

Chapter 4

THE ROLE OF THE ECONOMIC ENVIRONMENT

The preceding chapters have explored the determinants of income inequality at the level of the individuals and families who live, work and raise their children within a national economy. We have seen that certain key characteristics of the individuals in the family, most notably the education of the household's adult members, are important determinants of the household's decisions about labor force participation, fertility and the education of the children. The household's decisions interact with the economic environment that surrounds them—wages and employment opportunities—to determine household income and the earning capacity of the next generation. The message has been that a substantial part of income inequality in the region is attributable to differences across households in educational attainment and in other characteristics that determine household earning capacity. Thus, an important part of the Latin American income inequality story is that education and other determinants of earning capacity are unequally distributed across the population.

This is an important part of the story, the policy implications of which are very different from those that would have followed, for example, from a finding that the large differences in household earnings were inexplicable and unrelated to education or other individual characteristics. But we have also learned that this is not the whole story. This is so for two reasons. First, we have so far shed only limited light on why the distribution of education and other determinants of earning capacity are so skewed in Latin

America, and why they are so much more skewed in some countries of the region than in others.

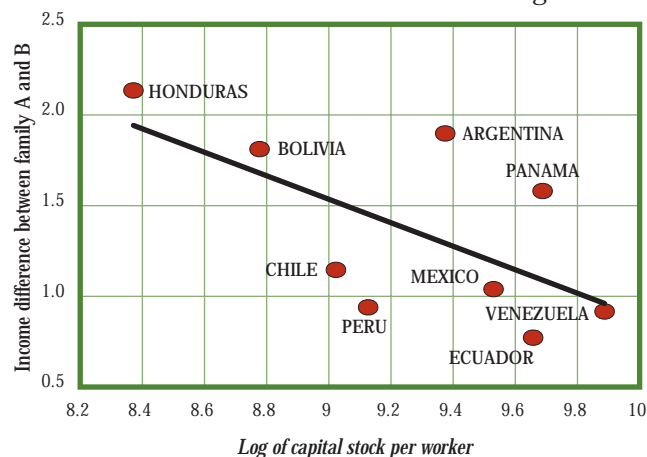
And further, we have uncovered evidence that a given difference in educational attainment or some other determinant of earning capacity generates much more inequality in some countries of the region than it does in others. It seems that in some countries there is something about the economic environment that translates a given difference in educational attainment into a larger difference in earning capacity, thus generating more unequal distribution of income, which is then amplified and transmitted to the next generation through the family decisions described in the previous chapter.

To understand this part of the story, we turn our attention away from detailed investigations of individual household behavior within a country,

where households face a relatively common economic environment, and toward comparisons across countries, where we find some key differences in the underlying economic environment. We can then try to learn how these differences affect distribution of income.

To motivate the discussion that follows, let us return for a moment to the Altamira and Bajares families introduced in Chapter 3. The families were identical in all respects except in the education of the family's adults. The more educated Altamira family had higher income than the Bajares family in all countries of the region, but that gap in income was much larger in some countries than in others; something about the economic environ-

Figure 4.1. How the Altamiras and Bajares Fare in Different Countries of the Region



Source: IDB calculations based on recent household surveys, and Technical Appendix.

ment was acting to magnify inequality in some countries. Figure 4.1 suggests that this aspect of the economic environment is not random or inexplicable, but is instead related to key characteristics of the economy in which the families are embedded. The figure suggests that in those countries of the region where workers have more capital to work with, the gap between the incomes of the Altamiras and the Bajares tends to be substantially smaller than in countries where less capital has been accumulated. This experiment seems to suggest that economic development promotes a more egalitarian distribution of income.

This chapter examines the international experience to explore in more detail the idea that certain aspects of the economic environment tend to promote income inequality. The stage of economic development is indeed importantly related to the distribution of income, and this factor helps explain why the distribution of income is so much more unequal in Latin America than it is in the industrial countries. We are also able to shed some light on the mechanisms through which the stage of development affects the distribution of income.

But we also find that the stage of development is only part of the story. After accounting for its stage of development, Latin America remains by international standards a region of very high income inequality. We thus turn to some other dimensions of the economic environment that may help to explain this excess inequality. While this investigation is exploratory, and hampered in some key respects by data limitations, the evidence suggests that the region's endowments of land and natural resources, including factors related to climate and geography, appear to have played an important role. We also find, not completely unrelated to this, that Latin America's volatile macroeconomic environment accounts for a significant share of the region's excess inequality. We say "not unrelated" because we also uncover evidence that this volatility results in part from the large external shocks that affect the region, which are themselves related to the region's rich endowment of natural resources.

The story is thus a complex one, in which circumstances associated with Latin America's stage of economic development interact with longer-lasting characteristics of the region, including its geography and climate, and its endowments of land and natural resources, to determine the income inequality observed today. But while we will have relatively little to say about policy until subsequent chapters, the explanations for income inequality provided here are not deterministic ones that leave no scope for remediation by good policies, or aggravation by bad policies. Indeed, one important motivation for laying out as fully as we can the underlying determi-

nants of income inequality is to lay the foundation for a more complete and productive strategy for policies to address the inequalities that may be generated by the region's history and economic circumstances.

INEQUALITY AND STAGES OF DEVELOPMENT

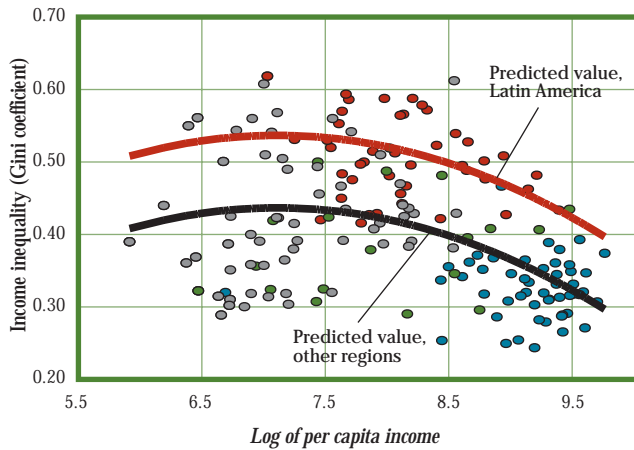
Perhaps the oldest and most prominent empirical speculation about the distribution of income focused on the development process as a key driver. The idea was that very primitive economies, in which virtually all of the population engages in very simple and labor-intensive activities, were likely to be very equal. During the process of development workers are pulled from the traditional sector into a gradually expanding "modern" sector with higher productivity and wages. This opens up an important wage gap between workers in the traditional and the modern sectors, and inequality thus emerges and increases in the early stages of development. By the end of the process every worker would be in the modern sector, earning roughly similar wages, and thus inequality would decline once again in the later stages of development. This story suggests a hump-shaped relationship between the level of development and income inequality, in which inequality first rises then declines as development proceeds, a relationship that came to be known as the Kuznets curve, after the economist who elaborated the idea in a famous 1955 paper.

Figure 4.2 illustrates the relationship between the stage of development, as measured by purchasing-parity adjusted income per capita, and income inequality. It also shows the predicted value implied by the statistical relationship that relates income inequality to per capita income and the squared value of per capita income.¹ Though some recent studies have had difficulty identifying a Kuznets curve relationship between income and inequality, in our data set there is in fact evidence of such a hump-shaped relationship between per capita income and inequality.

However, the upward-sloping part of the relationship between income and inequality appears to be relevant only for a few countries with very low income levels. The dominant feature of the relationship between development and inequality is a fairly strong tendency for inequality to decline as income rises. In particular,

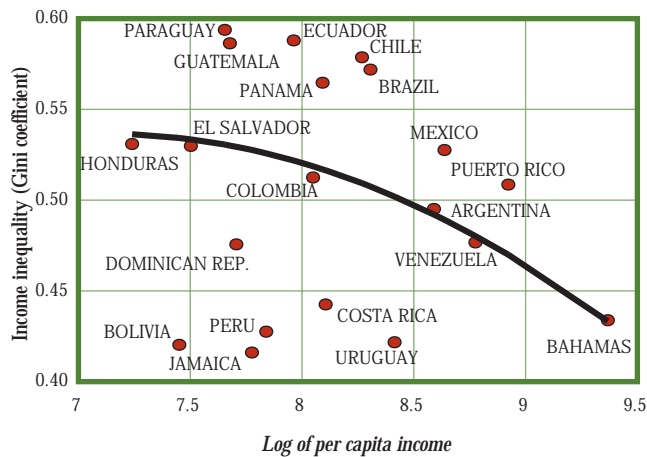
¹ We used the log of per capita income rather than the level, so that equal changes in the variable would correspond to percentage rather than absolute changes in per capita income. We also conducted the same analysis using (the log of) per capita income and its inverse, as suggested by Anand and Kanbur (1993), with essentially identical results to those reported above. See the Technical Appendix for the regression results that are summarized in the figure.

Figure 4.2. Development and Income Distribution



Note: In this and all subsequent figures, Latin American observations are graphed in red, the industrial economies are shown in blue, emerging East Asian economies are shown in green, and other countries are shown in grey. For the purposes of this report, emerging East Asia comprises Hong Kong, Indonesia, Korea, Malaysia, Singapore, Taiwan and Thailand.
Source: See Technical Appendix.

Figure 4.3. Development and Income Distribution, 1982-92



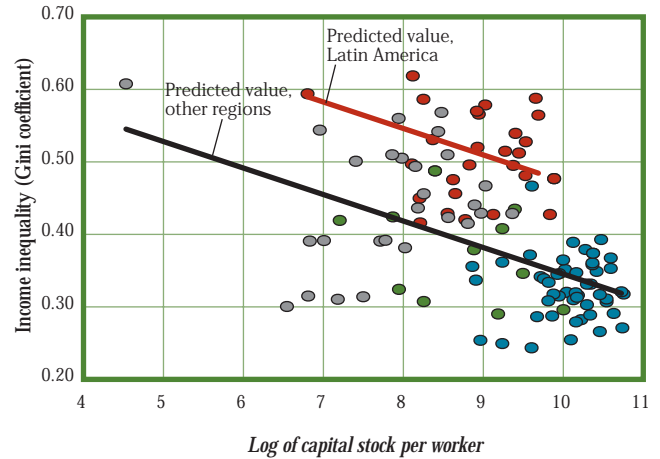
Source: See Technical Appendix.

few of Latin America's economies have income levels low enough to put them in the range where increased income would be associated with an increase in inequality, though several of them are near the peak of the estimated curve.

This predicted relationship between per capita income and inequality suggests that development is a powerful force; as a country moves from the level of development that puts it at the peak of the hump to the per capita income that characterizes the industrial economies, the Gini coefficient is predicted to fall by over 10 percentage points.

To allow for the possibility that the relationship between development and inequality is different in Latin

Figure 4.4. Income Inequality and Capital Intensity



Source: See Technical Appendix.

America than in the rest of the world, we also included a dummy variable for Latin America in the statistical relationship. The results suggest that the stage of development cannot explain all of Latin America's inequality; at any given level of development, Latin America exhibits roughly 10 percentage points more inequality than does the rest of the world.

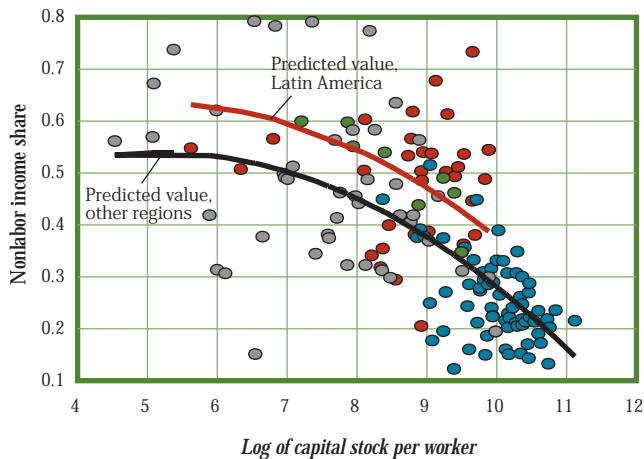
Economic development is associated with changes in the distribution of income because it involves economic and social transitions that affect the position of different economic and social groups. Here we discuss five of these transitions: the accumulation of physical capital, which affects the returns to labor; the educational transition, which affects the returns to skilled workers; the demographic transition, which carries with it profound implications for family size, labor force participation and educational attainment; urbanization; and formalization of the workforce.

Capital Accumulation Is Associated with Less Income Inequality

Development is, in essence, the accumulation of capital, both physical and human. It is natural therefore to begin with the role of capital accumulation. As Figure 4.4 illustrates, there is in fact a strong negative correlation between inequality and capital accumulation.

