

REGIONAL INTEGRATION AND WAGE INEQUALITY

There is little disagreement among most economists that countries benefit from trade liberalization. Yet, whether unilateral, multilateral (through the World Trade Organization) or through regional integration agreements (RIAs), trade liberalization has been one of the most controversial economic issues of our time. It is the focus of everyone from politicians to union leaders and anti-globalization forces because, while there are overall welfare gains from liberalization, these gains are not evenly distributed. What's more, in addition to some groups actually hurt by trade liberalization, there are others who have the perception at the very least that it has led to increased inequality, that is—that the burden of trade liberalization falls mainly on the poor.

Latin America has come a long way in terms of liberalization, reducing barriers to trade and eliminating restrictions to capital flows. While much of the liberalization occurred at the unilateral level, during the 1990s most countries deepened trade links at the subregional level as well (see Chapter 2), entering into a variety of South-South and North-South RIAs within the Americas. Several countries are currently negotiating trade arrangements with the European Union, and the hemisphere as a whole is moving toward the Free Trade Area of the Americas (FTAA).

South-South and North-North integration may have very different effects on wage inequality. In the context of the wave of trade liberalization sweeping Latin America—and all the perceptions and controversies surrounding it—this chapter will examine its impact on wage inequality in the region, with a focus on how wage inequality is affected by different forms

of regional integration. The effects on poverty are examined as well (see Box 12.1), although the link between trade and poverty is less direct than that between trade and wage inequality, since in the former, factors such as labor force participation decisions among household members and the price of the consumption basket intervene.

The chapter first explores trends in relative wages across skill groups, then moves on to examine the theory behind how trade and labor markets are related. We begin with the neoclassical Heckscher-Ohlin model in which countries differ in the relative endowment of factors. In its strictest form, this model offers relatively straightforward predictions of how trade and wages—especially wage inequality—should be related. This model is perhaps most relevant for countries with large differences in relative endowments (North-South trade). Relaxing some assumptions allows for considering the effects of North-North and South-South trade, in which trading partners are generally more similar in terms of relative factor endowments. After describing the model and its implications, we focus on the assumptions of the model and try to gauge how they contrast with reality, including Latin America's relative endowments and tariff structures prior to liberalization, labor market imperfections (which give rise to unemployment), and the flows of capital.

The chapter then reviews empirical studies of how trade liberalization in Latin America has affected labor markets. While our interest is on the effects of different types of integration, the bulk of the literature

Box 12.1 Poverty and Trade Liberalization

The relationship between trade liberalization and poverty is far from straightforward, encompassing various channels of influence. One might think that higher wage inequality automatically implies higher poverty levels, but this is not necessarily the case. Consider four interceding transmission mechanisms.

- *Level of wages.* Productivity may have risen for less-skilled workers, but at a lower rate than for the higher skilled. A rise in the wage level for low-skilled workers should lower the poverty rate, regardless of how much higher the wages of high-skilled counterparts have risen. (See Chapter 11 for more details on the debate over the effect of trade on productivity.)

- *Distribution of the newly unemployed among households.* The distribution of wages is calculated at the unit of individual earners, whereas poverty rates are based on the average income per capita of household members. The level and distribution of wages observed among earners may stay the same, but if unemployment associated with the adjustment to new labor demand is concentrated among families that were previously close to the poverty line, poverty will increase.

- *Distribution of new jobs among households.* Trade may alter the demand for labor and bring new workers with new wages into the labor market. Suppose the wages stayed the same for all workers who had been in the labor market prior to liberalization, but that new opportunities attracted low-skilled women into the

labor market. Under this scenario, the incomes among the poorest households would likely rise. Although the per capita incomes of the poor may be higher, wage inequality as measured by the wages of all earners would increase with the addition of very low wages to the distribution.

- *Price of consumption basket.* Since poverty is defined in relation to the ability to purchase a constant basket of consumption goods, any change in the real price of the goods basket will change the poverty rate. If trade causes the purchasing power adjusted price level for the basket to fall, the poverty line falls, which reduces the number of families living below the threshold.

The many different channels of influence make tracing the effects of trade on poverty extremely difficult. Further complicating the task are other determinants of poverty that are unrelated to trade but are changing over time and have important implications for the poverty rate. The most important factor is changing demographics. As the dependency ratio falls over time, income is divided among fewer family members, leaving more households above the poverty line. The decline in fertility rates and household size are unlikely to be linked to trade liberalization, but have powerful implications for the poverty rate.

One major debate is centered on how to interpret declines in poverty rates occurring simultaneously with trade liberalization. Within Latin America, Székely

focuses more generally on trade liberalization. We will try to extract implications from this existing literature for the issue at hand: the link between different types of integration and wage inequality. Several results emerge from the empirical studies. First, there is no clear consensus about the long-run effects of trade liberalization on wage inequality. Isolating the effects of a change in one set of factors may be straightforward in a laboratory setting but far more complicated in a world with simultaneously changing policies and economic conditions. Some Latin American countries experienced an increase in wage inequality following trade liberalization, but emerging evidence suggests that this pattern may reverse in the long run. Second, while the direct links between trade and wage inequality

are disputed, trade liberalization was generally associated with rising productivity and changes in firm behavior that contributed to increased demand for skill, and therefore rising wage inequality. Firms initially reduced employment and made investments that helped the remaining workers become more productive. This reallocation of labor and investment generates some optimism for long-run growth. Third, some studies suggest that the direct effect of trade via changes in goods prices and factor supplies may be small relative to the role played by changes in technology or increases in foreign direct investment associated with integration.

(2001) documents the meager reduction in poverty over the 1990s: the poverty rate fell on average by only 4 percentage points, from a level of 43 percent to 39 percent, based on calculations for 11 countries.¹

Using international data, Dollar and Kraay (2000) examine the trend in the incomes of the poorest quintile and suggest that in periods of economic growth, these incomes generally rise at the same rate as the incomes of the rich. In addition, they find that countries with a higher share of trade per GDP experience more economic growth. Rodrik (2001) and Rodrik and Rodríguez (1999) question the supposition that recent declines in poverty are linked to trade liberalization. From their perspective, stating that declines in poverty caused trade liberalization makes as little sense as saying that trade liberalization caused declines in poverty, since the correlations in the two trends are unlikely to be causally related and instead are likely to be reflecting other factors.

It is extremely difficult to properly control for the various determinants of poverty when attempting to identify the effects of trade liberalization. Most studies do not present a convincing link to liberalization, often relying on the problematic “before and after” approach. An ambitious set of studies by Gonzaga, Filho and Terra (2001) attempts to link the effect of trade liberalization to changes in poverty by specifically examining the pathways of change at the microeconomic level.² The studies examine changes in the wages of earners and

changes in employment, unemployment and job informality for the Dominican Republic, Paraguay, Jamaica, Brazil and Chile. The studies find inconsistent effects of whether poverty increases or decreases with liberalization, but in all cases the magnitude of the effects of trade liberalization on poverty are small.

While rising inequality does not necessarily imply higher poverty rates, it can be shown theoretically that in the presence of asymmetries of information and capital market imperfection, high income inequality can lower the accumulation of human capital and the prospects for long-term growth. Furthermore, the higher the level of income inequality, the lower the reduction in poverty for a given level of growth (see Ravallion, 1997). Given that wage inequality is the primary determinant of income inequality, the distributional effects of liberalization on wages are important to consider.

¹ Székely's measure of poverty is the share of individuals with per capita household incomes under \$2 a day.

² The studies consider the effects of trade liberalization and financial liberalization on the full distribution of per capita income. For the countries mentioned, a computable general equilibrium model is used to explicitly model the effects of liberalization, and then is combined with microsimulations to trace the pathways at the household level. The effects of capital account liberalization are also found to be small.

DIFFERENCES IN WAGES ACROSS SKILL LEVELS

In terms of the ratio of “skilled” to “unskilled” wages in Latin America, it is best to begin with words of caution: skill is in the eye of the beholder. That is to say, there is no agreed upon definition of “skill” in the literature. Some studies compare the wages of production workers to non-production workers; others compare wages across education levels. To examine relative wages across skill groups, we compare wages of workers who have completed different levels of schooling. We examine the difference in wages for a group whose wages are most likely to reflect changes in the demand for skill: urban males between the ages of 30 and 50 who worked at least five hours in the reference week. By

using specific measures of completed schooling for this group, which has persistently high employment rates over the period, we are more likely to pick up changes in prices, and not compositional changes.

Figure 12.1a shows that on average, the hourly wage for workers with completed tertiary schooling is approximately 100 percent higher than for workers who have completed secondary schooling.¹ According to this measure of the skills gap, the skill premium rose slightly over the 1990s. The figure is based on the differences in the 12 countries shown in

¹ The definition of the exact years of completing the different schooling levels per country are shown in the notes for Table 12.1.

