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3

The Causes and Consequences of Changing Income Inequality

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THIS CHAPTER attempts to reconcile the views of labor economists and trade economists. Labor economists and trade economists tend to operate differently, and it is a hard task to move people out of the paradigm they know.

The chapter has three goals. First, it attempts to synthesize the research to date on the contribution of international trade to rising income inequality in the United States and to labor market developments in other countries. The basic conclusion is that despite using very different methodologies, to date, on balance, most labor and trade economists agree that trade has accounted for a relatively small share of rising U.S. income inequality across skill groups. Other factors that play an important role seem to be demand shifts from skill-biased technological change, a deceleration in the growth of skilled-labor supply, and institutional factors such as declining unionization and falling real minimum wages.

Second, the chapter attempts to sketch out where research on trade and labor markets might go from here. In particular, we emphasize that research into how globalization has affected labor markets is far from complete. Trade economists in particular have tended to work from one perspective: the standard Heckscher-Ohlin trade model. This model has proven very useful, but it is not the only way of conceptualizing

how global integration might affect labor markets. Given this, the literature's current consensus that trade has played a smaller role than factors such as skill-biased technological change could be revised in the future. Additional research on globalization's role should try to balance sound theory with careful empirical work. Moreover, future research also should try to explain better the sharp rise in within-group (or "residual") wage inequality. Most of the research to date has focused on wage inequality across groups, but within-group inequality has been a major part of the overall inequality picture. To the extent that trade, technology, or other hypotheses cannot address this issue, our overall understanding of the causes of rising inequality will be limited.

Finally, the chapter discusses whether public policy solutions to rising inequality depend on understanding the exact causes. While the ongoing academic debate about the causes of rising inequality might help policy, an accurate understanding of these causes is not necessarily a precondition for most well-targeted policies. If policymakers want to help those whose relative (and, in many cases, real) incomes have fallen, sensible policies can be formulated without knowing these causes. The ongoing disagreement about causes does not imply there is disagreement about possible solutions.

The remaining sections summarize the basic facts about changing income distributions and the research to date about the causes, suggest directions for future research, and conclude by discussing the relevance (or lack thereof) of all this research to public policy.

The Research to Date

THE BASIC FACTS

The Current Population Surveys and other similar works have provided the main information about earnings inequality. Economists, primarily labor economists, have analyzed these data, which report on the earnings levels of millions of individuals, to determine the basic facts. Similar data files are available in many other advanced countries, and there has been a growing effort to compare and contrast the evidence for those countries with those for the United States.¹

Since the early 1970s the U.S. labor market has changed in three distinct ways. First, earnings have become much more unequal between more skilled and less skilled workers. For example, in 1979 male college-educated workers earned on average 30 percent more than male high school-educated workers. By 1995 this premium for college-educated workers had risen to about 70 percent. Within the class of male high school-educated workers, workers at the 90th percentile of the wage

distribution earned 60 percent more than workers at the 50th percentile in 1979. By 1995 this "90/50" gap had reached 83 percent. The overall wage distribution reveals a similar picture of rising inequality. Between 1979 and 1994 the ratio of the earnings of a male worker at the ninth decile compared with one at the median rose from 1.73 to 2.04. At the same time the earnings of that median male worker rose from 1.84 to 2.13 times the earnings of a worker at the first decile.²

The rise in U.S. earnings inequality observed is far from a global phenomenon. While many member countries of the Organization for Economic Cooperation and Development (OECD) experienced increases in earnings inequality during the 1980s, with the exception of the United Kingdom, the orders of magnitude were well below those experienced in the United States. Table 3-1 reports average five-year changes in the ratios of the ninth decile to the median and the median to the first decile. Only the United Kingdom and the United States have continued to experience a rapid rise in inequality into the 1990s, albeit it at a slower rate than occurred in the 1980s. While the tendency toward increased inequality appears to have slackened somewhat, only a few countries, notably Canada, Finland, and Germany, have actually experienced a decline in earnings dispersion over the last five or ten years.

Table 3-1 Average Five-Year Changes in Inequality since 1979

	1979-1989		1989-1994/95	
	D9/D5	D5/D1	D9/D5	D5/D1
Australia	.02	.02	.06	-.04
Austria	.02	.00	.00	.07
Belgium	-.01	-.02	-.02	-.02
Canada	.03	.08	-.01	-.13
Finland	.03	.00	-.02	-.10
France	.02	-.01	.01	.00
Germany	.01	-.12	-.03	-.08
Italy	-.03	-.23	.19	.32
Japan	.05	.00	-.02	-.07
Netherlands	.03	.00	.02	.01
New Zealand	.04	.05	.02	-.03
Sweden	.02	.01	.03	.00
United Kingdom	.09	.05	.03	.02
United States	.12	.11	.06	.07

Note: D9/D5 is the value of the ninth decile over the first decile. D5/D1 is the value of the fifth decile over the first decile.

Source: OECD, *Employment Outlook, July 1996* (Paris: OECD, 1996), table 3.1.

It should also be noted that the rise in U.S. inequality appears to predate increases occurring elsewhere.

While most OECD countries did not experience a sharp rise in inequality, many confronted increased unemployment. Table 3-2 presents the range of unemployment outcomes from 1973 through 1993 for a number of OECD countries. It is certainly true that, on average, earnings inequality did increase less, while unemployment increased more in Europe than it did in North America from 1979 to 1994. However, a number of countries are important exceptions. Of particular interest is the United Kingdom, which experienced *both* a rise in earnings inequality *and* a rise in unemployment.¹ Countries with a similar mix (albeit with less inequality) are Australia, New Zealand, and Canada. The unemployment experience of Belgium looks much like that in the United Kingdom despite the fact that it experienced a decline in inequality over the period. Unemployment in the Netherlands has been low and declining in the 1990s, alongside only a small rise in earnings inequality. Similar to the Netherlands are Austria, Japan, and Sweden. The experience of other OECD countries has been more mixed.

The second important change in the U.S. labor market has been that average real earnings have been growing much more slowly. In the 100 years to 1973, real average hourly earnings rose by 1.9 percent per year.