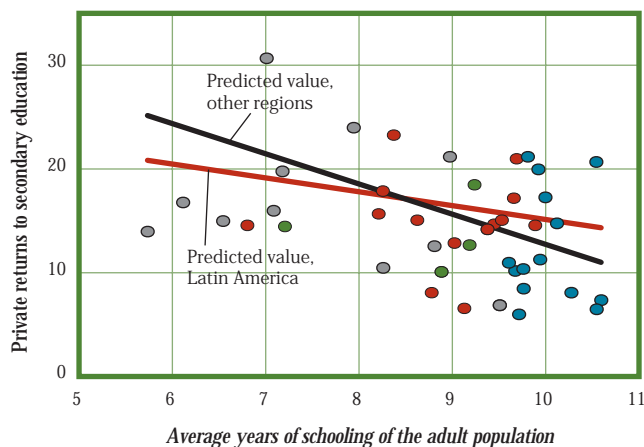
It is easy to understand how an increase in the stock of capital with which labor can work might affect the distribution of income. Basic economic theory suggests that, as capital is accumulated and becomes less scarce, the return that it earns should fall, while the return that is earned by other factors of production, such as skilled and

Figure 4.5. Nonlabor Income Share Falls as Capital Intensity Rises



Source: See Technical Appendix.

Figure 4.6. Returns to Education Decline as Education Rises



Note: Two observations with very high returns to education (Botswana and Zimbabwe) have been deleted from this chart to enhance readability.
Source: See Technical Appendix.

unskilled workers, would rise. Since the returns to capital accrue disproportionately to a small and wealthy subset of the population, this change in factor returns would be expected to improve the distribution of income.

Internationally comparable data on wages and the return to capital are hard to find, but most countries report rough estimates of the share of income that accrues to workers in the form of labor compensation, and that which is earned by entrepreneurs and businesses. Using this information, we see that there is a strong association between capital intensity and factor payments.

Where capital is more abundant, labor compensation tends to comprise a larger share of the national income and nonlabor income's share declines. This implies

that the return to capital declines sharply as capital becomes more abundant, since, despite the rise in the amount of capital that is employed in the economy, capital income (the product of the return to capital and the stock of capital) declines as a share of total income. The counterpart of this decline is a rise in the share of income paid to skilled and unskilled labor. Since labor power and skills are much more equally distributed among the population than is ownership of claims on the economy's capital stock, this tends to be equalizing.

As seen in Chapter 3, these direct effects of capital accumulation on factor returns are only the beginning of the story, for the increase in wages and the expanded opportunities for market work associated with capital deepening also trigger important changes in labor force participation, fertility and education, with powerful implications for the distribution of income.

Educational Progress Affects Returns to Education, Reducing Inequality

Development involves not only the accumulation of investments in buildings and equipment, but also in the education of the workforce. High returns to and an unequal distribution of educational attainment are important sources of income inequality. How does the human capital accumulation that accompanies economic development affect these determinants of income inequality?

Just as with physical capital, the private returns to education would be expected to decline as the population becomes more educated. And as seen in Figure 4.6, the returns to secondary education do in fact tend to decrease in countries where the population is more educated.²

How important is this effect? On average in Latin America, the population between the ages of 25 and 65 possesses roughly 4.8 years of education, while in the industrial economies the same population possesses about 8.4 years. Figure 4.6 suggests that this difference in average educational attainment is associated with an increase in the private returns to education in Latin America of roughly 7 percentage points, an increase in wage differentials that would have a major impact on the distribution of income. This suggests that increasing educational attainment in the region could be highly equalizing for income distribution, even if the educational

²The returns to secondary education shown in Figure 4.6 and the remainder of this chapter are from Psacharopoulos (1994), and may differ in some instances from the computations presented in previous chapters.

progress were not accompanied by reductions in the inequality of educational attainment.

There is also an important interaction between human and physical capital accumulation, since the data suggest that, holding constant the population's average educational attainment, a larger supply of physical capital is associated with higher returns to education. This is consistent with the idea that capital-intensive industries also require skilled labor and implies that a country or region is likely to experience particularly high returns to education if its investment in people lags behind its investment in capital.

We have seen that development affects the distribution of income through its effects on factor returns. Development tends to be equalizing because it reduces the returns to human and physical capital, ownership of which tends to be concentrated in the hands of a relatively small, wealthy segment of the population. But this is not the end of the story, for educational progress is also associated with systematic changes in educational inequality. This relationship was discussed in Chapter 2, where it was explained that educational inequality tends to rise with educational progress at first, but eventually declines as progress continues. Educational inequality is thus, in part, a transitory byproduct of educational progress, a point that is highly relevant for Latin America since, while measures of aggregate inequality of educational attainment have been rising, the inequality of educational attainment within cohorts has already started to fall.

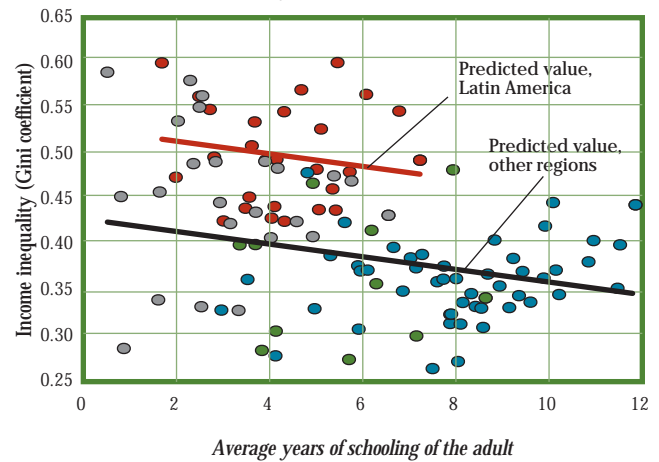
The impact of educational progress on inequality is thus something of an open question; while we expect such progress to drive down the premium that skilled workers earn and thus make the distribution of income more equal, it may at the same time be associated with an increase in educational inequality, which tends to increase income inequality. The international experience, summarized in Figure 4.7, suggests that, on balance, educational progress is in fact equalizing.

There is a strong negative relationship between educational attainment and income inequality, even after one controls for per capita income.³ Other things being equal, educational progress is equalizing; we shall provide some estimates of the significance of this factor below.

The Demographic Transition

The previous chapter highlighted the strong links between female labor force participation, fertility and educational attainment, showing that in families at the lower end of

Figure 4.7. Inequality and Educational Attainment
(Partial correlation, adjusted for income per capita)



Source: See Technical Appendix.

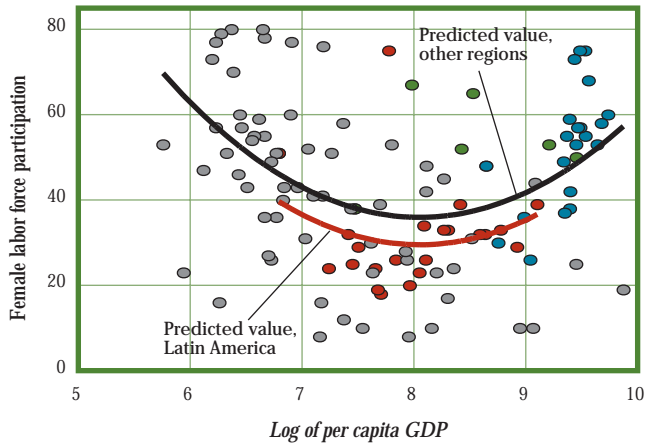
the income distribution, labor force participation was generally low and families tended to be large, undermining the family's capacity to invest in their children's education. The opposite tended to be true of high-income families, where labor force participation is higher and families have fewer children who are provided with more education.

A central element of this story is the role of fertility decisions and family size as key influences over income inequality in both the current and subsequent generations. This is of great relevance to Latin America because, along with much of the rest of the world, the region has been undergoing a wrenching demographic transition from the high birth and death rates common only a few generations ago to a world with much lower rates of fertility and death, longer life spans, and correspondingly older populations. This transition is due in substantial part to important advances in medical technology and public health practices, and their gradual diffusion in recent decades through the developing world. These innovations reduced death rates, and particularly infant mortality, resulting in a substantial increase in population growth and a decrease in the average age of the population. Over time, fertility rates have declined, and in most of the developing world populations are now beginning to grow more slowly and to become older.

While the demographic transition through which most of the developing world is now passing is related to

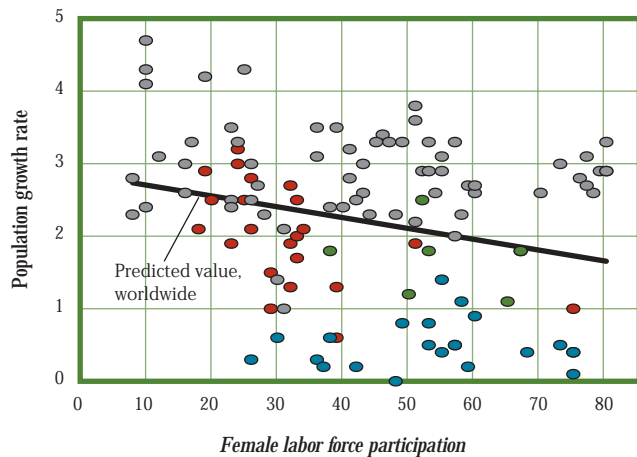
³ It is useful to control for per capita income to avoid confusing the effects of educational progress with other elements of the development process with which educational progress is likely to be correlated. If one does not control for per capita income, the correlation between education and the distribution of income is substantially stronger than that shown in Figure 4.7.

Figure 4.8. Development and Female Labor Force Participation
(In percent)



Source: See Technical Appendix.

Figure 4.9. Female Labor Force Participation and Population Growth
(In percent)

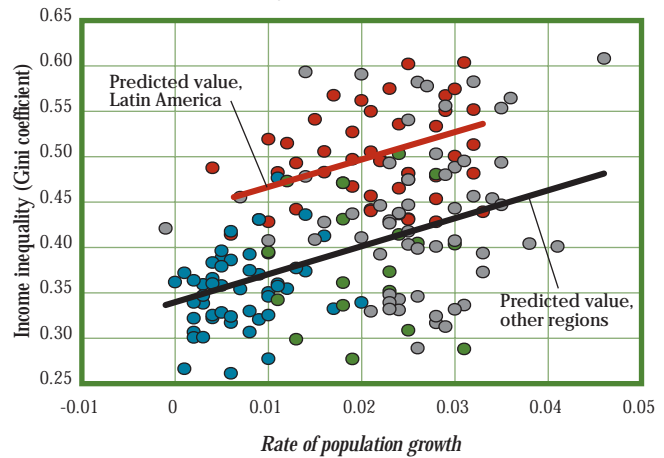


Source: See Technical Appendix.

medical advances of the past half century, it is also strongly related to economic development, since that process affects family decisions about fertility, labor force participation and education. Through these decisions, the demographic transition is having an important impact on the distribution of income.

As development proceeds and employment opportunities expand, it becomes increasingly advantageous for women to enter the labor market. At the same time, the process of urbanization that is typical of development, and the extension of water supplies, electrical power and communication networks, reduce the time and effort required to manage a household, making it easier for secondary earners to enter the labor force.

Figure 4.10. Demography and Income Distribution
(Partial correlation, adjusted for income per capita)



Source: See Technical Appendix.

Figure 4.8 suggests that female participation in the labor force tends to follow a U-shaped pattern. It tends to be relatively high at very low levels of development, perhaps reflecting the fact that very low-income economies are predominantly rural, where female participation tends to be high, and that at very low income levels many women simply cannot afford to forgo work. Starting at low levels of income, female participation tends to decline as per capita income rises until, at moderate income levels, participation begins to rise along with income, reflecting the enhanced incentives and possibilities for workforce participation that we have discussed. The figure also shows that female labor force participation tends to be lower in Latin America than in other countries with similar income levels.

As Chapter 3 emphasized, the decision to participate in the workforce and the decision on how many children to raise are closely related. Families in which both parents are in the workforce tend to choose to have fewer children than families where the potential secondary earner stays out of the labor force and in the home. Thus, as economic development proceeds and female labor force participation rises, fertility rates and the rate of population growth tend to decline.

Development is thus an important driver of the demographic transition through its impact on the incentives and the possibilities for labor force participation that face families. What does this have to do with the distribution of income? Quite a lot, it seems. Figure 4.10 shows that there is a strong positive correlation between population growth and income inequality, even after controlling for the level of development. The association is very strong. Holding constant the level of development, Fig-

ure 4.10 suggests that a 2 percentage point decline in the rate of population growth would be associated with a reduction in the Gini coefficient of income inequality of more than 7 percentage points, more than a third of the actual difference in income inequality between Latin America and the industrial countries. And the link between demographic factors and income inequality is also evident within Latin America, as seen in Figure 4.11.