Figure 12.1 Percent Difference in Hourly Wages for Urban Males Ages 30 to 50
a. Complete Tertiary vs. Complete Secondary

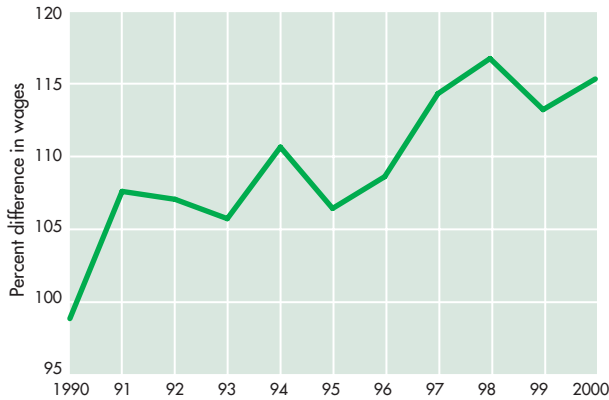


Figure 12.1 **b. Complete Secondary vs. Complete Primary**

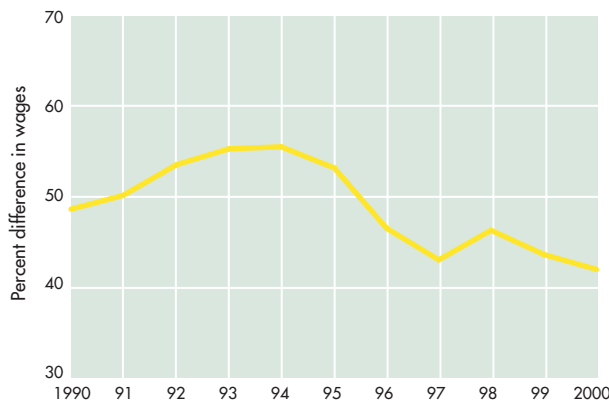
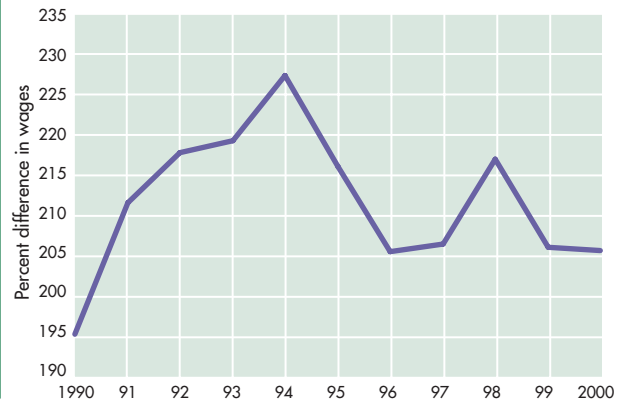


Table 12.1.² During the early 1990s, workers with completed tertiary schooling earned approximately 105 percent more than their counterparts with completed secondary schooling. By the end of the 1990s, they earned on average 115 percent more than their counterparts; in other words the skills premium rose by approximately 9 percent. This measure of skill, typical in the literature for developed countries, is likely a reasonable proxy for Argentina and Chile, where average years of schooling (10.4 and 10.2 years, respectively) are only a few years lower than the average for the United States (13.4 years).³

However, the difference in wages across the tertiary to secondary level is not necessarily the most appropriate for countries with low levels of schooling,

Figure 12.1 **c. Complete Tertiary vs. Complete Primary**



Note: The data are for the 12 countries in Table 12.1. To balance the panel for these figures, missing intermediate points are interpolated on a per country basis. Missing endpoints use the latest 1990s point from Table 12.1.

Source: IDB calculations based on household surveys.

such as Honduras and Brazil, where the mean years of schooling for the population aged 30-50 is 5.3 and 6.5, respectively. Completed secondary school would appear to correspond to a high level of skill. Figure 12.1b thus presents the difference in hourly wages across completed secondary education and completed primary education. In general, the skill premium fell over the 1990s, with the absolute difference in wages declining from approximately 53 percent to 42 percent by the late 1990s. As can be seen in Table 12.1, over the 1990s the skill premium according to this measure fell in Argentina, Brazil, Peru, Costa Rica, Honduras and Bolivia.⁴ The difference remained at similar levels over the 1990s in Panama, Venezuela, Colombia and Mexico, with a small increase for Chile and Uruguay.

² The average across countries shown in Figures 12.1 and 12.2 is not weighted by population. Countries for which survey data were available for at least three years in the 1990s were included in Table 12.1. Data were unavailable for the Caribbean region as a whole as well as for Guatemala, Nicaragua and Paraguay.

³ The average years of schooling are reported for the full population of persons ages 30-50. The survey data represent only urban areas in Argentina.

⁴ This pattern is consistent with the findings of Duryea, Jaramillo and Pagés (2002), who reported that the relative wage of male workers with secondary schooling has fallen in comparison with workers with primary schooling, even after controlling for labor market experience. The decline in returns to secondary schooling is more pronounced for the Andean region and for Mexico/Central America.

Table 12.1 Percent Difference in Hourly Wages by Completed Level of Schooling for Urban Males Ages 30-50

Secondary versus primary																
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Argentina											47	27	35	36	32	
Bolivia									49		51	33	40		46	32
Brazil		111		142				105	117		102	100	111	96	98	
Chile						30		44		47		50		44		
Colombia						51	39		54		50	50	52	45	39	
Costa Rica	34		43		30		38		42		34		32	12		34
Honduras						99	93	91	76	76	78	59	26	57	40	
Mexico					32			71		75		71		57		58
Panama							48				52		37	75	45	
Peru	28						23			47			18			20
Uruguay					52			47			54		62	60		
Venezuela		42			25				29		27		15	32	33	

Tertiary versus secondary																
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Argentina											86	72	73	70	64	
Bolivia									72		94	98	87		93	185
Brazil		119		112				121	131		145	131	134	149	146	
Chile						138		176		144		155		181		
Colombia						160	146		192		177	151	166	163	167	
Costa Rica	51		69		79		102		107		115		81	111		96
Honduras						133	147	90	88	141	88	120	110	116	107	
Mexico					103			119		142		139		210		131
Panama							123				117		120	79	105	
Peru	63						61			53			98			93
Uruguay					57			81			79		89	80		
Venezuela		58			58				67		55		104	103	87	

Tertiary versus primary																
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Argentina											172	119	133	130	117	
Bolivia									157		194	164	161		181	277
Brazil		362		412				352	402		395	363	393	389	389	
Chile						208		298		260		283		304		
Colombia						292	243		349		315	275	303	280	272	
Costa Rica	103		142		132		178		194		188		139	136		163
Honduras						363	377	262	232	324	233	251	165	239	190	
Mexico					168			274		323		309		385		264
Panama							231				229		202	213	196	
Peru	108						97			124			133			132
Uruguay					139			166			176		207	189		
Venezuela		124			98				116		97		135	168	148	

Notes: Complete primary is defined as up to grade 6, except for Bolivia and Colombia (5), Argentina (7), Brazil and Chile (8). Complete secondary is defined as up to grade 12 except for Brazil, Colombia, Costa Rica, Peru and Venezuela, where it is 11 years. Complete tertiary is defined as having completed four or five years of tertiary schooling. The difference in wages is first calculated as the difference in average log wages, then exponentiated. The sample is restricted to the population that worked at least five hours in the reference week of the survey. Hourly wages from the primary job are used except for Argentina and Colombia, for which wages from all jobs are used. All cells represent at least 5 percent of the sample of urban males ages 30-50. Source: Household survey data.

One concern with the first two measures of skill is that they are both potentially affected by the increased supply of workers with secondary schooling. In other words, these measures may be capturing more about the supply of secondary schooling than a change in the demand for skill. For the last measure, we consider the gap between workers with tertiary and primary schooling, since it is not affected by the supply of secondary schooling. Figure 12.1c shows no generalized trend in this third and preferred measure of the skill gap. It is important to consider the disaggregated trends, which are presented in Figure 12.2 for the 12 countries. While the tertiary to primary wage gap has been falling in Panama, Honduras, Argentina and, more recently, in Colombia, it has been rising in Mexico, Uruguay, Chile, Peru, Costa Rica, Bolivia and Venezuela. The gap for Brazil changed little over the decade. Both Mexico and Costa Rica had rapid increases in the gap in the early 1990s with reversals occurring in the latter part of the decade.

It is difficult to read any widespread trends in the skill premium from the full set of figures, but perhaps that in itself is noteworthy. Increases in skill gaps are observed in many cases, but as a whole, these figures contrast somewhat with the widespread view that less skilled workers in the region are consistently falling farther and farther behind their more skilled counterparts. Although there is evidence of a rise in the return to very highly skilled labor in numerous countries, the pattern of tertiary to primary wages found for Panama, Honduras and Argentina conflict with perceptions.⁵ How can we reconcile the results with the widespread notion among trade economists as well as anti-globalizers that liberalization is associated with rising gaps in wages across skill groups? First, early studies for Mexico and Costa Rica correctly noted the rapid increase in the skills gap in the early 1990s, but few countries have since mirrored such large increases. Second, by applying the typical measure of tertiary to secondary schooling, the skills gap may in some countries be contaminated by large changes in the supply of secondary schooling, instead of reflecting changes in the demand for skill. Brazil, Costa Rica and Peru show much more moderated change in the tertiary to primary gap than in the tertiary to secondary gap. Third, even estimates of the skill-premium from regressions indicate that the typical approach of comparing two points over time

may be inaccurate for capturing the trend. Finally, it is important to note that the information in Figures 12.1 and 12.2 is not explicitly linked to trade. It may be that while liberalization does increase the demand for skill and bring pressure for wage inequality to increase, in some countries these pressures may have been offset by other changes in the labor market.

THEORETICAL PREDICTIONS: HOW DOES TRADE LIBERALIZATION AFFECT LABOR MARKETS?

