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# **How Does Increasing Integration into the Global Economy Affect Sustainability?**

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## How Does Trade Affect the American Worker?

*[A]n increase in U.S. trade deficits will eliminate relatively more high-wage jobs, especially for workers with less than a college education. . . . [A]verage incomes will decline . . . as trade deficits grow.*

—Robert E. Scott and Jesse Rothstein, “American Jobs and the Asian Crisis: The Employment Impact of the Coming Rise in the U.S. Trade Deficit,” Briefing Paper, Economic Policy Institute (January 1998)

*Trade deficits do not cost jobs. In fact, rising trade deficits correlate with falling unemployment rates. . . . If the trade deficit really is one of our nation’s most pressing problems, the surest and swiftest way to tackle it would be to engineer a deep recession.*

—Daniel T. Griswold, “America’s Maligned and Misunderstood Trade Deficit,” Center for Trade Policy Studies, Cato Institute (24 April 1998)

Policy discussions at all levels as well as academic research have been marked by a good deal of rhetoric on the relationship between the globalization of the US economy and the dynamics of the US labor market. Imports and the growing trade deficit have been cited as important (or even principal) causes of the loss of manufacturing jobs, the increase in income inequality, and the stagnation in real wages. Policy discussions and research alike have sometimes confounded two factors that affect the relationship between globalization and the labor market. The first is how changes in the *trade balance* affect the labor market, and the second is how changes in *export and import flows*, the components of the trade balance, affect the labor market.

A close look at the trade balance reveals its macroeconomic underpinnings: Trade deficits are driven by expenditure greater than production at home and by faster growth at home than abroad. Contrary to the rhetoric, the trade deficit widens when US growth is good and job opportunities abound, and it shrinks when an economic slowdown occurs and the unemployment rate rises. Thus the relationship between the trade balance and overall conditions in the labor market is quite clear.

The more complex relationship is in how trade flows, and particularly the changing levels and composition of trade, affect workers. Some research does suggest that imports have contributed to wage inequality in the United States, but these conclusions could be significantly biased by the exclusion of exports from these analyses. More important, less research considers how relative wages are affected by technology as well as by trade.

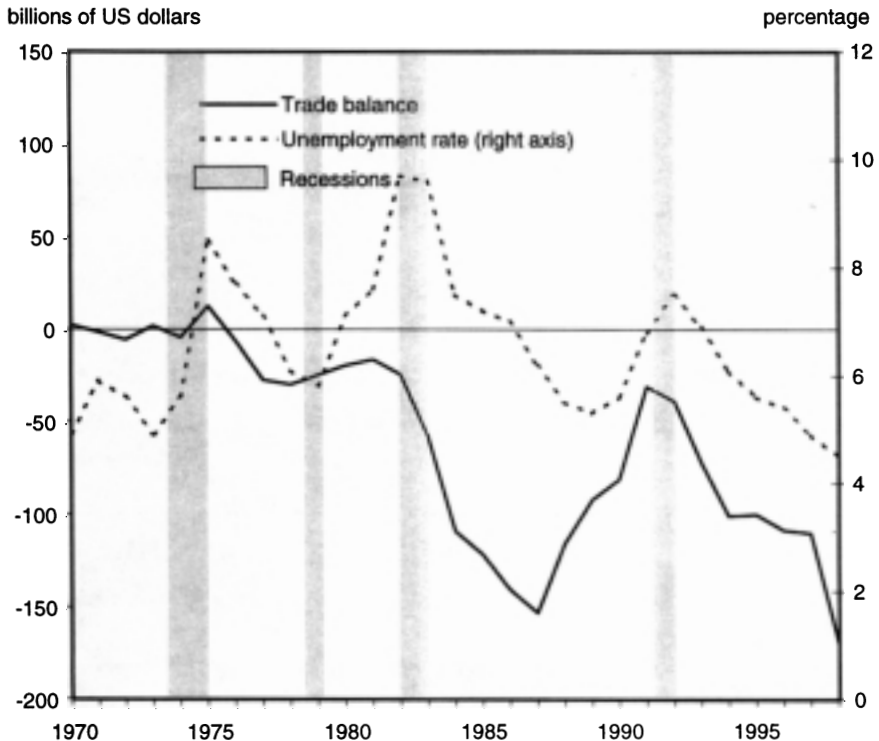
Indeed, empirical investigations that try to explain labor market conditions in the United States principally by using the forces of trade cannot explain two general observations about how the US labor market has changed over the past two decades. First, although the relative wages of unskilled labor have fallen, rather than using more of this cheaper labor, firms in fact use less of it and instead employ more skilled labor. Second, a closer examination of the rising income or wage inequality (which is often measured as the relative wage of skilled vs. unskilled workers) reveals that it is the rise in wage inequality *within* an industrial sector and *among* apparently similar workers that accounts for a greater proportion of the overall rise in wage dispersion; it is not the increase in wage dispersion *across* industries and skills that is most important in driving the overall increase in wage inequality (see, for example, Burtless 1995). To be concrete, for example, there is greater variation in the wage rate among skilled workers in, say, the textile industry than there is between the wages of skilled workers in textiles and skilled workers in glassware. Technological change and the increased demand for skilled workers both at home and abroad help to explain these general observations about the US labor market.