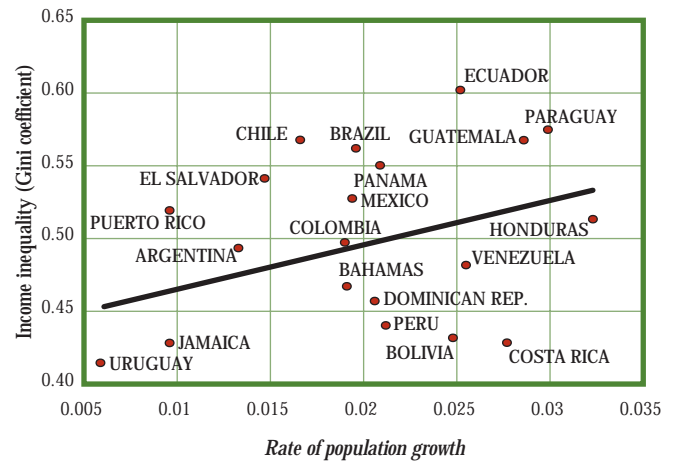
What explains this important link between demography and distribution? A number of explanations have been put forward. Some focus on implications for the age structure of the population growth. For example, it has been well documented that earnings differentials between skilled and unskilled workers tends to rise significantly as workers progress in their careers, and then decline significantly after workers retire.⁴ Thus, in a population with many more experienced workers, earnings differentials created by differing educational attainments will be larger, and income inequality higher, than in a population where most of the workforce is young. This cannot, however, explain why countries with rapid population growth and younger populations tend to have higher, not lower, income inequality than countries with older populations.⁵

An alternative explanation arises from the interaction between the wages of unskilled workers, family decisions and inequality that we have been emphasizing in this report. In the previous chapter we saw that when the returns to employment are low, participation in the workforce is lower, families are larger, and education of children is more limited. In this view, high fertility rates and the associated rapid population growth reflect a situation in which the returns to market work are low compared with the benefits of staying home and having a larger family.

It is thus not surprising to see that educational attainment tends to be low in countries where population growth rates are high. Figure 4.12 illustrates the strong negative correlation between the average educational attainment of the adult population and the rate of population growth.

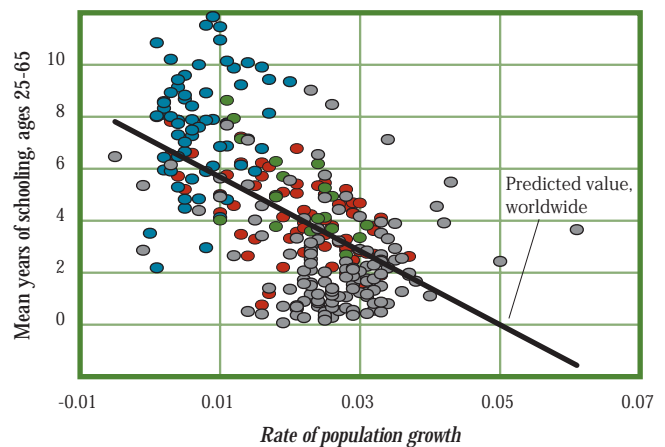
This correlation should of course not be read as a structural relationship in which the causality runs only from demography to educational attainment. It is likely that the reverse causality is important as well. Other things being equal, higher educational attainment is likely to be associated with lower rates of fertility and population growth. Indeed, this mutual relationship between fertility and the education decisions was a key point of the argument in Chapter 3. The very strong empirical relationship between fertility and education provides support for this story, which in turn helps us understand the strong empirical link between demography and the distribution of income.

Figure 4.11. Demography and Income Distribution



Source: See Technical Appendix.

Figure 4.12. Demography and Educational Attainment



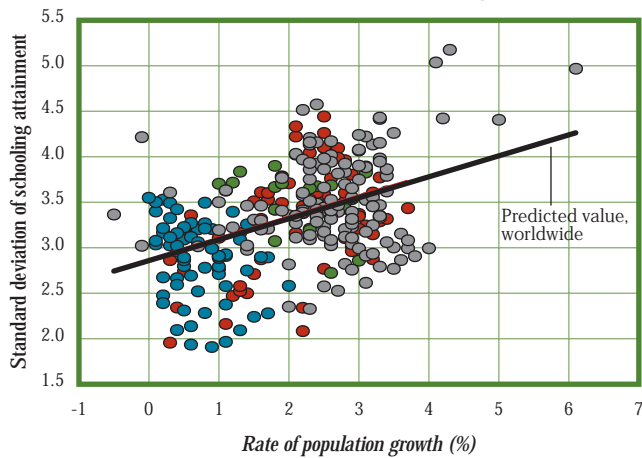
Source: See Technical Appendix.

But there is more. To the extent that high fertility and rapid population growth reflect an economic environment that offers low returns to market work, the effects are likely to be particularly strong in poor families, whose unskilled parents face the lowest rewards for entering the labor force. Rapid population growth should thus be associated not only with low levels of educational attainment on average, but also with a more unequal distribution of educational attainment across the population. And we do in fact see this.

⁴ See Atkinson (1982, p.100) for evidence on industrial economies, and Duryea and Székely (1998) and Chapter 2 of this report for evidence on Latin America.

⁵ On the other hand, if there are many retired workers, income inequality will tend to decline. There is some evidence that large retirement-age populations are associated with lower inequality; in a multivariate statistical framework, high rates of population growth—and therefore younger populations—are associated with higher inequality, while at the same time the share of the population over 65 is associated with significantly lower income inequality.

Figure 4.13. Demography and Educational Inequality
(Partial correlation, controls for mean schooling)



Source: See Technical Appendix.

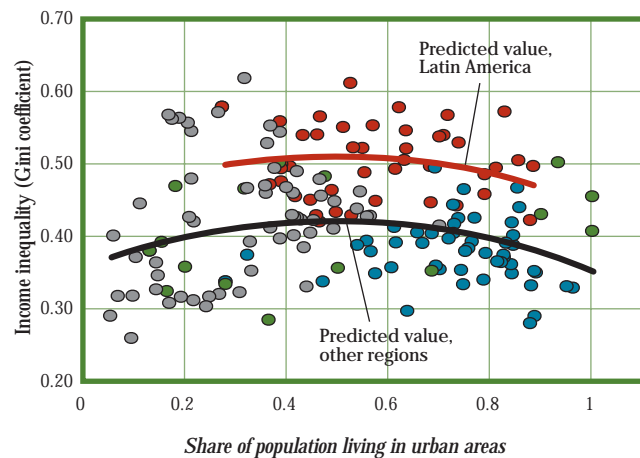
After accounting for the relationship between average educational attainment and educational inequality discussed in Chapter 2, we see that there is a strong positive correlation between population growth and educational inequality, as measured by the standard deviation of educational attainment. This suggests that the underlying factors leading families to choose higher fertility rates are adversely affecting not only the country's rate of investment in human capital, but also the distribution of those investments across the population, with adverse consequences for the distribution of income.

In summary, we have identified a number of channels through which demographic factors affect the distribution of income. The story about households that was laid out in Chapter 3 finds support in international comparisons; in general, high fertility rates, low female labor force participation and low educational attainment tend to go together, and these are associated with higher income inequality.

This is relevant for Latin America because different countries of the region are at very different stages of the demographic transition, ranging from relatively young countries like Nicaragua, Haiti and Guatemala, where the average age of the population is just over 20, to countries like Argentina, Jamaica and Uruguay, where the average age of the population is over 30, matching or exceeding that of the industrial economies. These differences in demographic structure help explain differences in the degree of inequality that characterize countries of the region, and they also help explain why Latin America is so much more unequal than the industrial economies.

The link between demography and distribution is also important and interesting because as birthrates and

Figure 4.14. Urbanization and Inequality
(Partial correlation, controls for per capita income)



Source: See Technical Appendix.

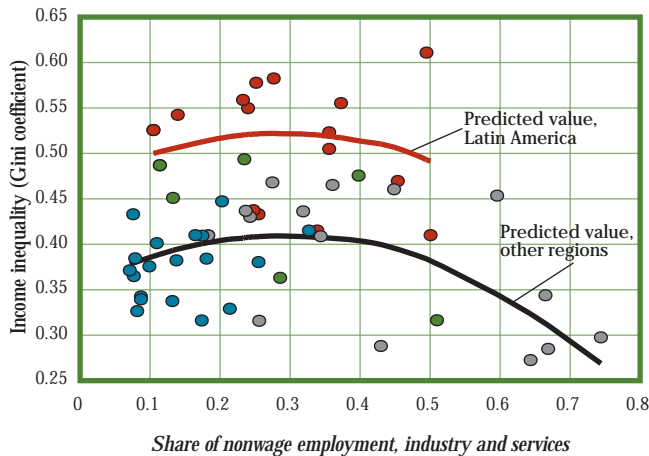
family sizes decline, most countries of the region are in the midst of a major demographic transition. Looking ahead, this demographic transition should be good news for income distribution in the region.

Urbanization

Development is also associated with urbanization, and like much of the developing world Latin America is experiencing a gradual urbanization of the population. The share of the population living in urban areas has risen from about 50 percent in the 1960s to 53 percent in the 1970s, 58 percent in the 1980s and well over 60 percent in the 1990s. This transition affects income distribution because the economic environment in rural areas differs dramatically from that of the cities. As we saw in Chapter 2, a key feature of the economic landscape in Latin America is a very large gap between the income of families in urban and rural areas. Holding constant other determinants of wages such as education and experience, workers in rural areas earn roughly 20 percent less than workers in urban areas. But the earnings gap is in fact substantially larger than this, because everything is not equal in the countryside and the city; in fact, educational attainment is dramatically lower in rural areas, a reflection of low wages, lower returns to educational investment and large family sizes. Finally, because rural families tend to be larger, reflecting both larger numbers of children and greater tendencies for extended families to live together, differences in the per capita incomes of urban and rural households is increased even further.

What does this earnings gap mean for the distribution of income? In the very early stages of the transition

Figure 4.15. Informality and Inequality
(Partial correlation, controls for per capita income)



Source: See Technical Appendix.

to an urban society, when nearly everyone lives in low-wage rural areas, income inequality would be expected to be relatively low. But as people begin to move to the higher-wage urban areas, the substantial gap between urban and rural earnings will contribute to gradually increasing inequality. Near the end of the process, when most workers have made the transition to the urban sector, the urban-rural earnings gap will affect only a small fraction of the population, and its contribution to the country's income inequality will thus be small.

We thus expect to see a hump-shaped relationship between urbanization and inequality, and this is in fact what emerges from the data. Even after controlling for per capita income, urbanization has an important effect on the distribution of income. Urbanization is predicted to have the most unfavorable consequences for income distribution at an urbanization rate of about 50 percent of the population, roughly where Latin America has been for the past several decades. The international experience suggests, however, that as the process of urbanization continues, it should begin to exert an equalizing rather than an unequalizing impact on the region.

Formalization

The final manifestation of Latin America's stage of development is its large informal sector. The incorporation of increasing shares of the workforce into formal employment relationships is one hallmark of the development process, and internationally the size of the informal sector tends to decline with per capita income. As development proceeds in the region, it is natural to expect that the incidence of informality will tend to decline as well.

What will this transition mean for income inequality?

As we saw in earlier chapters, informal sector employment generally pays less than employment in formal sectors. This is not true for all workers and for all types of informal employment, but it is true for most, and is especially true for women. Also, freed from the constraints imposed by minimum wages and collective bargaining, informal sector earnings are substantially more unequal than are earnings in the formal sector.

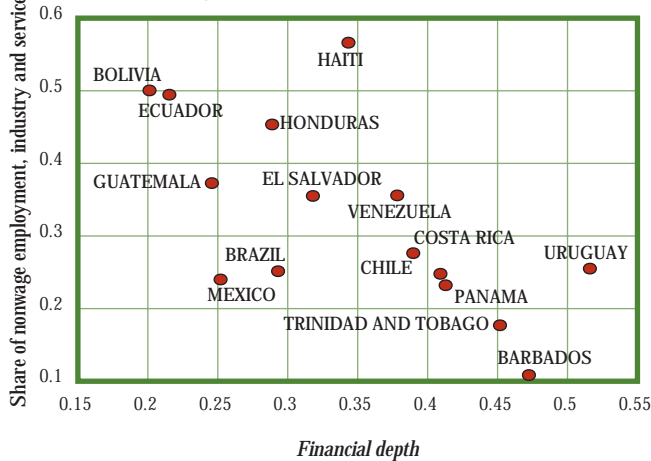
As with urbanization, we might therefore expect an inverted U-shaped relationship between informality and inequality. Because of differences between the average incomes of workers in the informal and formal sectors, inequality might increase in the early stages of formalization. However, as the process of formalization proceeds and the informal sector gradually shrinks in size, inequality will eventually begin to decline as an increasing share of the labor force becomes incorporated into the formal sector, where wage differentials are more limited than in the informal sector.

Figure 4.15 suggests that the process of formalization involves an increase in inequality until the rate of informality declines to about 25 to 30 percent of total employment, after which further declines in the size of the informal sector are associated with declines in inequality. This is an important point for Latin America, where the rate of informality ranges from about 11 percent of the workforce to nearly 60 percent, and the median rate for the region is 27 percent. This means that roughly half the countries of the region are now in the category where international experience suggests that further formalization of the workforce will tend to reduce inequality. Most other countries of the region have rates of informality ranging between 30 to 50 percent, where formalization is predicted to have only small adverse effects on the distribution of income, and only a few countries are still in the range where formalization of the workforce is predicted to have adverse consequences.