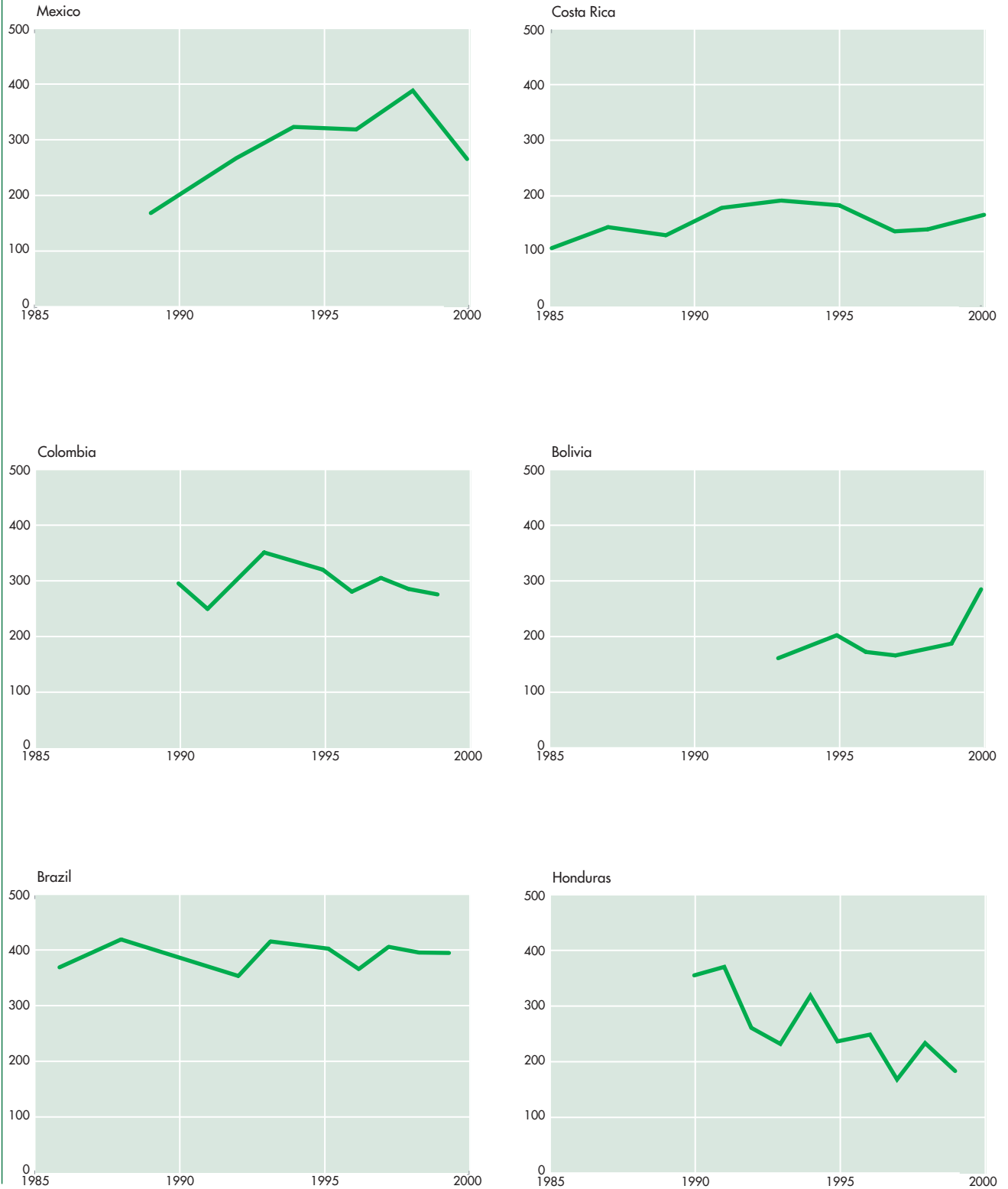
Stolper-Samuelson Theorem

The study of the relationship between trade liberalization and labor markets has a long history in economics. One of the first formal treatments of the relationship between trade liberalization and wage inequality was by Wolfgang Stolper and Paul Samuelson (1941). They based their analysis on the neoclassical Heckscher-Ohlin trade model, which predicts that comparative advantage emerges from differences in relative factor endowments. These differences are most stark between Northern and Southern countries, suggesting that this model may be most relevant for North-South integration. Countries that are relatively abundant in low-skilled labor (generally assumed to be the countries in the South) will be able to produce goods that intensively use low-skilled labor more cheaply than countries with relatively more high-skilled labor. This difference in costs will determine the pattern of trade as countries export the goods they produce at least cost.

Trade theory predicts that such voluntary trade will create net gains for all trading partners, but these gains may not be equally distributed throughout the population. Stolper and Samuelson show that, following trade liberalization, some groups gain, others lose, but the gains to the winners would be enough to compensate the losers. To understand the empirical relevance of these predictions, it is helpful to explain the mechanics behind the theory.

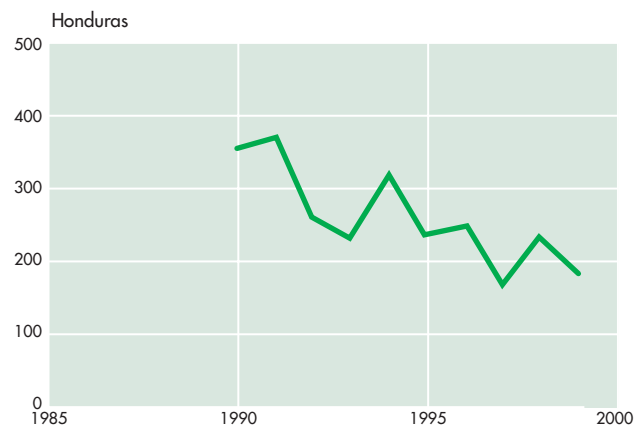
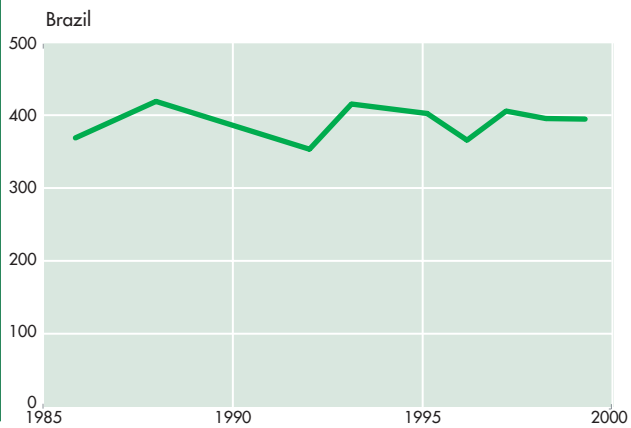
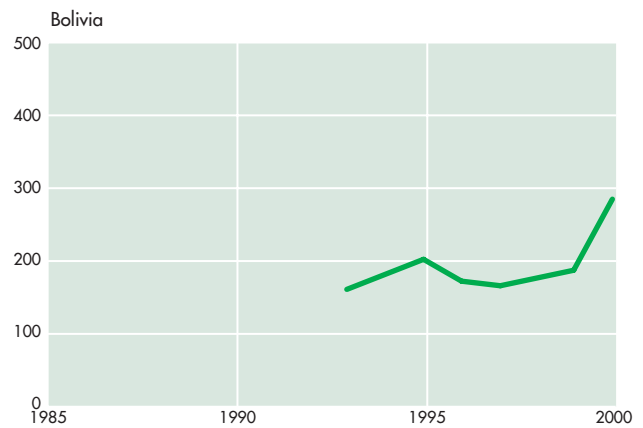
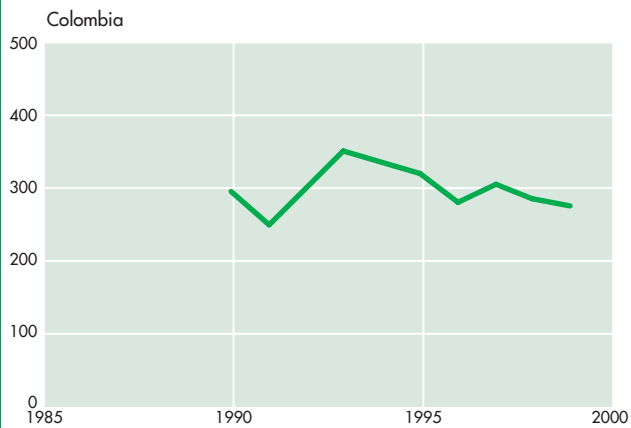
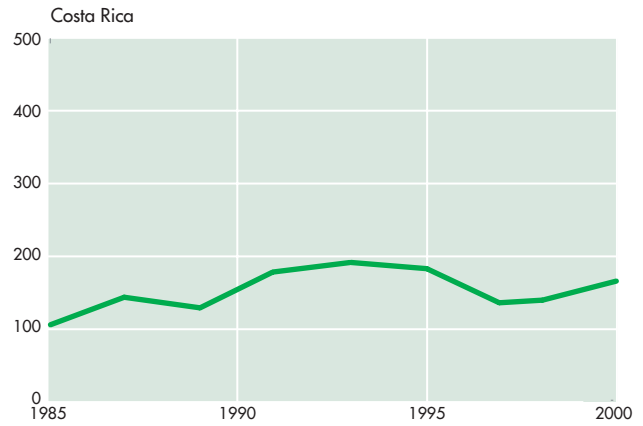
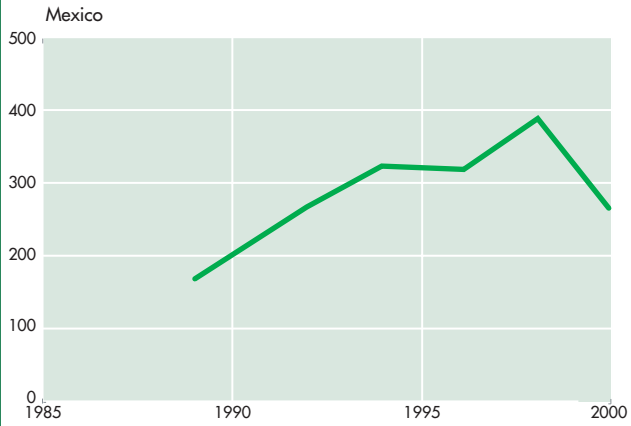
⁵ Regression results are similar, but sensitive to the specification used to characterize experience and education.

Figure 12.2 (cont.)



Notes: Countries are sorted from highest to lowest average education.
 Source: IDB calculations based on household surveys.

Figure 12.2 (cont.)



Notes: Countries are sorted from highest to lowest average education.
Source: IDB calculations based on household surveys.

A reduction in tariffs will reduce the relative price of imported goods. These price changes will be greatest between countries that are the most different. Since less skill-abundant countries would be importing more skill-intensive goods, they would experience falling prices for skill-intensive goods after trade liberalization. The fall in the price of the skill-intensive goods (and the corresponding increase in the relative price of the less skill-intensive good) would change the demand for skill. The increase in the relative price of the less skill-intensive good would increase the demand for less-skilled workers, relative to skilled workers, and therefore the wages of the less skilled workers would increase and the wages of the skilled workers would fall. Since less skilled workers have lower wages to begin with, this kind of trade liberalization should reduce wage inequality.

While the theory applies to trade liberalization in general, it can be loosely extended to examine the effects of preferential agreements to lower tariffs across countries or regions. For example, if Brazil signs a preferential agreement with Canada, a parallel reduction in tariffs between the two countries implies that the relative price of skilled goods would fall in Brazil and rise in Canada. It is then likely that Canada would import more low skill-intensive products from Brazil, while Brazil would import more of Canada's high skill-intensive exports. This implies that in Brazil, the relative demand for the relatively abundant factor, low-skilled labor, would increase, leading to a reduction of wage inequality. As the relative demand for the high-skilled workers rises in Canada, wage inequality would increase there. A different partner or set of partners is likely to have different implications for the changes in wages. For example, a preferential agreement signed with China could have very different implications for Brazil, since in comparison to China, Brazil is abundant in skilled labor. As tariffs fell, the demand for unskilled labor would likely fall in Brazil, while the demand for skilled labor would likely increase. As the wages of the less skilled rose in comparison with the wages of the more skilled, wage inequality would rise in Brazil. Regardless of the changes in relative wages, the gains from trade in the form of lower prices and higher income per capita should be larger, given wider differences in the factor endowments of the trading countries.