Trade and technological change are related, however. Trade is an important force supporting or driving technological change. New analysis (discussed below) suggests that increasing demand for skills in both domestic and international marketplaces is driving up the wages of the relatively more skilled workers. Hence the policy focus should be on education and skill-training of workers to take advantage of job opportunities in the expanding sectors. Policies that restrict trade are a blunt instrument to help some workers and could slow technological change and thus hurt long-term US growth potential, which benefits everyone (see chapter 5).

## The Trade Deficit and Labor Market Dynamics

From the perspective of the overall economy and the overall labor market, it is quite clear that a trade deficit does not cause recessions or unemploy-

**Figure 4.1 Trade, recessions, and unemployment, 1970-98**



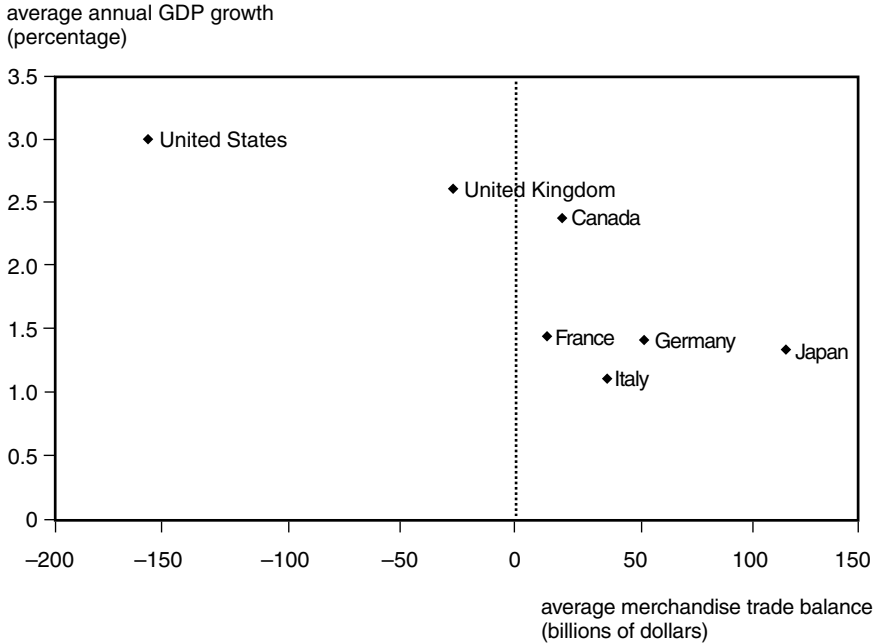
Sources: Bureau of Economic Analysis, *International Transactions Tables*; US Department of Labor, *Employment Situation*.

ment. This can be shown in several ways. For example, the relationships can be seen clearly in the correlation between the US trade balance, the unemployment rate, and periods of recession: As the economy slows, the unemployment rate rises, incomes fall, and the trade deficit narrows (figure 4.1).<sup>1</sup> This relationship between robust economic growth and a negative trade balance is not just a characteristic of the US economy, as the alternative presentation in figure 4.2 shows. Across the major industrial nations, trade balances that are positive on average are associated with GDP growth that is slow on average. Finally, employment creation and trade deficits tend to go together. The countries with the highest rate of increase in number of jobs also tend to be the countries with negative trade positions (figure 4.3).