While we have suggested that formalization of the workforce is a normal part of the development process, this does not mean it is an automatic outcome of the process. We find, for example, that in Latin America informality is associated with shallow financial markets, which is consistent with the idea that many entrepreneurs are forced to continue in a state of informal, small-scale development because they cannot obtain the credit that might finance an expansion and formalization of their business activities.

This highlights the fact that, while formalization normally accompanies development, the process could be short-circuited if the domestic financial system is not

Figure 4.16. Financial Depth and Informality, 1982-92



Source: See Technical Appendix.

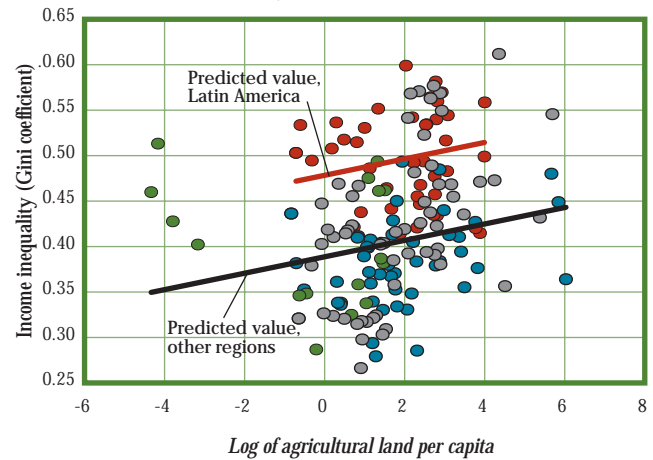
up to the task of supporting the transition. By the same token, policy measures that promote the development of a robust financial system with the capacity to serve small enterprises can promote formalization.

Summing Up: Stages of Development and Inequality

Economic development is associated with declining income inequality, at least over the range that is relevant for most countries of Latin America today. As Latin America develops, the distribution of income will be favorably influenced by the transitions associated with development, including capital deepening, educational progress, the demographic transition, urbanization and formalization of the labor force. This is no cause for complacency, however. Development is a slow process and any improvements in income distribution may be a long time in coming. The mechanisms discussed in this chapter may provide potential levers for policy to secure lasting improvements in income distribution.

In short, looking to the future, the message is an optimistic one. Latin America is undergoing several transitions that in some cases have been unequalizing, but which can in the near future be expected to exert a more equalizing influence on income distribution. However, while the eventual payoff of these transitions is likely to be significant, it will not bring Latin America's inequality to East Asian levels. Put differently, there is something about the Latin American economic environment that is generating persistently higher inequality, even after correcting for the impact of the region's stage of development.

Figure 4.17. Land Intensity and Income Inequality
(Partial correlation, adjusted for per capita income)



Source: See Technical Appendix.

THE STRUCTURAL BACKDROP FOR INCOME INEQUALITY

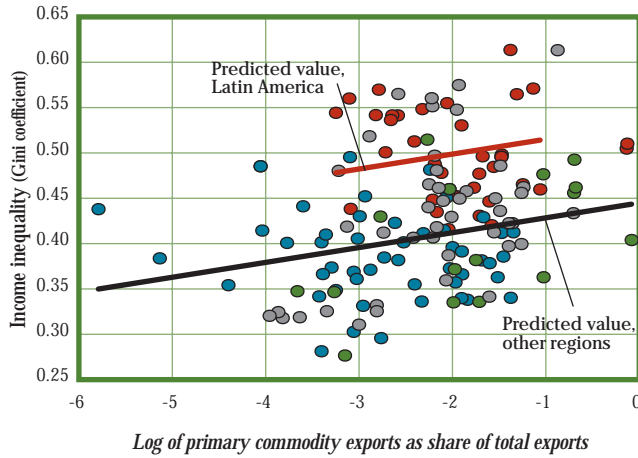
We now explore two longer-term or “structural” factors. The first is Latin America's geographical heritage, which has endowed it with specific types of land, natural resources, and climatic conditions that form the backdrop for the region's economic development. The second factor, fundamentally related to these endowments, is the region's exposure to large economic shocks, which has been associated with a history of macroeconomic volatility. This has colored prospects for development in the region, and affected, most importantly, the poorer members of these societies.

Geography and Natural Resources

Latin America is distinctive for many reasons. One of them is the region's rich endowment of natural resources, which has played a crucial role in its history, and which distinguishes it from most of the economies of South and East Asia that are generally less richly endowed in land and mineral wealth. What do these endowments mean for the distribution of income?

Figures 4.17 through 4.20 illustrate the relationship between income inequality and various measures of resource intensity and climatic conditions. They show, respectively, the quantity of agricultural land per capita, primary commodity exports as a share of GDP, and latitude, or distance from the equator, first comparing Latin America to other regions and then within Latin America itself. Each of the figures shows the correlation between

Figure 4.18. Primary Commodity Exports and Income Inequality
(Partial correlation, adjusted for per capita income)



Source: See Technical Appendix.

income inequality, as measured by the Gini coefficient, and the explanatory variable after accounting for the empirical relationship between income inequality and the stage of development discussed above.

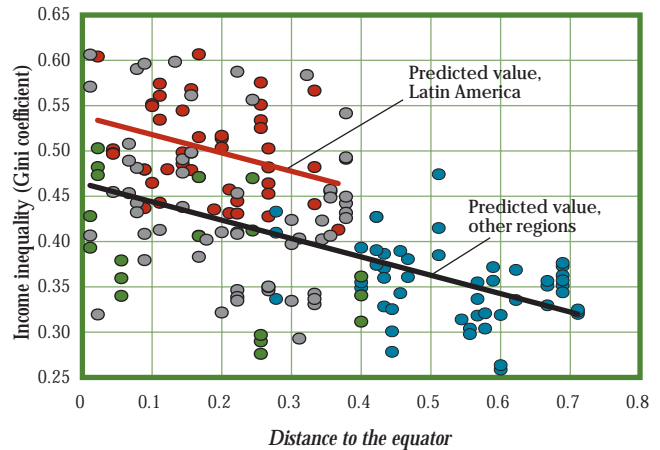
The correlations are striking. Countries with large amounts of agricultural land per capita are substantially more unequal than countries with relatively little land per capita. Countries that rely upon large exports of primary commodities are also substantially more unequal than countries with lower primary commodity exports.

Particularly striking is the correlation between latitude and inequality. Countries near the equator have systematically higher income inequality, even after accounting for the fact that countries in the tropics tend to be far less developed than are countries in more temperate regions. This is true at the global level, and also within Latin America.

This correlation between latitude and inequality is, in fact, the strongest and most robust of all those prepared for this report, as seen in Table 4.1, which measures the power of various potential explanations for income distribution. The number in the table is the fraction of the variance in the Gini coefficient explained by the simple statistical framework that includes the indicated explanatory variable.

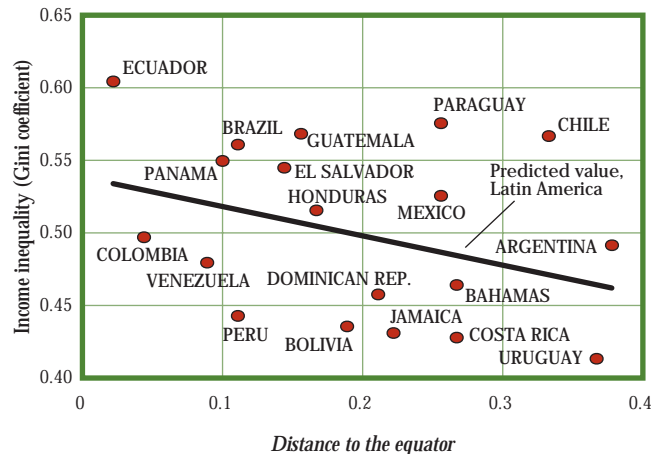
As the table indicates, the correlation between latitude and income inequality is higher than any other explanatory variable. While comparison of the numbers in the table is complicated by the fact that the different variables have different missing observations, and therefore the subsample of the data being explained by each variable differs somewhat, the importance of latitude as an explanation of inequality is also supported by the robust-

Figure 4.19. Latitude and Income Inequality
(Partial correlation, adjusted for per capita income)



Note: The "latitude" variable is the absolute value of the actual latitude of the center of the country divided by 90. It thus lies between zero and one, being equal to zero at the equator and one at the North and South Poles.
Source: See Technical Appendix.

Figure 4.20. Latitude and Income Inequality in Latin America
(Partial correlation, adjusted for per capita income)



Note: The "latitude" variable is the absolute value of the actual latitude of the center of the country divided by 90. It thus lies between zero and one, being equal to zero at the equator and one at the North and South Poles.
Source: See Technical Appendix.

ness of the variable to the inclusion of alternative explanatory variables. In all of the many specifications explored here, the variable measuring distance to the equator is highly significant in statistical and, as we shall see below, economic terms. The measures of land intensity and reliance upon primary commodity exports also proved fairly robust predictors of inequality, though the correlation between these variables is less dramatic.

It is impossible to ignore this strong relationship between geography and inequality. But the relationship is an unsettling one because it is not immediately clear

Table 4.1. Explanatory Power of Various Potential Determinants of Income Inequality

Latitude (Distance to the equator)	.532
Land intensity (Log of agricultural land per capita)	.207
Primary commodity exports as a share of GDP	.144
Stage of development (Per capita income and its square)	.442
Capital intensity (Log of capital stock per worker)	.280
Average schooling attainment	.396
Standard deviation of schooling attainment	.202
Rate of population growth	.430
Urbanization (Urban population times one minus the urban population)	.275
Informality (Share of nonwage employment in industry and services)	.261
Real GDP volatility (Standard deviation of the real GDP growth rate)	.198
Terms of trade volatility (Standard deviation of percent changes in terms of trade)	.198
Financial depth (Ratio of the broad money supply to GDP)	.272
Inequality of land ownership (Gini coefficient)	.197

Note: The numbers in the table give the R-squared of a linear regression of the Gini coefficient on the explanatory variable. The regression also included a dummy variable to distinguish between measures of income inequality that come from surveys of household expenditure, rather than surveys of income, since there is a tendency for expenditures to be less unequal than income. A dummy variable was also included for communist countries, since they experienced much less inequality than noncommunist countries. Because of missing data for the different explanatory variables, different regressions included different subsamples of the data set.

what the correlation means. What are the mechanisms that make for this strong association between income inequality and tropical land and climates? There are a number of explanations, all of which may contain at least a grain of truth.

Tropical Conditions Reduce Labor Productivity and Wages

One explanation for this association emphasizes the difficulties that tropical conditions create for workers, and the impact of tropical conditions on the productivity of labor. While progress has been made in ameliorating some of these conditions, life in tropical areas remains complicated by disease and by problems associated with climate, pests and soil and water quality. All hamper the productivity of labor, and particularly undermine agricultural efficiency. This is amplified by the fact that many of the most important innovations in agricultural technology have been associated with agricultural products and production techniques that are well suited to temperate rather than tropical regions.

Recent studies have begun to quantify the enormous toll that these conditions impose on progress for economic growth.⁶ This interruption of development prospects itself contributes to inequality, since economic development tends to be good for distribution, except at quite low income levels. But there is also good reason to expect that tropical conditions exert an independent effect on income

inequality. At least in the earlier stages of development, when industrialization is drawing labor out of the rural workforce, wages and working conditions in the modern sector will be linked, at least loosely, to conditions in the rural areas.

If an independent worker without a lot of capital can make a good living in farming—as was the case in the United States during much of its industrialization—a fairly high floor will be placed on wages that workers will accept in the industrial sector. Under these conditions, industrialization can take place with relatively high wages and low income inequality. If, on the other hand, workers in rural areas face the life of low productivity and difficult living conditions that are to be found in many tropical regions, industrialization may take place in a “buyer’s market” for labor, with low wages and high inequality. Moreover,

the resultant income inequality is likely to be amplified and perpetuated by the impact of these difficult labor market conditions in rural and modern sectors alike on family decisions about fertility, labor force participation and education.

Tropical Crops Are Associated with Unequal Distribution of Land and Income

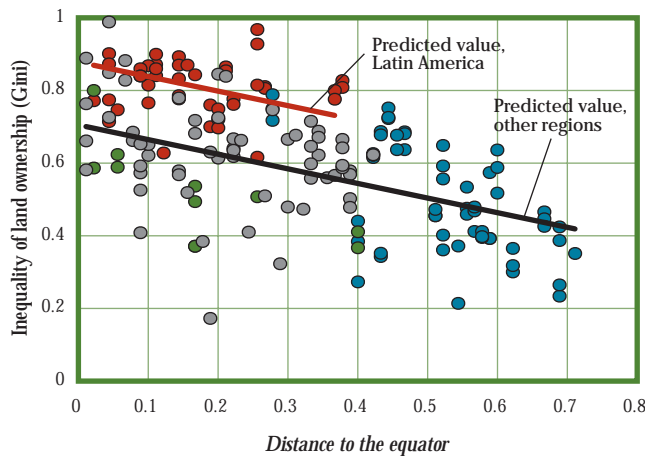
These labor market conditions may be reinforced by mechanisms that are emphasized in a second, complementary explanation for the association between tropical environments and inequality.⁷ This explanation emphasizes the nature of the technologies appropriate for tropical crops, as compared with crops grown in temperate climates. Many of the most important tropical crops, including cotton, sugar and tobacco, are efficiently produced on large-scale plantations. This is much less true of most temperate crops such as wheat, maize or barley, for which, until the relatively recent introduction of agricultural mechanization, relatively small-scale production was reasonably efficient.