Table 3-2 Percentage Unemployment Rates, 1973-1993

	1973	1979	1985	1989	1993
OECD	3.3%	5.1%	7.8%	6.4%	8.0%
OECD Europe	3.0	5.6	9.9	8.5	10.4
of which EU	2.7	5.4	10.5	8.7	11.0
Australia	2.3	6.1	8.1	6.1	10.8
Austria	1.0	2.1	3.6	3.1	4.2
Belgium	2.4	7.5	12.3	9.3	10.3
Canada	5.5	7.4	10.4	7.5	11.2
Finland	2.3	5.9	5.0	3.4	17.7
France	2.7	5.9	10.2	9.4	11.5
Germany	1.0	3.2	8.0	6.8	8.8
Italy	6.2	7.6	10.1	11.8	10.8
Japan	1.3	2.1	2.6	2.3	2.5
Netherlands	2.2	5.4	10.9	8.3	6.2
New Zealand	0.2	1.9	4.1	7.1	9.4
Sweden	2.5	2.1	2.8	1.3	8.2
United Kingdom	2.2	4.6	11.5	6.1	10.2
United States	4.8	5.8	7.1	5.2	6.7

Source: OECD, *Labour Force Statistics, 1973-1993* (Paris: OECD, 1995).

Since 1973 Consumer Price Index (CPI)-deflated real wages have *fallen* by about 0.4 percent per year. The combination of flat average wages and rising inequality means that tens of millions of American workers have experienced stagnation or even absolute declines in their real earnings in recent decades. U.S. workers at the low end of the earnings distribution have suffered the most, particularly those in the lowest decile. For example, the real hourly earnings of high school-educated males fell by 20 percent from 1979 to 1993.⁴ In contrast, there has been considerable growth in real earnings at the top of the earnings distribution. Senior managers and executives have experienced large increases in real earnings over the last couple of decades, especially when total compensation, including stock options, is included.

In contrast to the United States, in most OECD countries, including the United Kingdom, there has been strong real earnings growth across the wage distribution. For only two countries (New Zealand and Australia) has a rise in earnings inequality implied weak growth or even declining real wages for workers at the bottom half of the earnings distribution.¹ In most industrial countries, low-paid workers have experienced real earnings growth over the last two decades.¹

There is mixed evidence whether families are able to mitigate the impact of increased earnings variability. Susan Dynarski and Jonathan Gruber report that households have responded to earnings variation by smoothing their consumption.¹ They find that roughly half of this consumption smoothing occurs through offsetting income flows, in particular through the tax and transfer system, with the other half coming through savings and dissaving. This consumption smoothing is fairly complete: Dynarski and Gruber report that only about 10 percent of the variation in a household head's earnings is translated into variation in nondurables consumption and 17 percent in durables. Consumption expenditures, particularly on durable goods, do appear to be much more responsive to unemployment-induced earnings reductions for low-education or low-wealth groups than for high-education or high-wealth groups. In contrast, however, Orazio Attanasio and Steven J. Davis report for the United States that, among the less educated, real household consumption fell sharply during the early 1980s in parallel with sharp declines in real wages for those groups.¹ Among the college educated, both real consumption and real earnings rose throughout the 1980s. Attanasio and Davis conclude that this strong correlation across groups between real consumption and real earnings represents a failure of the hypothesis of between-group consumption insurance.

The third important fact is that in most countries, the rise in inequality has occurred not only between workers of different skill levels but

also among workers *within* a given skill level. Among workers in the same occupation or with the same years of schooling and age, the higher-paid ones had larger increases in earnings than the lower-paid ones. Moreover, it appears that earnings inequality has risen within virtually all occupations. Panels A through C of Figure 3-1 illustrate the changes in inequality within groups for the United States, Great Britain, and France, respectively. Movements in inequality within groups, sometimes called "residual inequality," tracks closely overall change. It rose steadily in the United States from the 1970s, while it declined in Great Britain in the 1970s but rose in the 1980s. In contrast, residual inequality was generally flat throughout the 1970s and 1980s in France. In the United States rising residual inequality accounts for approximately half

