

TRADING AWAY GOOD JOBS

An Examination of Employment and Wages in the U.S., 1979-94

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For almost two decades, wages have been eroding and income inequality has been increasing in the U.S.¹ The push for rapid growth in foreign trade and investment has only made matters worse. Even some of free trade's proponents admit that trade may be responsible for at least 20-25% of the increase in U.S. income inequality since 1979 (Tyson 1997).²

Despite this rise in inequality and the growing research that links an important portion of it to globalization, proponents of free trade still argue that it has benefited U.S. workers. Free trade advocates have typically built their case on two assertions: first, that trade has created jobs and spurred job growth in the U.S.;³ and, second, that export jobs pay significantly more than the average U.S. wage.⁴ As this report will demonstrate, both claims are misleading.

As for claims of job growth, many of the analyses cited by free traders typically count only the job possibilities created by exports and ignore those destroyed by imports. And though it may be true that export jobs pay more than the average job, such comparisons overlook the fact that import-competing jobs—typically in manufacturing—also pay substantially better.

Building primarily on the work of Jeffrey Sachs and Howard Shatz for the *Brookings Papers on Economic Activity*, this report analyzes the effects of trade on the demand for labor between 1979 and 1994 (the last year for which data are available). Our research examines how trade flows have affected demographic and income groups and the wages of workers in import and export industry jobs. Unlike much of the recent research on trade, this report comprehensively examines the relevant issues and adheres to the most intellectually sound methodologies.

Our analysis has resulted in several key findings:

- Between 1979 and 1994, the \$99.5 billion (in real 1987 dollars) increase in the U.S. goods and services trade deficit eliminated a total of 2.4 million job opportunities. About 2.2 million of those lost job opportunities were in the manufacturing sector. Trade accounted for fully 83% of the total 2.7 million jobs lost in manufacturing employment between 1979 and 1994.
- Every economic group has suffered a net loss in job opportunities, including the college educated. Although the trade deficit eliminated more employment opportunities for the non-college educated (especially those with less than a high school degree), the 460,000 new jobs for college-educated workers created by exports between 1979 and 1994 were offset by the 750,000 opportunities sacrificed to increased imports. The result was a net loss of 290,000 jobs for the college educated.
- Only a small number of industries, representing less than 5% of total national employment, currently import or export a large share of their output. Many more industries are subject to rapidly growing import and export shares, however, and industries with rapidly growing import shares pay more than ones with rapidly growing export shares.
- Industries facing fast-growing import competition pay wages that are about 4.5% higher than those paid in sectors with rapidly growing exports. For the economy as a whole, sectors with rapid import growth pay 4.1% to 6.6% better than average, while sectors with rapidly growing exports pay from slightly below average wages to 1.9% above average wages.
- Free traders often argue that wages in export industries are higher, on average, than those in import industries. This is **true** only when including older, import-battered industries that have had their wages depressed with time. In reality, imports are doing more to damage wages than exports are doing to raise them. At the economy's margins, where current rather than past trade is having its largest impact, imports have been destroying better-than-average jobs. At the same time we are increasingly competing in export markets using relatively low-wage labor. In debates on *expanding* trade, it is important to recognize the qualitative differences between the jobs in rapidly growing import and export industries. Even a balanced expansion of trade, with equal growth in imports and exports, would not lead to a better, higher-paying mix of jobs, and might even possibly lower wages.

Although this study analyzes data through 1994, the U.S. trade deficit has continued to grow through 1997, suggesting that job losses due to trade are even greater than this study's findings indicate.

Estimating the Job Costs of Expanded Trade

Tables 1 and **2** summarize the principal findings of our analysis of trade's impact on employment. The first row of Table 1 reports our estimates of the job changes in the whole economy due to imports and exports over the 1979-94 period. Our calculations show that the rise in imports between 1979 and 1994 reduced U.S. employment by 4.7 million (relative to what would have happened if the share of imports in domestic consumption had remained at its 1979 level). The rise in exports over the same period created

TABLE 1
Trade and Employment, 1979-94 (Thousands of Jobs)