In short, the data contradict the notion that a growing trade deficit costs jobs overall or slows the rate of growth of the economy overall. A more

1. Chapter 8 reviews in more detail the relationships between income and trade flows.

**Figure 4.2 Economic growth and trade balances of G-7 countries, 1992-97**



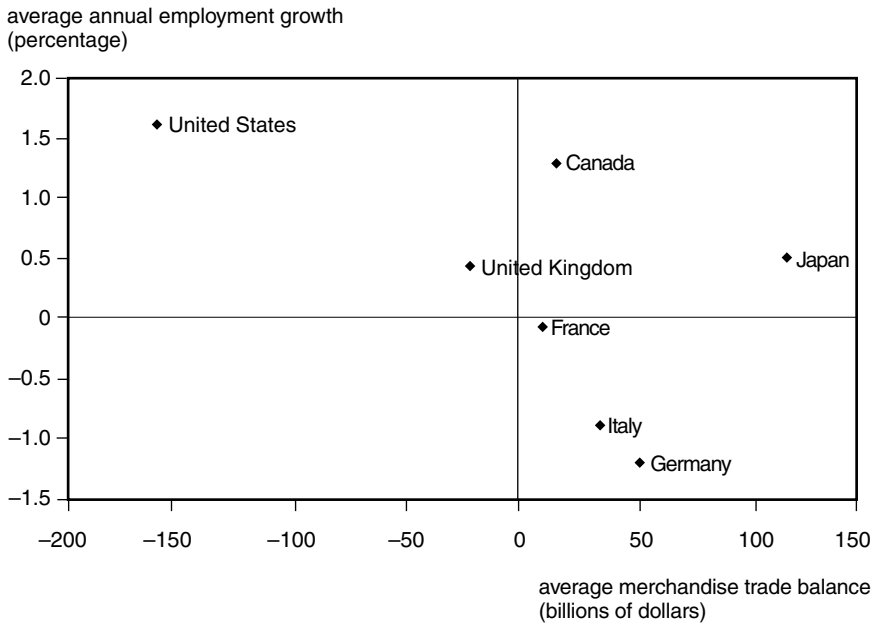
Source: Organization for Economic Cooperation and Development, *OECD Economic Outlook* (December 1998).

interesting line of inquiry considers how the level and composition of exports and imports, the two components of the trade deficit, might change relative wages or the distribution of jobs among types of workers or across sectors.

## Change over Time in US Exposure to Trade

At one time, the United States was considered a “closed” economy—that is, US GDP was little affected by international forces; whether exports or imports were rising or falling just did not much affect the economy. However, to find this state of affairs we have to go back to the 1950s, when the share of exports plus imports was less than 10 percent of GDP (figure 4.4). Starting about 30 years ago, the share of imports in GDP began a rapid, at times dramatic, rise. For exports, while the increase over the years in the share of GDP directly exposed to external demand has been nearly as great, the direction has not always been upward. Now, about one-fourth of GDP (nearly 30 percent in real terms) is directly influenced

