barros, Duryea and Székely (1998).

Among individual characteristics, educational differences have the most significant effects on inequality, explaining an average of one-fourth of the labor income concentration and as much as one-third of the concentration in Argentina, Costa Rica, El Salvador, Panama and Honduras. Differences in experience, which constitute one conduit for amplifying educational differences, account for 10 percent of labor income concentration, while gender differences account for approximately 4 percent (Figure 2.12).⁷

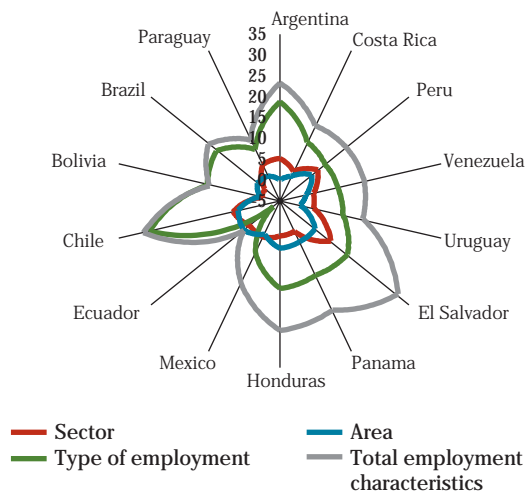
On the other hand, the explanatory capacity of earnings differences by type of job, geographic area and economic sector averages 18 percent for the 14 countries studied, exceeds 10 percent in all cases, and is near 30 percent in El Salvador and Chile. This concentration is attributable to the fact that earnings differ among workers having similar personal circumstances. Although labor characteristics have less explanatory capacity than personal characteristics, this capacity is far from negligible. Differences in earnings associated with labor characteristics reflect a number of different segmentation factors that underlie inequality. In labor markets segmented by transportation problems or institutional or cultural rigidities, the same group of individuals will necessarily experience greater income inequalities than those in a homogeneous, integrated society with flexible labor markets. As we will observe in Chapter 6, ambitious labor protection and job security standards in the formal sector in Latin America have constituted an inequality fac-

tor, as they have limited worker mobility and reinforced income differences (as well as social security and stability differences) between those workers covered by legislation and those who are not.

The greatest inequalities associated with labor characteristics arise from the differences in earnings by type of job (supervisors, formal sector employees and informal sector workers). These differences account for an average of 13 percent of labor income inequality in Latin America. The highest levels of inequality by type of job are found in Chile, accounting for 27 percent of the concentration. Remuneration differences by economic sector explain an average of 5 percent of the concentration, with a maximum of 11 percent in El Salvador, while geographic differences account for about 3 percent. Greater segmentation between rural and urban areas is observed in Ecuador, El Salvador, Chile, Honduras, Panama and Peru, accounting for 5 to 6 percent of the concentration (Figure 2.13).

⁷ The sum of these factors does not correspond to 35 percent of all factors mentioned in the preceding paragraph, as the latter figure reflects the influence of the interplay between the factors.

Figure 2.13. Inequality Associated with Employment Characteristics
(Percent of the Gini coefficient of labor income)



Note: Regression of income mixing all personal and labor characteristics.
Source: IDB calculations based on recent household surveys, and Barros, Duryea and Székely (1998).

EDUCATIONAL INEQUALITIES

Since educational differences are the main factor in labor income inequality in Latin America, a more detailed analysis is warranted of the status of education in the region and its influence on wage inequality.

The population's average educational level is the most important indicator of the quantity of "human capital" a country's workers provide. However, this factor is only one dimension of the status of education, and does not suffice to explain the differences in worker earnings. We must also consider how this educational capital is distributed among the population. Societies having considerable disparities in educational levels might be expected to have a higher labor income concentration level than those in which education is more uniform. However, education dispersion is also insufficient to explain income differences. Its impact will depend on earnings gaps existing between the highly educated and the uneducated. Finally, among persons having the same number of years of education, there will also be earnings differences, resulting in part from differences in educational quality or characteristics.

The average educational level and distribution, earnings gaps by educational level, and quality differences are therefore the four dimensions that must be considered in analyzing the influence of education on labor income concentration. These dimensions are interrelated; for example, when a country's average educational level

is very low, the distribution tends to be fairly equitable. The differences arise when some individuals begin to be more educated than others. Similarly, relative earnings of the highly educated will tend to be quite high initially, when these persons are in the minority, but will be lower in societies with higher and better distributed educational levels. Last, poor educational distribution will be reflected in differences in the number of years of education, as well as in lower earnings for persons with a lower quality education who are less likely to reach more advanced educational levels.

Educational Levels in Latin America

Educational levels have increased in Latin America. In the 1970s, the average Latin American over 25 years of age had 3.3 years of education. By the early 1990s, this average had increased to 4.8 years. During this period, the uneducated proportion of the population declined from 36 percent to approximately 23 percent, while the percentage of the population with some university education rose from 2 percent to more than 8 percent (Table 2.1).

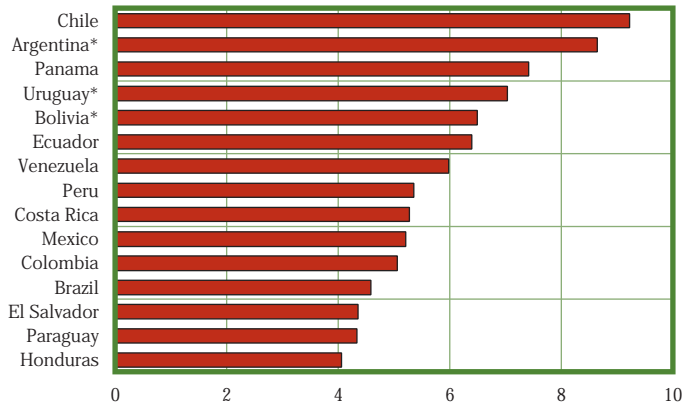
However, educational progress in the region has lagged far behind other groups of countries. The Asian "miracle" countries, where the average educational level was 3.5 years during the 1970s (quite similar to Latin American countries), reached an average of more than six years of education in the early 1990s. While the average educational level in Latin America improved at a rate of only 0.9 percent per year, in East Asian countries it improved at a sustained rate of approximately 3 percent per year.

Comparison with the countries of East Asia highlights a major difference in the structure of education: in Latin America, a very small proportion of the population has a secondary education, while many people have had only some primary education. As surprising as this may seem, the educational differences between East Asia and Latin America cannot be attributed to the illiterate proportions of the population or to the university-educated component. On the contrary, in Latin America, a slightly higher proportion of the population has attended a university.

The disproportion between primary and secondary education groups is one feature that distinguishes Latin America not only from East Asia, but from any other region of the world. In fact, Latin America has the highest proportion of workers with some primary education, and after sub-Saharan Africa, it has the lowest proportion of workers with some secondary education.

