Poverty, Inequality, and Human Capital Development in Latin America, 1950–2025
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The World Bank
Washington, D.C.
Thus study considers anyone living on less than $2 per day as living in poverty, and anyone living on less than $1 per day as living in extreme poverty. The figures are based on estimates of current (1995) population. Other authors may use different definitions of poverty and base their estimates of the scope of poverty on population figures from different years. Thus, measures of poverty may vary from publication to publication.

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LATIN AMERICA IS KNOWN THROUGHOUT the world for its widespread poverty and extensive inequality. In many ways, this impression is true. Today, one out of three Latin Americans lives in poverty, and there are 86 million people in the region who struggle to survive on incomes of less than $1 per day.

Coupled with this poverty is extremely high income inequality across the region. Although there are differences from country to country — in some places the wealthiest 10 percent of the population has 84 times the resources of the poorest 10 percent, while in others the ratio is "only" 15-1 — 15 out of 17 countries in the region have levels of inequality higher than expected from their levels of development.

This paper argues that the single most important factor contributing to the persistence of inequality and the increase in poverty has been the lack of adequate education for the new generation. Indeed, several factors — economic growth and structural transformation of the economy, the convergence of regional per capita income, and the diminishing rates of return on education — have combined to lower the region's inequality. But the slow expansion of human capital development has counteracted those factors to give the region a statistically stagnant level of high inequality.

The average Latin American worker has two years less education than would be expected for the region's level of economic development. The gap in education levels with the successful Asian countries has not decreased but increased in recent years. Latin America's illiterate labor force — people who reach age 25 without schooling or with incomplete primary education — continues to grow at excessive rates. The number of families dependent on illiterate workers closely parallels the number of families who are living in poverty.

Not all the news is bad. The percentage of the population living in poverty declined steadily between 1950 and 1980. It increased a bit in the '80s during the region's economic crisis, but it declined during 1988-1994, as Latin American countries continue their adjustments of external and fiscal imbalances. However, even as the percentage of poor people in the population declines, the region's growth rate is insufficient to reduce their absolute number. To the contrary, if the current rate of growth continues, two more people will fall under poverty each minute.
during the next decade.

Only a rapid increase in human capital development can bring the region out of poverty quickly. In fact, what the region needs might be called a human capital shock: universal basic education for all young people in the next two decades, to bring the average education for the labor force to 9 years per person.

Although high growth without this human capital development will reduce the number of poor people over time, increasing education levels will get the job done much more quickly. Moreover, this paper argues that rapidly expanding education will in itself actually lead to higher growth rates.

Such rapid acceleration of education will be expensive. Direct costs will amount to an additional expenditure one-half to one full point of a nation’s GNP over the next 25 years, depending on the speed of the process. Young people and their families will pay a cost, too, as they will be kept out of the labor market longer while they pursue their education.

The payoff, however, is high and fast. If the additional income generated by this additional education were taxed at today’s rates, the additional investment required could soon pay for itself. And after about 20 years, the demand for education would increase more slowly than the economy because of demographic transition.

This paper argues that the need is clear: a rapid increase in human capital development throughout Latin America, to provide the surest and quickest road out of poverty for the population. The adoption of a dynamic path of expansion for human capital, if parallel to growth-enhancing policies, would substantially accelerate growth, totally eliminate the excess of inequality in the region, and upgrade the standard of living for 70 percent of Latin Americans today living below the poverty line.
INEQUALITY AND POVERTY IN LATIN AMERICA DURING THE LAST FOUR DECADES

LATIN AMERICA IS NOTORIOUS for high income inequality and the widespread poverty that comes from it. Brazil is the country that gets the most attention in this regard — pictures of favelas clinging to the hillsides around Brazilian cities are familiar to people throughout the world. Central American countries like Honduras and Guatemala, or Andean countries like Peru and Bolivia, also are frequently scrutinized, giving the entire region a patina of destitution, at least in the popular press. Amid this poverty, of course, there are scenes of great wealth.

This section examines the depth of poverty in the Latin America and Caribbean region, and the extent of inequality that accompanies it.

A. THE EXCESS OF INEQUALITY IN LATIN AMERICA

Chart 1.1, which compares countries according to their Gini Coefficients, a rating system for income inequality, shows that levels of inequality are in fact high throughout the region, but they also are diverse, varying between 0.63 and 0.42. That means that in some countries, the wealthiest 10 percent of the population has 84 times more resources than the poorest 10 percent, while in others that ratio is “only” 15-1.

The greatest inequality is in Honduras and Peru; the lowest is in Uruguay and Barbados.

Despite these country-to-country differences, 15 out of 17 countries of the region have levels of inequality higher than expected according to their levels of development. Empirical estimates of the Kuznets Curve (which predicts inequality according to the levels of development) for a sample of 102 countries shows that, on average, a Latin American country has a Gini Coefficient 4.1 points higher than countries with similar per capita income levels.

Because the levels of income and the extent of inequality varies widely from one country to another, the excess of inequality for Latin America as a region is even bigger. We estimate a
Gini Coefficient of 0.56 for the region as a whole, which is higher than Yotopoulos’s estimate for all the developing world (0.501) and higher than the expected level for LAC’s level of development (0.50).

Therefore, the diversity of inequality and income per capita in the region produces a clear excess of inequality for most Latin American countries and for the Latin American region as a whole.

B. Continental Poverty: Regional Structure and Trends

1. Regional Differences

There have been several worthwhile attempts to define the poverty level for Latin America — that is, to define a level of income that is insufficient to have an acceptable standard of living. The Economic Commission for Latin America, after a detailed study of the patterns of consumption in nine countries, placed the poverty line between $1.66 and $2.47 per person per day, depending on the country. The World Bank, based on detail income information from 12 countries, adopted a poverty line of $2 per person per day across the region. This paper combines the two studies, but places emphasis on the differences among countries in the region. The poverty line depends on each country’s income level, but the weighted poverty line for the region is $2 per capita per year. To estimate extreme poverty — the poorest of the poor — we used a point of half the value of the poverty line.

In 1995 35.1 percent of the population of Latin America and the Caribbean was below the poverty line, and 18.8 percent was below the extreme poverty line. This indicates that there were 165.6 million poor Latin Americans in 1995, of which 86.3 million were extremely poor, living on a daily income of only about $1 per person.