**Figure 4.3 Employment growth and trade balances of G-7 countries, 1992-97**



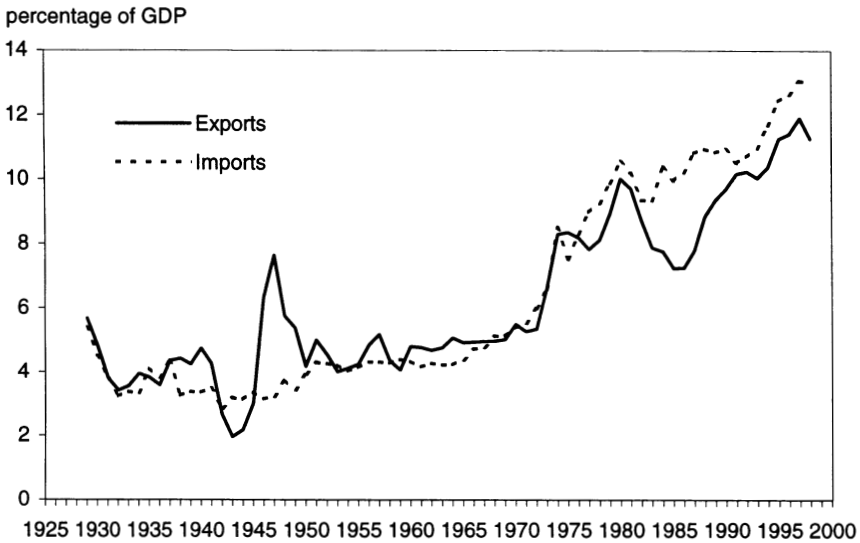
Source: Organization for Economic Cooperation and Development, *OECD Economic Outlook* (December 1998).

by trade forces, split about equally between export exposure and import exposure.

This aggregate measure of global exposure masks differences in the pace of change in exposure of different sectors of the US economy to trade (table 4.1). In the production of goods, which represented about 20 percent of GDP in 1998, direct exposure to trade—that is, imports plus exports as a share of sector-specific GDP—is a remarkable 60 percent, nearly twice the exposure just 15 years ago. Moreover, the share of goods output affected by imports is 10 percentage points greater than the figure for exports. When disaggregated further into durable goods and nondurable goods, the total exposure of these subsectors is higher and the disparity between export and import exposure even greater.

On the other hand, the exposure of the service-producing sector to international trade is far less, and the increase over the past 20 years less dramatic. Although trade in services is growing faster than trade in goods (see chapter 3), the services component of GDP is growing even more rapidly; thus the direct exposure of the service sector to trade remains much lower, about 10 percent overall.

**Figure 4.4 Exports and imports as share of GDP, 1929-98**  
(nominal dollar basis)



Source: US Department of Commerce, *Survey of Current Business*.

Using the standard global exposure measure in this simple decomposition into exports and imports of goods and services highlights two points. First, trade affects different groups of producers, workers, and consumers differently, as those involved with or purchasing products from the goods-producing sectors are affected much more by trade than those in the service-producing sectors. Second, the exposure through imports vs. exports is not the same. To the extent that exports and imports affect workers differently, the effect would be felt most in the goods-producing sector, where the imbalance between exports and imports is the greatest.

## A Model of Global Exposure and Worker Wages

The theory of how changes in global exposure affect workers' wages is often analyzed in the Heckscher-Ohlin-Samuelson (HOS) framework. This standard trade model assumes that two economies that trade with each other have different types of labor (say, skilled labor in the United States and unskilled labor in another country), but identical tastes and technology. It is a static, long-run model that assumes full employment

**Table 4.1 Export and import shares of GDP matched by sector (percentage)**

	1975	1985	1990	1998
<b>Real (chained 1992 dollars)</b>				
<i>Goods</i>				
Exports	11.6	11.8	17.0	24.7
Imports	13.3	19.6	21.6	35.0
<i>Services</i>				
Exports	3.1	3.8	5.3	6.3
Imports	2.5	3.6	3.9	4.4
<b>Nominal</b>				
<i>Goods</i>				
Exports, total	15.3	13.3	18.1	21.9
Durable goods	22.7	19.0	28.0	34.4
Automotive vehicles	10.5	9.0	10.7	11.5
Nondurable goods	18.8	13.8	19.0	24.0
Imports, total	13.8	20.6	23.1	30.1
Durable goods	16.3	28.3	33.5	45.1
Automotive vehicles	12.2	14.7	15.3	17.5
Nondurable goods	21.1	36.1	46.1	50.0
<i>Services</i>				
Exports	3.6	3.9	5.3	6.0
Imports	3.2	3.6	4.0	3.8