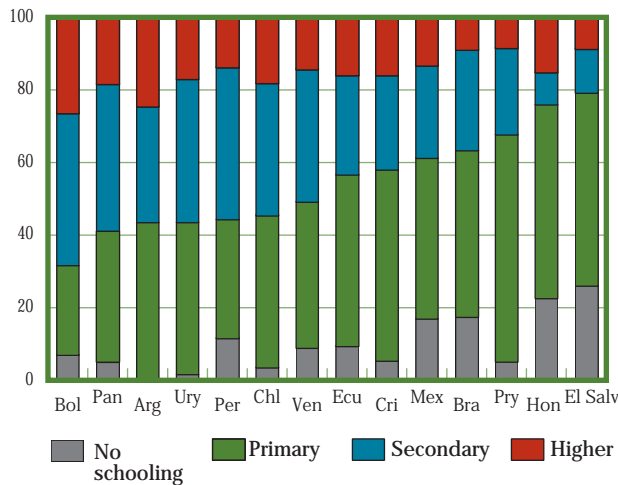
As might be expected, however, this regional pattern includes tremendous differences between countries.

Figure 2.14. Average Years of Schooling



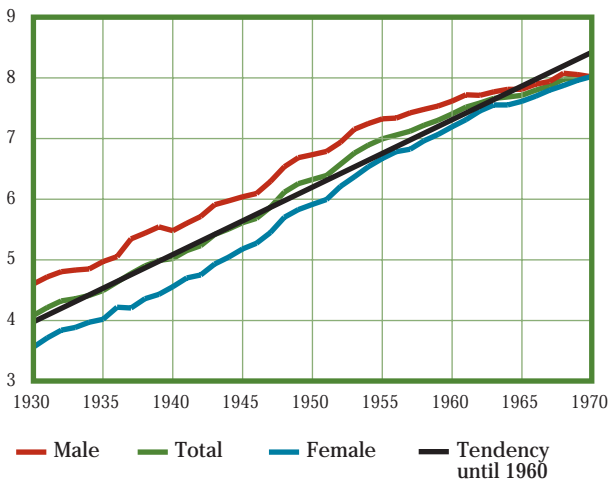
*Countries with urban data only.
Source: IDB calculations based on recent household surveys.

Figure 2.15. Population Distribution by Level of Education (In percent)



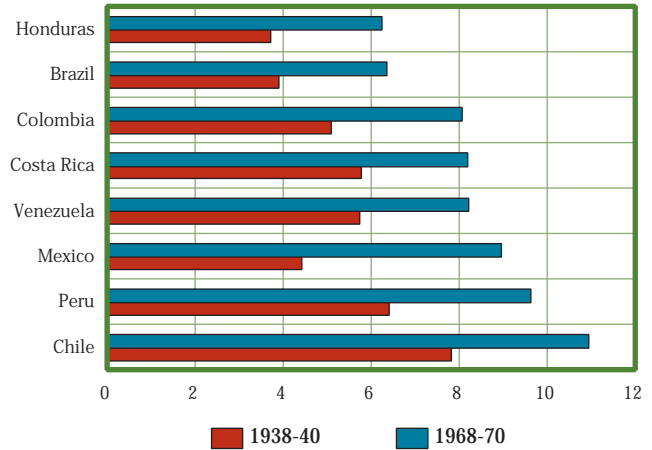
Note: Population 25 years of age or older.
Source: IDB calculations based on recent household surveys.

Figure 2.16. Mean Years of Schooling by Birth Cohort in Latin America (Three-year moving average)



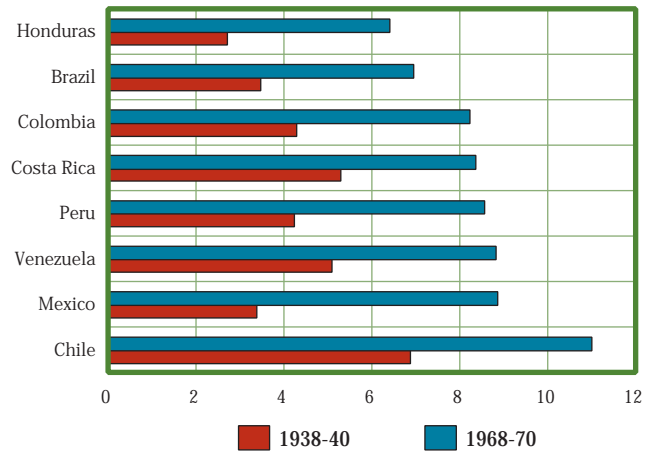
Source: Duryea and Székely (1998).

Figure 2.17a. Education by Cohort: Males Born in 1938-40 and 1968-70 (Years of schooling)



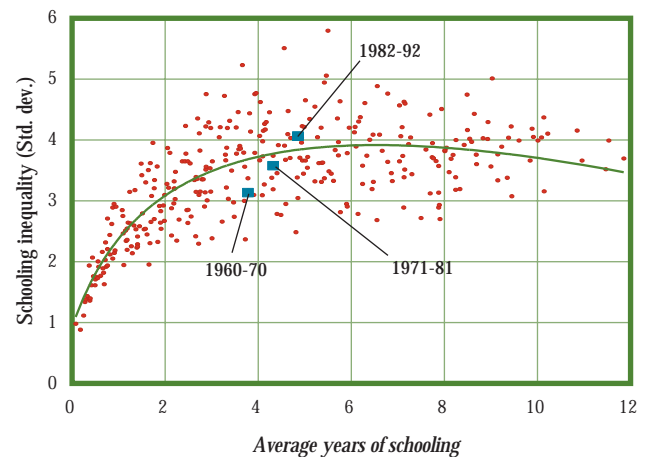
Source: IDB calculations based on recent household surveys.

Figure 2.17b. Education by Cohort: Females Born in 1938-40 and 1968-70 (Years of schooling)



Source: IDB calculations based on recent household surveys.

Figure 2.18. Schooling Inequality and Level



Note: Squares identified by years refer to Latin America.
Source: Calculations based on data from Barro and Lee (1996).

Table 2.1. Educational Levels in Latin America and East Asia, 1990
(Percent of the population over 25 years of age at each level)

	Latin America	East Asia
No education	23.6	20.1
Primary, complete or incomplete	50.8	43.8
Secondary, complete or incomplete	16.9	28.0
Higher, complete or incomplete	8.6	8.2

Source: Calculations based on data from Barro and Lee (1996).

At one extreme, approximately half of the population in Guatemala or Haiti has had no education, while the average adult has had less than three years of schooling. At the other extreme are relatively advanced countries such as Argentina and Barbados, where average education exceeds seven years, near the level of industrial countries (Figure 2.14).

The high relative share occupied by countries having some primary education, which is characteristic of Latin America as a whole, is seen in Brazil, Jamaica, Trinidad and Tobago and Costa Rica, where more than 60 percent of the population over 25 years of age has only had some primary education. The small proportion occupied by the group with some secondary education is particularly evident in Brazil and Guatemala, with only about 5 percent of the population in this group (Figure 2.15).

Since new educational efforts can only change the level of education in the younger groups, the time frame required to raise the average educational level of the entire adult population is quite lengthy. In addition, a comparison of average education rate increases in countries with different demographic structures and growth rates may be misleading. A more direct method for determining educational progress is to compare educational levels in different cohorts. Educational levels for both men and women in each generation have tended to exceed previous generations. However, the progress rate decelerated for generations born after the end of the 1950s and during the 1960s (Figure 2.16).