The highest incidence of poverty in Latin America is in Central America, where approximately 60 percent of the population is poor (See Chart 1.2). The lowest incidence is in the Southern Cone, at about 10 percent. Between these two are the Andean Region (44 percent), the Caribbean (38 percent), Brazil (35 percent) and Mexico (26 percent). The incidence of extreme poverty falls into a similar order: 36 percent, 5 percent, 25 percent, 19 percent, 23 per-
CHART 1.2
POVERTY AND EXTREME POVERTY IN LATIN AMERICA IN 1995

A. POVERTY

B. EXTREME POVERTY
POVERTY IN LATIN AMERICA 1950-95

CHART 1.3
The problems of poverty in Brazil, Central America and Haiti are well known. But the problem of poverty in Latin America is more pervasive and more widespread than generally recognized. In absolute numbers, Mexico has a higher population of extreme poor than the rest of Central America and the Caribbean together, and the Andean countries have twice as many extremely poor as Central America and about as many as Brazil. Thus, the solution to the problem of poverty in Latin America must be region-wide.

2. The Evolution of Poverty in Latin America

Chart 1.3, Panel A, shows that the incidence of poverty in Latin America seems to have decreased over the long term. Specifically, the population living below the poverty line decreased between 20 and 25 percentage points between 1950 and 1995. However, high, stable Gini Coefficients mean that the rate of per capita income growth in the region — 1.8 percent — has not been enough to cause the absolute number of poor to decrease. In fact, the number of poor people in Latin America increased from 92 million in 1950 to 165.6 million today (Panel B on the chart).

There are different sub-periods within the evolution of poverty. The incidence of poverty decreased slowly from 1950 to 1965, yet the absolute number of poor increased considerably. Between 1965 and 1980 the decrease in the incidence of poverty accelerated, to the point where the absolute number of poor between 1970 and 1980 stopped increasing. But the reversal in economic growth in the 1980s increased the incidence of poverty in the region by 40 million new poor. The short economic recovery of recent years helped reverse the increase in the incidence of poverty, but it was not enough to cut the absolute number of poor people.

And those poor people are increasingly
found in Latin American cities. Chart 1.4 demonstrates that although the absolute number of poor has increased substantially in the last 25 years, the number of poor living in rural areas has, in fact, decreased. This urbanization of poverty is probably the most important feature of poverty in Latin America in the last few decades.

In summary, the region's 1.8 percent economic growth and the rapid relocation of the labor force to the cities have brought a decrease in the incidence of poverty in Latin America but have not reduced the absolute number of poor people. The absolute number of poor today is twice what it was 40 years ago.

C. CHANGING FACTORS OF LATIN AMERICAN INEQUALITY

The distribution of income has not changed despite the rapid development process of the past decades in Latin America, and poverty has tended to increase. This section examines why.

1. The Decreasing Role of Traditional Factors of Inequality

Economists associate inequality of income distribution with the distribution of assets within the population or with the distribution of the market power of the owners of these different assets. Thus, when economists who study Latin America see the pervasive and persistent income inequality that exists in the region, they look at unequal asset distribution or the differences in market power between actors in different sectors to try to find the causes.

When the first studies of the 1960s identified the high level of inequality in several Latin American countries, almost all pointed to the uneven distribution of land as its main cause. At the end of the 1950s, half of the population lived in rural areas, and agriculture represented more than a third of the national product. At that time, rents from land made up as much as 15 percent of the national revenue or 20 percent of household income. The inequality and importance of this source of income contributed substantially to regional income inequality. In addition, the difference in labor productivity between urban and rural areas widened from the 1950s to the beginning of the 1970s — when urban activities were five times more productive than agriculture — justifying the shift in analysts' interest toward the modes of interaction between industry and agriculture.

Now, 40 years later, and in accordance with normal patterns of development, the importance of agriculture has diminished tremendously. Today, agriculture barely represents 10 percent of the GNP, and it employs scarcely more than 20 percent of the labor force over the entire continent. Rents from agriculture account for only 2 to 3 percent of overall household income. Differences in rural-urban productivity are now half of what they were at the beginning of the 1970s. Uneven land distribution or urban-rural productivity gaps may have contributed to inequality in the past, but today their importance is small on a regional scale.

Thus, some authors have turned to looking at other income-generating assets to find the cause of the region's widespread inequality, but none seems to be particularly convincing. Part of the problem is that the distribution of the ownership of fixed urban assets has not been fully studied for Latin America. We do know that the percentage of the population owning their own homes has grown slowly since the early '70s, which means that the inequality in these assets must not have increased. We believe that productive urban assets are concentrated, but changes in this area have not been studied. And since the relationship of capital to output in urban areas has not increased much since the 1970s, we would not expect to see these assets increasingly contributing to aggregate inequality. Likewise, financial assets do not seem to be responsible for the continuing inequality. Financial assets have actually been growing faster than income in the past two decades, and most of the rents have disappeared as financial markets have been deregulated. If anything, this should have led to lower inequality, but as we have shown, inequality persists.

Lack of solid documentation on the changes in asset holdings in rural and urban areas
CHART 1.5
INTER-REGIONAL INCOME INEQUALITY IN LATIN AMERICA

A. CONVERGENCE OF PER CAPITA INCOME

B. EFFECT OF REGIONAL DISPERSION ON INCOME INEQUALITY
led discussions on income distribution in Latin America in the last 15 years to focus on differences in market behavior between the various agents in the short term. In the 1980s Keynesian and Latin American structuralist ideas were combined to explain the persistence in Latin American inequality. Having market power in price fixing, they reasoned, entrepreneurs tend to finance investments by increasing prices. This leads to a deterioration of the real income of urban labor and peasants, who respond by demanding higher wages. These actors’ institutional ability to defend their income share would therefore be a basic factor for persistent inequality to generate persistent inflation. However, the opening of the economy in the 1980s and growing price competition seems to have broken the vicious cycle of incompatible market forces that led to high inequality through inflation. Thus, economists have again turned their attention to long-term generators of inequality.