It has been argued that the returns to scale associated with many tropical crops facilitated an extreme concentration of land ownership. This idea is certainly borne

⁶ See Sachs and Warner (1995) and Gallup and Sachs (undated).

⁷ See Engerman and Sokoloff (1998) for a persuasive presentation of this view.

Figure 4.21. Latitude and Inequality of Land Ownership
(Partial correlation, adjusted for per capita income)



Source: See Technical Appendix.

out by the data, which show that the ownership of land is much more concentrated in tropical than in temperate areas.

In fact, the correlation between latitude and the concentration of land ownership is even more impressive than the correlation between latitude and the distribution of income, suggesting that promotion of highly concentrated land ownership is an important mechanism through which climate and geography have influenced income distribution.

The concentration of land ownership facilitated by the increasing returns to scale in the production of tropical crops reduces competition among employers and may provide them with substantial market power over their employees, thus compounding the difficulties faced by workers in tropical areas. The most extreme manifestation of this market power was slavery, a phenomenon that developed almost exclusively in tropical and subtropical climates, these being parts of the New World where agricultural technology presumably made it most profitable. One view is that inequality in many parts of Latin America is in substantial part the legacy of tropical labor markets, including slavery.

The concentration of land ownership that typifies countries in tropical regions was facilitated in Latin America by the land, immigration and labor policies of governments from early colonial times. But the interesting historical question is whether these policies were accidents of history, or whether they were themselves the result of the natural resource endowments, climate and other geographical conditions of the Latin American colonies. It has been argued that such policies, as well as many of the institutional features that have long been invoked

as explanations for Latin America's highly skewed income distribution, have their roots in the factor endowments that awaited the Spanish and Portuguese colonizers of the region.⁸

An important exception to the general rule that countries in tropical regions have more concentrated land ownership is provided by the economies of emerging East Asia, which lie close to the equator but nevertheless have very low concentrations of land ownership. This may be one of those rare exceptions that actually proves the rule, for the crop upon which these societies were generally built was rice, which does not exhibit the economies of scale in production associated with other tropical crops such as sugar, cotton or tobacco. While other factors may certainly be at play, it seems plausible that East Asia's relatively more egalitarian distribution of income has much to do with the economic, social and institutional structures left behind by a rice culture.

But this example also highlights data limitations. While they have substantial predictive power, variables such as distance to the equator are clearly no more than crude proxies for important structural differences closely associated with, but not identical to, the indicator. The same is true of, for example, aggregate measures of land intensity if, as we have argued, there are important differences between different types of land.

Natural Resources—A “Capital Sink”?

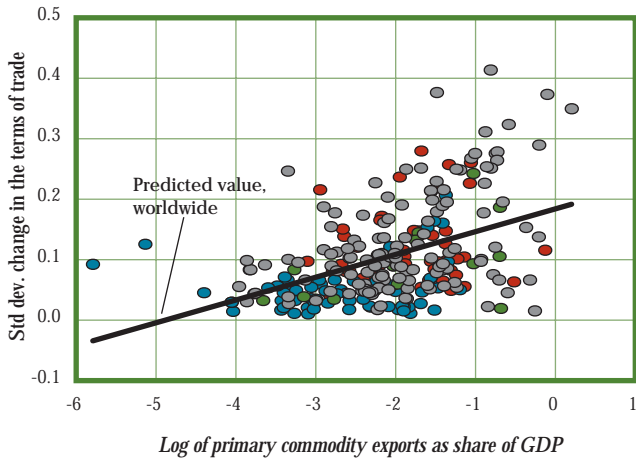
There are other explanations for the link between natural resource endowments and inequality. It has been argued, for example, that mineral resources and certain types of land require considerable physical capital and very little labor. In developing countries, where capital is scarce and labor abundant, this may increase the relative price of capital and reduce the market size to support a growing manufacturing and modern services sector. This leaves workers in a difficult situation, lowering real wages and worsening the distribution of income. And, to the extent that growth is generally facilitated by the development of manufacturing and nonresource-based industries, natural resources may even undermine prospects for long-run development, with deleterious implications for the distribution of income.⁹

A final reason for the association between abundant natural resources and inequality lies in the implica-

⁸ See Engerman and Sokoloff (1998).

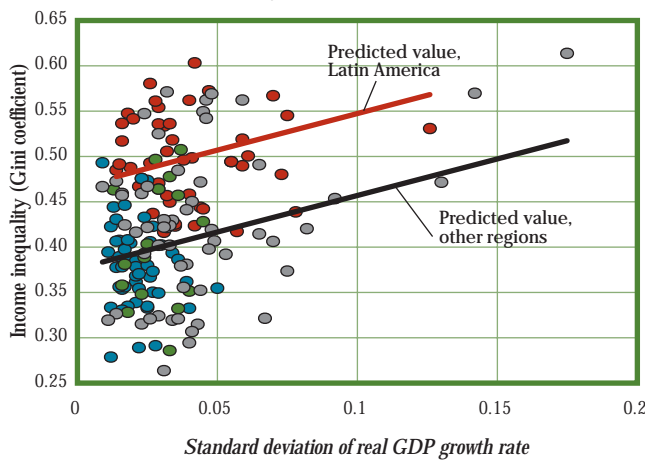
⁹ See Sachs and Warner (1995) for evidence that natural resources are associated with slower growth. A number of theoretical ideas have been floated to explain how large natural resource endowments may undermine growth prospects. These typically involve externalities, increasing returns to scale, or important learning-by-doing dynamics in industries that tend to be crowded out by the presence of natural resource wealth. See Matsuyama (1992).

Figure 4.22. Natural Resources Are Associated with Large External Shocks



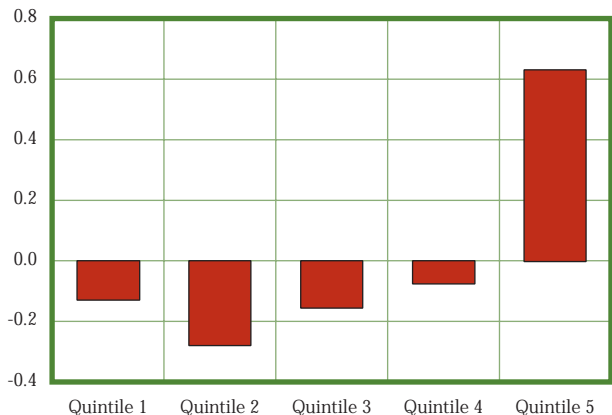
Source: See Technical Appendix.

Figure 4.23. Macroeconomic Volatility and Inequality (Partial correlation, adjusted for per capita income)



Source: See Technical Appendix.

Figure 4.24. Volatility and Income Distribution (Impact of GDP volatility by quintile)



Source: See Technical Appendix.

tions of such abundance for macroeconomic volatility. Large external shocks to which Latin America is exposed have much to do with the region’s rich endowments of natural resources and consequent reliance upon volatile primary commodity exports. Macroeconomic volatility worsens income inequality in a number of ways. As Figure 4.22 shows, volatility in the terms of trade is closely associated with reliance upon primary commodity exports.

Macroeconomic Volatility Worsens Income Distribution

The volatile macroeconomic environment with which Latin American families and businesses have had to cope has taken an enormous toll on the region, reducing the rate of long-term growth by as much as one percentage point per year, worsening the distribution of income, and lowering educational attainment.¹⁰

Figure 4.23 presents the correlation between macroeconomic volatility, as measured by the standard deviation of the real GDP growth rate, and inequality, after accounting for the influence of the stage of development (as measured by per capita income and squared per capita income) and geography (as measured by distance to the equator). The positive relationship between volatility and the distribution of income is significant in both statistical and economic terms. The statistical relationship suggests that a three percentage point reduction in the volatility of real GDP growth would reduce the Gini coefficient of income inequality by roughly 2 percentage points. To the extent that the reduction in volatility also produces more rapid economic growth, the beneficial effects on income distribution would cumulate over time.

Who gets hurt by a volatile macroeconomic environment? The statistical relationship between macroeconomic volatility and the income shares that accrue to different quintiles of the population—accounting for the estimated impact of the stage of development and geographical factors as before—shows that all except the richest 20 percent of the population are adversely affected by macroeconomic volatility. The hardest hit are the second and third quintiles from the bottom.

What are the mechanisms that underlie this relationship between economic instability and inequality? During the past few decades, a substantial body of economic research has documented the adverse impact of inflation and macroeconomic shocks and crises on the poor.¹¹ But there is more at work than the simple fact

¹⁰ Inter-American Development Bank (1995).

¹¹ See Lustig (1995) and Morley (1995).

Macroeconomic shocks do not affect all groups the same way, nor do their effects recede entirely with economic recovery. Many heads of households are forced to retire early from their formal jobs, passing into the informal sector or into inactivity, perhaps permanently. To make up for the reduction in family income, many young persons drop out of school, sometimes never to return. Once the crisis is over, employment is higher than before but at the cost of higher rates of informal sector employment and fewer young persons in the education system.

These are the preliminary conclusions of a study that has tracked the effects of the Mexican crisis that broke out at the end of 1994 (Márquez, 1998). Although this episode is still not over, some effects have been so profound that they will likely be felt for some time.

In the year after the crisis, the economy contracted 6.2 percent. Although this drop corrected itself almost completely in the following year, many other changes did not recede quite as quickly. The unemployment rate, which had risen 3.5 percent in 1995, fell by only one point in 1996. But this was not due to a lack in the creation of jobs, which increased 3 percent in 1996 (after a decrease from 0.2 percent in 1995), but rather to the expansion of the labor market in both 1995 and 1996.

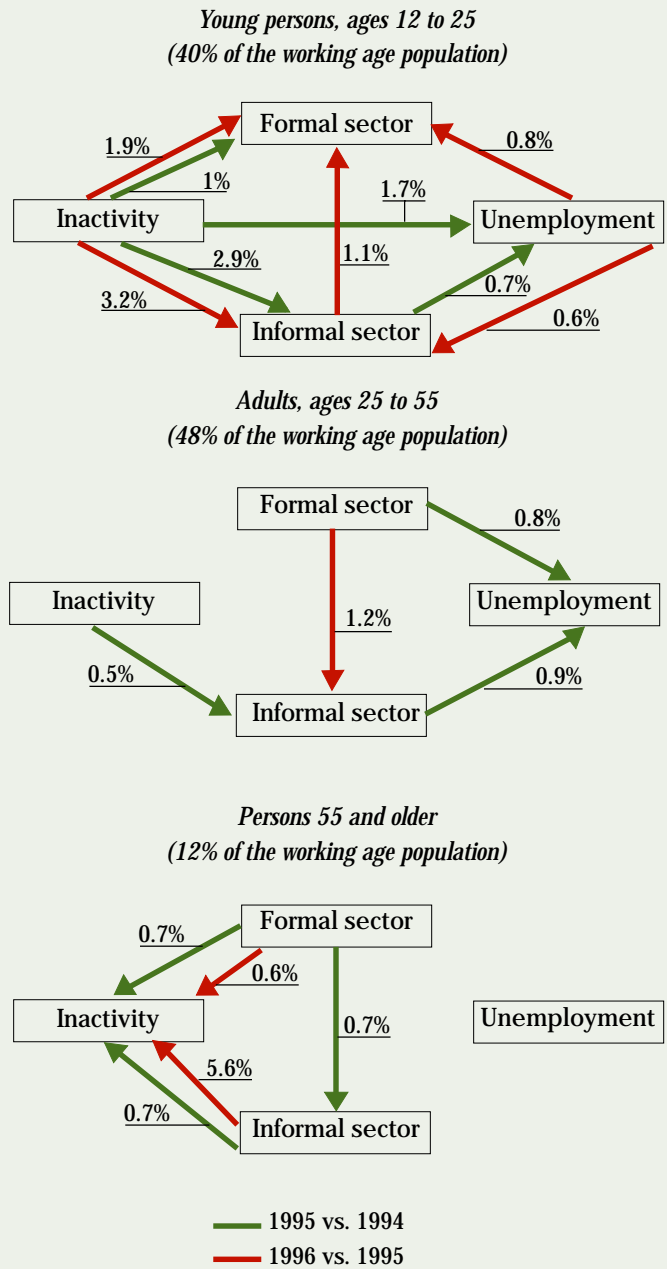
Moreover, although employment recovered, the share of formal jobs in private sector companies decreased, while the share of informal sector jobs increased. In 1996, 55.1 percent of job growth was generated by small businesses and other informal activities (self-employment or family helpers). Two years earlier the rate was 53.7 percent. In this period, the number of informal sector jobs rose by more than 900,000, while the number of formal jobs in the private sector fell by 200,000. Had it not been for the government, which created a similar number of jobs, expansion of the informal sector would have been even greater.