Comparison of educational levels up to 1995 for individuals born during the period 1968-70 (who were 25-27 years of age at the time) with those of persons born 30 years earlier shows that, on average, only about three years of progress was made in terms of years of education—approximately one year per decade. Women progressed more rapidly than men, although the levels are still modest (Figures 2.17a and b). In Chile, Peru and Mexico, for example, men gained more than three years while women gained more than four. However, men pro-

gressed by only about 2.5 years in Brazil, Costa Rica, Honduras and Venezuela, and women gained between three and 3.5 years in Brazil and Costa Rica. The more accelerated education rate increase for women means that they have now surpassed men in average years of education in almost all countries. Among the countries included in Figure 2.17, only in Peru do men still have a substantial advantage in educational level.

Distribution of Education

How does the distribution of education reflect the slow rise in Latin America's average educational levels and the fact that the educational structure is skewed toward a high proportion of individuals with some primary education and very few with secondary education?

Before answering this question, one should define the relationship between the average educational level and the distribution of education among the population. When educational levels are low, characteristic of societies that are less economically developed, there is a low degree of education dispersion, as very few people have had any education. There are few educational differences between generations and within each generation: all individuals tend to have similar educational levels. As the economy develops, educational progress is not uniform. Educational levels initially rise only in some limited groups. This causes educational differences to appear between the older and younger generations and within each generation, as the education system reaches only a fraction of the school-age population. As a result, during the initial stages of the development process, these two conduits lead to an increase in education dispersion.

Dispersion levels continue to rise, but the rate of increase decelerates as a higher proportion of the population achieves more advanced levels of education. The education dispersion between generations normally continues to rise in the long term, while the dispersion within generations begins to fall with broader basic education coverage. After a certain point, at which average educational levels are already very high, total dispersion (between and within generations) tends once again to decline, as there is a limit to the number of years individuals wish to remain in the education system. After the more educated groups reach this limit, higher average educational levels lead to smaller education gaps as compared with the subsequent groups. In the extreme case, we can consider a society in which everyone has a university education and there is no education dispersion.

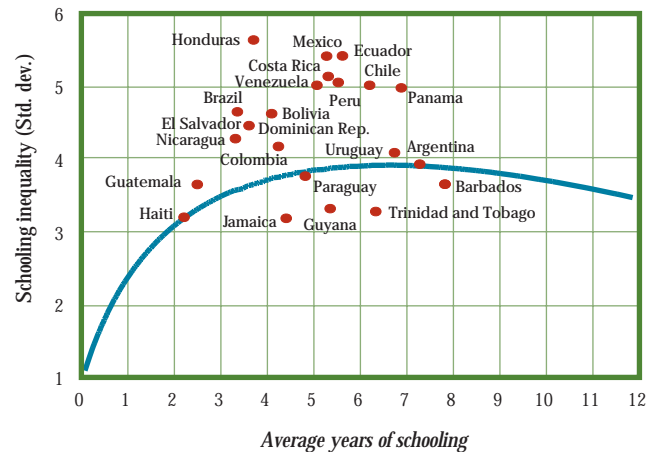
Figure 2.18 shows this relationship between educational level and dispersion at the world scale. Each of

the points represents the educational situation of a country during a given period.⁸ When educational levels are extremely low, there is typically a difference of about one year between levels among various individuals. Dispersion levels increase rapidly at the beginning and then gradually approach a maximum of about four years. In Latin America during the 1960s, when the average educational level was about three years, dispersion was lower than might be expected in light of this international pattern. However, as average education increased, the region reached and then surpassed the normal education dispersion level. Beginning in the 1980s, education was more poorly distributed in Latin America than could be justified by the normal course of the process. The typical differences in educational levels between individuals in the same country now exceed four years for an average educational level of less than five years.

In most countries of the region, education is more poorly distributed than one might expect (Figure 2.19), with the exception of Guyana and a number of English-speaking Caribbean countries. This might be attributable to the pronounced influence of the British model on the school systems adopted by these countries, as the British system is more inclusive, and has fewer dropouts up to the secondary level. University access, on the other hand, tends to be more restrictive than the model adopted by Hispanic countries. In the English Caribbean, only 5.4 percent of the adult population has had no education, well below the 33 percent in Hispanic countries in the region. However, only 2.5 percent of the adult population has had some university education—half the level observed in Hispanic countries (Figure 2.15).

Education dispersion, on the other hand, has tended to increase in Latin America, depending on how the differences between and within generations interact. Average educational levels have increased in part because younger people are getting more education than their elders—which affects the dispersion between generations—but also because the dispersion within each generation is improving. These effects are more pronounced in some countries than in others, and Brazil and Venezuela illustrate the differences. In Brazil, the generation born in 1954-56 had an average educational level of five years, with a variance of approximately 30 percent. The 1939-41 generation reached the same level in Venezuela, but with a variance of approximately half, as this increase occurred through expanded primary education coverage rather than through a rise in more advanced education in some groups. In countries where educational levels have been sustained in a broader base (Chile, Costa Rica, Peru and Venezuela), education dispersion within each generation has been reduced vis-à-vis prior generations, beginning

Figure 2.19. Distribution of Education in Latin America



Source: Calculations based on data from Barro and Lee (1996).

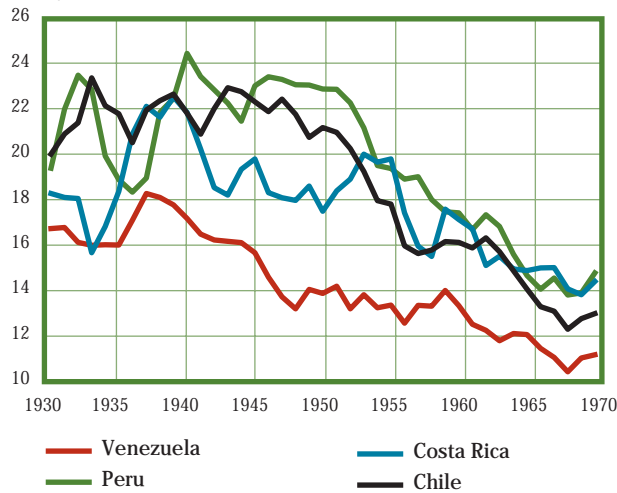
with those born during the 1940s (Figure 2.20a). On the other hand, where the process of increased average education is farthest behind, or where coverage has been less extensive (Brazil, Colombia, Honduras and Mexico), dispersion did not begin to decline until the generations born during the 1960s (Figure 2.20b). Fortunately, education dispersion within the younger generations in all cases is lower than in the immediately preceding generations, suggesting that total education dispersion will tend to decline in the long term.

How can the excessive dispersion in the population's average years of education in most Latin American countries be explained? What tangible factor in the educational area underlies these apparently abstract indicators? Answering these questions starts with identifying certain features in Latin American school enrollment and dropout rates by social category and then comparing them with other regions of the world. This comparison can be made for 27 countries throughout the world, including seven in Latin America, using recent studies based on comparable household surveys to reconstruct the educational history of youth in the same cohort (15-19 years of age) by social category in all countries.⁹ In each country, the "poor" category is defined as households in the lower 40 percent in terms of consumption and standard of living (not necessarily income) levels, and "wealthy" households are defined as those in the upper 20 percent.