Figure 3-1 Within-Group Wage Inequality

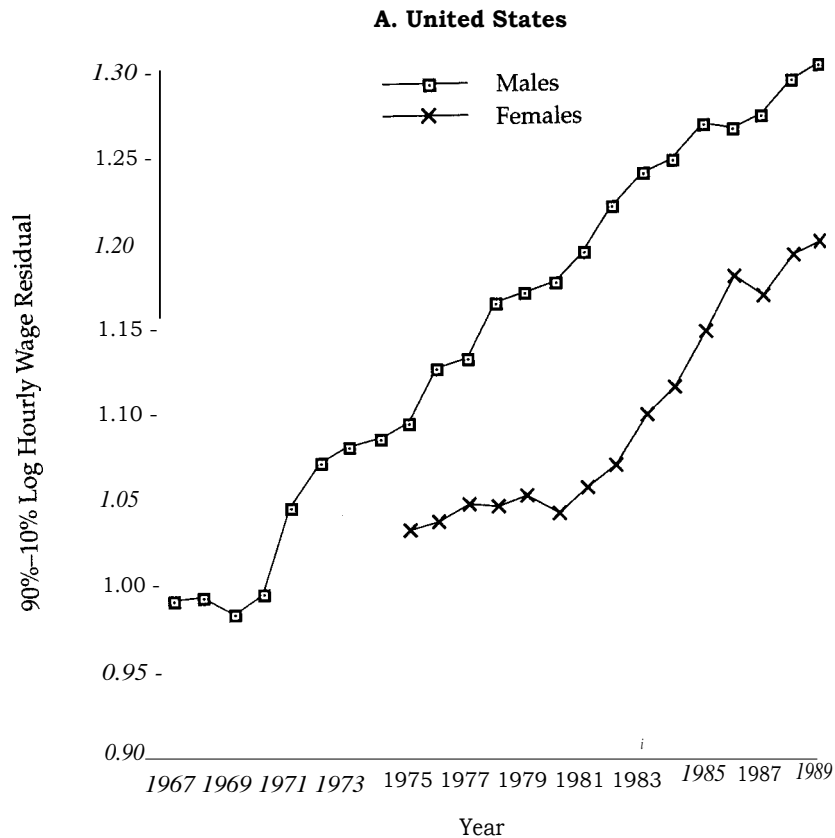
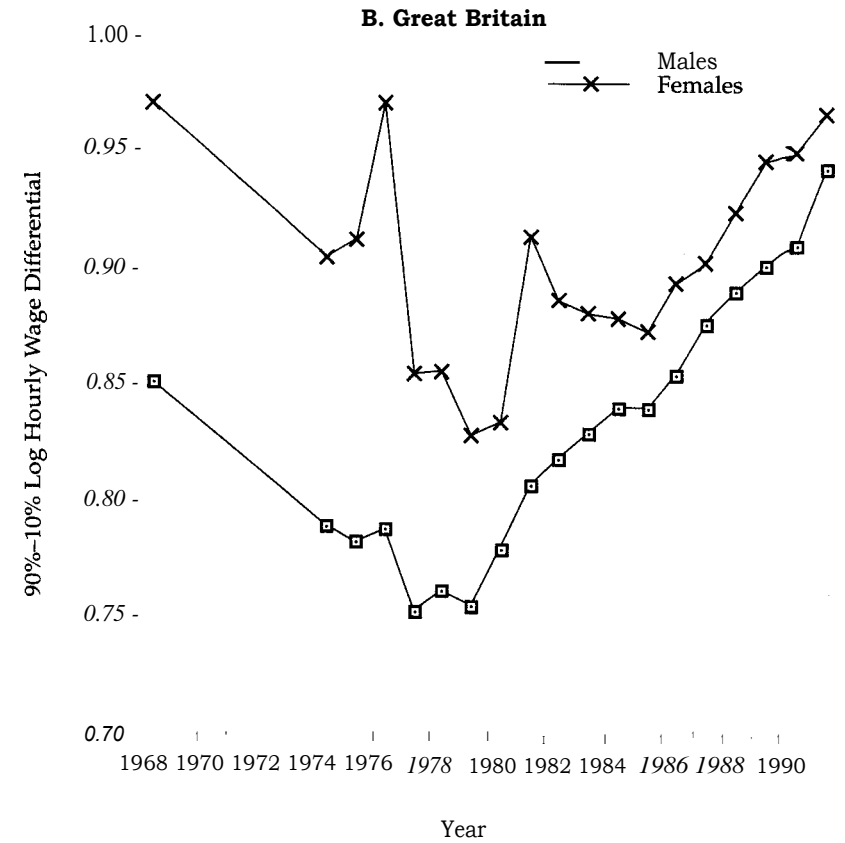
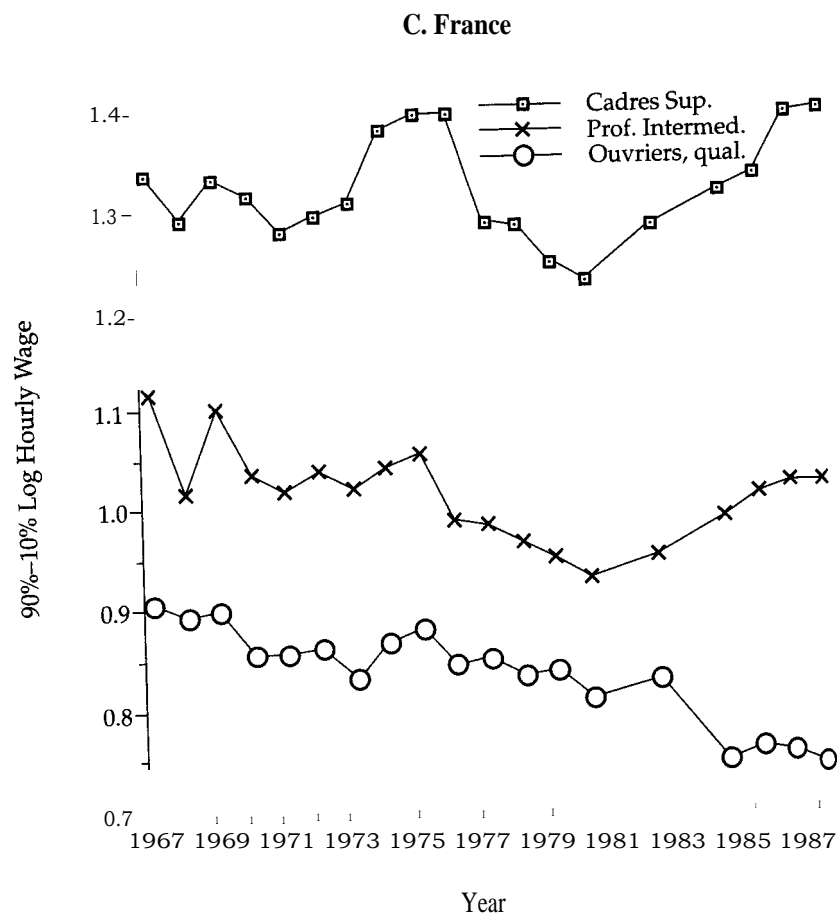


Figure 3-1 Within-Group Wage Inequality (Continued)



of the overall rise in wage inequality. Even if the differences between groups, such as the educational or wage premium, were to return to their 1979 levels (perhaps through an increase in the supply of skilled workers), overall inequality in the United States would still be higher than in earlier years.

In our view, any comprehensive explanation for the changes in wage inequality that have occurred over the past two decades has to be consistent with the rather different experiences that have occurred across countries. Moreover, it also must address rising inequality within skill groups as well as across groups. In what follows we examine possible explanations.

Figure 3-1 Within-Group Wage Inequality (Continued)

Source: Lawrence F. Katz, Gary W. Loveman, and David G. Blanchflower, "A Comparison of Changes in the Structure of Wages in Four OECD Countries," in Lawrence F. Katz and Richard B. Freeman (eds.), *Differences and Changes in Wage Structures* (Chicago: University of Chicago Press and National Bureau of Economic Research, 1995).

THE FRAMEWORK OF CAUSES: DEMAND, SUPPLY, AND INSTITUTIONS

There are three main candidates to explain rising inequality: shifts in relative labor demand, shifts in relative labor supply, and changes in labor market institutions. Within the set of demand-side and institutional explanations, those that have received the most attention are

international trade, technological change, the composition of aggregate demand, the decline in the real minimum wage, and deunionization. On the supply side, changes in the supply of educated workers have been emphasized as an importance influence. Presumably some combination of all of these has contributed to increased wage dispersion.