The key to this story is that changes in trade policy affect wages through changes in the relative prices of goods. However, the precise theoretical relationship between output prices and relative wages, known as the Stolper-Samuelson (SS) theorem, only holds under very restrictive assumptions.

In particular, the model assumes that there are two goods made with two factors of production (labor and capital, or low-skilled and high-skilled labor). In addition, the model assumes that markets are perfect, that factors can costlessly move between industries, that factors cannot move across countries, and that returns to scale and technology are constant and the same for all countries. The numerous restrictions embodied in the theory create a large number of ways in which the model may deviate from reality. These deviations affect our expectations of how trade liberalization will affect inequality.

Pattern of Protection

One example lies in the pattern of protection. The Stolper-Samuelson theorem predicts that the change in tariffs will affect relative wages through a change in prices. Yet, how tariff reductions affect prices depends on the pattern of tariffs prior to liberalization, particularly on differences in tariff levels between skill-intensive and less skill-intensive goods. Since a country's scarce factor stands to lose from trade liberalization, a reasonable expectation based on the theory is that countries use tariffs to protect their scarce factor. If this were the case, the Stolper-Samuelson predictions would apply. But country realities may differ from these expectations. For instance, prior to joining the GATT in 1986, Mexico protected its less skilled workers by placing higher tariffs on those goods that intensively used less skilled workers.⁶ Similarly, for Argentina, the Mercosur tariff is higher and provides more protection in the industries that are intensive in low-skilled workers (Porto, 2001). Under these conditions, trade liberalization that reduces protection in the low-skilled manufacturing sector to a greater extent than in other sectors may increase the gap in wages between skill groups, a

⁶ Hanson and Harrison (1999), Revenga (1997) and Robertson (2002) describe these patterns for Mexico.

result that would appear to contradict the predictions of Stolper-Samuelson. There are at least two possible explanations for this apparent contradiction. First, less skilled workers may have more of an influence in trade policy in that they are relatively more successful in securing tariffs to protect their wages.⁷ If the pattern of tariff protection is more strongly linked to the political process than to the concept of comparative advantage, it is not necessarily expected that trade liberalization will increase the relative wages of the abundant factor. Another possibility is that Latin American countries are not relatively abundant in less skilled workers, in which case the pattern of protection would be consistent with expectations.

Abundance of Which Factor?

The question of whether Latin American countries are abundant in less skilled workers depends critically on what countries fall into the relevant comparison group. Should a country's relative supply of labor be compared with the countries it trades with, or with the rest of the world? While Latin American countries are relatively endowed with less skilled labor when compared to the developed countries, they are probably not abundant in less skilled labor relative to the rest of the world, especially with respect to Asia and Africa.⁸ Thus, while over 70 percent of Mexico's imports and exports are with the United States, China's growing international market presence may have important effects on wages in Mexico. In the context of bilateral and regional agreements, wage changes should be linked to differences in factor endowments across partners, but the presence of other trading associates external to the agreement may moderate the gains from trade. In our example of a preferential agreement between Canada and Brazil, the relative wage of the less skilled in Brazil may rise to a lesser extent after the agreement if Canada has been trading with China.

Similarly, there may be large differences in the definition of "skill" across countries. Workers considered skilled in one country may be unskilled in another, complicating direct comparisons. While a worker with 10 years of education would be considered skilled in Mexico, he or she may not be considered skilled in the United States. Furthermore, the rankings of factor abundance also depend on what factors are consid-

ered. If a third factor of production is introduced, such as natural resources or land, the standard Stolper-Samuelson result does not necessarily hold.⁹

Factor Content

The Stolper-Samuelson theorem predicts that the change in relative prices drives the change in relative wages. Several analysts have suggested that changes in imports and exports, rather than changes in relative prices, can be compared with changes in wages to determine how liberalization affects inequality. The justification for using imports and exports, aside from being intuitive measures of trade, is that imports increase the effective supply of the factors used to produce them. For example, importing labor-intensive goods would increase the effective supply of labor in the country importing those goods. The effects on labor markets can therefore be determined by the factor content of traded goods. Trade economists tend to be skeptical of this approach because imports may increase for reasons other than trade liberalization (such as an economic boom), but some studies have shown that this approach is appropriate under certain conditions.¹⁰ The results of this debate notwithstanding, imports and exports remain popular measures of integration, as the empirical results illustrate.

Adjustment Costs/Unemployment

The neoclassical model generally assumes that markets adjust easily, so that, in the purest form, there is no unemployment. Understanding market imperfections and adjustment costs that give rise to unemployment

⁷ Marktanner (2000) finds that it may be more politically efficient to use trade policy to address distributional concerns, which may explain the use of tariffs in ways contrary to the Stolper-Samuelson predictions.

⁸ Wood (1997) and Spilimbergo, Londoño and Székely (1999) make this point by comparing the relative endowments of several factors.

⁹ Fischer (2001) shows that when a country is land abundant (relative to labor), trade liberalization may increase income inequality in the long run. He finds this effect for land-abundant Chile, while the opposite happened in labor-abundant Taiwan. See also Leamer et al. (1999).

¹⁰ For more on this debate, see Freeman (1995), Panagariya (2000) and Deardorff (2000).

can also help us understand how trade liberalization will affect employment and unemployment. When barriers to trade fall, resources move in response to the change in relative prices. If adjustment costs are significant, and therefore adjustment is slow, unemployment may result.¹¹ Several studies examine adjustment costs in Latin American countries. The persistence of inter-industry wage differentials and labor market adjustment costs suggests that labor markets may not adjust instantly, leading to worker dislocation.

The degree of market inflexibility in Latin America has also been the subject of debate. Heckman and Pagés (2000) show that mandatory hiring and firing provisions are more stringent in Latin America than in industrial countries. However, while the results of their 2000 study suggested a negative effect on employment, their recent work with better regulatory measures and a larger data set suggests otherwise. It is likely that the presence of large informal labor markets reduces the effect of mandatory regulations in Latin America. In terms of costs, Robertson and Dutkowsky (2002) use industry-level data and find that measured labor market adjustment costs in Mexico are about one-tenth the size of comparably-measured adjustment costs in the United States and the United Kingdom. The size of the adjustment costs affects the relative adjustment of wages and employment. When labor market adjustment costs are high, negative shocks may affect wages more than employment.

Trade among Similar Countries

Differences in relative factor endowments give rise to trade in the Heckscher-Ohlin model, but most world trade is between the developed countries of the North that have relatively similar factor endowments. In the early 1980s, this phenomenon inspired a “new” trade theory based on intra-industry trade (two-way trade in similar products) and monopolistic competition. In these models, countries with similar endowments specialize in varieties of products and exchange different varieties to satisfy consumers’ love of variety. Trade liberalization between similar countries tends to favor intra-industry trade, as has been well established for developed countries. Guell and Richards (1998) find that regional agreements between Latin American countries have increased intra-industry trade there as well.

Relatively little theoretical work has been done relating intra-industry trade with wage inequality. That is not surprising, given that the models are based on a representative agent methodology that does not lend itself to an analysis of relative wages. One might expect smaller changes in wages if South-South trade is based on smaller differences in comparative advantage. Current research, however, suggests that intra-industry trade may also contribute to rising inequality. Dinopoulos, Syropoulos and Xu (1999) find that increasing intra-industry trade can increase the demand for skill and therefore increase wage inequality.

Other Implications of Integration

Integration generally involves much more than reducing trade barriers. Recent measures to promote integration include provisions to facilitate capital flows and increase the flow of technology. Each of these can have significant implications for the effects of integration on labor markets.

One constraint on growth and employment is the lack of capital. Integration agreements that promote FDI can therefore increase labor demand. The implications for wage inequality depend on the kind of workers that are generally employed by foreign capital. Conventional wisdom suggests that plants with foreign capital tend to use more advanced technology and hire relatively more skilled workers. In fact, it is also possible that capital movements from developed to developing countries can raise the demand for skill in both countries, thus increasing inequality in both countries (Feenstra and Hanson, 1996). For example, if capital that generally employs workers with a high school education moves from the United States to Mexico, this will reduce the demand for high school workers in the United States (where they are low skilled workers) and increase the demand for these workers in Mexico (where they are high skilled).

Acemoglu (1999) shows that if trade is associated with changes in technology that are more likely

¹¹ Hungerford (1995) finds that trade shocks have only a small effect on the probability of layoffs in the United States. Kletzer (1998), on the other hand, finds evidence of significant job displacement in some U.S. industries.

to be used by high skilled workers, wage inequality will increase in both the high-skill abundant and low-skill abundant trading partners. This process is often referred to as skill-biased technological change. Greater integration may reduce the costs of technology and therefore motivate innovation. Technology has received much attention as a factor raising the demand for skills in the developed countries.¹² Most technology in Latin America is imported. Thus, trade liberalization may reduce the costs of importing technology. If this technology complements skills, the lower cost of technology will increase the demand for skill. Notice that if trade leads to the adoption of new technology, and technology is complementary with skill, trade will at the same time increase productivity and increase inequality. Thus, increases in wage inequality are not necessarily welfare reducing; the level of wages for the high skilled may have merely increased at a greater rate than the wages for the low skilled (for example, poverty rates can fall while the skill gap increases).

REVIEW OF EMPIRICAL FINDINGS

Does Trade Liberalization Increase Inequality?

In between the passionate anti-globalization view that trade liberalization increases inequality and poverty, and the equally strong convictions of trade theorists that liberalization increases living standards, lies the simple fact that, despite a great deal of careful empirical work, the debate over the effect of trade liberalization on wages in developing countries remains unresolved. A definitive answer may be elusive in a changing world: societies are not laboratories where tariffs can be lowered while everything else is kept constant in order to see what happens. Other reforms press ahead simultaneously, and societies change constantly in terms of related variables ranging from the female labor supply to family structure and macroeconomic conditions.