The 1995 crisis forced more than 5 percent of young persons between the ages of 12 and 25 to enter the labor market: 1 percent found formal employment, 2 percent were employed in small businesses or in informal jobs, and 1.7 percent joined the unemployment lines. The 1996 recovery reinforced this trend even more: 1.9 percent more were employed in formal business, and 3.2 percent in informal activities. The recovery also allowed a large number of young persons who in the previous year had informal jobs or who were unemployed to pass into the formal sector. Thus, in the two years that followed the crisis, 9 percent of all young persons joined the job market and more than one-half of them found employment in the formal sector.

By contrast, adult workers ended up swelling the size of the informal sector, and, above all, the ranks of the unemployed. Between 1994 and 1996, 2 percent of all Mexicans between the ages of 25 and 55 lost their formal jobs. During the recession year, the economic downturn produced a rise in unemployment, further aggravated by workers who left the informal sector. In the following year, workers who left formal jobs were for the most part directly involved in the informal sector.

Workers 55 and older also left their formal jobs, and a large number withdrew entirely from work activity. In 1995, 1.4 percent of all workers 55 and older left their formal jobs, one-half of them for the informal sector and one-half for inactivity, where they were joined by many others discouraged by their work in informal occupations. This situation did not correct itself in 1996: 0.6 percent of all older workers went from the formal sector to retirement and 5.6 percent more abandoned informal jobs to become inactive.

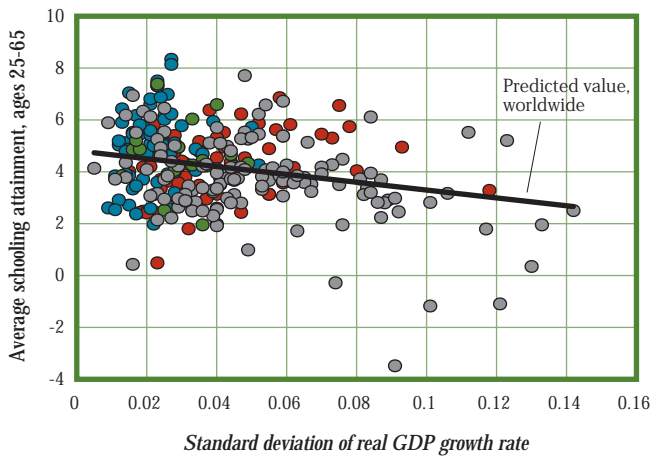
Figure 1. Labor Market Recomposition, Mexico, 1994-96
(Percent of the corresponding age group)



Source: Márquez (1998). Note: Only net flows greater than 0.5 percent of the corresponding age group are shown.

The end effect of the crisis was a great loss of human capital. Young persons abandoned their studies, companies lost the accumulative experience of thousands of middle-age and older workers, and older workers abandoned all productive activity. Thus, although economic activity recovered from the beginning of 1996, society lost resources, and for many families, prospects for improvement faded.

Figure 4.25. Macroeconomic Volatility and Educational Attainment
(Partial correlation, adjusted for per capita income)



Source: See Technical Appendix.

that the poor are more exposed to the ups and downs of a shock-prone economy. Macroeconomic volatility contributes to higher inequality in the long run because the poor lack the means available to wealthier individuals and families to handle the shocks, and they may therefore be forced by an adverse shock into decisions that have adverse consequences for their long-run earning potential or that of their children.

When industrial economies fall into recession, their students tend to remain in school longer, since it makes sense to wait out the bad labor market until conditions improve. In developing economies, many students lack this option. As Box 4.1 documents for the recent Mexican crisis, when the economy suffers a major adverse shock, the young are often forced into the labor market, presumably because their families cannot afford the out-of-pocket expenses associated with school, or more likely because the young person's contribution is needed for the family's income. The Mexican example also shows that, when the crisis abated, the students did not return to school, but remained in the labor force. Once a child's schooling has been interrupted for any significant length of time, it is not likely to be resumed.

Recent research has shown that this link between volatility and educational attainment is a general pattern; in countries with greater volatility, educational attainment tends to be significantly lower.¹² This is, of course, bad for income inequality because where education is more scarce, the wage premium earned by well-educated workers tends to be higher. But there is more, for it is not only the country's average level of educational attainment that is affected by volatility. Because the poor are particularly exposed to adverse macroeconomic shocks, it is plau-

sible that children from poor families will be the ones forced out of school in the event of a crisis.

We thus expect macroeconomic volatility to increase educational inequality at the same time it reduces average attainment. After accounting for the normal relationship between educational inequality and the average level of schooling attainment discussed in some detail above, countries with more severe macroeconomic volatility also tend to have more inequality in educational attainment. Macroeconomic volatility is thus doubly unequalizing, both reducing the average level and raising the inequality of educational attainment.

A volatile macroeconomic environment also undermines investment, which translates over time into a lower capital stock.¹³ This tends to increase income inequality because a scarcity of capital means that the returns to capital are high, and because the reduction of investment slows all of the transitions associated with development.

THREE INTERACTIONS

We thus see that two longstanding features of the Latin American economic terrain—endowment of land, natural resources and climate, and macroeconomic volatility—have contributed in important ways to the problem of inequality in the region. Shortly we will make some very rough estimates of the quantitative importance of these factors, and of the factors associated with the region's stage of development. But before doing so, we note that the story is in fact somewhat more complex than the one that we have presented so far, because it involves not only these two sets of factors, but also interactions between them.

Wages for Unskilled Work and Inequality— A Virtuous Circle

The family is the decisionmaking nexus through which inequality generated by the economic environment may be amplified and transmitted to the next generation. In particular, anything that reduces the wages of low-skilled workers or impedes the ability of secondary wage earners to enter the labor market will not only result in high

¹² See Flung, Spilimbergo and Wachtenheim (1998).

¹³ There is a very large theoretical and empirical literature on the relationship between macroeconomic volatility and investment, including Inter-American Development Bank (1995). Servén (1998) handles the econometric issues with particular care, and provides a brief overview of the issues and the literature. Leamer, et al. (1998) present a trade-theoretic argument about why natural resource-intensive economies may be particularly risky for capital.

inequality for the current generation, but will also reduce low-income families' capacity to educate their children. At the level of the family, one generation's educational gap is transmitted to the next generation. At the economy-wide level, the resulting scarcity of skilled workers contributes to the premium that well-educated workers receive, and amplifies existing inequalities. This compounds the unequalizing impact of anything that reduces the incomes that can be earned by unskilled labor, and may perpetuate inequality for generations, even after the initial cause of the low wages is removed. This will be the case if a country's geography and natural resource endowments lead to low wages for unskilled labor. The natural resource endowments may thus impede the demographic transition described above.

High costs or barriers to the labor force participation of adults in poor families can also perpetuate inequality. If a community lacks running water, electricity or other utilities that ease the task of maintaining a household, and thus facilitate labor force participation by secondary earners, the family is more likely to be trapped in a high-fertility, low-education equilibrium for this and the next generation. The same will be true if women face discrimination in the labor market, or if excessively restrictive regulation of labor contracts makes it difficult for secondary earners to participate in the formal labor market on terms consistent with their responsibilities at home.

We have presented this interaction in somewhat negative terms. But it also offers important opportunities for policy, for the family's amplification and intergenerational transmission of inequality means that policy changes that increase the earnings of unskilled workers and that facilitate labor market participation may have substantial and long-lasting effects on inequality. Such policies could trigger a virtuous cycle of lower fertility, increased participation, and more complete education of the family's children.

A Volatility Trap

We have seen that macroeconomic volatility adversely affects the distribution of income. This volatility is in large part the consequence of the region's exposure to large external shocks—itsself a consequence of the region's rich endowment of natural resources—combined with inadequate policy responses, which have tended to amplify rather than absorb external shocks.

Why is it that policy has so frequently been destabilizing in Latin America? One explanation is inequality itself, which generates deep political and social cleav-

ages that make it much more difficult to mount a prompt and effective response to the shock. Recent research by Rodrik (1998b) lends support to the idea that divided societies, where income inequality or ethnic fragmentation are pronounced, are much less likely to respond adequately to an external shock and, consequently, more likely to suffer an output collapse should one occur.

This leads to the possibility of a volatility-inequality trap in which the region's exposure to external shocks creates a volatile environment that, due to social fissures associated with the income inequality, tends to be amplified by inadequate policy responses. This amplified macroeconomic volatility then worsens the distributional problem both directly and indirectly by undermining development prospects. The political economy of inequality thus interacts with external volatility, and carries with it the danger of a self-reinforcing cycle of volatility and inequality.

The outcome is not, however, inevitable, for recent research has also established that strong institutions can help overcome both the social conflicts generated by the need to adjust to large shocks and the difficulties created by inequality. Rodrik (1998b) provides evidence that countries with strong institutions of conflict management, as indicated by measures of the quality of governmental institutions, rule of law and democratic rights, as well as effective social safety nets, were less likely to suffer output collapses in the aftermath of a large external shock. Similarly, recent research on the role of budgetary institutions has documented the fact that stronger institutions can promote more adequate fiscal policymaking.¹⁴ The challenge for policymakers in the region is to find institutions up to the task of promoting effective adjustment to shocks in order to ensure that Latin America will not become locked in a volatility-inequality trap.

Globalization and Distribution

The world has been undergoing an important process of globalization for at least the past 20 years. This new international environment has brought developing economies into far closer economic contact with industrial economies, and has also exposed middle-income developing economies like most of Latin America to formidable competition from much lower-income economies like China and India, which with roughly a third of the

¹⁴ See von Hagen and Harden (1994) for evidence on Europe, Poterba (1996) on the United States, and Fukasaku and Hausmann (1998) on Latin America.

Box 4.2. Democracy and Distribution

Latin America is living through a process of political as well as economic development. In recent decades, democracy has spread throughout the continent, and it continues to sink deeper roots as political decentralization brings the region's governments closer to their constituents. What might this democratic transition mean for income distribution in the region?

Economic and social policy choices are heavily influenced by the economic, social and political institutions that exist to express societal preferences and to mediate social conflicts. There is a large body of evidence that these institutions—which include an array of arrangements such as the nature of the electoral system, the degree of respect for property rights and the rule of law, and the legal institutions surrounding the monetary and fiscal policy decisionmaking process—influence economic policy choices and prospects for economic development.

There is also a growing body of evidence that political institutions affect the distribution of income as well as its average rate of growth. For example, Li, Squire and Zou (1998) present evidence that countries that enjoy more extensive civil liberties tend to have less inequality than do countries with fewer liberties. This association between democracy and equality seems particularly strong in Latin America, where the correlation between a widely-used index of civil liberties and the Gini coefficient of income distribution is about 0.46, which is in fact higher than the correlation with per capita income and many other explanatory variables. Similarly, Rodrik (1998c) shows that in countries where democratic institutions are stronger, wages tend to be higher than in weaker democracies, after controlling for other determinants of real wage levels, including labor productivity. Though Rodrik does not make an explicit link between the level of real wages and the distribution of income, it is likely that the higher real wages would be associated with more equal distribution of income.

What are the mechanisms through which political institutions might affect the distribution of income? While firm evidence is lacking, it seems plausible that effective democracies—where the principle of “one man, one vote” is generally respected and politicians are held accountable to their constituents—tend to do a better job of delivering essential social services such as health and education to low-income neighborhoods than do political systems that lack this accountability, if only because the distribution of voting power is more equally distributed than the distribution of economic power. Democratic governments

may also tilt the market scales in favor of workers; Rodrik interprets his finding that wages tend to be higher in democratic countries as evidence that democratic governments act in ways that enhance the bargaining power of workers.

There may also be indirect effects of governance structures on economic growth. Firm adherence to the rule of law, a credible policymaking framework, and the existence of civil liberties may reassure investors that their investments will not be subject to arbitrary confiscation or unpredictable and unreasonable taxation, thus promoting investment and the pace of development. Barro (1996) argues that the rule of law and free markets are positively correlated with economic growth and that, holding constant these and a number of other factors, political freedom is associated with more rapid growth up to a certain point, after which it may have negative effects. Along similar lines, the World Bank (1997) presents evidence that credible policymaking institutions are strongly associated with higher investment and more rapid economic growth. And, as we have argued, there are good reasons to believe that this more rapid growth will, over time, tend to promote more equitable distribution of income.

Democracy may also promote equality by reducing macroeconomic volatility and the likelihood of disruptive economic crises. While we often lament the delays that can be generated by the process of democratic decisionmaking, the process provides a means to resolve social conflicts that has far more legitimacy than nondemocratic alternatives. Because they provide a means of resolving the social conflicts often associated with economic crises, democratic political institutions may also facilitate more effective adjustment to external economic shocks. Rodrik (1998b) presents evidence that countries with latent social conflicts such as ethnic or linguistic differences or racial tensions have a more difficult time adjusting to economic shocks. Conversely, strong institutions of conflict management—including adherence to the rule of law, democratic rights, and robust social safety nets—tend to promote more effective management of economic shocks, thus reducing the likelihood that a shock will lead to a major collapse. This may explain why democracies tend to produce less macroeconomic volatility than do countries where democratic rights are weaker (Rodrik, 1997). Given the high cost of economic crisis for the poor, the less volatile economic environment that democracies deliver should translate into a more equitable and secure place to live.

world's population have recently burst onto the economic scene. It has opened up new possibilities for businesses to locate their production in the most cost-effective locations, and has vastly increased the size of the markets where talented and skilled individuals can earn their living. And financial market globalization is taking place every bit as rapidly as are markets for goods and services.