Source: US Department of Commerce, *National Income and Product Accounts*.

and balanced trade, and therefore it cannot address issues of the trade *balance*, only trade *flows*.<sup>2</sup>

How do trade flows change relative wages and the distribution of jobs in this framework? The transmission mechanism is as follows: When trade opens up or increases between the United States (relatively well endowed with skilled labor) and the other country (relatively well endowed with unskilled labor), the result is a drop in the relative price of the good that is produced using relatively more of the unskilled labor. This drop in relative price causes an increase in US imports of that good. The rise in

2. The HOS model is widely used because of its elegance and simplicity. However, it does not explain very well trade patterns of industrialized countries, in part because much of this trade is “intra-industry” (between countries of similar factor endowments but different tastes). The HOS model does better at explaining North-South trade flows. Moreover, since it is a model of balanced trade, it is of little use when trade flows are not balanced—for example, when countries are at different points in their business cycles.

imports would tend to reduce the US demand for unskilled labor, but because full employment is assumed, instead the relative wage of unskilled labor in the United States falls just enough to offset the incipient reduction in demand for that type of labor. Then the United States produces (and exports) more of the good whose production is intensive in the use of skilled labor. But the theory holds that both that good and the import-competing good should now be produced with the use of relatively more of the unskilled labor than before, because its relative wage has fallen. In brief, imports of goods produced with cheaper foreign unskilled labor reduce the relative wage but increase the use of unskilled US labor.

Relaxing the constraints on full employment or allowing skill upgrading by unskilled US labor in response to the change in relative wages would reduce the force of the conclusion, but in general does not reverse it. Other models of international trade that allow for strategic business pricing and costly adjustment of capital resources yield the same forces. Similarly, some departure from the assumptions of identical tastes and technology can be absorbed without altering the fundamental forces yielding the conclusion that trade flows lead to relative price movements that are matched with relative wage changes.<sup>3</sup>

The theoretical trade framework shows the direction of the relationship between trade flows and relative wages, but not how strong the forces are or how large an impact they have; these measurements are the task of empirical analysis. In taking the trade models to the data, many researchers look for a link between quantity of imports and the relative wage outcome.<sup>4</sup> What generates the increase in imports is not defined, so these researchers often confound the role of imports of products that use unskilled labor intensively with the role of imports that are coming into the country in response to relatively more robust growth at home. On balance, this research suggests that imports have not played the principal role in changing relative wages, nor in the loss of manufacturing jobs. The modal esti-

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3. Examples of this approach include Mann (1988) and Borjas and Ramey (1993).

4. In theory, the empirical search ought to start with a change in relative prices, since this is the engine that drives the trade flows and the subsequent change in relative wages. There are three different strands of the literature that start the process with an increase in imports. The first approach observes that imports as a share of GDP is insufficiently large to be an important determinant of the decline in relative wages. See, for example, Krugman and Lawrence (1996). For the counterproposition, namely, that wages are set on the margin, and that therefore the import share is not a valid indicator of labor-market pressures, see Leamer (1996). For the effect of import prices on wages, see Mann (1996). The second strand, often called factor-content or decomposition analysis, classifies imports by their labor content and is often used by labor economists; it is discussed later in this chapter. Examples include Borjas, Freeman, and Katz (1991), Berman, Bound, and Griliches (1994), and Wood (1995). The third strand uses cointegration regression analysis to compare the data-generating processes for the trade deficit and for the relative wage movements; see Borjas and Ramey (1994). For a fourth approach, see Cline (1997).

mates are that 10 to 20 percent of the decline in the relative wage of the unskilled worker and less than 10 percent of the decline in manufacturing jobs may be due to increased imports.

A problem with the HOS model and its empirical implementation is that, according to the model, in addition to a decline in the relative wage of the unskilled worker, there should also be a shift in demand toward unskilled labor. In reality, even though the relative wage of skilled labor has risen, the demand for and use of this type of labor also has increased (figure 4.5).