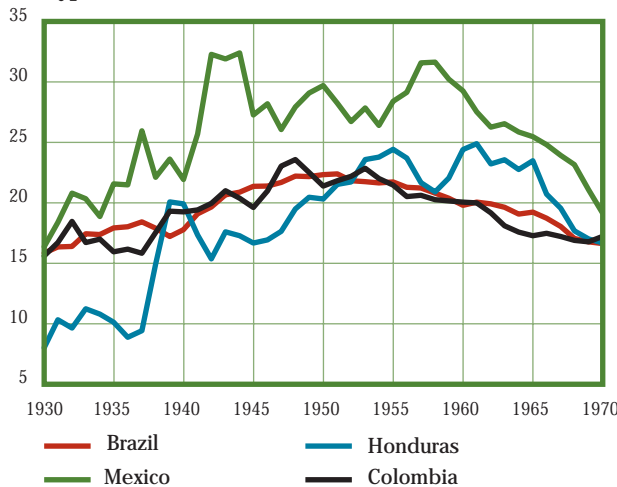
⁸ Three observations are included for each country, corresponding to averages for the periods 1960-70, 1971-81 and 1982-92.

⁹ Filmer, Pritchett and Tan (1998). The majority of the surveys were conducted between 1991 and 1996.

Figure 2.20a/b. Variance of Male Schooling by Birth Cohort
Type A Countries



Type B Countries



Note: The y axis is the moving average of the variance of education.
Source: Duryea and Székely (1998).

In Latin American countries, differences in educational achievement between the various social categories are less pronounced during the first few years of school, and increase appreciably thereafter. On average, 94 percent of the children in the poor categories of the four countries considered in South America (Bolivia, Brazil, Colombia and Peru), and 76 percent of the poor children in low-income countries in Central America and the Caribbean (Guatemala, Haiti and the Dominican Republic) enroll in and complete the first year of primary education. These percentages are lower than, but do not differ greatly from, those in the moderate categories (99 percent and 92 percent, respectively), and even in the upper categories (99 percent and 96 percent). However, as early as the fifth year of education, only about 63 per-

cent of the children in the poor category in South American countries, and approximately 32 percent in those of Central America and the Caribbean, remain in the system. During the ninth year of school, these figures decline to 15 percent and 6 percent, respectively. By contrast, in the upper category, 93 percent and 83 percent of children in the two groups of countries complete their fifth year of school, and 58 percent and 49 percent complete their ninth year (Figures 2.21a-2.21c).

It follows that the poor distribution of education in Latin America is not attributable to the lack of initial access to schools, but to increasing differences in school desertion among children from different categories as they advance through the system.

These patterns are far from universal (Figures 2.22a-2.22c). In some regions of the world, educational differences begin with first grade, reflecting access problems. For example, in West Africa and South Asia, less than half of the children in the poorer 40 percent of income levels complete first grade, which is accomplished by approximately four of every five children in the wealthier category.

Unlike Latin America, in other groups of countries with a high initial enrollment rate, a greater proportion of the children are kept in school, at least during the first five years, which reduces educational differences by income category (East Asia). In other regions with a high initial enrollment rate followed by a dropout problem, the latter is not concentrated so heavily among the poor—it also affects the middle and even upper classes (East Africa).

In summary, Latin America's poor educational distribution is not the result of problems of initial access for the poor to the education system. It results instead from high and more rapid dropout rates among the poor. Latin American school systems are quite stratified as a result, and do not constitute a mechanism for social mobility, or for reducing income differences, as is true in other areas of the world.¹⁰

RETURNS ON EDUCATION IN LATIN AMERICA

Educational progress in Latin America has been slow and education dispersion quite high, reflected in part by the normal relationship between the two variables, and strengthened by the stratification of educational achieve-

¹⁰ Chapter 3 discusses the determinants of educational progress at the family level. Chapter 5 examines the implications of educational sector organization on the efficiency and quality of the services provided to different income groups and analyzes the distribution of the benefits of public expenditure on education.

Figure 2.21a. Percent of Population with First Grade Education, by Income Level

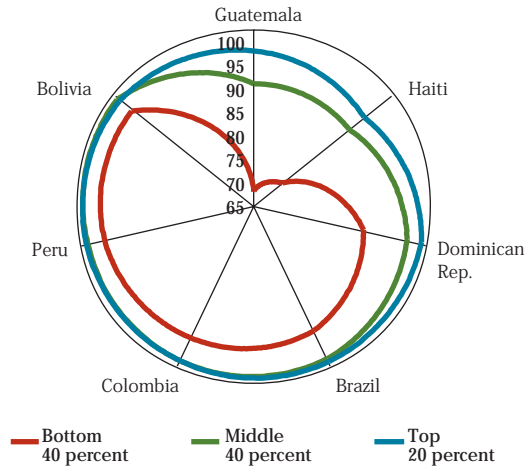


Figure 2.22a. Percent of Population with First Grade Education, in Developing Regions, by Income Level

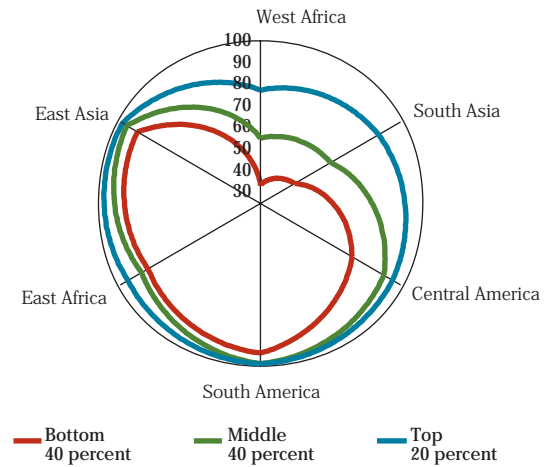


Figure 2.21b. Percent of Population with Fifth Grade Education, by Income Level

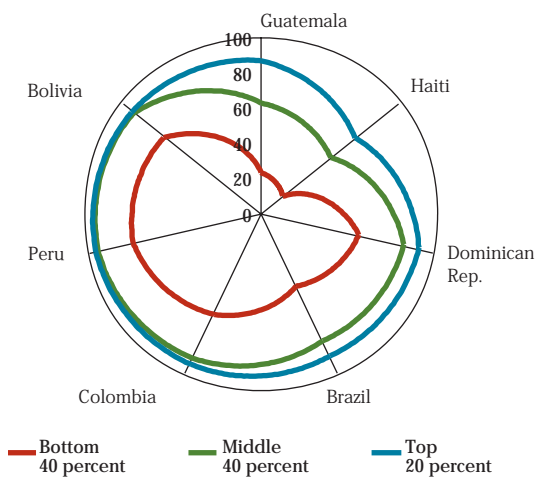


Figure 2.22b. Percent of Population with Fifth Grade Education, in Developing Regions, by Income Level