One broad point of consensus is that a primary cause of rising inequality has been a shift in relative labor demand toward more skilled workers. Lawrence F. Katz and Kevin M. Murphy document that for the U.S. economy overall, supply changes alone cannot explain rising income inequality.¹⁰ The main reason is that for most time periods and skill groups, both the relative earnings and relative supply of more skilled workers have been rising. Relative earnings can increase along with relative supply only if relative demand is increasing as well. Katz and Murphy conclude that demand growth has been an important component of the change in factor prices since 1963 and particularly during the 1980s. David H. Autor, Katz, and Alan B. Krueger also report an acceleration of the demand shift between the 1970s and 1980s relative to earlier decades.¹¹ Looking at just the manufacturing sector, Eli Berman, John Bound, and Zvi Griliches and Robert Z. Lawrence and Matthew J. Slaughter find the same trend: that even though the relative wage of more skilled workers has been rising, within most industries firms have been employing relatively more of these workers.¹² These facts point strongly toward a shift in labor demand.

THE INFLUENCE OF INTERNATIONAL TRADE ON LABOR DEMAND

Both trade and labor economists have studied whether international trade has contributed to the demand shift away from less skilled workers. To date, the majority of trade economists working in this area have tested trade's role in a Heckscher-Ohlin framework. The standard assumptions are that all countries make the same sufficiently diversified mix of products under perfect competition and with all factors (in particular, skilled and unskilled labor) perfectly mobile across industries. In this context the Stolper-Samuelson theorem predicts that international trade influences relative factor demands and thus factor prices.

The basic idea underlying all versions of the Stolper-Samuelson theorem is straightforward. International trade affects the prices of products, which, in turn, affect factor prices by changing relative factor demands.

Any trade-induced change in a country's product prices alters the relative profit opportunities facing its price-taking firms, which respond by shifting their resources toward (away from) those industries in which relative profitability has risen (fallen). This entails a shift in country-wide demand for factors of production: Demand rises (falls) for the factors used relatively intensively in the now relatively profitable (unprofitable) sectors. Given fixed factor supplies, changed factor demands mean changed factor prices. Thus trade influences relative factor prices via changes in the terms of trade—which may result from trade liberalization and other causes.

A number of papers have tested whether the Stolper-Samuelson process has contributed to rising income inequality. Several have examined changes in U.S. product prices to see whether the prices of unskilled-labor-intensive products have fallen relative to the prices of skilled-labor-intensive products. Jagdish Bhagwati analyzes the aggregate U.S. terms of trade (i.e., the price of U.S. exports relative to the price of U.S. imports) and finds they fell during the 1980s.¹³ This is evidence that skilled-labor-intensive products did not have relatively higher price increases (assuming exports employ skilled labor intensively relative to imports). Lawrence and Slaughter analyze various samples of industry-level U.S. manufacturing prices over the 1980s.¹⁴ They find no clear evidence that skilled-labor-intensive products had relatively larger price increases. Jeffrey D. Sachs and Howard Shatz argue that computer prices should be excluded from any analysis because these prices are measured poorly.¹⁵ For their restricted sample, Sachs and Shatz find that skilled-labor-intensive products had slightly higher relative price increases in the 1980s. Edward E. Leamer allows for various degrees of pass-through from technology changes (as measured by total-factor productivity growth) to product prices; he also analyzes the 1960s and 1970s as well as the 1980s.¹⁶ For all pass-through specifications for the 1980s and the 1960s, he finds no concentration of price increases in skilled-labor-intensive industries. However, he consistently finds relative price increases for the skilled-labor-intensive products for the 1970s. Like Learner, Robert E. Baldwin and Glen C. Cain control for the effect of technology on product prices, and they also conclude that trade seems not to have contributed to widening income inequality during the 1980s.¹⁷ Finally, Krueger finds that for a sample of 150 of the 450 four-digit Standard Industrial Classification (SIC) industries, from 1989 to 1995 skilled-labor-intensive industries did experience slightly higher product-price increases.¹⁸

On balance, then, these product-price studies generally find little evidence that trade contributed much at all to increased income inequality during the 1980s. Some studies do find evidence of relative price declines for unskilled-labor-intensive products during the 1970s and the 1990s. However, on many measures these were not periods of rapidly rising earnings inequality.

In contrast to these product-price studies, many labor economists and some trade economists have analyzed the effect of trade flows—exports and imports. The difference in focus can be attributed in part to the fact that many labor economists have expressed concern about the quality of aggregate price data. For example, Freeman worries that "price data is subject to serious measurement problems. Import prices exist for relatively few industries and cover only some goods in those industries. Output prices suffer from an aggregation problem, since the sectors with imports presumably include domestic goods that differ in important dimensions from the imports. Changes in the quality of products not captured in the indices create measurement error, which may be correlated with the skill intensity of production."¹⁹ In addition to concerns about data quality, many economists also worry that product-price studies do not control adequately for nontrade influences on these prices.

Given these concerns, various authors have searched for effects of trade in output or employment quantities. Bound and Johnson treat trade as a product-demand shock and find that it explains very little of the rise in inequality.²⁰ Berman, Bound, and Griliches assume that trade operates by shifting demand *across* industries only (which could be true, for example, with fixed-input production technologies and an unchanging set of industries produced).²¹ Yet they calculate that the large majority of the manufacturing-wide demand shift occurred *within* industries. From this they conclude that trade played no important role. L. G. Kletzer uses industry-level data on the United States drawn from the March Annual Demographic Files of the Current Population Survey and finds that foreign competition accounts for a relatively small share of employment and wage changes.²² Furthermore, Davis, J. Haltiwanger, and S. Schuh examine firm- and plant-level data from the Census of Manufactures over many years and find no evidence that either job creation or job destruction varies across industries according to the trade flows in those industries.

Other studies have focused on trade volumes. Paul R. Krugman calibrates a simple general-equilibrium model of the U.S. economy to consider what changes in relative product prices and wages would be consistent with the observed increase in imports from less developed

countries (LDCs).²⁴ In his model, the small amount of imports that enter the United States from LDCs (1.6 percent of total OECD output in 1990) corresponds to very small changes in relative product prices and relative wages—magnitudes he terms well within measurement error. George J. Borjas, Freeman, and Katz argue that the effect of trade on labor markets can be thought of as working through factor supplies, not factor demands: Imports from developing countries are treated as an increase in the U.S. relative endowment of less skilled labor while exports reduce it.²⁵ Using input-output tables to infer from observed U.S. trade flows the implicit quantities of factor services embodied in these flows, they calculate that the large U.S. trade deficits from 1980 to 1985 can account for approximately 15 percent to 20 percent of the total rise in income inequality. But they also conclude that this effect dissipated in later years as the trade deficit shrank relative to total output. Using a similar methodology, in a later paper they conclude that U.S. trade—particularly trade with less developed countries—accounts for less than 10 percent of either the rise in the college/high school wage differential or the drop in relative wages of high school dropouts.