## **A Model of Labor Skills and Institutions, International Trade, and Wages**

There are other analytical frameworks and empirical approaches to the link between trade and wages. In these models, relative wages are first and foremost a function of worker skills as proxied by experience and educational attainment and of the balance between the supply of and the demand for labor with these skills. Investigations examine whether and how much international trade shifts either the demand for or the supply of certain types of workers. They then infer the impact on relative wages of workers classified by education and/or experience.<sup>5</sup>

The main difficulty with this approach is that either the demand or the supply side is usually taken as given, which can generate inconsistencies and difficulties in implementation. For example, some authors say that imports shift labor demand—that is, imports reduce the demand for certain kinds of labor because consumers buy imports instead of domestically produced goods that use that kind of labor. But other researchers calculate how much labor is “embodied” in imports, and thus imports become a factor that implicitly shifts labor supply.

Research by Borjas and Ramey (1994) linking labor institutions, sectoral trade deficits, and relative wages offers the foundation for a possible relationship between the widening trade deficit and the falling household savings rate. Further research is necessary to test this relationship, but it could work as follows. Borjas and Ramey show that the bulk of the widening of the trade deficit from 1963 to 1988 was in highly concentrated industries in the manufacturing sector. Workers in these sectors often earn wages well above those commensurate with their level of skill or education, in part because the highly concentrated industries redistribute some of their economic profits back to workers (in some cases, to avoid strikes).

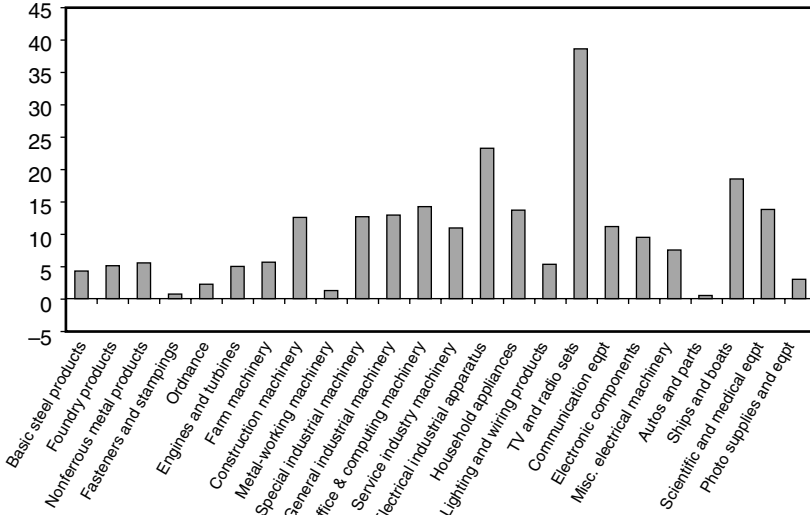
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5. Examples of this work include Bound and Johnson (1992), Berman, Bound, and Griliches (1994), Murphy and Welch (1991, 1992), Feenstra and Hanson (1995), and Brauer and Hickok (1995).