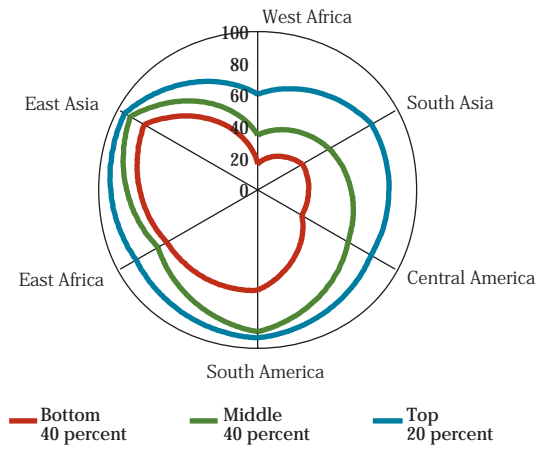


Figure 2.21c. Percent of Population with Ninth Grade Education, by Income Level

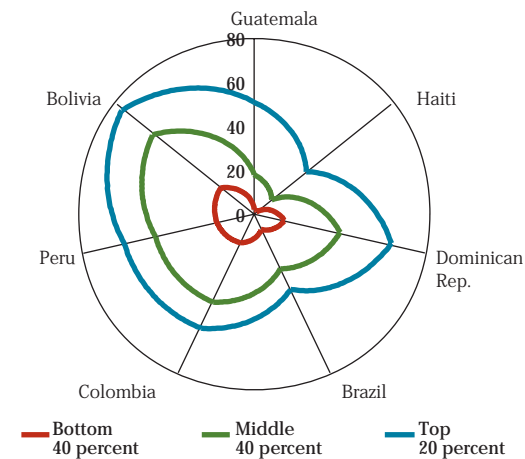
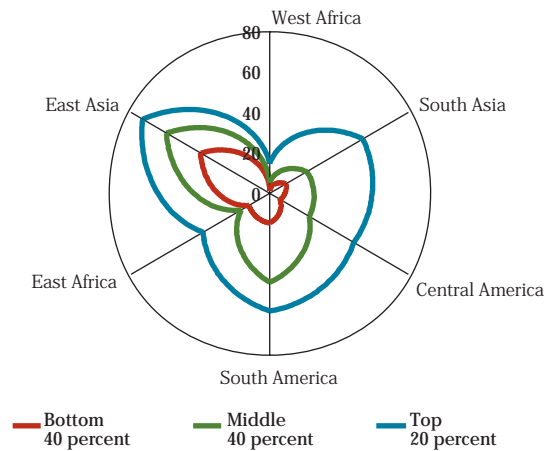


Figure 2.22c. Percent of Population with Ninth Grade Education, in Developing Regions, by Income Level



Source: Filmer, Pritchett and Tan (1998).

Source: Filmer, Pritchett and Tan (1998).

ment. However, educational level and distribution are only two of the four dimensions that must be considered to understand the relationship between education and income distribution. Returns on education and educational quality must also be considered.

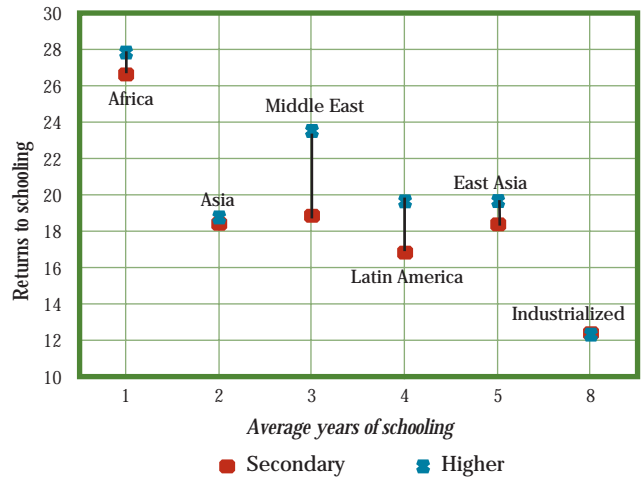
Individual returns on education are higher where the scarcity of this resource is most acute. An individual with an additional year of education in a country where educational levels are very low is likely to receive a much greater income increase than someone in a country where high educational levels are common. While in Africa income rises approximately 30 percent for each year of secondary or university education, in industrial countries, where average educational levels are high, one additional year of secondary or university education only represents an increase of approximately 12 percent in individual income. In between these two extremes, Latin America is closer to the industrial countries than it is to Africa (Figure 2.23).

These different returns can have an enormous impact on income gaps. With a 12 percent return on education, the income gap between an individual with a complete university education and an uneducated person is five to one. With an 18 percent return, it is 17 to 1, and with a 30 percent return, it is 86 to 1. The effects on income distribution also depend on the population distribution by educational level. If average education corresponds to the level reached by the majority of the population—however high the returns—there will be little difference in income distribution. However, when education is highly dispersed, as is true in Latin America, such high returns can have a considerable impact.

Low Returns on Little Education

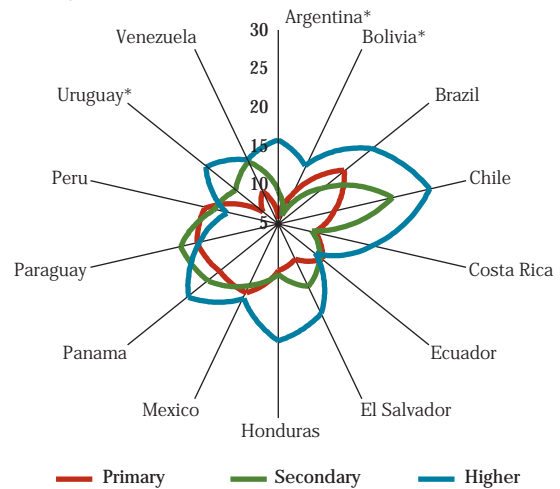
Returns on education vary not only from country to country, but among educational levels. Returns on secondary education are typically lower than those at the university level, as observed in Figure 2.23. At the international level, there is also evidence that returns on primary education are significantly higher than at the subsequent levels, with rates exceeding 30 percent in many countries. While some earlier studies have estimated average rates of return of 26 percent on primary education in Latin America up to the end of the 1980s,¹¹ estimates based on household surveys for the 1990s show returns of only 10 percent on primary education, which do not differ greatly from returns on secondary education (11 percent), and are lower than those on university education (18 percent). The highest returns on primary education are found in Brazil (17 percent), Mexico and Peru (both 14 percent). While returns on secondary education do not exceed 16 percent

Figure 2.23. Returns to Education and Years of Schooling



Source: Psacharopoulos (1994).

Figure 2.24. Returns to Education, by Level



* Countries with urban data only.

Note: Regressions of returns to education by level controlling for experience and experience squared.

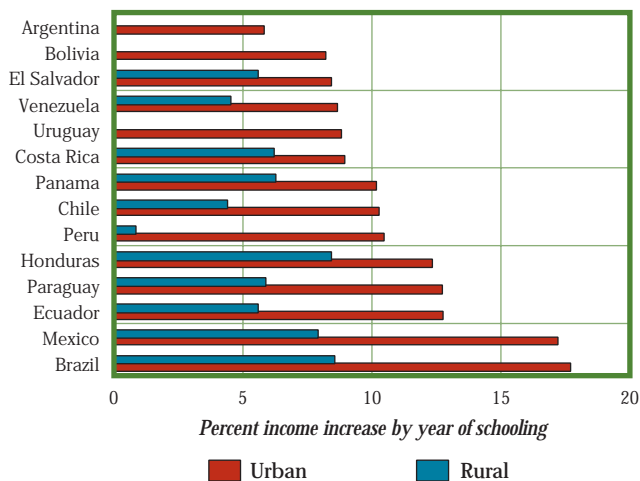
Source: IDB calculations based on recent household surveys.

in any of the countries, those on university education exceed 20 percent in Brazil, Chile, Costa Rica, El Salvador, Honduras and Panama, and never fall below 15 percent (Figure 2.24).