The variance of per capita income from country to country contributes substantially to regional inequality, so persistence in the heterogeneity in levels of development among Latin American countries could possibly explain the continuing high levels of inequality. However, evidence indicates that in the long term, income disparity among countries has actually diminished considerably. Panel A in Chart 1.5 shows how the income per capita in South American countries other than Brazil was 20 percent above the continental average in the 1950s, whereas Brazil’s income was 25 percent below. By the 1980s these gaps had become insignificant. The reduction in the dispersion of per capita income among the Latin American countries was big enough to have a substantial effect on regional income inequality. A simple simulation presented in Panel B of Chart 1.5 suggests that this factor alone seems to have contributed to a reduction of more than 2 points in the Gini coefficient of the region.

In summary, income from land has proved to contribute less and less to regional inequality, and there is no evidence that holding physical and financial urban assets has contributed increasingly to inequality. Monopoly market forces have decreased with the opening of the economies and per capita income has tended to converge among countries. The persistent inequality must be rooted, therefore, in the evolution of another income-generating factor, which so far has been neglected within the Latin American research literature: human capital.

2. Has Educational Expansion Caused Income Inequality?

What is the relationship between the persistence of inequality and poverty and the dynamics of human capital formation in Latin America? This sub-section suggests that the slow expansion of educational opportunities for young people in the past 25 years has not been enough to overcome the relative human capital scarcity in the labor force characteristic of Latin America. On the contrary, it has caused inequality in human capital to increase in the past decades and has been a major contributor to the growth of semi-permanent poverty that plagues the region.

There is a strong empirical association between a country’s level of development and the degree of education of its labor force. This can be identified by correlating the educational level of the population above age 25 with per capita income, adjusted for international purchasing power for the 173 countries in the world. The statistical results are very strong and allow accurate calculations of countries’ expected level of education according to their level of development. The non-linear character of the relationship between education and per capita income indicates that the intensity of education tends to increase with economic development, speeding up substantially at the intermediate levels of development that LAC countries have seen in the past decades.

This “pattern” is used in Panel A of Chart 1.6 to evaluate the level of education reached in different regions of the world. Asian countries and countries that are or have been socialist (China or Eastern Europe) tend to have higher educational levels than expected for their level of development. Latin America, the Arab countries, Africa and southern Europe (Greece, Italy, Spain
CHART 1.6
EDUCATIONAL INSUFFICIENCY IN LATIN AMERICA

A. INTERNATIONAL PERSPECTIVE

B. LATIN AMERICA IN HISTORICAL PERSPECTIVE: 1950-1990
and Portugal) tend to have lower educational levels than expected. Latin America in particular, with an average of 5.2 years of education for the adult population in 1995, has approximately two years less education than what is expected.

The historical process of human capital development can be characterized by contrasting the education of the labor force observed since the World War II with the expected values according to this pattern (chart 1.6, panel B). At the beginning of the post-war period the labor force had 2.4 years of education. For the level of development at that time, the expected level of education was 4 years. The educational gap of the labor force, therefore, was 1.6 years. At the beginning of the 1980s, the gap had grown to 2.5 years: Latin America had 4 years of education, while the level expected for its development was 6.5 years. In the 1980s Latin America expanded the educational level of the labor force at approximately the same rate as the rest of the world, but a gap between observed and expected education levels for Latin America has continued to this day. (The apparent closing of the gap since 1979 is a result of the fall of per capita income in this decade for Latin America, and does not indicate extra progress in education.)

What this all means is that compared with the rest of the world, the level of education of Latin America's labor force since World War II has been lower than it should have been for its level of development. In other words, the current level of education is insufficient, as is the recent expansion of the educational system.

Educational insufficiency is particularly high compared with Asia. Chart 1.7 compares Asian and Latin American educational development over time. The four most successful Asian countries (Hong Kong, Taiwan, Korea and Singapore) already had a considerable educational advantage at the beginning of the 1960s and have widened the gap substantially with Latin America since
then. Indeed, the average labor force in Latin America today has no more education than these four Asian countries had in 1970. By comparison, Indonesia, Malaysia, the Philippines and Thailand had little more than half of Latin America's educational level in the 1960s, but they equaled the level in the 1980s and have now passed it.

Such a slow expansion of education in Latin America has caused serious distribution consequences. The persistent scarcity of human capital as a result of the prolongation of such low levels of education for incoming generations could have contributed, paradoxically, to the increase in inequality in the distribution of human capital. Here's why: In a society where there is no education for anyone, the level of education is zero and the variance of education among the population is naturally zero. In a society where the entire population reaches the maximum level of education, the level of education is at maximum, but the variance is, again, zero. But it takes time to reach that maximum level, as each incoming age group is educated. In this interim period, the variance of education tends to rise with the increase in the level of education until it reaches a turning point, after which it decreases. Although the evolution in time of the variance depends to a great extent on the relative emphasis that each country gives to basic or higher education, international experience suggests that the maximum educational inequality results when average educational levels reach 6.3 years.

When the successful Southeast Asian countries reached such a turning point in the mid-1970s, their subsequent educational expansion was accompanied by a spread in education levels.

**CHART 1.8**

**CHANGING FACTORS OF INEQUALITY**

**LATIN AMERICA 1950–1995**

- **EFFECTS: INCOME GROWTH, INCOME CONVERGENCE, MIGRATION**
- **EFFECTS OF HUMAN DEVELOPMENT INEQUALITY**
CHART 1.9
EDUCATION OF THE LABOR FORCE
IN LATIN AMERICA AND SOUTHEAST ASIA

A. WITHOUT EDUCATION

B. UNIVERSITY EDUCATION
CHART 1.9
EDUCATION OF THE LABOR FORCE
IN LATIN AMERICA AND SOUTHEAST ASIA

C. FUNCTIONALLY ILLITERATE

D. SECONDARY EDUCATION

Note: functionally illiterate includes no education and incomplete primary schooling.
throughout the population — enough to
decrease income inequality. Young people enter-
ing the labor market with more education in the
last 20 years have found increasingly egalitarian
pay structures that were not derived from the
reduction of rates of return on education.