However, while the empirical evidence on the short-run effects of trade liberalization on wage inequality in Latin America is not entirely clear, the results seem to suggest that the reduction of tariffs in Latin America was followed at least initially by an increase in wage inequality. In the longer run, wage

inequality may fall depending on further liberalization of the initial trade reforms. Wage inequality in Chile rose from 1970 to 1990, when inequality began to fall.¹³ The cause for the reversal is not clear. Mexico experienced a similar reversal that may be easier to explain. Various studies find that wage inequality rose in Mexico following its accession to the GATT, but fell following Mexico's entrance into NAFTA (Figure 12.3).¹⁴ This is consistent with the idea that the *type* of integration matters (North-South vs. South-South). The GATT liberalization for Mexico occurred with respect to the world, while the NAFTA liberalization was with the North, which may help explain the different patterns in subsequent wage inequality. Mexico is not necessarily abundant in less-skilled workers in comparison to world trading partners such as China, but it is less skilled in comparison with the United States and Canada. It is also possible that the changes in wages in the initial years after GATT were dominated by the dismantling of the extra protection for less-skilled workers, given Mexico's pattern of protection before GATT.

Interestingly, GATT and NAFTA liberalization also had different effects on another dimension of inequality—the geographical distribution of employment in manufacturing (see Box 12.2).

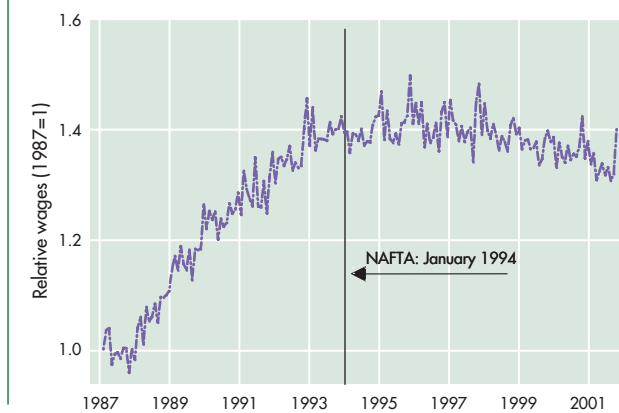
Coinciding trends of rising wage inequality and trade liberalization, even when they do occur, do not necessarily imply that one causes the other. Likewise, liberalization can contribute to a change in the demand for skill that is offset by other changes in the economy. Formal studies of the link between inequality and liberalization in Latin America vary somewhat based on the theoretical method motivating the approach. In particular, studies can be grouped into those that examine the link between tariffs, prices of goods, and wages (price studies); studies that examine the effects of changes in trade volumes on inequality; and studies that look at other channels.¹⁵

¹² Two of many studies in developed countries that compare trade and technology are by Haskel and Slaughter (1999, 2001).

¹³ See Bravo and Marinovic (2001).

¹⁴ See Airola and Juhn (2001), Acosta and Montes Rojas (2001), and Robertson (2001). The trends in the secondary to primary wage gap for Mexico shown in Table 12.1 are similar to the trends in Figure 12.3.

¹⁵ For a thorough review of the literature, see Robertson (2002).

Figure 12.3 Relative Wages in Mexico, 1987-2001

Note: This figure shows the wage ratio of nonproduction workers to production workers, weighted by industry employment. The data are from Mexico's Monthly Industrial Survey conducted by INEGI. The ratio is normalized so that the value of January, 1987 is equal to one.
Source: Robertson (2001).

Price Studies

Price studies link changes in relative prices to changes in relative wages. Although the link from prices to wages is the closest to the Stolper-Samuelson theory, relatively few Latin American studies take this approach. Beyer, Rojas and Vergara (1999) compare changes in relative prices and wages in Chile and find that the rise in the relative price of skill-intensive goods helps explain the increase in inequality. This is consistent with the standard theory if Chile is relatively abundant in skilled labor.¹⁶ For Mexico, Hanson and Harrison (1999) examine firm-level data and industry-level prices during 1984-90 and find little evidence of a relationship between changes in output prices and changes in wage inequality. Alternatively, they identify changes within industries, such as foreign investment and export orientation, as significant contributors to rising wage inequality. Robertson (2001) finds that movements in relative prices were both consistent with Mexico's tariff liberalization and the rise in inequality between 1986 and 1994. He finds that the relative price of skill-intensive goods fell after 1994, which may help explain the fall in wage inequality after NAFTA. Another possible explanation is that the effects of liberalization have different short- and long-run effects.

For Brazil, Gonzaga, Filho and Terra (2001) compare tariff changes, price changes and wage inequality, concluding that wage inequality fell follow-

ing trade reforms in 1988, and that trade liberalization may help explain the fall in wage inequality. However, while wage inequality fell in Brazil, one of the countries with the lowest levels of schooling in the region, inequality rose in Chile, which has high levels of education. Meanwhile in Mexico, wage inequality rose during the GATT years and fell after NAFTA (Figure 12.3). This evidence, taken together, may be consistent with observations that while Mexico is not abundant in low-skilled labor with respect to the world, it is abundant in low-skilled labor with respect to Canada and the United States.

Supply and Demand Studies

A supply and demand approach has been commonly used to compare the factors that may affect the relative demand for skill, although the links to theory are much weaker. Many of the studies ignore the factor content of trade and focus on the quantity of trade. These studies generally find that increased trade flows are associated with increased wage inequality.

In Argentina, Galiani and Sanguinetti (2000) find that trade flows increased wage inequality following liberalization. Rising inequality in Argentina and falling inequality in its largest Mercosur partner, Brazil, is consistent with standard trade theory in the sense that Brazil can be considered abundant in low skill and Argentina abundant in high skill. In Brazil, 50 percent of persons ages 20 to 60 have completed less than six years of schooling, while in Argentina the respective figure is 8 percent.

In terms of magnitude, Galiani and Sanguinetti (2000) find that trade explains a small portion of the increase in inequality. In another study on Argentina, Acosta and Montes Rojas (2001) find that while trade did contribute to the rising demand for skill, technology probably played a more important role. Thus, both studies reach similar conclusions as found in U.S. studies: the direct effect of trade was small and technology was probably more important.

In Costa Rica and Colombia, Robbins and Gindling (1999) and Robbins (1996) find that trade increased wage inequality. They use household surveys

¹⁶ The average years of schooling in Chile for the population age 25 and older is 9.6. In the United States, the average is 13.

Box 12.2 Integration and the Economic Geography of Mexico

The gains from trade may be distributed unevenly not only across wage classes, but across regions. In Mexico, the regional effects of trade policies can be viewed from the vantage point of two milestones: Mexico's entry into the GATT in 1986 and formation of the North American Free Trade Agreement (NAFTA) in 1994.

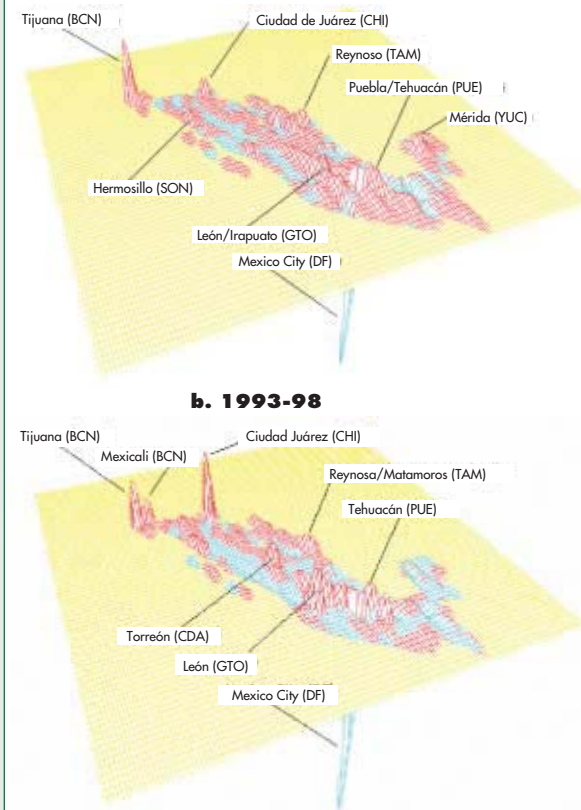
In 1985, Mexico's trade-weighted tariff on manufactured goods stood at 28.5 percent, and 92.2 percent of such goods required import licenses. By 1998, the trade-weighted tariff had fallen to 6.6 percent and the licenses were nearly eliminated. Over the same years, the ratio of Mexico's exports to GDP rose from 15.4 percent to 30.8 percent, and the share of its exports sold to the United States rose from 60.4 percent to 87.9 percent. In short, through these trade policy changes, Mexico has become more integrated with the rest of the world and, in particular, with the U.S. As a result, it has also experienced extensive changes in the distribution of employment among municipalities.

In 1998, of Mexico's 2,443 municipalities, the 16 that constitute the Federal District contained 12 percent of the nation's manufacturing employment. If the municipalities of the surrounding state of Mexico are added, the statistic doubles to 24 percent. Yet, if Mexico City's preeminence is striking, so too was its erosion during the preceding 10 years of integration. Table 1 ranks leading cities by changes in their percent shares of national manufacturing employment from 1988 to 1998. Of the negative changes, one was in Monterrey, one in Guadalajara, and the rest in *delegaciones* of the Federal District. Over the decade, Mexico saw a deconcentration, if not an exodus, of manufacturing from its mega-city and its burgeoning cousins.

Among the greatest positive changes were those in border cities such as Tijuana, Ciudad Juárez and Mexicali. Collectively, they grew from being home to 5.6 percent of Mexico's manufacturing workforce in 1988 to 10 percent in 1998. This marked an increase of 275,000 workers in three municipalities that together now rival the industrial preeminence of the Federal District. But much of the story is told below the top ten. Figure 1a shows the changes in municipal shares from 1988 to 1993, and Figure 1b shows the changes from 1993 to 1998. Positive changes are represented by red peaks, negative changes by blue depressions. Although other factors have also influenced the outcomes, comparing the figures shows whether the two different trade policies—non-preferential opening under the GATT and preferential opening under NAFTA—have had different consequences.

The figures show many similarities: Tijuana, Ciudad Juárez and Reynosa on the U.S. border stood out as growth centers in both periods. Their growth was led by radio, television, communications and medical equipment assembly and apparel manufacture, almost

Figure 1 Change in Municipal Percentage of National Manufacturing Employment
a. 1988-93



all destined for export to the U.S. Tehuacán, in the state of Puebla, and León, in Guanajuato, although less than 250 miles from Mexico City, also flourished as apparel export manufacturing centers in the 1990s.