Many trade economists believe that these quantity studies—particularly the trade volume studies—have serious problems. A major issue has been the conditions under which trade volumes correctly identify the effect of trade on relative factor prices.²⁷ One serious problem with relying on trade volumes is they are endogenous outcomes: that is, trade flows are the outcome of decisions of producers and consumers worldwide. Trade volumes are not exogenous causes, and they can change for nontrade reasons, such as a rise in aggregate demand triggered by higher government spending.

The methodological issues surrounding the proper way to gauge trade's role have not been resolved. Nevertheless, what is important to emphasize is that the large majority of studies to date—regardless of their methodology—find only a small role for international trade in rising U.S. income inequality. Product prices, labor shifts, trade flows: All these data have been analyzed in different ways, and the recurring conclusion is that trade has not mattered much.

OTHER INFLUENCES ON LABOR DEMAND: SKILL-BIASED TECHNOLOGICAL CHANGE

It is fair to say that, at present, many economists think that the biggest single cause of changes in the U.S. income distribution is technological change. In most studies, the conclusion that technology is the main culprit has not been drawn from direct observation or measurement.

Rather, it is the residual explanation—it is largely a name for our ignorance. The often-made argument is "it isn't X, Y, or Z so it must be skill-biased technical change."

A few recent papers provide direct evidence of this technological shift and link it to wage outcomes. Berman, Bound, and Griliches present several case studies that document the technological changes that have occurred in industries experiencing large shifts toward more skilled workers.²⁸ Following this work, Berman, Bound, and Steve Machin present evidence that many OECD countries have experienced rising relative employment of more skilled workers within the same industries.²⁹ This, they argue, is evidence that the skill-biased technological change is a global phenomenon. Krueger demonstrates evidence that people who use computers on the job tend to earn more than similar workers who do not use computers on the job.³⁰ And Autor, Katz, and Krueger analyze several plausibly direct measures of technological change (e.g., rising investment in office equipment) and find a high correlation across industries between these direct measures and indirect measures such as rising skilled labor shares of the total wage bill.³¹

But the evidence in favor of the skill-biased technological change hypothesis is not without its own set of problems. John E. DiNardo and Jorn-Steffen Pischke emphasize the difficulty in inferring causation between income inequality and measures of computer usage.³² Rather than the computers causing higher wages for the users, it might be that the more skilled, higher-paid workers tend to choose jobs using computers. Also, the technology story is not easily reconciled with sluggish growth in average U.S. real wages. Real wages approximately equal labor productivity: if massive investments in new computer technologies have been made, why have these investments not lifted average labor productivity and, thus, wages? Finally, it might be wondered why, if technological changes have been similar across countries (as Berman, Bound, and Machin suggest), they have not produced similar inequality outcomes.

More generally, we would argue that research to date has not demonstrated that labor demand factors explain much of the differential growth of wage inequality among countries. In fact, all advanced countries have experienced large, steady shifts in the industrial and occupational structure of employment toward sectors and job categories that use a greater proportion of more educated workers.³³ Also, the share of employment in manufacturing declined everywhere except in Japan. Perhaps differential labor demand shifts help explain the experiences of different countries. But if this is the case, it will need to be demonstrated

that different countries have experienced different combinations of trade policy changes as well as differences in the rate of new-technology adoptions, fiscal policies, and other factors affecting the demand for products and factors.

THE ROLE OF SUPPLY CHANGES

Current research does indicate that differences among countries in growth in the supply of workers has contributed to the greater rise in skill premiums in the United States than in other countries. In the United States in the 1970s, the baby-boom cohort moved from college to the labor market, increasing the relative supply of more skilled workers. But in the 1980s the baby boom busted and growth in the relative supply of more skilled workers slowed considerably. These changes help explain why the U.S. college—high school wage differential fell during the 1970s and then reversed around 1979. Table 3—3 illustrates the differential growth rates of college-educated workers in the United States, Britain, France, and Japan. Katz, G. Loveman, and David G. Blanchflower found that, under a set of plausible assumptions, such differences can account for a large portion of the declining U.S. skill premium in the 1970s and its rise in the 1980s.³⁴

Some of the supply changes might reflect a nontrade aspect of globalization: immigration. There are two key facts here. First, immigration rates have risen sharply since around 1970. Second, since about that time U.S. immigrants' average skill levels have been declining.³⁵ Today one-third of U.S. high school dropouts are foreign-born. Recent immigrants might have helped expand the relative supply of less skilled workers during the 1980s and thus put downward pressure on the wages of less skilled U.S. natives who compete with these immigrants for jobs.

The evidence on immigration's contribution to rising income inequality is mixed. Some studies find that immigration-driven supply shifts have *not* contributed very much to wage dispersion. David Card cites many papers that report very small effects of immigrants on native wages: The ballpark figure is that a 10 percent increase in the fraction of immigrants in an area reduces native wages by less than 1 percent.³⁶

But there is a methodological debate among labor economists on this point. Most of these studies have used cities (or metropolitan statistical areas) as the unit of observation. Borjas argues that this approach ignores the possibility that workers move across cities and

Table 3-3 Growth Rates of Male and Female College-Educated Workers in Four Countries

	Annual Log Growth Rates	
	1969-1979	1979-1989
United States		
Employees age 18-64	.043	.023
Population age 18-64	.043	.026
Britain	1973-1979	1979-1989
Employees age 16-60	.068	.037
Population age 16 - 60	.068	.037
France	1970-1980	1980-1989
Labor force age 15+	.039	.050
Population age 15+ (males)	.045	.039
Population age 15+ (females)	.026	.046
Japan	1971-1979	1979-1987
All employees age 15+	.050	.029

Source: Reprinted, with permission of the publisher, from L. Katz, G. Loveman, and D. Blanchflower, "A Comparison of Changes in the Structure of Wages in Four OECD Countries," in L. Katz and D. Freeman (eds.), *Differences and Changes in Wage Structure*, (Chicago: University of Chicago Press and NBER, 1995), p. 48.

regions.³⁷ This mobility can diffuse the impact of immigrants from their destination city throughout the national labor market. If native workers can leave a city when immigrants arrive or if outside native workers can choose not to relocate to that city, then the labor supply change in the destination city can be much smaller than the total immigrant inflow. Thus, wages decline everywhere, not just in the destination city (although presumably the nationwide decline is much smaller than the destination-city decline would be if native workers were immobile). To measure accurately the impact of immigrants on wages, the entire United States must be studied. With this national perspective, Borjas, Freeman, and Katz find that immigration has sharply pressured the earnings of the least skilled Americans.³⁸ Specifically, post-1979 immigration can account for between 27 and 55 percent of the decline in the relative wages of high school dropouts. However, immigrants can explain no more than 10 percent of the decline in the wages of high school graduates relative to college graduates.