This is in marked contrast with the Latin
American experience. As the slow expansion of
education has prolonged the phase of increasing
educational inequality, new education con-
tributes systematically to larger income inequali-
ty in the working population. This has caused
substantial impact. Had the 1950s begun at high-
er levels of education, increases in education
would have caused relatively little income
inequality and would have reversed after the
beginning of the 1980s. But that was not the
case. Faced with a low level of education from
the start, the accumulation of human capital had
a very high impact on labor income inequality.¹¹

Chart 1.8 plots the effects of educational
expansion and other causes of inequality.¹²
During the last 40 years, three forces have con-
tributed to a decrease in income inequality in
Latin America:

1. economic growth along with the structural
   transformation in the economy, which represents the
   reduction of the Gini Coefficient by one point
   through the end of the 1970s;

2. the convergence of regional per capita income,
   which represents a reduction of the Gini
   Coefficient by at least two points during the
   same period; and

3. the diminishing rates of return on education,
   which also lowered the Gini Coefficient by
   almost two points.¹³

On the other hand, while these three fac-
tors were lowering income inequality, the grow-
ing uneven distribution of human capital tended
to make income inequality rise. In fact, as is
shown in the chart, the dispersion of human
capital pushed the Gini Coefficient up five
points — and the sum of the four effects was
approximately zero for the entire period 1950-
1995, thus creating the statistical appearance of
inequality inertia that many analysts have
found.¹⁴

3. Education and Poverty

Not only was overall educational expansion
in Latin America slow, but it was particularly
slow for the poorest sectors of the population. A
comparative look at Southeast Asia shows how
uneven educational expansion in Latin America
has been. Both groups of countries had similar
sized labor forces at the end of the 1950s, about
80 million people. In Southeast Asia, due to the
influence of the four less developed countries, 47
million people had no education. At that same
time in Latin America, 34 million had no educa-
tion. But in the last 30 years, as seen in Panel A
of Chart 1.9, Southeast Asia reduced the absolute
number of people with no education by one-
fifth, while the number increased by one-sixth in
Latin America. This is in sharp contrast with the
evolution of the university-educated population
 PANEL B, Chart 1.9). At the beginning of the
1960s, both regions had similar university-edu-
cated labor forces: 800,000 people. Both regions
incorporated 100,000 university-educated people
into the labor force yearly through the beginning
of the 1970s. After this point higher education in
Latin America grew at a quicker rate, incorporat-
ing 2 million more university-educated people
into the labor force than Southeast Asia by the
end of the 1980s.

Clearly, the problem in Latin America was
on the bottom end of the educational spectrum.
Latin America's relatively low coverage in pri-
mary education allowed increasingly higher
absolute numbers of the population to reach
adulthood with no education. Another result is
that the population with incomplete basic edu-
cation instruction grew the most during this
period. As can be seen in Chart 1.9, Panel C,
while Southeast Asia stabilized its functionally
illiterate population, Latin America's practically
doubled in the last 30 years. At the same time,
20 million more people with secondary educa-
tion (complete primary education, complete or
incomplete secondary) entered the labor market
in Southeast Asia than did in Latin America
(Chart 1.9, Panel D).

Latin American educational expansion led
to many more functionally illiterate persons,
many more university educated persons and many fewer workers with secondary schooling than in Southeast Asia.

This is not at all separate from the evolution of poverty in Latin America. The absolute number of family members dependent on insufficiently educated workers evolved in the last 40 years surprisingly parallel to the population with income below the poverty line, as shown in section I. B.2 of this paper. As seen in Chart 1.10, in 1950 there were almost 80 million poor persons in Latin America, whether they were measured by income or by the lack of human capital. In the following 20 years, 35 million new poor were comparable in number to persons dependent on worker with insufficient education. In the 1970s, the decrease in the rate of growth for poverty by income seems to have benefited by far the population with no education. After the inadequate performance of the 1980s, the number of poor rose again in both categories, reaching 160 million. Given the income fluctuations of the economic cycle, the pocket of poverty in Latin America can be clearly associated over long periods of time with persons dependent on others who lack human capital. The close link between education, poverty and inequality has been found regularly in micro cross-section studies, but this is the first time it is shown in a dynamic region-wide analysis.\textsuperscript{15}

D. Summary

The above analysis shows that in more than the few countries with extreme inequity, inequality in Latin America as a whole is very high, with a Gini Coefficient above the expected level by five or six points. The analysis also suggests that with the relative convergence of per capita income among the different sub-regions of Latin America, and with transformations in rural production and labor conditions, Latin America's level of development should have produced a peak in income inequality, and then it should
have decreased over the past 20 years. But it did not. The reason seems to lie with the slow expansion of educational opportunities in the region over the last two decades. At the beginning of the post-war period, Latin America's labor force had half the education expected on an international standard. Educational expansion did not reduce this imbalance, as it did in other parts of the world, especially Southeast Asia. In addition, Latin American educational expansion was slow and discriminatory against the poorest sectors of the population. It left a contingent of the labor force without education, and that contingent has grown tremendously in the past two decades. The growth of the functionally illiterate labor force in the last 45 years closely parallels the growth of the population living under the poverty line in Latin America.
INEQUALITY, POVERTY AND HUMAN CAPITAL IN THE NEXT FOUR DECADES

THE PREVIOUS CHAPTER SHOWED how inequality in Latin America has not decreased and poverty has increased in the last 45 years, in spite of the impact of agricultural rents' loss of importance and the rapid convergence of per capita income among the subregions. The dynamics of the urban labor market seems to be the main cause of inequality in recent years, since insufficient human capital formation kept the distribution of educational benefits from reaching the population more equitably. It has also created an army of functional illiterates who are structurally poor.

This chapter studies the future of poverty and inequality in Latin America. The first section examines the projections for poverty that come from the expected economic growth for the continent. It simulates alternative scenarios for economic growth and improvements in equality that would permit a substantial reduction in poverty in the next few decades. The second section shows how the accumulation of human capital could promote both the desired equality and the economic growth needed to reduce poverty. The third section calculates the financial consequences of human capital accumulation and its implications for income distribution.

A. A FIRST LOOK AT THE FUTURE

The methodology used in Chapter 1 to reconstruct the hypothetical evolution of poverty in Latin America in the last 45 years can be used to project the evolution of poverty in the future. If inequality remains static, the amount of poverty in the region will depend essentially on how the economy grows. As seen in Chart 2.1, after stagnating, the world economy recovered and reached a 1.9 percent annual increase in per capita income for the 1991-1994 period. Latin America, after its stagnation during the 1980s, grew at 1.9 percent per capita in the first part of the 1990s, and it could maintain this growth for the next 10 years.16
This prolongation of the economic growth recovery phase in Latin America in the next decade could, according to our estimates, reduce the percentage of the population living under the poverty line. As shown in Panel A of Chart 2.2, the incidence of poverty would decrease from 35.1 percent in 1995 to around 30 percent in 2005. However, faced with the projected growth of the population, such a decrease in the incidence of poverty would not be enough to reduce the absolute number of poor persons in Latin America. Chart 2.2, Panel B, shows that the number of Latin Americans living in poverty would continue to grow at a rate of a million people a year — that's two additional poor people per minute — reaching 176 million people in 2005.