But the figures also show notable differences. Mérida and several other municipalities in Quintana Roo, Campeche and Chiapas, near ports or the southern border, grew in the non-preferential opening period but not in the preferential opening period. Conversely, Mexicali, on the U.S. border, and Torreón, near it, grew substantially in the preferential period but not in the non-preferential period. On balance, there is some evidence of regional repercussions of Mexico's change from non-preferential to preferential trade liberalization.

The dominant features of the figures—the peaks centered on Tijuana, Ciudad Juárez, León and Tehuacán, and the crevasse underlying Mexico City—represent a dramatic reversal of fortune. There was some perceived advantage to the mega-city's agglomeration, after all, that continued to fuel its growth in both absolute and relative terms until the mid-1980s. Part of the advantage was undoubtedly the centralization in Mexico City of power, political influence and public spending; part stemmed from externalities, manifested

Table 1 Cities Ranked by Share Change in National Manufacturing Employment, 1988-98

	Positive changes			
	Employment, 1988 (number of persons)	Employment, 1998 (number of persons)	Share in national manufacturing, 1998 (%)	Change in share
1 Tijuana (BCN)	41,872	153,530	3.76	2.15
2 Ciudad Juárez (CHI)	108,172	240,782	5.90	1.74
3 Apodaca (NLN)	8,303	37,214	0.91	0.59
4 Zapopan (JAL)	24,989	63,337	1.55	0.59
5 Mexicali (BCN)	24,562	61,375	1.50	0.56
6 Guadalupe (NLN)	13,289	41,414	1.02	0.50
7 Reynosa (TAM)	24,141	55,080	1.35	0.42
8 León (GTO)	55,508	103,397	2.53	0.40
9 Tehuacán (PUE)	8,981	28,471	0.70	0.35
10 Hermosillo (SON)	11,294	31,795	0.78	0.34
Negative changes				
1 Azcapotzalco (D-F)	87,493	74,588	1.83	-1.71
2 Tlalnepantla (MEX)	80,502	73,606	1.80	-1.45
3 Naucalpan (MEX)	80,202	78,697	1.93	-1.32
4 Monterrey (NLN)	92,001	103,457	2.53	-1.19
5 Guadalajara (JAL)	102,453	126,737	3.10	-1.04
6 Cuauhtémoc (D-F)	60,838	62,710	1.54	-0.93
7 Gustavo Madero (D-F)	47,944	43,718	1.07	-0.87
8 Miguel Hidalgo (D-F)	55,061	58,143	1.42	-0.80
9 Iztapalapa (D-F)	68,293	79,502	1.95	-0.82
10 Benito Juárez (D-F)	36,386	31,122	0.76	-0.71

in technological spillovers and labor training; and part lay in the simple fact that people had already chosen to locate there. Manufacturing industries were unlikely to stray far from their principal output market, particularly given the large transport costs they would incur in supplying that market from outside the Valle de México.

The GATT liberalization and NAFTA combined with other causes to unravel these advantages. Political decentralization supporting state and municipal self-government militated against the first advantage; negative externalities in the form of congestion costs, including pollution and the consequent limitations to auto circulation and factory emissions, began to balance against the second; and Mexico's opening, combined with its physical geography and transport infrastructure, undermined the third. As Mexico exports a larger part of its output, more of manufacturing firms' output markets lie in the United States rather than Mexico City. The capital's distance from the border, coupled with the lack of multi-lane and restricted access divided highways over parts of the distance, gives more advantages to establishing manufacturing plants in the north and fewer advantages to Mexico City. What is more, the north's advantages are compounded cumulatively as its share of manufacturing industry grows: other northern plants and migrant employees are among the new plants' suppliers and consumers, so by locating in the North they are all locating alongside a growing portion of their markets.

Integration has thus diminished regional

inequalities in Mexico—with an important caveat. It has "chosen" regions that might not have figured as largely as others in policymakers' development plans, particularly post-NAFTA. To illustrate, in Figure 1b, a path of red is discernible running south from Ciudad Juárez past Torreón, surrounded by a sea of blue. The red is situated exactly on one of the principal highways from Mexico's interior to the northern border; the blue contains the small towns and *ejidos* far from it. In the immediate post-GATT period, in addition to well-situated areas like those on the highway, many of the more numerous and poorly situated areas also experienced relative growth. This cannot be said as accurately of the post-NAFTA period. From 1988-93, 68 percent of municipalities recorded positive changes in their shares of national manufacturing employment, but over 1993-98, that fell to 51 percent.

Will the trend of manufacturing deconcentration in Mexico City, and its growing concentration at the border and a handful of particular areas inland, continue? Perhaps not. The limitations to agglomeration already confronted by Mexico City now begin to emerge in the border cities, as labor and congestion costs there rise. Meanwhile, improvements in national transport infrastructure should reduce the cost difference between serving the U.S. market from the border and from more distant locations. Trade liberalization and integration will continue to influence shifts in Mexico's economic geography, but their epicenters may change.

to control for changes in the supply of education (and several other institutional factors) and find that much of the increase in wage inequality that followed trade liberalization in both countries was due to a rising demand for skill.

A few studies examine changes in trade policy instead of changes in trade quantity. Although they do not analyze the effect of changes in the prices of goods, these studies are closely related to the policy decision to lower tariffs. A recent study takes the novel approach of linking indices of policy reforms to a series of household surveys from 18 countries covering the 1990s. Behrman, Birdsall and Székely (2001) compare the contributions of trade liberalization, privatization, financial market reforms and technology using data from 18 Latin American countries. They find that trade liberalization had no significant effect on wage inequality, but technology and financial market reforms (including capital account liberalization and tax changes) had a significant impact on changes in wage inequality.¹⁷

Robbins (1996) relates changes in wages to changes in tariffs in Costa Rica and does not find evidence that trade liberalization increased the demand for skills in ways consistent with the Stolper-Samuelson theorem. Instead, he argues that technological changes were behind the increase in wage inequality.

Concern continues to be raised about the impact of trade liberalization on women's wages and employment opportunities. The "before and after" studies that claim to measure the effects of trade liberalization are even more problematic for women than for men, since the secular changes in female labor force participation may have larger effects on the distribution of female wages than changes in trade liberalization. The effects of trade liberalization on women's labor market outcomes remain an important area for future research.

FDI and Technology

Chapter 10 suggests that regional integration agreements are associated with an increase in foreign direct investment both from member countries and outside sources. Foreign investment flows have played a very important role in the economies of Latin America.¹⁸ Foreign investment may affect employment either directly (through new hires and expansions over time) or indirectly (through linkages with local firms) (Lall,

1995). Regarding the direct channel, Feenstra and Hanson (1996, 1997) develop and test a model in which foreign capital represents a transfer of jobs that are considered less skilled in the developed countries but are skilled in the developing countries. Examining Mexico's maquiladoras, they find support for their hypothesis that foreign capital increased wage inequality in Mexico.

Foreign capital can also bring in new technologies whose complementarity with skills may increase the demand for skill.¹⁹ Thus, integration that increases capital and technology flows may increase inequality. This effect may be especially important in Latin American countries that develop much less of their own technology. Alvarez and Robertson (2001) find that domestic firms that partner with foreign capital are more likely to innovate than firms without foreign capital. Foreign capital tends to use the most advanced production techniques (Buitelaar, Padilla and Urrutia, 1999). These effects are complementary with trade liberalization that makes importing machine tools, especially computer-controlled machine tools, much less expensive for Latin America (Alcorta, 2000). These imports may have contributed to rising productivity. If workers need more skills to work with these technologies, the demand for these skills, and thus inequality, increases.

Another channel through which integration may affect relative wages and poverty is through technology. In the United States and developed countries, trade and technology are often posited as alternative explanations for changes in the wage structure.²⁰ The fact that the South in general, and Latin America in particular, generally do not develop technology to the same extent as the North suggests that increased integration between the North and the South may facilitate

¹⁷ Trade liberalization is measured as the mean of the average level and average dispersion of tariffs, per Lora (1997).

¹⁸ Some of the many studies that discuss capital flows into Latin American countries are Agosin, Fuentes and Letelier (1994); Agosin and Ffrench-Davis (1997); and Gil Diaz (1999).

¹⁹ Blonigen and Slaughter (1999) find that, for the United States, FDI increases the demand for less skilled workers.

²⁰ Acemoglu (1998, 1999) shows some of the patterns of skill and suggests that in the United States, the increase in the supply of skilled workers has induced the development of skill-complementary technology. These technologies affect the relative demand for skill (Autor, Katz and Krueger, 1998).

technology flows southward. Since living standards depend on productivity, these flows may hold the promise of reducing poverty as well.

There are several ways that technology may change as a result of trade liberalization. First, exporting may create the incentives to implement more advanced technologies to meet the demands of world consumers or reduce inefficiency afforded to them by protection.²¹ Several studies have found that exporting firms are more productive, and that exporting is linked to incentives to invest in new technology (see Chapter 11).²² These new technologies may have increased the demand for skill (Macario, 2000). Importing intermediate inputs as well as machinery may also create effects analogous to technological change. Finally, reducing barriers to trade may make it easier to acquire foreign technologies. If countries have more flows of goods, services and communication between them, the cost of diffusing technology falls. Firms are more able to learn from other countries and apply that accumulated knowledge at home. Acosta and Montes Rojas (2001), using household-level data for Mexico and Argentina, compare the roles of trade and technology and find that technology may have had larger effects on inequality than trade flows.

POLICY IMPLICATIONS

The most ambitious integration initiative pending for the region is the Free Trade Area of the Americas (FTAA). Under the assumption that the South is relatively abundant in less skilled workers, North-South integration should reduce wage inequality there. On the other hand, if integration facilitates the flow of capital and technology, this integration may increase the demand for skill and increase wage inequality (at least in the short run). The existing empirical literature offers only little clarity. There seems to be some consensus that wage inequality increased in Latin America following trade liberalization, and most studies agree that this increase in inequality was correlated with an increase in the demand for skill, especially in the short run.