## unskilled workers

### A. Change in average wage premium to skilled worker

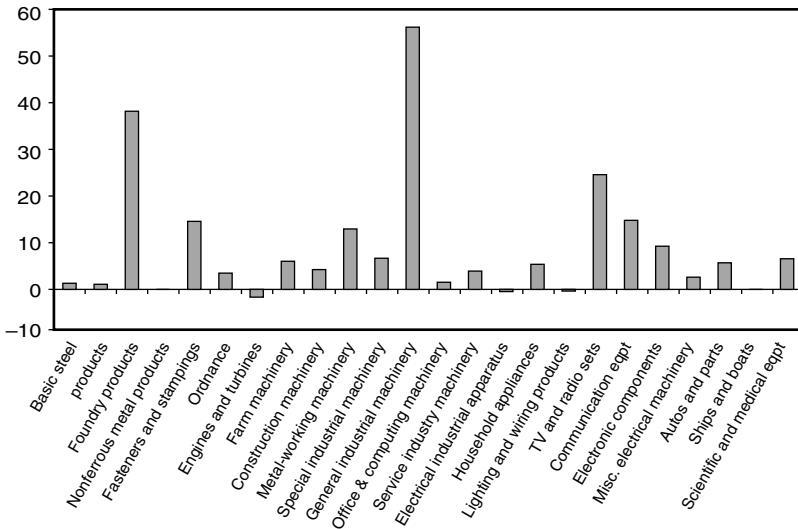
percentage



Note: Values calculated as follows:  $\text{mean} \left[ \frac{\text{wage} - \text{skilled}}{\text{wage} - \text{unskilled}} \right]_{(1987-95)} - \text{mean} \left[ \frac{\text{wage} - \text{skilled}}{\text{wage} - \text{unskilled}} \right]_{(1978-86)}$

### B. Change in average relative employment of skilled worker

percentage



Note: Values calculated as follows:  $\text{mean} \left[ \frac{\text{employment} - \text{skilled}}{\text{employment} - \text{unskilled}} \right]_{(1987-95)} - \text{mean} \left[ \frac{\text{employment} - \text{skilled}}{\text{employment} - \text{unskilled}} \right]_{(1978-86)}$

Source: US Department of Commerce, *Annual Survey of Manufactures*.

As jobs were lost in these sectors, workers moved into other sectors where wages more closely matched skills, and their path of lifetime income fell.<sup>6</sup>

Because consumption paths change relatively slowly, if permanent income falls, the household savings rate would also tend to fall. If a sufficiently large group of workers were displaced from jobs where they earned a sufficient wage to be both spenders and moderate savers and went into jobs at lower wages where they were zero savers, it could help explain the relationship between the widening trade deficit and the falling household savings rate. Since we know that there are many more jobs being created in the US economy that are at the high-skill, high-wage end of the spectrum, the challenge is to figure out how to move displaced workers into these job opportunities. Skill upgrading could have the triple benefit of narrowing the trade gap, raising worker incomes, and increasing the household savings rate.

## Trade and Technology Go Hand in Hand

Most of the empirical studies on the determination of relative wages explain only about half or less of the change in relative wages. Many researchers call the unexplained factor “technological change” or “productivity growth.” They then opine that technology must have a more important effect on relative wages than trade has.

Going back to the theory offers few insights on what additional variables or data might improve the empirical analysis, either to reduce the unexplained residual or explicitly to model technology (see Collins 1985, Leamer 1994, and Richardson 1995). By itself, technical change that economizes on the use of labor releases proportionately more unskilled labor than skilled labor, yielding the decline in the relative wage of unskilled labor necessary to employ fully both types of labor.<sup>7</sup> Hence in theoretical models, trade and technology have the same effect.

More recent empirical work recognizes that technology both drives and is driven by international trade. Hence empirical analysis that includes only trade data but not technology data will yield biased estimates of the role of trade for relative wage movements. Moreover, this new work also recognizes that exports, not just imports, might affect relative wages; indeed, much of the earlier empirical work on trade and relative wages actually only examines imports.

This new analysis suggests complex relationships between trade, productivity growth, and relative wages. International discipline can affect

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6. For more discussion of the consequences of job displacement and the relationship between trade and job displacement, see Kletzer (1998a, 1998b).

7. The only key assumption for this result is that the production function for the low-skill good is relatively more intensive in the use of unskilled labor.

**Table 4.2 Impact of trade exposure on relative wages**  
(regression coefficients, sample of 21 industries)

<b>Technology factor</b>	0.7	(not significant)
<b>Initial exposure<sup>a</sup></b>		
Exports	0.6	
Imports	-0.2	(not significant)
<b>Changes in exposure<sup>b</sup></b>		
Exports	1.6	
Imports	-0.6	(not significant)

Note: Vector of change in mean relative wage defined as in figure 4.5.

a. Share of exports in production and imports in domestic consumption at beginning of sample period (1978).

b. Change in average exposure between first and second half of sample period ([1995-87] – [1978-86]).