Low returns now offered by basic education in Latin America may reflect the influence of globalization, through a number of conduits. The incorporation of China and other less developed countries into world trade may have exerted adverse pressure on earnings for workers

¹¹ See Psacharopoulos and Ng (1994) and Psacharopoulos (1994).

Figure 2.25. Rates of Return to Primary Education in Urban and Rural Areas
(In percent)

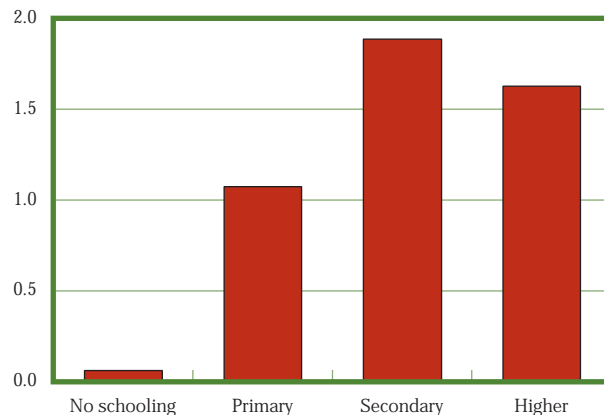


Note: Regression of return to education by level and areas controlling for experience and experience squared.
Source: IDB calculations based on recent household surveys.

with only a basic education. Trade liberalization (by Latin American countries as well as those in other regions) may have raised the relative price of local natural resources, to the detriment of relative wages.¹² And, combined with macroeconomic policies, trade liberalization in Latin America seems to have fostered the adoption of technological change that has displaced labor demand to more skilled employment.¹³ These demand factors have also interacted with a sharp expansion in the unskilled labor supply for demographic reasons, with no commensurate rise in educational levels.¹⁴

This profile of returns does not lend itself to imbalances any more than the typical profile of developing or industrial countries. The structure of returns in Latin America implies an income gap of eight to one between an individual with a complete university education and an uneducated worker; by contrast, the typical profile of industrial countries involves a gap of 11 to 1, while lower middle-income developing countries are found to have a gap of 33 to one.¹⁵ However, the structure of returns on education in Latin America is conducive to the stratification of education, as it provides little incentive to advance in basic education unless there is the scope (and potential) to have access to a university education. The small proportion of the population that reaches secondary education in Latin America is consistent with this interpretation. However, the imbalancing effects are even greater. As we will note in the following chapter, inequalities arising from education are replicated and amplified within the family, as the number of children is largely dependent on the mother's income generation potential.

Figure 2.26. Income Increase per Year of Experience, by Level
(In percent)



Note: Education level coefficients controlling for initial earnings and years of schooling.
Source: IDB calculations based on recent household surveys.

Women with low levels of education tend to have more children, who in turn will have little potential of receiving a good education.

Although returns on primary education are low, they are even lower in rural areas. While, on average, one additional year of primary education represents an 11 percent income increase for an urban worker, a rural worker's income only rises by 6 percent. The greatest differences in returns on education are found in Brazil, Mexico and Peru—possibly a reflection of quality differences between rural and urban areas, as well as a lack of adequate labor opportunities for more educated rural workers. These differences may be reinforced by the fact that the more motivated and capable workers might be more inclined to migrate to the cities (Figure 2.25).

A Note of Caution

Calculations of returns on education may be used misleadingly to support the argument that public education expenditure should focus on higher education, as it offers the highest returns. This assertion would be mistaken,

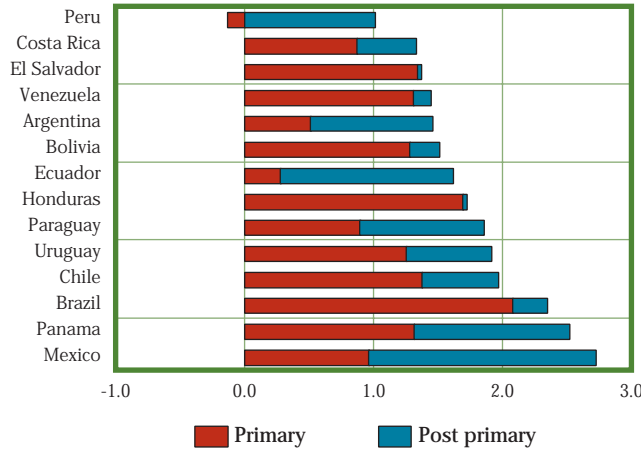
¹² See Rodrik (1997) and Wood (1997).

¹³ See Robbins (1996) and Lora and Olivera (1998).

¹⁴ See Duryea and Székely (1998).

¹⁵ Rates of return for OECD countries used were 21 percent, 12 percent and 12 percent for the three respective levels; for developing countries with incomes of up to \$2,450, they were 30 percent, 19 percent and 19 percent. Rounded averages reported by Psacharopoulos (1994).

Figure 2.27. Income Increase per Year of Experience, by Country (In percent)



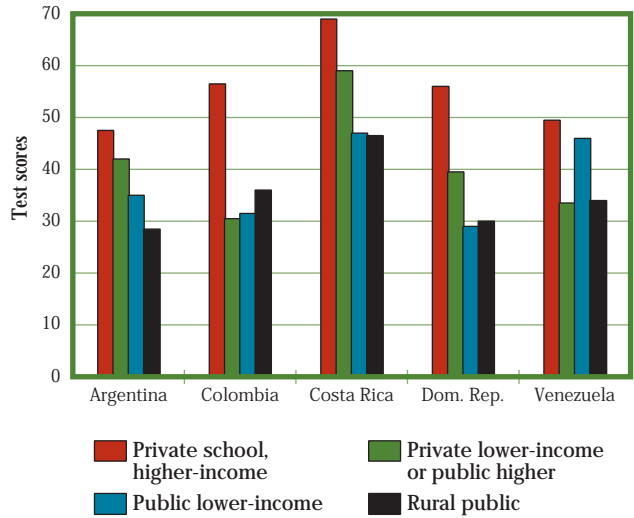
Note: Level of education coefficient controlling for initial earnings and years of education by level.
 Source: IDB calculations based on recent household surveys.

however, as public expenditure should aim at social returns, not private ones. Although basic education offers individuals low returns, it is socially desirable as it provides a basis for further benefits. Better basic education is necessary to improve the population's health conditions, reduce the birth rate, and raise the standard of living in urban areas, among many other factors.