Will this new economic environment facilitate or impede an equalizing development process in Latin America?

International Trade and Distribution in Latin America

The outstanding feature of most developing countries is their scarcity of capital and abundance of labor. The ba-

sic theory of international trade suggests that its expansion will increase the income earned by a country's most abundant factor of production. Thus, the prediction is that when industrial countries increase their trade with developing economies, the returns to capital rise in the industrial economy and wages fall, while in the developing economies wages rise and the returns to capital fall. This would, of course, be equalizing in the developing economies, and unequalizing in the industrial economies.

This prediction has received a lot of attention in the industrial economies, because the years of globalization have seen strongly declining demand for unskilled workers. This has resulted in a massive decline in the real wages of unskilled workers in the United States and a large increase in unemployment in much of Europe. However, a large body of research has come to a rough consensus that, while increased trade with developing economies has probably contributed to the decline in demand for labor, other trends, such as technological advances like computers, have probably played a somewhat more important role.¹⁵ This is partly because there has been little evidence of the relative price shifts that this theory relies upon to generate large wage effects, and partly because industrial country trade with developing countries—though much larger than it was two decades ago—remains relatively small, on the order of 5 percent of GDP, making it seem implausible to many economists that the effects on labor markets could have been so large.

To the extent that this mechanism is important, it is good news for Latin America and other developing economies, which should expect to see wage increases as a result of greater integration with the industrial economies. But things are not so simple, for several reasons.

First, and most ominous, while Latin America is labor intensive relative to the industrial economies, labor is scarce and quite expensive by the standards of countries like China and India, both of which are rapidly inserting their very large economies into the world trading system. This raises the theoretical possibility that the need to compete with China will drive Latin American wages down toward Chinese levels rather than up toward industrial-country levels.

This is a daunting possibility, but seems theoretical for the moment. The world is more complicated than the simplest trade theory. There are more than two factors of production (labor and capital) in the world. There is labor with different degrees and kinds of skill, a large variety of natural resource endowments, and many different kinds of goods that are traded. A more sophisticated approach that takes these considerations into account suggests that wages and other factor prices will

tend to be driven together only for those countries that produce and trade similar combinations of goods.¹⁶ And, at the moment, most countries of the region do not in fact compete with the labor-intensive economies of Asia, mainly because Latin America's rich endowment of land and natural resources provides it with a comparative advantage in the production and export of resource-intensive goods, rather than the raw labor-intensive goods that China and India generally export.

So, for the moment, most Latin American workers would appear to be somewhat insulated from direct competition with the very low-wage economies of China and India. Having said that, it is also true that several countries of the region have established important *maquila* sectors, which produce labor-intensive exports such as textiles for export to industrial country markets. For these countries, the prospect of increased competition from low-wage Asian countries may be more real and imminent.

Globalization and Wages—the Educational Imperative

Given the likely inability of resource-based industries to indefinitely provide a basis for economic development sufficient to absorb Latin America's growing labor force, countries of the region will eventually be faced with the need to develop new industries based on different comparative advantages. Here there are two possibilities. One is that the new industries will be based on comparative advantage derived from abundant supplies of unskilled labor, which will place countries in direct competition with the low-wage Asian economies. The other is that the new industries will be based on comparative advantage derived from the skills and education of the workforce, an outcome that offers the possibility of escaping the downward pressure on wages that would be implied by direct competition with low-wage Asian economies.¹⁷ This highlights an important interaction between globalization and

¹⁵ For overviews of the debate, see Sachs (1998), Freeman (1995), Ricardson (1995) and Wood (1997). The latter argues that the impact of trade on unskilled workers' wages in industrial economies has been much larger than the conventional wisdom would suggest.

¹⁶ Technically, factor prices will tend to be equalized among countries that lie within the same "cone of diversification." This is an important point, because it means that the impact of trade on factor prices in a country will depend not on how abundantly endowed the country is by comparison with world patterns, but rather how abundantly endowed the country is in comparison with other countries that produce similar goods, that is, that are in the same "cone of diversification." To take a hypothetical example, Brazil may be labor intensive by global standards, but if it mainly produces tradable products that are produced by even more labor-abundant economies such as China or India, Brazil is in fact capital intensive by the relevant comparison, and trade liberalization would tend to raise the return to Brazilian capital, not labor. Davis (1996) explains this important point clearly, and highlights the challenge that it presents for empirical research in this area.

¹⁷ Leamer, et al. (1998) provide a more complete explanation of this point.

the educational transition, and suggests that promoting education is particularly urgent in the new international economic environment.

Implications of Globalization for a Resource-Rich Region

Globalization also interacts importantly with Latin America's abundant endowment of land and natural resources. Globalization can be expected to raise the returns that can be earned by these natural resources, and to expand possibilities for the international capital flows required to develop them more aggressively. While the case for exploiting the region's abundant supply of natural resource is strong, the danger is that the increased reliance upon natural resource-based industries that has followed trade liberalization in some countries of the region may expose them to the difficulties discussed above in yet more exaggerated forms.

"Footloose Capital"—A Threat to Workers?

Another factor that the simplest theory of international trade overlooks is the operation of labor markets and its implication for income inequality. Whereas the theory assumes that labor markets are perfectly competitive, many labor markets in the world are characterized by a bargaining process that can have an important impact on wages and the distribution of income. Because globalization has increased the ability of capital to move from one country to the next in search of efficiencies and lower wages, while labor mobility has remained largely unchanged, it has been argued that capital's bargaining power has increased to the detriment of labor. Grant us wage concessions, workers are told, or we will pack up our capital and take it elsewhere. Note that the simple threat to leave may have significant effects on wages, even if there are no trade or capital flows actually triggered by the globalization. Rodrik (1998a) presents evidence that in countries that are more open to international trade, as measured by the value of international trade as a share of GDP, wages tend to be significantly lower than in more closed economies, after controlling for productivity and other determinants of wages. He also argues that increased mobility of capital makes it more difficult to tax profits, with the result that an increasing share of the tax burden falls upon workers.

Openness, Investment and Development

More fundamentally, it needs to be borne in mind that openness to international trade will affect income distribution through a number of channels. Most importantly, there is now a rough consensus that open trade regimes are conducive to growth, which contains important equal-

izing forces that may eventually outweigh the direct, unequalizing effects of international trade, if any. While the impact of openness on growth may be felt in a number of ways, an important one is its effect on increased international investment.

To test this impact, we investigated the statistical relationship between openness, as measured by an index of trade policy orientation compiled by Jeffrey Sachs and Andrew Warner, and capital intensity, as measured by the log of the capital stock per worker. The analysis was confined to developing countries, since virtually every industrial country was already categorized as "open." We controlled for a number of other potential determinants of capital intensity, including the capital intensity in the previous decade (to account for gradual adjustment of the capital stock), the land intensity of the economy in question, its latitude, and the average inflation tax. A strong positive relationship between openness and capital intensity was found. The results suggested that in the medium run¹⁸ a switch from a closed to an open trade orientation was associated with an increase in the capital stock of about 22 percent, with much larger results over the long run. As we have argued in some detail above, such an increase in the capital stock would be good news for the distribution of income, as the greater abundance of physical capital raises wages and reduces the returns to capital.

These results are far from definitive. But they do serve to highlight the fact that openness and globalization are multifaceted phenomena whose impact on income distribution requires an assessment in a number of areas.

LESSONS FROM INTERNATIONAL COMPARISONS: A BOTTOM LINE

While we have emphasized the limitations imposed by the data available to investigate the various influences on income inequality—some variables are measured poorly and others are only rough proxies—the data do roughly correspond to most of the influences on distribution that we can identify. It is natural to ask whether the stories that we have been telling explain a significant portion of Latin America's inequality, and if so, which of the stories are most important?

Our approach was to gather empirical measures summarizing the various factors discussed in general

¹⁸ Over a time horizon of about a decade, which was the periodicity of our panel data.

Table 4.2. Why Is Latin American Inequality So High?
(Estimated impact on the Gini coefficient)

Dimensions of economic development included in the analysis	Comparison group			
	Industrial economies		Emerging East Asia	
	Dimension of development	Latitude, land and volatility	Dimension of development	Latitude, land and volatility
1. Per capita income and demography	6.00	11.08	1.30	4.91
2. Capital intensity	0.73	15.07	0.21	4.60
3. Education	3.60	11.68	0.97	6.22
4. Urbanization	1.96	14.84	3.23	4.10
5. Demography	2.80	11.78	0.30	5.02
6. Schooling, demography and urbanization	4.56	12.20	3.84	4.59

Source: Study calculations as described in the text. Demography refers to the rate of population growth. Capital intensity refers to the log of the capital stock per worker. Education refers to the mean educational attainment of the population aged 25-65, and the standard deviation of educational attainment across that population. Urbanization refers to the share of the population living in urban areas and that variable squared. The measures of endowments used in all cases were the log of agricultural land per capita, distance of the country to the equator, and the standard deviation of real GDP growth. The data set included three subperiods: 1960-1970, 1971-1981 and 1982-1992. See Technical Appendix.

terms above, and to use them in a multivariate statistical analysis to determine the strength of their association with the Gini coefficient of income inequality. The resulting relationship was then used to examine how much of the difference between Latin America's inequality and that of some benchmark can be explained by differences between the various measures of transition in Latin America and the benchmark. We considered two different benchmarks—the industrial economies and emerging East Asia—since comparisons against these rather different regions highlight different aspects of the Latin American experience.

Missing data for many countries made it impractical to simply introduce measures summarizing all five of the development-related transitions in a single statistical relationship. For this reason, the discussion that follows describes a number of different exercises, in which we took different combinations of the variables representing the five dimensions of the development process. Each exercise included all three variables selected to estimate the importance of a country's natural endowments, including the log of agricultural land per capita to summarize the economy's natural resource intensity; latitude, to summarize the influence of climate and geography; and the volatility of real GDP growth, to summarize the volatility of the macroeconomic environment.

Table 4.2 summarizes the results. The first column lists the dimensions of economic development included in each of the several statistical exercises. For example, the first exercise captures in a broad way all of the transitions related to the economic development process and the demographic transition by including in the statistical

analysis linear and quadratic terms in per capita income and the rate of population growth. The next number gives the estimated impact of these variables on Latin America's income distribution, using the industrial countries as the counterfactual. More precisely, this means that if per capita income and the population growth rate were equal to the average for the industrial economies, rather than those that were actually observed in Latin America, the Gini coefficient would be about 6 percentage points lower than it actually was. In the next column, we calculate the counterfactual for differences in latitude and land intensity. The first row shows that if the region had the latitude and land intensity of the industrial economies, the Gini coefficient would be about 11 points lower than it actually was.

In this sense, Latin America's stage of economic development, as characterized by per capita income and demography, explains about six percentage points of the difference between the region's Gini coefficient and that of the industrial countries. Since the actual difference is about 18 percentage points, we can say that the region's stage of development explains about a third of the difference between Latin American and industrial country inequality. By the same logic, the longer-term factors that we have identified—latitude, land intensity and volatility—are estimated to account for 11 percentage points, or nearly two-thirds, of the difference. Taken together, the two stories explain nearly all of the difference between Latin American and industrial country Gini coefficients.

The more important of the two factors associated with Latin America's stage of development is per capita income, which accounts for nearly 5 of the 6 percentage point difference in the Gini coefficient explained by the stage of development, while demographic factors account for about 1.2 percentage points of the difference. Of the "structural" factors, by far the most important quantitatively is latitude, which is estimated to account for over 9 percentage points of the difference between industrial country and Latin American inequality. Volatility explains roughly 2 percentage points, and land intensity explains quite little.¹⁹

¹⁹ The reason for this is that the industrial countries include several countries, such as Canada, New Zealand, and the United States, with huge endowments of agricultural land per capita. If the counterfactual were, for example, Europe, the results would of course be different.

Why Is Inequality Higher Than in Emerging East Asia?

Comparisons with the industrial economies shed interesting light on Latin America. But it is also revealing to compare the Latin American experience with that of emerging East Asia, a region at roughly the same stage of development but with substantially lower inequality. The last columns of Table 4.2 provide counterfactuals that ask how Latin America's income inequality would change if it resembled emerging East Asia in the dimensions that we have been discussing?

There we see that factors associated with the stage of development have little to do with Latin America's higher inequality; differences in per capita income and the rate of population growth explain only 1.3 percentage points of the 11 percentage point difference between the two region's average Gini coefficients. This is not surprising, since emerging East Asia's incomes are not much higher than the average for Latin America. Our indicators of the region's "endowments"—latitude, land intensity and volatility—account for about 5 percentage points of the difference. Taken together, these variables account for just over half the difference between income inequality in the Latin American and East Asian economies.