Source: Mann (1997).

firms and their workers in two ways: initial exposure and change in exposure to global trade. On the import side, an increase in imports can show firms what new varieties of products are available, and reverse engineering can communicate new technologies. However, rising imports may not pressure firms into changing the way they do business if at the same time the domestic market also is expanding. Firms may not even recognize that they are in competition until they start losing market share to imports. Similarly, on the export side, simply committing to try to export can encourage technological uptake and best practice. Firms do not have to have a larger share of exports in the production run to benefit from export competition.

When researchers take these hypotheses about trade competition to the data and control for the trade-productivity relationship, they find that it is *export* competition for *foreign* markets that has the more powerful effect on relative wages, not *import* competition in the *domestic* market (table 4.2) (Mann 1997, 1998). That is, when interactions between trade and productivity growth are controlled for, the exposure of industry to exports emerges as the more important force driving the increased wage premium to skilled workers. This suggests that, in contrast to common belief and to most previous research, it is not so much that import competition is bidding down the wages of the unskilled worker, but that demand for skilled labor is bidding up the wages of skilled workers. It is the commitment to export and, in particular, an increased share of exports in production that are associated with strong relative-wage effects. Import exposure is not a significant determinant of the change in the skilled-unskilled wage premium over the 1980s and 1990s.<sup>8</sup>

8. The results are consistent with the conclusions on wage premia from Katz and Summers (1995) and Richardson and Rindal (1996), and match quite well with the results of Bernard and Jensen (1997).

In addition to helping to explain the behavior of relative wages, the complex relationship between trade and productivity growth has important implications for the long-term sustainable rate of growth of the US economy, a topic to which we turn in the next chapter. From the standpoint of policy initiatives, it seems clear that skill and flexibility training will allow workers to take advantage of job opportunities in the expanding sectors.

Yet, despite the expanding corpus of research showing that technology-driven demand for skilled workers raises the skill premium, the political sensitivity to import competition remains, as reflected in legislation to assist workers in transition and to protect some industries. There is thus a potential conflict between the demand for less—or at least less rapid—integration with global markets because of the perceived consequences for some workers, and the benefits that such integration confers on the economy as a whole. Managing this conflict has important implications for the sustainability of the external deficit, not because of simple economics but because of the much more complex relationships between social well-being and politics.

## Conclusion

### Summary

- Political rhetoric often emphasizes the relationship between the globalization of the US economy and the dynamics of the US labor market. The relationship actually has two facets, one associated with changes in the *trade balance* and the other with changes in *export and import flows*, the components of the trade balance.
- From the perspective of the overall economy and the overall labor market, it is clear that a trade deficit is driven by expenditure greater than production at home and by faster growth at home than abroad. A trade deficit widens when US growth is good and job opportunities abound, and it shrinks when a recession occurs and unemployment rises.
- Several theoretical models of the relationship between trade flows and relative wages suggest that increased trade with low-skill and low-wage countries will have a negative effect on the wages of low-skilled American workers. However, these models yield the same conclusions when technological change is substituted for trade.
- In empirical analysis, when trade flows, productivity growth, and relative wages are all considered together, a complex relationship emerges among them. It is increasingly apparent that trade and productivity

growth work hand in hand to raise the relative wages of skilled workers by increasing the demand for such workers.

## **Policy Discussion**

- The policy focus that emerges from the research places emphasis squarely on education and on skill and flexibility training of workers so that they can take advantage of job opportunities in the expanding sectors, whether these be at import-competing firms with enhanced technology or exporting firms serving the international marketplace.
- Trade policies that limit flows of imports of a certain set of industries would do little to reduce wage dispersion, but could reduce productivity growth and thus undermine the long-term potential of the US economy, to the detriment of all workers.
- A final reason to focus on policies that will improve the distribution of wages is somewhat speculative: The increase in wage dispersion correlates to some degree with the downward trend in household savings and the downward trend in the trade balance. If a policy plan could improve the economic fortunes of less skilled workers, it might have the additional beneficial effect of improving the rate of household savings, and closing the current account gap.