While there are several factors that may explain the response of inequality to integration, all of the factors seem to generate similar policy implications. Regardless of whether further integration is North-

South or South-South, economic integration causes a reallocation of resources between industries. Trade opening is expected to bring long-run gains in the form of increases in productivity and growth, but the process of integrating markets means that economies are more susceptible to swings in world prices. Given the fact that some adjustment is certain, programs to facilitate the process for workers and families are important.

Training and Job Search Programs

Worker training and job search programs that smooth transitions to new types of employment will particularly help workers become more productive sooner. The availability of effective programs prior to further rounds of liberalization will also make workers less anxious about prospects for integration. New skills taught to displaced workers should reflect the new profile of demands in the economy, regardless of whether those new demands derive from generalized technological change or tariff reductions. Currently, most training institutes are designed based on the pre-1980s framework of import-substitution, in which the state could highlight a few industries and provide training for a determined set of skills. Although flush with funds from earmarked taxes, many institutes have not been linked to the changing demands for skill.

One promising innovation is the regulatory approach to training being used in Chile. The National Training and Employment Service (SENCE) does not provide the training directly, but rather uses an income tax rebate for businesses that contract or directly provide a program to their employees. The program must meet SENCE's criteria for relevance and quality for the firm to be eligible for the rebate. Since the firms are self-financing a portion of the training costs, they have the incentive to select programs that suit their demands. The same type of rebate is available to firms offering

²¹ Currie and Harrison (1997) find evidence that firms increased productivity following trade liberalization in Morocco.

²² See Aw and Hwang (1995), Bernard and Jensen (1997), and Alvarez and Robertson (2001). Dijkstra (2000) argues that the link between trade liberalization and technological change seems weak. Technological change may have been correlated with other factors, such as industrial policy and exchange rate movements that encouraged restructuring in the manufacturing sector.

apprenticeships to potential employees drawn from workers displaced from their old jobs.

The challenge for institutes that provide their own courses, such as the National Training Institute (INA) in Costa Rica, is to identify and provide training that provides skills that are well aligned with the demands of businesses.

Displaced workers with high levels of education may have strong prospects for being re-hired without job training, and may benefit quickly from job search programs. But it is important for job search assistance to be well integrated with the training programs. A new program in El Salvador run by the non-governmental organization FEDISAL lists training course openings in the national job registry. Programs combine counseling along with listings of job openings. The model is innovative in that private, non-governmental and governmental institutions are collaborating to better link services with changing demands. Walk-in facilities that offer computerized searches of national job registries are becoming more common, but these services are not necessarily accessible in all geographic areas (Mazza, 2001).

Unemployment Insurance and Workfare Programs

Traditionally, unemployment insurance in the region came in the form of a generous severance payment available when formal sector workers were involuntarily separated from their jobs. Heckman and Pagés (2002) suggest that unemployment insurance slows the reallocation of workers to new positions, since employers have the incentive to maintain inefficient staff to avoid paying the stiff penalty. Unemployment insurance as is implemented by developed countries, with smaller monthly payments, is often criticized for discouraging labor supply. A new hybrid unemployment insurance in Chile directs a share of wages and the employer's contribution to individual accounts. Workers first draw down their personal accounts before they are eligible to receive government payments. Since the worker's contributions roll over to retirement accounts if they are not used, the worker has the incentive to conserve the account. These schemes are also portable from job to job, an attractive feature in dynamic economies.

Employment programs in which participants receive a minimum wage in exchange for work have advantages over standard unemployment insurance, since the unemployment transfers are typically only available for formal sector workers and provide a disincentive to work. Workfare programs are more expensive to administer than cash transfers, but do not discourage labor supply. If the wage is not set artificially high, the program is effectively "self-targeted" in that jobs tend not to be captured by high-skilled workers who have better prospects elsewhere. Another feature of a low-level wage is that participants have the incentive to self-graduate to "regular" jobs with better wages. Unfortunately, too often the allocation of positions is subject to discretionality based on political objectives, diminishing the effectiveness of the program.

The ensuing benefits to society of trade liberalization—higher productivity and growth and lower prices—are diffuse, whereas the costs of economic transformation are concentrated and visible. Perceived losses by workers in specific industries create strong interest groups opposed to the dismantling of protection. Targeting re-training programs to specific industries or geographic areas with expected losses can reduce political opposition to integration. Generous severance packages may reduce opposition in the short run, but do not necessarily leave the dislocated workers with good prospective earning streams. Some workers may have interests in running their own businesses but lack the capital and expertise. Providing credit and training to small and medium-sized enterprises is important for directing displaced labor towards more efficient production. Promoting exports, ties to foreign markets, and new technologies may help increase worker productivity in ways that are necessary for long-run improvements in living standards.

Safety Nets

Targeting employment and training programs to workers in sectors affected by liberalization may be desirable, but most social welfare policies should not be linked to the process or policies of liberalization. Social safety nets should be available to those in poverty, regardless of the direct cause of that poverty. In the context of reducing poverty and raising living standards, social safety nets must consider the welfare and

capacities of all family members, not only those who have lost jobs. Still, the added vulnerability of families to external shocks, such as precipitous drops in coffee prices, indicates that the social safety nets need to be flexible enough to expand during crises.

Promotion of Competitiveness in Rural Economic Activities

Worldwide trade liberalization in agriculture is critical for making trade work for the poor. Poverty tends to be concentrated in rural, agricultural areas throughout the region. Continued subsidies in the agriculture sectors in the developed world keep the international price of commodities artificially low, which effectively blocks off a path out of poverty for the approximately 20 percent of families in the region whose main livelihood comes from agriculture.²³ In the highly indebted poor countries (HIPC) of the region, approximately 30 percent of households depend primarily on the agricultural sector as their main source of household income.²⁴ Low prices are not the only problem. There is a lack of technology and production alternatives, particularly in tropical countries where agriculture has been protected. Regional integration in infrastructure, such as transportation, is critical for generating opportunities in agriculture. There have also been difficulties in getting agricultural products from Latin America to foreign markets because firms have not met export standards, which are not uniform among importing countries. Some unification of the standards would facilitate exports. Countries can also provide assistance to small and medium-sized firms to help them meet the standards required for their agricultural products. Both technical assistance and credit for investing in new technologies can facilitate commodity exports by small and medium-sized producers.

Education

The education of the next generation of workers should be a priority. A labor force with a high level of general skills will be best placed to take advantage of or weather the adjustments from changes in international prices and advancements in technology. Targeted human development programs such as Bolsa-Escola in Brazil, Oportunidades in Mexico, and PRAF in Hon-

duras are succeeding in raising the schooling attainment of school age children by providing cash transfers to families conditional on their children remaining in school. Other programs such as Nuevas Oportunidades in Costa Rica change the supply of schooling. The program offers flexible schedules that enable dropouts, both children and adults, to complete primary and secondary schooling at their own pace. Students attend a minimum number of formal course hours with teachers operating in non-standard facilities such as churches or municipal buildings, and complete the lion's share of coursework according to their own schedules. PRAF also includes components to improve the quality of education.

Often a basic set of skills is necessary before job specific training is effective. If the relative demand for skill increases, the increasing returns to skill provide an additional incentive to stay in school longer. But this is not possible if the quality and quantity of educational opportunities are lacking. To meet the rising demand for skill that seems to follow liberalization, public investment in broad-based education becomes increasingly important. While the temptation exists to retain protection for highly mobilized or vulnerable groups, delaying the dismantling of protection creates new generations of potential workers with misaligned skills.

²³ Some workers in the labor-intensive sector of non-traditional agriculture benefit from trade barriers.

²⁴ Based on sector of activity of the household head. The estimates are 31 percent in Honduras, 34 percent in Bolivia and 35 percent in Nicaragua.

REFERENCES

- Acemoglu, Daron. 1998. Why Do New Technologies Complement Skills? Directed Technical Change and Wage Inequality. *Quarterly Journal of Economics* 113(4) November.
- . 1999. *Patterns of Skill Premia*. NBER Working Paper no. 7018.
- Acosta, Pablo, and Gabriel Montes Rojas. 2001. Trade Reform, Technological Change and Inequality: The Case of Mexico and Argentina in the '90s. University of Illinois at Urbana-Champaign. September.
- Agosin, Manuel, and Ricardo Ffrench-Davis. 1997. Managing Capital Inflows in Chile. *Estudios de Economía* 24 (December): 297-326.
- Agosin, M., R. Fuentes, and L. Letelier. 1994. Los capitales extranjeros en las economías latinoamericanas: Chile. In José Antonio Ocampo (ed.) *Los capitales extranjeros en las economías latinoamericanas*. FEDESARROLLO and the Inter-American Development Bank.
- Airola, Jim, and Chinhui Juhn. 2001. Income and Consumption Inequality in Post-reform Mexico. Paper presented at the 2001 Latin American and Caribbean Economic Society Meetings. October.
- Alarcon, Diana, and Terry McKinley. 1997. The Rising Contribution of Labor Income to Inequality in Mexico. *North American Journal of Economics and Finance* 8(2): 201-12.
- Alcorta, Ludovico. 2000. New Economic Policies and the Diffusion of Machine Tools in Latin America. *World Development* 28(9) September: 1657-72.
- Alvarez, Roberto, and Raymond Robertson. 2001. Exposure to Foreign Markets and Firm-level Innovation: Evidence from Chile and Mexico. Macalester College. Mimeo.
- Autor, David H., Lawrence F. Katz, and Alan B. Krueger. 1998. Computing Inequality: Have Computers Changed the Labor Market? *Quarterly Journal of Economics* 113(4) November: 1169-213.
- Aw, B. Y., and A. R. Hwang. 1995. Productivity and the Export Market: A Firm-level Analysis. *Journal of Development Economics* 47: 313-32.
- Behrman, Jere, Nancy Birdsall, and Miguel Székely. 2001. Economic Policy and Wage Differentials in Latin America. University of Pennsylvania. November.
- Bell, Linda. 1997. The Impact of Minimum Wages in Mexico and Colombia. *Journal of Labor Economics* 15(3): S102-35.
- Bernard, Andrew, and J. Bradford Jenson. 1997. Exporters, Skill Upgrading, and the Wage Gap. *Journal of International Economics* 42(1-2) February: 3-31.
- Beyer, Harald, Patricio Rojas, and Rodrigo Vergara. 1999. Trade Liberalization and Wage Inequality. *Journal of Development Economics* 59(1) June: 103-23.
- Blonigen, B., and M. Slaughter. 1999. *Foreign-Affiliate Activity and U.S. Skill Upgrading*. NBER Working Paper no. W7040.
- Bravo, David, and Alejandra Marinovic. 2001. Wage Inequality in Chile: 40 Years of Evidence. Paper presented at the XVII Latin American Meeting of the Econometric Society, University of Chile.
- Buitelaar, Rudolf M., Ramon Padilla, and Ruth Urrutia. 1999. The In-Bond Assembly Industry and Technical Change. *CEPAL Review* 0(67) April: 137-56.
- Currie, Janet, and Ann E. Harrison. 1997. Sharing the Costs: The Impact of Trade Reform on Capital and Labor in Morocco. *Journal of Labor Economics* 15(3) July: S44-71.
- Deardorff, Alan V. 2000. Factor Prices and the Factor Content of Trade Revisited: What's the Use? *Journal of International Economics* 50(1) February: 73-90.
- Dijkstra, A. Geske. 2000. Trade Liberalization and the Industrial Development in Latin America. *World Development* 28(9) September: 1567-82.
- Dinopoulos, Elias, Constantinos Syropoulos, and Bin Xu. 1999. Intra-Industry Trade and Wage Income Inequality. University of Florida. Mimeo.