A 1.9 percent per capita growth rate in the next decade, therefore, is lower than what is required for Latin America to reduce poverty. Although it surpasses by far the stagnant per capita income registered for 1975–1990, this economic growth is lower than the region's historical growth rates and lower than the expected growth in other parts of the world. It is actually lower than the growth rate for Latin America between 1950 and 1974, which was 2.24 percent, or the growth rate expected in the next decade for industrialized countries (2.4 percent), or even the growth rate for developing countries (3.3 percent). In fact, an annual growth rate of 1.9 percent for Latin America in the next decade is not a true sign of recovery, because it would make permanent the gap between the region's actual and the potential GNP (derived by projecting observed growth from 1950 to 1974), as indicated on Chart 2.3.

Supposing the high level inequality remains in Latin America, and projecting such moderate economic growth, poverty would continue to increase during the next decade. But such low growth and persistent inequality scenarios are not inevitable. Economic growth is based to a great extent on the results of the dynamic accumulation of resources and policies that aim to improve resource allocation. Inequality is not a "stylized fact," but rather the result of many forces subject to the influence of policies.

Our small simulation model can be used to project the evolution of poverty if economic growth accelerates or if inequality decreases. There are six alternate scenarios for the evolution
CHART 2.2
POVERTY IN LATIN AMERICA 1970–2005

A. HEAD COUNT RATIO

% OF THE POPULATION

B. ABSOLUTE NUMBERS

MILLIONS OF PERSONS
of poverty, shown in Chart 2.4. First, if inequality remains constant at today’s high level and if growth remains slow, poverty will continue to increase steadily. Second, if inequality remains constant and per capita annual growth accelerates to the world average rate of 2.4 percent, poverty would stabilize at its current level for 10 more years; it would then decrease in the next decade, and in 2015 it would reach the same level as it was in 1988. Third, if per capita growth accelerates to 3.0 percent annually, by 2005 the increase in the number of poor that resulted from the crisis of the 1980s would be eliminated, and by 2015 the number of poor would decrease to 100 million, the same number registered in 1965.

Alternatively, there are three scenarios centering on lowering the region’s high inequality — and all of them show a reduction in poverty. First, even if the growth rate remains very low, if the excess five points of inequality were gradually eliminated, poverty would be reduced to 144 million in 2005 and to 122 million in 2015. Second, if this gradual reduction of excess inequality were combined with an increase in the annual growth rate to the world average of 2.4 percent, the number of poor would be reduced to 100 million in 2015. And finally, a 3.0 percent growth rate would lead to a dramatic reduction of the number of poor to 104 million in 2005 and to 64 million in 2015. Thus, eliminating inequality in the distribution of income would be just as effective in reducing poverty as economic growth. Together, there would be the greatest progress.

B. CATCHING UP IN HUMAN CAPITAL: THE SIZE OF THE CHALLENGE

The combined effect of accelerated economic growth and inequality reduction could have an enormous impact on the reversal of the recent increase in poverty and on the future elimination of poverty in Latin America.

The past 20 years of macroeconomic performance in Latin America have shown that growth cannot be sustained without macroeconomic equilibrium. Any important imbalance in fiscal or external accounts makes an adjustment necessary to stabilize the economy. But stabilization and macro adjustments are not enough to renovate economic growth. Economic growth renovation requires actions that lead to an increase in the
resources in the economy or to improving the efficiency of resource use and allocation. With only 10 percent of GNP coming from agriculture, the region has already exhausted much of the potential for growth from urbanization. In addition, governments’ efforts to adjust to terms of financial and exchange rate interventions and the liberalization of commerce in the last 10 years have helped and should be maintained, avoiding reversals or imbalances. In the following pages I will explore a complementary need: human development in the creation of a development pattern with more growth and less inequality.

1. The Dynamics of Human Capital Accumulation 1950-1990

Insufficient education is, without a doubt, one of the largest dynamic imbalances that the Latin American economy faces in trying to accelerate growth with equality. Chapter I illustrates how Latin America entered the post-war development process with serious educational insufficiencies in its labor force and how the rate of educational expansion has not been enough to close the gap.

The average level of education for all of the labor force is the aggregate of educational levels reached by different generations. To identify the relationship between the economy and the educational system, it is necessary to study the changes in education for the new generations that enter the labor market. To this end, we reconstructed the educational history of the successive Latin American post-war generations.17

As expected, the dynamics of human capital accumulation were not continuous, nor were they homogeneous among regions, nor did they stand out on a world level. Chart 2.5, Panel A shows three different phases. The new generations entering the labor market in the 1950s received an increasing rate of education, but that growth rate stopped for the 80 million persons...
CHART 2.5

EDUCATION OF THE LATIN AMERICAN LABOR FORCE

A. FOR THE WHOLE REGION

B. THE NEW LABOR FORCE IN THREE SUB-REGIONS

year each generation joined the labor market

- MEXICO AND CENTRAL AMERICA  - BRAZIL  - REST OF SOUTH AMERICA
entering the work force in the 1960s and 1970s. Educational expansion in the 1970s increased the human capital of the work force during the 1980s. The unevenness of time in the Latin American aggregate reflected enormous regional differences, as seen in Panel B. The delay in educational expansion was greater and took more time in the two largest countries of the region: Mexico and Brazil. The slow educational expansion in Mexico in the 1960s and 1970s and the regression in Brazil at the same time are the explanation for Latin America’s lack of progress in education during this period. (See Chart 2.6). Progress in the past decade occurred in Central America, the Andean Region and the Southern Cone, but not in Mexico or Brazil.