Immigration seems to have mattered less in the rest of the OECD. Immigration flows have been small in the United Kingdom since 1980, yet they were substantial in the period of declining wage inequality before 1970. Similarly, immigrant flows into France and Germany appear to have coincided with a narrowing, not a widening, of the earnings distribution.

THE ROLE OF LABOR MARKET INSTITUTIONS

In addition to supply and demand, a third possible influence on relative wages is labor market institutions interacting with supply and demand. The two most important ones are unions and minimum wages. And the broad evidence here is that both have mattered: In the two OECD countries with the strongest rise in inequality during the 1980s (the United States and the United Kingdom), both of these institutions weakened in ways that tended to exacerbate inequality.

The decline in trade unions might be an important explanation of rising inequality. Unions reduce inequality by standardizing pay rates among workers within an establishment and across establishments. The threat of unionization also forces nonunion employers to raise pay or benefits to keep unions out. Thus, strong unions generally mean less inequality.

Table 3-4 reports union density rates across countries. In the United States, union density has declined dramatically since 1970. The U.S. decline is greater than in other countries and predates declines elsewhere—as does the nation's rise in inequality. In the United Kingdom, unionization rose strongly in the 1970s and then declined subsequently. Again, this trend closely tracks the inequality changes over the period. In the rest of the OECD the evidence is more mixed. Some countries (e.g., Denmark and Sweden) saw increased union density over the period. Others experienced declines in union density in the 1980s, with some experiencing recovery or no further declines in the 1990s. Moreover, the decline in earnings inequality in the 1990s that occurred in a number of countries (Belgium, Canada, and Germany) is associated with stabilizing or even slight increases in density in a number of countries (Japan, Netherlands, Norway, Canada, and Germany).

Minimum wages obviously tend to reduce inequality, at least among the employed. The fall in the real minimum wage also seems to have contributed to rising inequality in the United States and United Kingdom. The real value of the minimum wage in the United States declined substantially over the period 1970 to 1990, and even with recent

Table 3-4 Union Density Across OECD Countries, 1970-1994

	1970	1980	1990	1993
Declining Density				
Austria	61.3	56.2	45.9	43.2
France	22.0	17.5	9.5	8.8 (1992)
Greece	-	47.7 (1977)	34.1	31.8
Japan	34.7	30.8	25.2	24.2
Portugal	-	60.7 (1984)	31.8	-
Turkey	-	29.2	21.5 (1989)	-
United States	27.3	22.3	15.9	15.3
Sharp Rises in Density				
Denmark	60.0	76.0	73.0	76.3
Finland	51.4	69.8	72.0	80.1 (1994)
Iceland	-	68.1 (1979)	96.4	-
Spain	-	12.5	16.1	22.0
Sweden	67.7	80.0	84.0	90.5 (1994)
1970s rises; Declines in 1980s and 1990s				
Australia	44.2	49.9	40.8	35.0 (1994)
Ireland	53.1	57.1	51.7	49.2 (1992)
Luxembourg	46.8	52.2 (1981)	49.7 (1987)	-
New Zealand	40.8 (1972)	47.7 (1981)	45.5	30.1
Switzerland	28.3	30.7	26.6	25.7 (1992)
United Kingdom	44.8	50.7	39.1	36.3
Declining density in 1980s; Stabilizing in 1990s				
Belgium	47.1	55.9	51.2	52.9 (1992)
Canada	31.0	36.1	35.8	37.4
Germany	33.0	35.6	32.9	33.2 (1994)
Italy	36.3	49.3	38.8	38.8 (1992)
Netherlands	38.0	35.3	25.5	25.5 (1994)
Norway	54.9	56.9	56.0	58.1 (1994)

Notes: Data for Canada, Greece, Iceland, Luxembourg, New Zealand (1970–1986), Portugal, and Turkey is membership including retired and unemployed members as a percent of wage and salary earners in employment. For the remaining countries it excludes from the numerator union members who were retired or unemployed.

Administrative data based on union files used with the following exceptions. Survey data used in the United States, 1980–; Australia, 1990–; New Zealand, 1989–. Confederation data used in France, Greece, Iceland, Luxembourg, Portugal (1990), Spain (1977–1979), and Turkey.

Source: Katz, Loveman, and Blanchflower, "A Comparison of Changes in the Structure of Wages in Four OECD Countries," pp. 54-55.

increases it remains very low by historical standards. In the United Kingdom, wages councils, which set sectoral pay rates for the young and the unskilled, were gradually abolished during the 1980s. Even though the abolition appears to have had little impact on employment, it appears to have reduced wages at the low end. Here again the United States and the United Kingdom look different from other OECD countries. For example, strong rises in France's minimum wage appear to have prevented a sharp erosion in real wages at the low end of the French wage distribution⁴⁰

Overall, then, the timing of changes in these institutions and wage inequality suggests a link between them. More systematic research has supported this view. Freeman argues that one-fifth of the total rise in inequality can be attributed to declining union power.⁴¹ Blau and Kahn argue that more decentralized wage-setting mechanisms in the United States account for the greater rise in male wage inequality in the United States than in other countries.⁴² And Nicole Fortin and Thomas Lemieux (and, relatedly, John E. DiNardo, Fortin, and Lemieux) argue that one-third of the total rise in U.S. wage inequality in the 1980s can be attributed to declines in unionization and the real minimum wage along with economic deregulation.⁴³

Conclusion About the Current Evidence on Inequality Causes

Research to date does not allow the precise allocation of the relative contribution of demand, supply, and institutional forces to rising U.S. wage inequality. However, at this time most economists agree that trade has not been a major factor in the shift in labor demand away from less skilled and toward more skilled workers. Other factors playing an important role seem to be demand shifts from skill-biased technological change, a deceleration in the growth of the skilled-labor supply, and institutional factors such as declining unionization and falling real minimum wages.