The Multiplier Effect of Experience

Income differences resulting from education also tend to multiply with experience. Returns on experience vary at different levels of education. The rate at which income increases with years of experience is practically nil for uneducated workers, approximately 1 percent per year for workers with some primary education, and generally exceeds 1.5 percent per year for workers having a secondary or university education (Figures 2.26 and 2.27). Although as a rule the effect of experience on workers with primary education is greater than for those with no education (except in Peru), and is lower than for workers with some post-secondary education, there are considerable differences between countries. This may reflect the fact that the quality of education has not been constant over time, nor is it the same among countries. A deterioration in educational quality will be reflected in an apparent gain with experience, as older workers would tend to earn higher incomes because they have more experience, as well as because they are more educated. The opposite will occur if quality has improved.

Figure 2.28. Performance in Mathematics and Science by Type of School, 1990s



Source: Luna and Wolfe (1993), cited by Schiefelbein (1995).

QUALITY PROBLEMS

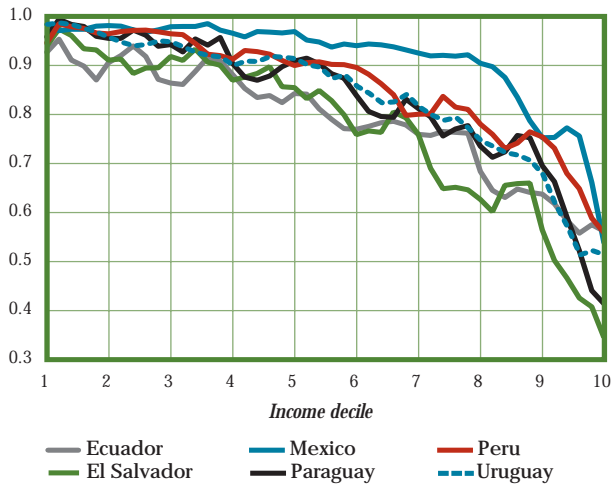
The number of years of education is only an approximate indicator of a person's educational level. An insufficient quality education yields a lower return and lower income during an individual's working life. If the education quality distribution is skewed against children from low-income sectors of the population, it will constitute an additional conduit for labor income concentration, and ultimately for the replication of inequality. All evidence for Latin America indicates that, in fact, the poor receive an inferior quality of education.

Judging from the comparison of international tests, academic performance among Latin American students is below the performance of industrial and East Asian countries.¹⁶ Further, within each country, performance among public school students from low-income families or rural schools is far below achievement in middle- and upper-class schools, especially private secondary schools. Only students from elite private schools perform on par with international levels (Figure 2.28).

Private schools offer up to twice as many hours of instruction as public schools, and generally cover the full official curriculum, while, ironically, only about 50 per-

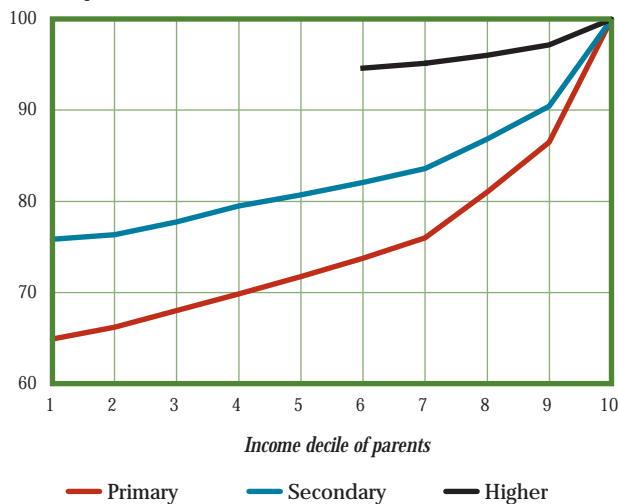
¹⁶ Reading test performance by students from seven Latin American countries was below levels of industrial and East Asian countries. In a worldwide test of mathematics skills, in which only two Latin American countries participated, one occupied the penultimate position among 41 countries, and the other would not allow the results to be published. See Puryear (1997) and Prael, et al. (1998).

Figure 2.29. Use of Public Education by Income Decile
(Percent of primary and secondary children)



Source: IDB calculations based on recent household surveys.

Figure 2.30. Educational Quality by Income Decile of Parents
(In percent, decile 10 = 1)



Note: Labor income regressions of dependents of the household as a function of experience, experience squared, education by level, education by level times education of the father, and father's and mother's education.
Source: IDB calculations based on recent household surveys.

cent of the official curriculum is covered in official schools. Public schools also register high grade repetition rates, indicative of lower levels of academic achievement per year of study.¹⁷ Inferior performance by public schools is not exclusively attributable to the students' socioeconomic situations. If the potential influence of students' observable characteristics is isolated, it confirms that scholastic achievement is lower in public schools.¹⁸

It is thus not surprising that high-income families turn away from public education. The public sector pro-

vides over 90 percent of the primary and secondary education to the poorest 40 percent of the population and approximately 80 percent to the middle 40 percent. In the next highest income sectors, however, there is an exodus from the system, to the extent that only 25 to 40 percent of the children attend public schools among families in the highest income percentiles (Figure 2.29). Contrary to what is generally believed, private education is only a feasible option for the fraction of the population that can afford it. This is a clear element of distinction between the wealthiest 10 percent of the population and the rest, which possibly underlies the enormous income gaps pointed out in Chapter 1.

Poor educational quality severely affects the income generation potential of persons from the lower-income brackets. Higher-income families have greater purchasing power, allowing them to afford a better education for their children, and the parents are in a better position to make decisions regarding their children's education, and possibly to influence their achievement. Econometric analysis indicates that the rate of return for children per year of education is significantly dependent on the father's education or the father's permanent income.¹⁹ This effect is independent of (and additional to) the possible direct impact of the father's income or the parents' education on the child's income for reasons other than years of education.²⁰

Estimates show that individuals from the lower deciles receive a primary education whose quality (measured in terms of income generation capacity) is 35 percent lower than that of the next decile above.²¹ Even between the ninth and tenth deciles, the average difference in primary education quality exceeds 10 percent. In secondary education, quality differences between the first four deciles and the last exceed 20 percent, and between the ninth and tenth deciles, they are still near 10 percent.

¹⁷ Preal, et al. (1998).

¹⁸ See Lockheed and Jiménez (1994), who conclude that, in addition to individual characteristics, performance in private secondary schools in Colombia is 13 percent better than in public schools, and 31 percent better in the Dominican Republic. See also Saavedra (1997) for Peru, and Savedoff (1998) for Chile and Venezuela.

¹⁹ The father's permanent or expected income is the estimated function of income that reflects the father's education and experience. For purposes of these estimates, the "father" is defined as the male head of household at least 20 years older than the dependent in the same household.

²⁰ These results are based on the six cases in which the father's education is found to have a significant impact on the rates of return of the child's education, also including the father's and mother's education as separate explanatory variables. In the other countries, although this effect was significant when the latter variables were not included, it was no longer significant when they were introduced.

²¹ The effect of the father's education on the return on the child's education and the parents' educational levels per income decile can be used to determine the expected quality of education the children will achieve for each income decile.

Not surprisingly, the quality differences are lower for secondary and university levels (Figure 2.30), since the system's selection process eliminates persons receiving the poorest quality education during the early years. However, smaller quality differences per income level in higher education (only about 3 percent between the last two deciles) suggest that access to quality universities can be influenced more by factors other than the income level of the family, such as individual aptitude.