2. Future Human Capital Requirements

Educational insufficiency in the Latin American labor force is currently very high because the pattern of development before the 1980s was very scarce in human capital and because the efforts of the last 15 years have not been enough to turn things around. Today, the Latin American labor force has little more than five years of education. For current levels of development, the expected level of education for the labor force is slightly above 7.0 years. This creates an average accumulated gap of two years per worker. This educational gap is much higher for Brazil and Mexico because their levels of development today require three more years of education per worker. These two countries make up 93.5 percent of the educational gap for all of Latin America today.

Levels of education for the average labor force have been calculated to be consistent with the three scenarios of economic growth studied in the previous section: slow (1.9 percent), historical average (2.24 percent) and rapid (3.0 percent). As Chart 2.7 shows, the different paths of economic growth represent enormous differences in the human capital required for the labor force. In 2005 the requirements would be seven years for the slow path and eight years for the accelerated path. By 2020, the requirements would be 7.9 and 9.1 years respectively.
These human capital requirements can be contrasted with three scenarios of human capital formation in the next quarter century. In the first case, the average educational level of the labor force would grow at the same rate as registered in the last decades. In the second case, the

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rate would slowly increase, and in the third case the rate would increase very rapidly. The table on page 26 shows the main results:

If the education of new generations were to expand at the same rate as it did in the last two decades, the average labor force would reach only 7.2 years of education in 2020, and the gap would widen in relation to international standards of required education in each year. This is below the 7.9 years of education required for even a slow growth path. Even to reach the education needed in the scenario of slow economic growth, the education of new generations would have to grow more quickly than it has been — at a moderate rate of one year of education each 10 years. In this case there would be convergence to the international standard in the year 2020, although it would occur very slowly. But if the average educational level of each generation grew one year every five years, the education of the labor force would be just what the economy requires in a scenario of rapid economic growth.

In short, eliminating human capital insufficiency along an optimistic economic growth path requires a substantial acceleration of the education of the new generations. Chart 2.8 shows the magnitude of change required. The moderate scenario of educational career accumulation of the new generations would reach 11 years in 2025. In the rapid accumulation scenario, the generations should reach an average of 12 years of education per person by 2015. This will not be easy; it means doubling in the next two decades the increase in education created in the last 40 years.
3. Quantitative Dimensions of the Possible Accumulation Scenarios

Such an acceleration in the accumulation of human capital requires considerable financial resources. In order to quantify these dimensions of human capital accumulation, we designed a simplified algorithm to accumulate flows of students and their direct financing. Likewise, we used a simple model of macroeconomic consis-
tency to evaluate, roughly, the costs and social benefits of the accumulation of human capital.

Latin America today has approximately 125 million students, with coverage of about 65 percent of the population between the years of 5 and 24, and in absolute terms this demographic group will continue to grow during the next 20 years. After 2015 the group will stabilize at an absolute 207 million young people. If educational expansion continues at the present rate — the inertial scenario — there would be 200 million students, with a 95 percent coverage of the relevant population, but in the year 2055. In the intermediate acceleration scenario, the same 95 percent coverage and the same 200 million students would be reached by 2025. In the rapid accumulation scenario, those levels would be reached by 2005 (see Chart 2.9).

Chart 2.10 shows that only in a slow educational expansion scenario for new generations could the fraction of the GNP slated for basic education financing remain relatively constant. In order for Latin America’s human capital to converge with international patterns, there would need to be an additional investment of more than half a point of the GNP each year for the next 25 years. In fact, a rapid convergence would require investments to increase one full point of the GNP during the next 10 years, although then it could decrease slowly, when the achievement of coverage would not require any more resources because of the demographic trends. Alternately, a slower convergence would mean investments would have to increase each of the next 25 years (although less than a full point) and would begin to decrease only in 2025. In any case, as shown in chart 2.11, half a point of GNP of additional public expenditure on basic education allows Latin America to catch up with the rest of the world in terms of their financial commitment.

Despite the additional expenditures required for the next 25 years, in either case of the acceleration of human capital accumulation the increase in investments as a share of GDP is not permanent. Demands for educa-
tion after 2015 will increase more slowly than the economy, because of the demographic transition.\textsuperscript{21}

C. SOME REGION-WIDE IMPLICATIONS

1. Macroeconomic Effects

The acceleration of the accumulation of human capital has enormous implications for future Latin American economic growth. The simplest way to quantify this impact is to simulate its effect by using international estimates of the impact of education on aggregate production. Using Lau’s results for Latin America,\textsuperscript{22} we find that acceleration of human capital accumulation in the rapid scenario brings additional growth of 0.7 points per year of the per capita product in the next 15 years and 0.8 points per year on the average for the period 2000–2025. If we use Southeast Asia as a guide for the impact of education on economic growth, the effects on per capita growth are even higher: 1.1 percent and 1.2 percent for both periods, respectively. (After 2025, the direct impact on growth would begin to decrease in any case because of the slowing of human capital accumulation brought on by the decrease in student population and the universalization of coverage.)

This is not to minimize the considerable expense, which goes beyond the direct costs associated with provision of educational services that we estimated in the previous section. Education also represents an opportunity cost for young people, who could join the labor force at an earlier age if they were not in school. And with most of the educational expansion taking place for young people who would have ended their schooling after primary school and during secondary school to enter the labor market, this opportunity cost would be significant. Assuming the annual opportunity cost per student is 86.3 percent of annual per capita income,\textsuperscript{23} the economic cost of massively educating the new generations is a considerable fraction of the GNP, which could surpass 10 percent in the next 15 years.
Chart 2.12, which brings together estimates on economic costs and benefits of the rapid path toward human capital accumulation, shows that costs are concentrated in the initial phase. The cost for providing educational services is just a fraction of the total cost of education. Benefits represented by a growing product take more time to show up. The Net Present Value of such an investment of somewhat less than $1.0 trillion24 will be $2.0 trillion in the next 50 years, a bit more than the region’s current GNP. The return rate is 24.1 percent, which is high compared with the rest of investments. Additionally, this rate is sensitive to two parameters. If the opportunity cost for each student is 10 percent less (for example, 78 percent of per capita income), the return rate would be 36 percent. If the effect of educational expansion on the product were similar to Southeast Asia, the internal rate of return would be 110 percent. If both parameters are changed simultaneously, the return would be 136 percent.

These high rates of return indicate that the investment in human capital would pay for itself simply by taxing the additional income created by the education at a 9 percent marginal rate. This is less than today’s marginal tax rate.