Future Research: The Need to Test Other Aspects of Globalization

Where might research go from here? To answer this question, first we highlight some of the important differences in thinking among labor and trade economists. We will then discuss how bridging these differences might help direct future work.

THE DIFFERENCES BETWEEN LABOR ECONOMISTS AND TRADE ECONOMISTS

As the research has progressed, methodological debates have emerged—at times quite spirited. There have been disagreements between trade economists, between labor economists, and between trade economists and labor economists. At the risk of overgeneralizing, it is probably fair to say that many of the "trade vs. labor" debates reveal fundamental methodological differences between the two fields. Trade economists tend to value clear general-equilibrium thinking, whereas labor economists tend to value careful empirical work. The reasons for this difference in relative values is not entirely clear. History might explain part of it. For a long time labor economists have had more and higher-quality data sets available than trade economists. Perhaps over time those lacking data concentrated on theoretical issues while those with data focused on empirical issues. Whatever the reasons for these taste differences, they clearly have driven many of the methodological debates. Some trade economists fault labor economists for being atheoretical while some labor economists fault trade economists for sloppy empirical work and untestable theories.

In particular, some trade economists argue that labor economists miss many of the important general-equilibrium insights of trade theory. Trade economists tend to prefer to think about—and to analyze empirically—many markets simultaneously. This is crucial, because many of trade theory's key insights, such as the Stolper-Samuelson theorem, rely on interactions among product and factor markets. Labor economists who focus on an individual labor market or markets will necessarily miss these general-equilibrium issues.

Some labor economists respond that because there are few appropriate instruments in the labor market to solve endogeneity problems, identification is difficult to achieve. When set alongside the serious aggregation and omitted variable biases associated with estimating general equilibrium models, there is a widely held view that such models are unlikely to produce useful insights. More generally, labor economists also seem skeptical about the validity of some of the basic assumptions of most trade theories.

For example, standard trade theory assumes that factor markets are perfectly competitive—that every factor earns its marginal revenue product. There is a good deal of evidence, however, that rent-sharing is prevalent and hence that labor markets should be characterized as non-competitive⁴⁴ This is especially true in Europe, and a growing body of

evidence finds this even in the United States and Canada.⁴⁵ Similarly, standard trade theory assumes perfect interindustry factor mobility within countries. This implies, among other things, that the same factor should earn the same wage in all industries. Yet labor economists have assembled a large body of evidence that interindustry wage differentials are sizable, persistent over time, and stable across countries.^o

RECONCILING METHODOLOGIES: WHAT CAN BE DONE?

It is probably true that most labor and trade economists could learn something from the other group. Labor economists probably should think harder about the theory underlying their data analysis, while trade economists should worry more about data quality and about how their theories accord with basic facts.

This learning could help push the research on trade and labor markets in a much-needed direction. The literature's current best guess that trade has played a smaller role than other factors, such as skill-biased technological change, should be prudently regarded as tentative, because this conclusion depends so strongly on research from one perspective: the Heckscher-Ohlin model. The model's detailed analysis of multiple factor and product markets makes it a natural tool to study a general-equilibrium problem such as trade and wages. However, many issues regarding how trade—and globalization more generally—affects labor markets remain understudied.

What has not been looked at? First, many nontrade aspects of globalization. We still know very little about how the U.S. labor market may have been affected by exchange-rate volatility or increased international capital mobility. Second, it may be that "nontrade" influences on labor demand are themselves driven by international trade. Might not the pace of technological change depend on (among other things) the competitive pressures generated by international trade? Adrian Wood calls this type of technological change "defensive innovation": Firms innovate only when forced to defend existing market positions against international competitors.⁴⁷ Another idea that warrants further exploration is that deunionization reflects (again, among other things) the competitive pressures generated by international trade.

These aspects of globalization seem plausible. There are anecdotes of firms adopting information technology in order to remain internationally competitive. Similarly, there are anecdotes of firms gaining bargaining strength against unions by threatening to hire foreign fac-

tors of production (via foreign direct investment or outsourcing to foreign suppliers).

The difficulty is to find appropriate empirical tests to distinguish between these competing explanations. Anecdotes help direct research, but as trade theory rightly emphasizes, they must hold up in general equilibrium. To the extent that the data permit, these issues, like the product price studies, are best addressed with broad data sets. On the other hand, these are subtle questions that may be better analyzed with industry- or firm-level data. Careful consideration should be given to balancing a general-equilibrium focus against industry-level and firm-level case studies for which better-quality data can be obtained.

Some researchers have moved beyond Heckscher-Ohlin models and factor-content studies to analyze the effects of globalization. For example, Robert C. Feenstra and Gordon Hanson consider the factor price implications of Ricardian trade among countries making different sets of products (distinct from the standard Heckscher-Ohlin assumption that all countries make the same set of products):⁸ Slaughter considers whether foreign direct investment by multinational corporations has contributed to U.S. income inequality.⁴⁹ Borjas and Valerie A. Ramey analyze whether international trade has pressured imperfectly competitive industries to squeeze the rents earned by less skilled workers in those industries.⁵⁰ And Slaughter considers whether international trade has pressured U.S. labor markets not by changing the prices of factors but by changing the elasticities of demand for factors.⁵¹ It is worth noting that in some cases, the results suggest an important role for trade in explaining rising inequality. More research along these lines will expand our understanding of trade and labor markets.

In proposing future research directions, more attention should be paid to explaining residual (within-group) inequality. This inequality likely will be difficult to reconcile with models that group factors of production based on observable characteristics. The problem affects not only standard trade models but many labor models as well. A comprehensive trade-based explanation of residual inequality will have to expand standard trade models to incorporate some explanation of this dimension of inequality.

Overall, research into how trade and other aspects of globalization have affected labor markets is far from complete. Therefore, economists' current best guess that trade and other globalization considerations have played only a small role may be subject to revision. If progress is to be made, research will need to develop theories with clear empirical predictions that can be tested against the available data.

Public Policy Responses to Rising Inequality: Do the Causes Matter?

Many sensible public policy responses to rising inequality can be undertaken without knowing the exact combination of the causes, primarily because the policy principle of targeting should be followed. That is, any policy undertaken to reduce wage inequality should attempt to create as few distortions—and thus generate as little economy-wide deadweight losses—as possible.