Differences in the quality of secondary education available to the poor are quite significant. For individuals from a family in the most wealthy decile of Chile or Costa Rica, each additional year of education leads to an income increase that is 4 percentage points higher than for individuals from a family in the poorer decile. This is the magnitude of additional quality that wealthy individuals can buy owing to the segmentation of the education system. The differences are three points in Bolivia, Honduras, Panama and Uruguay. They are also appreciable between the last two deciles: in all of these countries, those from the wealthiest decile receive at least an additional 1 percent return per year of education over persons from the decile immediately below (Figure 2.31). These quality gaps are indicative of the degree of educational stratification in each country resulting from the interplay of the differences in quality of the education system with an individual's family history.

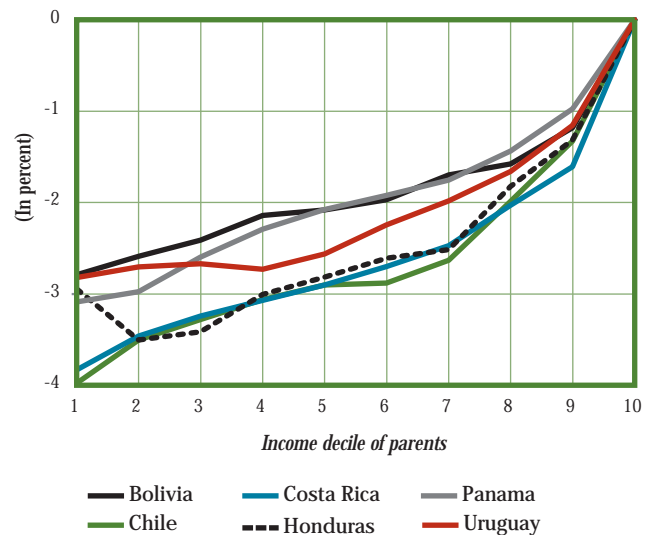
In conclusion, all available indicators point to the fact that there are major quality differences in the education received by the poor and the wealthy. These differences strengthen the influence of the distribution of education and the structure of returns on income concentration. As will be seen in Chapter 5, the source of these quality differences is not the level of expenditure, or even the fact that the wealthy have greater access to private education. The problem lies in the organization of the public education system, which is typically highly centralized, provides no incentives to adapt to the circumstances of students and their families or to improve quality, and does not involve families or even teachers in administrative or pedagogic decisions.

CONCLUSIONS

From the standpoint of income equality, education in Latin America involves four problem areas:

- *The level* of education has increased more slowly than in other regions in recent decades as a result of deficiencies in the scope of secondary education and early withdrawal from the school system by children from low-income families.

Figure 2.31. Cost of Lower Quality Education (Rates of return to education differentials with respect to the tenth decile)



Note: Labor income regressions of the dependents of the household as function of the experience, experience squared, education by levels, education by levels times father's education, and father's and mother's education. Source: IDB calculations based on recent household surveys.

- Education *dispersion* is high as, apart from younger generations having more education than earlier ones, within each generation there are major differences in educational achievement. However, these intragenerational differences are on the decline in all countries.
- *Returns* on education are low for the first years of school but high for university education, and are substantially lower in rural than in urban areas.
- Educational *quality* is much lower for students from low-income families, most of whom attend public school and do not have access to better quality higher education.

In summary, education is profoundly stratified in Latin America, an effect that is perpetuating, rather than correcting, income inequalities.

REFERENCES

- Barro, R., and J. W. Lee. 1996. International Measures of Schooling Years and Schooling Quality. *American Economic Review Papers and Proceedings* 86(2) and accompanying database.
- Barros, Ricardo Paes, Suzanne Duryea, and Miguel Székely. 1998. Explaining Inequality: An Investigation Using Microsimulation Techniques. Office of the Chief Economist, Inter-American Development Bank. Unpublished.
- Duryea, Suzanne, and Miguel Székely. 1998. Labor Markets in Latin America: A Supply-Side Story. Paper presented at the seminar "El empleo en América Latina: cuál es el problema y cómo enfrentarlo," Annual Meeting of the Inter-American Development Bank, Cartagena.
- Filmer, Deon, Lant Pritchett, and Jee-Peng Tan. 1998. Educational Attainment Profiles of the Poor (and Rich): DHS Evidence from Around the Globe. Mimeo.
- Hamermesh, Daniel S. 1998. *Changing Inequality in Markets for Workplace Amenities*. NBER Working Paper Series No. 6515, April.
- Krueger, A. B., and L.H. Summers. 1988. Efficiency Wages and the Inter-Industry Wage Structure. *Econometrica* 56: 259-94.
- Lockheed, Marlaine E., and Emmanuel Jiménez. 1994. *Public and Private Secondary Schools in Developing Countries*. World Bank HRO Working Paper No. 43.
- Lora, Eduardo, and Gustavo Márquez. 1998. The Employment Problem in Latin America: Perceptions and Stylized Facts. Paper presented at the seminar "El empleo en América Latina: cuál es el problema y cómo enfrentarlo," Annual Meeting of the Inter-American Development Bank, Cartagena.
- Luna, E., and R. Wolfe. 1993. A Feasibility Report on the Assessment of Mathematics and Science Education in Latin America. Technical Department, Latin America and the Caribbean Region, World Bank. Mimeo.
- Preal, Diálogo Interamericano, and Cinde. 1998. El futuro está en juego. Report of the International Commission on Education, Equity and Economic Competitiveness. April.
- Psacharopoulos, George. 1994. Returns to Investment in Education: A Global Update. *World Development* 22(9): 1325-43.
- Psacharopoulos, G., and Y. C. Ng. 1994. Earnings and Education in Latin America: Assessing Priorities for Schooling Investments. *Education Economics* 2(2).
- Psacharopoulos, G., and Z. Tzannatos. 1992. *Women's Employment and Pay in Latin America: Overview and Methodology*. Washington, D.C.: World Bank.
- Puryear, Jeffrey M. 1997. *La Educación en América Latina: Problemas y Desafíos*. PREAL Working Paper Series No. 7. PREAL, Santiago.
- Raj Mehta, Shailendra. 1998. The Law of One Price and a Theory of the Firm: A Ricardian Perspective on Interindustry Wages. *Rand Journal of Economics* 29(1) Spring: 137-56.
- Robbins, Donald J. 1996. HOS Hits Facts: Facts Win. Evidence on Trade and Wages in the Developing World. Harvard Institute for International Development. Mimeo.
- Rodrik, Dani. 1997. *Has Globalization Gone Too Far?* Washington, D.C.: Institute for International Economics.
- Saavedra, Jaime. 1997. Private and Public Schools in Peru. GRADE. Mimeo.
- Savedoff, W., ed. 1998. *Organization Matters: Agency Problems in Health and Education in Latin America*. Washington, D.C.: Inter-American Development Bank.
- Schiefelbein, Ernesto. 1995. Programa de acción para la reforma educativa en América Latina y el Caribe. UNESCO-OREALC, Annual World Bank Conference for Latin American and Caribbean Development, Rio de Janeiro, June 12-13.
- Wood, Adrian. 1997. Openness and Wage Inequality in Developing Countries: The Latin American Challenge to East Asian Conventional Wisdom. *The World Bank Economic Review* 11(1) January: 33-57.