In fact, these estimates of the impact of educational expansion on economic growth could be even greater. Recent literature has identified enormous benefits associated with the spread of knowledge that this simple method does not see.25 The most recent literature also emphasizes the impact of human capital accumulation on foreign trade.26 The recent expansion of world trade has been relatively more intense for goods with a higher human capital content than in earlier periods. The greatest intensity of human capital in the labor force will provide to Latin America a comparative advantage that is less subject to the abrupt fluctuations of basic products.

2. The Effects on Income Distribution and Poverty

Rapid acceleration of educational opportunities will have enormous implications for
CHART 2.13
EDUCATION: CHANNELS TOWARD EQUITY
IN THREE EXPANSION SCENARIOS

A. STANDARD DEVIATION OF HUMAN CAPITAL ASSETS

B. RETURNS ON EDUCATION
resource allocation, factorial income distribution and the price system of the economy. Through the pricing system the impact also falls on individual and family income distribution. The effects can only be identified through careful general equilibrium analysis.27 This paper uses a simpler yet less complete methodology to analyze the impact of different paths of human capital accumulation on income distribution. If an individual’s labor income is seen as the return of his human capital, the variance of the logarithm of income for the population can be expressed in terms of the rates of return to human capital and the distribution of human capital among the population.

Using this methodology, educational expansion affects labor income distribution by changing the distribution of the population’s educational assets or by changing the return rate on these assets. As mentioned above, a typical empirical relationship between the level of education and its distribution among the population in different countries was calculated by Ram. The relationship between educational level, per capita income and the rate of return has been calculated by this author.28 The hypothetical effect of educational expansion on inequality indicators between 1970 and 2025 was calculated based on these empirical regularities.

The results, as seen in Chart 2.13, indicate that the educational expansion of the past 25 years in Latin America contributed to increasing educational inequality among the population.29 However, education’s contribution to inequality of asset holdings would change once the average level of education reaches 6.3 years. Once past this level, the distribution of educational assets improves rapidly with further education. Panel A on the chart shows that the accelerated accumulation of human capital posits the curves’ turning point at the end of this century, allowing for a later rapid decrease in the population’s distribution of income (this would happen in 2018 if education spread slowly). Educational expansion, nevertheless, must
have had an important impact on returns on education in the past 25 years, as Panel B on Chart 2.13 shows. Given the expected effect on economic growth, the acceleration of human capital in the next decade could have just a minimal impact on the evolution of return rates in the future.

The relative impact of the paths of capital accumulation on the distribution of income in Latin America through the two channels mentioned above can be contrasted with other models of the Kuznets tradition. Chart 2.14, which complements and extends the time period of the results of section I.C.2, gives a synthesis of these effects.

In accordance with the classic Kuznets curve, Latin America should have reached its highest point of inequality well before World War II. To this effect, post-war economic growth for the region as a whole would have had less inequality. Since the region’s growth ran parallel to a systematic decrease in per capita income differentials among the various sub-regions, this should have also contributed to a reduction in the Gini Coefficient. According to these two elements suggested by Kuznets, the Gini Coefficient should have decreased by several points, which it did not. The evolution of human capital seems to have been the force that counteracted the effect of the two previous factors. As can be seen in the chart, even if Latin American had had a post-war human capital accumulation similar to international patterns, labor inequality would have risen. However, as analyzed above, Latin America did not have enough human capital accumulation during the entire period. Therefore, the contribution of human capital inequality to inequality could have been less in the first years after the war. By the same token, educational expansion would have increasingly contributed to inequality in the last four decades — even more if the impact of educational insufficiencies on returns on education, which were higher than expected, are taken into account. Empirically, therefore, the hypothesis cannot be overlooked in that the particular characteristics of the educational expansion in Latin America during this period were uneven enough to keep the Gini Coefficient from decreasing, as Kuznets would have predicted.

The situation could change dramatically, however, if human capital is accelerated as suggested above. Given the combination of the effects of acceleration on the variance of educational capital and the rates of return, the distribution of income could change dramatically in the next few decades. As shown in Chart 2.14, the distribution of labor income could reach the maximum point of inequality before the end of the century, after which the Gini Coefficient of labor income would decrease systematically. In the absence of other elements that cause inequality, the Gini Coefficient for global income distribution could decrease five or six points in the next 20 years.

This is precisely the global decrease of inequality that would be consistent with the decrease in the number of poor people in 2015 to a third of today’s numbers. (See the simulation on Chart 2.4).

D. SUMMARY

The inertia in the Latin American economy today, with low expectations for economic growth in the medium term and weak efforts to remove the factors that cause inequality, is not enough to reduce poverty in the next 10 years. To eliminate poverty significantly and permanently, collective efforts could be directed toward human capital acceleration. Today, Latin Americans are deficient in education by an average of two years or because they have the level of education required for the level of development of 25 years ago. If recent tendencies of slow expansion of the educational system continue, the insufficiency could become three years, and Latin America would be ever more removed from changing the natural basis of its dynamic development.

On the other hand, if Latin America decides to close the gap in the next 15 years, it would be an expensive undertaking. But the information available shows that this investment is very attractive: Given its major effect on economic growth, the investment can finance itself. And the calculations here suggest that accelerating human capital accumulation, in the order recommended above, would be enough to raise the standard of living for more than 100 million poor people in Latin America.
THROUGHOUT THE POST-WORLD WAR II PERIOD, income inequality in Latin America has remained the highest in the world. During the last 20 years, this persistent inequality, combined with mediocre economic growth, led to 50 million more poor people in the region, the highest increase in absolute terms in the 20th century.

This paper argues that Latin America's high inequality, increasing poverty, and slow economic growth are not unrelated. Specifically, it argues that the unsatisfactory manner in which the region has developed human capital during this period is the main factor behind this poor performance. Low investment in basic education meant scarcity and uneven distribution of human capital, and this fact, usually neglected in literature on Latin American development, is the main factor behind the increase in poverty and the persistence of high inequality during the last 20 years. The high level of income inequality has reduced support for basic education and oriented public resources disproportionately toward university education. With fewer resources devoted to basic education, the quality of that education has been poor; it doesn't fulfill the expectations of the population, and this reduces a demand for it. The result is an increasing number of functional illiterates, which has weakened the process of economic growth and the stable links to the world economy and has, at the same time, weakened efforts in the region to expand democracy.