- Dollar, David. 1992. Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976-1985. *Economic Development and Cultural Change* 40(3) April: 523-44.
- Dollar, David, and Aart Kraay. 2000. Growth Is Good for the Poor. Development Research Group. World Bank, Washington, DC. March. Mimeo.
- Duryea, Suzanne, Olga Jaramillo, and Carmen Pagés. 2002. *Latin American Labor Markets in the 1990s: Deciphering the Decade*. Inter-American Development Bank Research Department Working Paper.
- Feenstra, R. C., and G. H. Hanson. 1996. Foreign Investment, Outsourcing, and Relative Wages. In R. C. Feenstra, G. M. Grossman and D. A. Irwin (eds.), *Political Economy of Trade Policy: Essays in Honor of Jagdish Bhagwati*. Cambridge, MA: MIT Press.
- . 1997. Foreign Direct Investment and Relative Wages: Evidence from Mexico's Maquiladoras. *Journal of International Economics* 42: 371-93.
- Feliciano, Zadia M. 2001. Workers and Trade Liberalization: The Impact of Trade Reforms in Mexico on Wages and Employment. *Industrial and Labor Relations Review* 55(1) October: 95-115.
- Fischer, Ronald D. 2001. The Evolution of Inequality after Trade Liberalization. *Journal of Development Economics* 66(2) December: 555-79.
- Freeman, Richard. 1995. Are Your Wages Set in Beijing? *Journal of Economic Perspectives* 9(3) Summer: 15-32.
- Galiani, Sebastian, and Pablo Sanguinetti. 2000. Wage Inequality and Trade Liberalization: Evidence from Argentina. Universidad Torcuato Di Tella. July.
- Ganuzza, Enrique, Ricardo Paes de Barros, Lance Taylor, and Rob Vos (eds.). 2001. *Liberalización, desigualdad y pobreza: América Latina y el Caribe en los 90*. PNUD, CEPAL. June.
- Gil Diaz, Francisco. 1999. Capital Flows to Latin America. In Martin Feldstein (ed.), *International Capital Flows*. National Bureau of Economic Research Conference Report series. Chicago and London: University of Chicago Press.
- Gonzaga, Gustavo, Naercio Filho, and Cristina Terra. 2001. Wage Inequality in Brazil: The Role of Trade Liberalization. PUC-Rio. September.
- González, Diana Alarcon, and Terry McKinley. 1997. Paradox of Narrowing Wage Differentials and Widening Wage Inequality in Mexico. *Development and Change* 28(3) July: 505-30.
- Guell, Robert C., and Donald G. Richards. 1998. Regional Integration and Intra-industry Trade in Latin America, 1980-90. *International Review of Applied Economics* 12(2) May: 283-300.
- Hanson, Gordon, and Ann Harrison. 1999. Trade, Technology, and Wage Inequality. *Industrial and Labor Relations Review* 52(2) January: 271-88.
- . 1999. Who Gains from Trade Reform? Some Remaining Puzzles. *Journal of Development Economics* 59(1) June: 125-54.
- Haskel, Jonathan, and Matthew J. Slaughter. 1999. *Does the Sector Bias of Skill-Biased Technical Change Explain Changing Skill Differentials?* NBER Working Paper no. 6565.
- . 2001. Trade, Technology and U.K. Wage Inequality. *Economic Journal* 111(468) January: 163-87.
- Heckman, James, and Carmen Pagés. 2002. Law and Employment: Lessons from Latin America and the Caribbean. May.
- Hungerford, Thomas L. 1995. International Trade, Comparative Advantage and the Incidence of Layoff Unemployment Spells. *Review of Economics and Statistics* 77(3) August: 511-21.
- Kletzer, Lori. 1998. Trade and Job Loss in US Manufacturing 1975-1994. NBER. February.
- Krugman, Paul, and Raul Livas Elizondo. 1996. Trade Policy and the Third World Metropolis. *Journal of Development Economics* 49: 137-51.

- Lall, Sanjaya. 1995. Employment and Foreign Investment: Policy Options for Developing Countries. *International Labour Review* 134(4-5): 521-40.
- Leamer, Edward E. 1998. In Search of Stolper-Samuelson Linkages between Trade and Lower Wages. In S. Collins (ed.), *Imports, Exports, and the American Worker*. Washington, DC: Brookings Institute Press.
- Leamer, Edward E., Hugo Maul, Sergio Rodríguez, and Peter K. Schott. 1999. Does Natural Resource Abundance Increase Latin American Income Inequality? *Journal of Development Economics* 59(1) June: 3-42.
- Lora, Eduardo. 1997. *A Decade of Structural Reform in Latin America: What Has Been Reformed and How to Measure It*. Inter-American Development Bank Research Department Working Paper 348. June.
- Macario, Carla. 2000. The Behavior of Manufacturing Firms under the New Economic Model. *World Development* 28(9) September: 1597-610.
- Marktanner, Marcus. 2000. Why Do Politicians in Developed Nations Prefer Foreign Trade Policy to Income Redistribution to Counteract Income Inequality Resulting from Globalization? *Global Business and Economics Review* 2(2) December: 235-45.
- Mazza, Jacqueline. 2001. Labor Intermediation Services: A Review for Latin American and Caribbean Countries. Sustainable Development Department, Inter-American Development Bank. Mimeo.
- Panagariya, Arvind. 2000. Evaluating the Factor-Content Approach to Measuring the Effect of Trade on Wage Inequality. *Journal of International Economics* 50(1) February: 91-116.
- Paus, Eva, and Michael D. Robinson. Real Wage Performance under Greater Trade Openness: Lessons from Latin America and Asia. *Journal of Developing Areas* 33(2) Winter: 269-88.
- Porto, Guido. 2001. The Distributional Effects of Mercosur Using Survey Data to Assess Trade Policy. Princeton University. Mimeo.
- Ravallion, Martin. 1997. *Can High-Inequality Developing Countries Escape Absolute Poverty?* World Bank Policy Research Department Working Paper no. 1775, Washington, DC. June.
- Revenga, Ana. 1997. Employment and Wage Effects of Trade Liberalization: The Case of Mexican Manufacturing. *Journal of Labor Economics* 15(3) July: S20-43.
- Robbins, Donald. 1996. Stolper-Samuelson (Lost) in the Tropics? Trade Liberalization and Wages in Colombia: 1976-1994. Harvard University.
- Robbins, Donald, and T. H. Gindling. 1999. Trade Liberalization and the Relative Wages for More-Skilled Workers in Costa Rica. *Review of Development Economics* 3(2) June: 140-54.
- Roberts, Mark J., and James R. Tybout. 1997. The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs. *American Economic Review* 87(4) September: 545-64.
- Robertson, Raymond. 2001. Relative Prices and Wage Inequality: Evidence from Mexico. Macalester College. Mimeo.
- . 2002. Trade Liberalization and Wage Inequality: A Review of the Latin American Experience. Inter-American Development Bank Research Department, Washington, DC. Mimeo.
- Robertson, Raymond, and Donald H. Dutkowsky. 2002. Labor Adjustment Costs in a Destination Country: The Case of Mexico. *Journal of Development Economics* 67(1) February: 29-54.
- Rodrik, Dani. 2001. The Global Governance of Trade as if Development Really Mattered. Trade and Sustainable Human Development Project, United Nations Development Programme. Mimeo.
- Rodrik, Dani, and Francisco Rodríguez. 1999. *Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence*. NBER Working Paper no. 7081. April.
- Slaughter, Matthew. 2000. What Are the Results of Product-Price Studies and What Can We Learn from Their Differences? In Robert C. Feenstra (ed.), *The Impact of International Trade on Wages*, National Bureau of Economic Research Conference.

- Spilimbergo, Antonio, Juan Luis Londoño, and Miguel Székely. 1999. Income Distribution, Factor Endowments, and Trade Openness. *Journal of Development Economics* 59(1) June: 77-101.
- Stolper, W., and P. Samuelson. 1941. Protection and Real Wages. *Review of Economic Studies* 9 (November): 58-73.
- Székely, Miguel. 2001. The 1990s in Latin America: Another Decade of Persistent Inequality, but with Somewhat Lower Poverty. Inter-American Development Bank Research Department Working Paper 454, Washington, DC. June.
- Thompson, Henry. 1995. Free Trade and Income Redistribution in Some Developing and Newly Industrialized Countries. *Open Economies Review* 6(3) July: 265-80.
- Tybout, James, and Daniel Westbrook. 1995. Trade Liberalization and the Dimensions of Efficiency Change in Mexican Manufacturing Industries. *Journal of International Economics* 39(1-2) August: 53-78.
- Tybout, James, Jamie de Melo, and Vittorio Corbo. 1991. The Effects of Trade Reforms on Scale and Technical Efficiency: New Evidence from Chile. *Journal of International Economics* 31(3-4) November: 231-50.
- Wood, A. 1997. Openness and Wage Inequality in Developing Countries: The Latin American Challenge to East Asian Conventional Wisdom. *World Bank Economic Review* 11(1) January: 33-57.