There are at least two reasons why more than half the difference between East Asian and Latin American income inequality remains unexplained. The first is that the analysis so far has summarized all of the processes associated with development with per capita income. This misses the important role played by differences in the nature of urbanization.

A second reason is that for East Asia, "latitude" is a particularly poor proxy for differences in agricultural technologies that have influenced the evolution of income inequality. While these countries are located relatively close to the equator, the rice culture that shaped their economic and social development was not conducive to the same kinds of large-scale plantation production structures seen for many other tropical crops. In addition to these factors, there may of course be other factors that we have not included from the analysis.

Table 4.2 investigates the separate influence of measures summarizing the five dimensions of the development process. For explaining the difference between Latin America and the industrial economies, schooling, urbanization and demography appear to be the quantitatively most important elements of the development process. When these variables are included in a single statistical exercise, the estimated impact of the transitions is roughly equal to the estimate that emerges using per capita income as a proxy for all of the transitions.

The degree of urbanization emerges as an important difference between Latin America and East Asia, a difference not captured by differences in per capita income. The difference emerges not because the average degree of urbanization is very different in the two regions; at just over 50 percent of the population, they are similar. It emerges instead because the East Asian average results from the combination of two almost completely urbanized populations (Hong Kong and Singapore, where the rates of urbanization are 93 and 100 percent, respectively) and two very rural populations (Indonesia and Thailand, where the rates of urbanization are only 28 and 18 percent of the population, respectively.) Only two countries, Korea and Malaysia, have the moderate rates of urbanization found to be associated with the most inequality. In Latin America, on the other hand, very high and very low rates of urbanization are rare, and most countries of the region have rates of urbanization associated with high inequality. When schooling, demography and urbanization are considered together, the analysis explains roughly 8.5 percentage points, or about 75 percent, of the difference in income inequality between Latin America and East Asia.

CONCLUSIONS

This chapter has attempted to identify a number of economic factors associated with income inequality in order to gain some understanding of the manner in which they may be contributing to the problem. The discussion has had relatively little to say about the role of policy, but that does not mean that policy does not matter. Policies can either ameliorate or aggravate the inequality that may be generated by some aspect of a country's economic circumstances. For example, in countries where unskilled workers earn very low wages, there will be a tendency for lower female labor force participation, which is associated with larger families and lower educational attainment of the next generation, with the result that educational and income inequality is transmitted from one generation to the next. But policy can weaken this intergenerational transmission of inequality in a number of ways, such as by lowering barriers to female labor force participation, lowering the costs of access to education, improving the quality of educational services available to low-income families, and strengthening social safety nets so that poor children are not forced to withdraw from school during bad economic times. The purpose of the chapter was to improve understanding of the determinants of income inequality, with the aim of promoting more comprehensive and productive policy responses.

TECHNICAL APPENDIX

Data Definitions and Sources

The data set that was used for Chapter 4 was generated from annual data from a variety of sources. Because measurements of income inequality and some of the other data are made at infrequent and irregular intervals, we aggregated the time series into three 11-year time intervals: 1960-1970, 1971-1981, and 1972-1982 inclusive, and used the average of the available annual data for each time period. The variables that we discuss in the chapter are shown in Table 4A.1.

Stage of Development and Income Distribution

Figure 4.2 illustrates the link between the stage of economic development, as measured by per capita income, and inequality, as measured by the Gini coefficient. In addition to the individual data points, we also show predicted values for Latin America and other regions. These predicted values are based upon the regression summarized in column (1) of Table 4A.2. In that regression, we regressed the Gini coefficient on a dummy variable that indicates whether the measurement was based upon a survey of household expenditure, rather than income, a dummy variable for Latin America and the Caribbean, per capita income, and squared per capita income.

Two relevant points emerge from this analysis. First, there is statistical support for a curvilinear relationship between development and distribution, which is reflected in the statistically significant coefficient on squared per capita income. (We conducted the same analysis using per capita income and its inverse, as suggested by Anand and Kanbur [1993] and obtained results that were similar in statistical terms and visually almost indistinguishable from the curve shown in Figure 4.2.) Second, after controlling for per capita income, there is a statistically significant estimate of the coefficient on the Latin American dummy, which indicates that at any given stage of development, countries in Latin America tend to have a Gini coefficient that is about 10.2 percentage points higher than do countries in other regions of the world. The “pre-

Table 4A.1. Variable Definitions and Sources

Gini	Gini coefficient of income inequality. Source: Deininger and Squire (1996) database.
Expsurvey	Dummy variable = 1 if the measurement of income inequality is based upon a survey of household expenditure and = 0 if the measurement is based upon a survey of household income. Source: Deininger and Squire (1996).
Comm	Dummy variable = 1 if the country was communist and = 0 if the country was noncommunist. Source: Deininger and Squire (1996).
Latam	Dummy variable = 1 if the country was in Latin America and the Caribbean.
Lppp	Log of per capita income in constant, purchasing parity adjusted dollars. Source: <i>World Penn Tables</i> (1995).
LKapw	Log of capital stock per worker in constant U.S. dollars. Source: World Bank, <i>World Tables</i> , 1995.
MeanSchool	Average years of schooling of the population aged 25-65. Source: Barro and Lee (1994).
StdSchool	Standard deviation of years of schooling of the population aged 25-65. Computed using Barro-Lee data.
Urban	Share of the population living in urban areas. Source: World Bank, <i>World Tables</i> , 1995.
Popgrow	Rate of growth of the population. Computed using data from IMF <i>International Financial Statistics</i> .
Meanage	Average age of the population. Computed using data from the World Bank, <i>World Tables</i> , 1995.
Latitude	Distance of the country from the equator. Computed as the absolute value of the latitude divided by 90.
LLand	Log of arable land per capita. Source: World Bank, <i>World Tables</i> , 1995.
RGDPStd	Standard deviation of real GDP growth. Computed using annual data from IMF <i>International Financial Statistics</i> and the IDB <i>Economic and Social Database</i> , 1995.
FDep	Ratio of the broad money supply (M2) to GDP. Source: IMF <i>International Financial Statistics</i> .
CivLib	Index of civil liberties, ranging from 1 to 7, with higher numbers representing stronger civil liberties. Source: Barro and Lee (1994).

dicted values” that are shown in the various figures of Chapter 4 are derived in the same manner. Because of space considerations, we do not present all of the underlying regressions here.

Counterfactual Exercise

Here we explain in more detail the counterfactual exercises that are summarized in Table 4.2. The six rows of that table are based upon the six regressions that are summarized in columns (2)-(7) of Table 4A.2. Each of these regressions includes as explanatory variables Latitude, LLand, and RGDPStd, and also one or more dimensions of the stage of adjustment. In all cases, the coefficients on Latitude, LLand, and RGDPStd are statistically significant at conventional confidence levels.

In column (2) we see the results of using per capita income and the population growth rate as measures of the stage of development and the country’s position in the demographic transition. The link between per capita

Table 4A.2. Summary of Econometric Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Expsurvey	-3.04 (-2.26)	-6.33 (-5.44)	-7.34 (-5.08)	-7.04 (-5.77)	-6.65 (-6.30)	-6.64 (-5.65)	-8.04 (-7.09)
Comm			-10.38 (-1.72)	-11.52 (-4.90)	-13.80 (-6.22)	-11.47 (-4.41)	-13.14 (-5.65)
Latam	10.20 (7.46)						
Lppp	28.64 (2.61)	41.03 (4.62)					
Lppp ²	-2.02 (-2.97)	-2.59 (-4.66)					
LKapw			11.48 (2.09)				
LKapw ²			-716 (-2.20)				
MeanSchool				-906 (-3.34)			-449 (-1.48)
StdSchool				1.85 (2.20)			.002 (0.003)
Urban					.812 (0.35)		
Urban(1-Urban)					48.09 (6.21)		45.22 (5.24)
Popgrow		86.34 (1.21)				75.19 (0.91)	70.40 (0.94)
Meanage						-231 (-1.42)	
Latitude		-24.72 (-7.21)	-30.74 (-7.70)	-25.50 (-7.80)	-31.69 (-11.58)	-25.77 (-6.68)	-26.10 (-7.91)
LLand		1.31 (4.33)	1.19 (3.22)	1.68 (5.19)	.973 (3.46)	1.28 (3.83)	1.05 (3.05)
RGDPStd		54.09 (2.67)	90.01 (3.00)	62.71 (2.43)	66.25 (3.44)	63.62 (2.91)	73.94 (3.14)
Nobs	173	172	112	159	175	158	157
RBarSq	.459	.630	.625	.602	.650	.585	.668

Note: Dependent variable is the Gini coefficient (in percent). In the first regression the communist economies are excluded. All regressions include a constant, which is not reported. The t-statistics are in parentheses.

income and the Gini remains strong, though the statistical evidence for an independent link between demographic factors and income distribution is not strong, after one also controls for the “environmental” factors, latitude, land intensity and macroeconomic volatility. In order to obtain the counterfactual estimates reported in the first row of Table 4.2, we used these coefficient estimates to compute how much the Gini would change if the explanatory variables were changed by enough to bring the value for Latin America to the average value for the industrial countries (or emerging East Asian in the second set of counterfactuals.)

The remaining counterfactuals, summarized in rows 2-6 of Table 4.2, were computed in the same manner, using the regression results summarized in columns 3-7 of Table 4A.2, respectively.

Other Results

In this chapter we emphasize a number of variables that have not been emphasized in recent work, and we do not emphasize a few that have figured prominently. Table 4A.3 presents additional statistical evidence on three variables that were emphasized in a recent study (Li, Squire and Zou, 1998) that exploits essentially the same data on income inequality used here. That study emphasized the role of financial depth, an index of civil liberties, and inequality in land ownership as predictors of inequality in the distribution of income.

Column (1) of Table 4A.3 is a base regression, which includes none of these variables but does include indicators of geography and climate (latitude), resource intensity (lland), macroeconomic volatility (RGDPStd), and the stage of development.

If we add an indicator of financial depth to this regression, the estimated coefficient is negative, as in Li, Squire and Zou (1998), but it is not statistically significant. Meanwhile, the coefficient estimates for the rest of the variables remain similar to those of the base regression, and they remain statistically significant.

Table 4A.3. Further Econometric Results

	(1)	(2)	(3)	(4)	(5)	(6)
Expsurvey	-4.36 (-3.83)	-3.31 (-2.65)	-4.79 (-3.59)	-3.58 (-1.86)	-1.10 (-0.68)	-3.39 (-1.71)
Latam	5.32 (4.19)	3.46 (2.27)	7.33 (4.27)		15.30 (7.09)	4.15 (1.71)
Latitude	-22.03 (-6.54)	-23.75 (-5.96)	-26.17 (-5.78)			-24.70 (-4.02)
LLand	1.152 (4.036)	2.06 (4.86)	1.503 (4.23)			1.258 (2.48)
RGDPStd	55.98 (2.84)	36.87 (1.65)	54.38 (2.20)			85.86 (1.77)
LKapw ²			-716 (-2.20)			
Lppp	31.10 (3.32)	36.09 (3.02)	46.71 (4.21)			28.71 (1.71)
Lppp ²	-1.99 (-3.41)	-2.23 (-2.94)	-2.89 (-4.23)			-1.81 (-1.72)
FDep		-2.06 (-0.52)				
LndGini			-15.49 (-3.37)	18.98 (3.51)	-5.81 (-1.03)	
CivLib						-0.60 (-0.079)
Nobs	168	123	103	104	104	72
RBarSq	.529	.584	.735	.116	.406	.529

Note: Dependent variable is the Gini coefficient (in percent). Communist economies are excluded. from the regression. All regressions include a constant, which is not reported. The t-statistics are in parentheses.

While Li, Squire and Zou (1998) found that higher concentration of land ownership should be associated with higher income inequality, our results suggest the opposite result. This is of course highly counterintuitive. Something of an explanation can be found in the regressions summarized in columns (4) and (5), which focus solely on the correlation between the land Gini and the income Gini. If there is no dummy variable for Latin America in the equation, there emerges a strong positive correlation between the two. But if a dummy variable for Latin America is included in the regression, the estimated (conditional) correlation becomes negative. This suggests that the main reason for the positive correlation between the land Gini and the income Gini results from the fact that Latin America has a very high land Gini and a very high income Gini—but after accounting for Latin American regional differences with a dummy variable, the positive correlation vanishes. Given this sensitivity to simple

changes in the specification, we thought it most prudent not to emphasize the role of the land Gini.

In column (6) of Table 4A.3 we add an index of civil liberties to the regression. We find that this index has limited explanatory power, once one controls for the variables emphasized in this chapter. As we note in Box 4.2, this is not true if we restrict the sample to Latin America; in this restricted sample, civil liberties are associated with less inequality, a correlation that is statistically quite significant.

There are differences between these results and the previous published work, in terms of periodicity of the data (annual vs. 11-year periods) and econometric technique. However, these do not seem to be the reason for the difference in results, as we can very roughly replicate the previous results with our data set. What seems to be generating the difference in results is our inclusion of alternative explanatory variables.

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