The education gap in Latin America today is extremely serious. The average worker has two years less education than expected from the region's level of economic development, and this gap has not diminished during the last decades. In fact, the variance of education of the working population is now the highest in the world. This situation, combined with low expectations for economic growth in the middle term, seems destined to produce increasing numbers of poor people for the next 20 years — prolonging the vicious circle of social development in Latin America.

This paper calls for action to break that vicious circle. It recommends greatly expanded investment in basic education to eliminate the education gap in the next two decades, expanding schooling up to secondary education to 200 million students, and allowing 95 percent of the
young population to complete basic education. Because of the interconnection of human capital development, income inequality, and poverty explained in this paper, this expansion of basic education will eliminate all five points of excess income inequality in the region and, if accompanied by a reasonable increase in economic growth, will lead to a virtual elimination of poverty in the region. This “human capital shock” will turn the region’s vicious circle into a virtuous circle. Poverty and inequality are not structural facts, historically determined; they instead will yield to policy changes.

Such “human capital shock” will require considerable financial resources. Public expenditure in basic education must increase at least one-half percent of GNP over the next 25 years. With that effort, Latin America will catch up with the rest of the world in its public financing of basic education. The effort also will lead to a high rate of return. Economic growth in per capita income will accelerate almost 1 percent per year during the next four decades. And the social rate of return will be at least 24 percent, or more than 100 percent if combined with more sharing and enhancing growth policies.

Moreover, by taxing the additional income at the current tax rates, this large investment can be self-financed.

Unfortunately, more than money is needed to implement this “human capital shock.” Standing in the way are the actual institutional structures of the schooling system in the region. The style of organization might have been adequate for the region’s early stages of development many years ago, but the bureaucratic, inflexible, and excluding organization is now seriously limiting the possibilities of expanding coverage and improving the quality of education. In order to be effective, the new financial effort must coincide with institutional development that fully incorporates economic and social rationality in the social service of education. With fairer financing, pluralistic and autonomous modes of organization, incentives for efficiency and quality, more competitive provision of services, and consumers empowered with better information and financial resources, the “human capital shock” will not only improve economic growth and social development, but also provide a fertile ground for a profound and sustainable democracy.
NOTES

The Gini Coefficient varies between zero and one. It tends to one when very few people have all the income. It tends to zero when income is equitably distributed throughout the population. So, it is a measure of income inequality. The Gini Coefficient is derived from the Lorenz curve, which shows the fraction of total income received by each percentile of the population, ranked from lowest to highest income bracket. The Gini Coefficient is the area between the diagonal and the Lorenz Curve, divided by the area of the triangle formed by the diagonal and the bottom and right sides of the square.

With 141 observations for 102 countries, the regression line fitted is

\[
\text{Gini} = -0.36 + 0.24 \ln(\text{Income}) - 0.02 (\ln(\text{Income}))^2 - 0.18 \text{Dsoc} + 0.041 \text{Dlac}
\]

\[(5.1) \quad (4.3) \quad (8.2) \quad (2.7) \quad R^2 = 0.49 \]


Using 173 observations from the UNDP’s Human Development Report, 1994, the following regression line was obtained:

\[
\ln(\text{Eduda}) = -14.4 + 3.2 \ln(\text{Income}) - 0.15 \ln(\text{Income})^2
\]

\[(27.6) \quad (5.8) \quad (4.4) \quad R^2 = 0.70 \]

The exception to this was Colombia, which recorded a decrease in the rates of return for education that more than compensated for the growing inequality of human capital. See Londono, Juan Luis. “Kuznetsian Tales with Attention to Human Capital.” Paper presented to the Third Inter-American Seminar on Economics in Rio de Janeiro in 1990. It was formalized by Rati Ram’s “Educational Expansion and Schooling Inequality: International: Evidence and Some Implications,” in The Review of Economics and Statistics, 1990.

The results on this chart are a first order approximation. As the Gini Coefficient is not decomposable, I decomposed the variance of the logarithm of income consistent with that Gini Coefficient, assuming a log normal distribution.


See a summary in Sam Morley, Poverty and inequality in...


18 The delay between the middle of the educational cycle and entrance into the labor market is about 10 years.


21 This analysis has not considered the costs of university education. If its cost per student education is five times more than for basic education, Latin America invests approximately 0.8 points of the GNP in university education. The growth of university education captured at least 40 percent of all the additional resources invested in education in the last 20 years.


23 This parameter is derived as follows: 71.8 percent of Latin America's population is of a working age. The participation rate is 35.9 percent works, with an average unemployment rate of 7 percent, so 33.4 percent are employed. Productivity per worker, therefore, is three times the income per capita. The population between 12 and 24 years of age has a specific labor participation of 50 percent, by which its expected income might be about 1.5 times income per capita. With returns to experience at 2.8 percent annually, his or her income would be 57.6 percent of the income of an average worker. Therefore, 1.5*0.576=0.863 is the parameter used.

24 One million million.


27 I have applied this General Equilibrium methodology to Colombia's income distribution for the period 1938-1988, Londoño, 1995.

28 Ram's equation (Rati Ram, Educational expansion and schooling inequality: international evidence and some implications. (The Review of Economic and Statistics, 1990) is: StDev = 1.492Edu - 0.118 Edu2

29 Londoño's (1995) equation for 64 countries is

\[
\text{Returns} = 0.18 - 0.010Edu \times 0.012Edu2
\]

(1.6) (1.4) R2 = 0.40

30 Psacharopoulos's data for 28 Latin American countries at the end of the '80s fits this regression:

\[
\text{Returns} = -2.16 + 0.65\ln Y - 0.044\ln Y2 - 0.064\ln Ed
\]

(5.0)(2.1) (2.1) (2.9) R2 = 0.53

29 A similar result was found in Brazil by J.G. Almeida dos Reis and Ricardo Paes de Barros in,"Wage Inequality and the Distribution of Education," Journal of Development Economics, 1991.

30 This argument is developed in Londoño, Juan Luis. "A horizontal mode of social organization." Washington, 1996 (mimeo).
Other titles from the World Bank

Edwards, Sebastian. *Crisis and Reform in Latin America: From Despair to Hope.* Published for the World Bank by Oxford University Press. 1995


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