The appropriateness of the targeting principle can be debated. There are many philosophical and political arguments why aggregate efficiency gains may be weighted less relative to equality goals such as reducing inequality. Nevertheless, this principle seems to be the most appropriate one because in reality, it seems to have guided many recent U.S. economic policies. A good example of this has been the country's overall support of freer trade since 1945 through ongoing rounds of negotiations through the General Agreement on Tariffs and Trade (GATT).

The targeting principle suggests that many of the major research questions regarding rising inequality are largely irrelevant for formulating sound redistributive policies. For example, consider the major issue of whether the demand shift away from less skilled workers has been caused by international trade and/or skill-biased technological change. Both international trade and technological innovation generate aggregate gains for society, even in cases where they hurt particular groups within society. In light of these aggregate gains, redistributive policies should not attempt to restrict international trade or technological innovation. Doing so would incur unacceptably high costs for society overall.

On the supply side, however, knowing whether immigration is contributing to rising inequality might help inform policy debates. In particular, if the balance of evidence indicates that immigrants are putting downward pressure on less skilled wages, then policies such as tightening the skill criteria for immigrants might make sense. Even if this were the case, targeting suggests that if immigration generates aggregate gains for society, policies should not attempt to restrict immigration more than current policies already do.⁵² Conceptually, one difficult issue here is how to define society: including or excluding the new immigrants?

As for labor market institutions, even if their decreased role has contributed to rising inequality, it is not clear that policies to reassert their

role would be well targeted. Minimum wages, for example, are usually regarded as inefficient because of the costs they impose on firms and on displaced workers. The trade-off between the efficiency and equity of labor market institutions like the minimum wage is not entirely clear. Recent research suggests that the efficiency costs of minimum wages, when the level of the minimum is low, may be smaller than commonly supposed. However, there is still widespread belief that the trade-off is large enough that policies that target institutions are not the best ones.

All this suggests that the best solution is to target the problem—low incomes for less skilled workers—as directly as possible. This means short-term solutions such as earned income tax credits and (perhaps) long-term solutions aimed at facilitating the acquisition of skills through education and retraining.

Obviously, it is far from obvious how public policies can facilitate the acquisition of skills. For example, the broad goal of "better education" might be proposed. One issue this immediately raises is its long-term nature. Increasing the supply of more skilled workers through education takes decades; does this really help the less skilled workers already in the labor force and unlikely to return to school? "More retraining for current workers" might be the broad response to this issue. But for whom, and financed by whom?

More generally, the role public policy can and should play in education and training is an extremely complicated problem involving a large set of issues related to access, financing, methods, and standards. Existing research by economists and others demonstrates this quite clearly. Even the modest goal of limiting policy to just helping solve market failures is difficult, at least partly because the identity of these failures is not entirely agreed upon. But it is important to stress that these issues exist regardless of the causes of rising inequality—and solving these issues almost certainly does not require an exact understanding of the causes of rising inequality. How best to educate children, for example, is a policy problem independent of relative wages and issues such as how open a country is to international trade.

Unfortunately, there is no political consensus in the United States (or elsewhere) that action should be taken to counteract rising inequality. In the current U.S. political discussions, the problems of the less skilled is not a major issue. One argument against any policy response is that rising income inequality is a temporary development to which market forces will respond appropriately. In particular, on the supply side, people respond to higher returns to skill by acquiring more skills through education and retraining. Again, this argument returns to the issue of what role public policy should play in the process of skills acquisition.

However, it also returns to the point that these policy discussions largely do not depend on knowing the exact causes of rising inequality.

It is on this point that the two coauthors agree most strongly. While we still have very different opinions about how good research relates theory, testable hypotheses, and data, we agree quite strongly that the economics of proper policy interventions is relatively clear—and we conjecture that a large majority of economists agree on this point. There is still much to be learned about the causes and consequences of changing wage inequality, but these causes are largely irrelevant for designing appropriate policy responses.

Notes

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1. For some of these papers, see Richard B. Freeman and Lawrence F. Katz (eds.), *Differences and Changes in Wage Structures* (Chicago: University of Chicago Press and National Bureau of Economic Research [NBER], 1995).
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4. Declines of this magnitude are reported by Richard B. Freeman, "Are Your Wages Set in Beijing?" *Journal of Economic Perspectives* 9, no. 3 (Summer 1995), pp. 15-32, and by Lawrence Mishel and Aaron Bernstein, *The State of Working America, 1994-95* (Armonk: M. E. Sharpe, 1994).
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6. OECD, *Economic Outlook 1996*.
7. Susan Dynarski and Jonathan Gruber, "Can Families Smooth Variable Earnings?" mimeo., MIT, July 1997.
8. Orazio Attanasio and Steven J. Davis, "Relative Wage Movements and the Distribution of Consumption," *Journal of Political Economy* 104, no. 6 (December 1996), pp. 1227-62.
9. It is called "residual inequality" as it arises, as it is usually estimated as a residual from a regression of log hourly wages on a set of education, experience, and race dummies with interactions, separately by year and gender. See Katz, Loveman, and Blanchflower, "A Comparison of Changes in the Structure of Wages in Four OECD Countries."
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11. David H. Autor, Lawrence F. Katz, and Alan B. Krueger, "Computing Inequality: Have Computers Changed the Labor Market?" *Princeton University Industrial Relations Section Working Paper* no. 377 (March 1997).
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13. Jagdish Bhagwati, "Free Traders and Free Immigration: Strangers or Friends?" *Russell Sage Foundation Working Paper* (1991).
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26. George J. Borjas, Richard B. Freeman, and Lawrence F. Katz, "How Much Do Immigration and Trade Affect Labor-Market Outcomes?" *Brookings Papers on Economic Activity* 1 (1997), pp. 4-90.
27. Comprehensive surveys of many of the issues include: Jagdish Bhagwati and Vivek Dehejia, "Free Trade and Wages of the Unskilled: Is Marx Striking Again?" pp. 36-75; and Alan Deardorff and Dalia Haikura, "Trade and Wages: What Are the Questions?" pp. 76-107, both in Jagdish Bhagwati and Marvin Kosters (eds.), *Trade and Wages* (Washington, D.C.: American Enterprise Institute, 1994); see also J. David Richardson, "Income Inequality and Trade: How to Think, What to Conclude," pp. 33-55; and Adrian Wood, "How Trade Hurt Unskilled Workers," pp. 57-80, both in *Journal of Economic Perspectives* 9, no. 3 (Summer 1995).
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52. See, for example, Borjas, "Economic Benefits from Immigration," for calculations on the size of this aggregate gain.