	Total Employment, 1989		Job Changes Induced By: [*]								
	Whole Economy	Manuf. Only	Gross Imports			Gross Exports			Net Exports		
			1979-89	1989-94	1979-94	1979-89	1989-94	1979-94	1979-89	1989-94	1979-94
Total	120,554	19,811	(2,629)	(1,750)	(4,706)	864	1,362	2,340	(1,765)	(387)	(2,366)
Men	64,339	12,850	(1,537)	(998)	(2,738)	532	813	1,411	(1,005)	(185)	(1,327)
Women	56,215	6,960	(1,092)	(751)	(1,968)	332	549	929	(760)	(202)	(1,039)
White	96,720	16,006	(2,084)	(1,396)	(3,739)	708	1,114	1,915	(1,376)	(281)	(1,825)
Black	11,803	1,783	(247)	(159)	(434)	77	117	204	(170)	(41)	(230)
Hispanic	6,296	1,092	(155)	(92)	(265)	39	56	101	(117)	(35)	(165)
Other	5,735	929	(142)	(104)	(267)	41	74	121	(101)	(30)	(146)
College	22,377	2,796	(362)	(324)	(750)	148	293	460	(215)	(31)	(290)
Noncollege	98,177	17,015	(2,267)	(1,425)	(3,956)	717	1,069	1,880	(1,550)	(356)	(2,076)
Some College	37,738	5,078	(658)	(479)	(1,233)	256	424	713	(403)	(55)	(519)
High School	37,627	7,461	(956)	(579)	(1,641)	303	431	774	(653)	(148)	(867)
Less Than HS	22,812	4,476	(653)	(368)	(1,083)	158	215	393	(495)	('53)	(690)
Wage Range**											
90-99	11,736	2,226	(269)	(231)	(545)	106	197	315	(163)	(34)	(230)
75-89	13,486	2,678	(309)	(229)	(584)	123	202	340	(186)	(27)	(244)
50-74	19,994	3,770	(435)	(296)	(792)	166	259	447	(269)	(36)	(345)
21-49	31,818	5,651	(713)	(457)	(1,259)	235	361	629	(478)	(96)	(631)
0-20	43,520	5,485	(903)	(537)	(1,526)	234	343	610	(670)	(194)	(916)
Agriculture	3,381		(129)	(93)	(237)	12	(34)	(17)	(117)	(127)	(254)
Manufacturing	19,811		(2,078)	(1,276)	(3,608)	500	803	1,359	(1,577)	(473)	(2,248)
Services	66,278		(233)	(164)	(430)	108	296	421	(125)	132	(9)
Other	31,085		(189)	(216)	(432)	244	297	577	55	81	145

*Assumes import and export shares in output remained at their 1979 level. Excludes effects on wholesale and retail trade and advertising.

**Wage ranges are percentile of the real 1979 wage distribution.

TABLE 2
Trade and Employment Shares (%), 1979-94

	Total Employment, 1989		Job Changes Induced By: ¹								
	Whole Economy	Manuf. Only	Gross Imports			Gross Exports			Net Exports		
			1979-89	1989-94	1979-94	1979-89	1989-94	1979-94	1979-89	1989-94	1979-94
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Men	53.4%	64.9%	58.5%	57.1%	58.2%	61.6%	59.7%	60.3%	56.9%	47.8%	56.1%
Women	46.6%	35.1%	41.5%	42.9%	41.8%	38.4%	40.3%	39.7%	43.1%	52.2%	43.9%
White	80.2%	80.8%	79.3%	79.8%	79.5%	81.9%	81.8%	81.8%	78.0%	72.6%	77.1%
Black	9.8%	9.0%	9.4%	9.1%	9.2%	8.9%	8.6%	8.7%	9.7%	10.6%	9.7%
Hispanic	5.2%	5.5%	5.9%	5.2%	5.6%	4.5%	4.1%	4.3%	6.6%	9.1%	7.0%
Other	4.8%	4.7%	5.4%	5.9%	5.7%	4.8%	5.5%	5.2%	5.7%	7.6%	6.2%
College	18.6%	14.1%	13.8%	18.5%	15.9%	17.1%	21.5%	19.6%	12.2%	8.0%	12.3%
Noncollege	81.4%	85.9%	86.2%	81.5%	84.1%	82.9%	78.5%	80.4%	87.8%	92.0%	87.7%
Some College	31.3%	25.6%	25.0%	27.4%	26.2%	29.6%	31.1%	30.5%	22.8%	14.2%	22.0%
High School	31.2%	37.7%	36.4%	33.1%	34.9%	35.1%	31.6%	33.1%	37.0%	38.3%	36.6%
Less Than HS	18.9%	22.6%	24.8%	21.0%	23.0%	18.3%	15.8%	16.8%	28.1%	39.5%	29.1%
Wage Range**											
90-99	9.7%	11.2%	10.2%	13.2%	11.6%	12.2%	14.5%	13.5%	9.2%	8.8%	9.7%
75-89	11.2%	13.5%	11.8%	13.1%	12.4%	14.3%	14.8%	14.5%	10.5%	6.9%	10.3%
50-74	16.6%	19.0%	16.5%	16.9%	16.8%	19.2%	19.0%	19.1%	15.2%	9.4%	14.6%
21-49	26.4%	28.5%	27.1%	26.1%	26.8%	27.2%	26.5%	26.9%	27.1%	24.9%	26.6%
0-20	36.1%	27.7%	34.4%	30.7%	32.4%	27.0%	25.2%	26.1%	37.9%	50.0%	38.7%
Agriculture	2.8%		4.9%	5.3%	5.0%	1.3%	-2.5%	-0.7%	6.7%	32.8%	10.7%
Manufacturing	16.4%		79.0%	72.9%	76.7%	57.9%	58.9%	58.1%	89.4%	122.2%	95.0%
Services	55.0%		8.9%	9.4%	9.1%	12.5%	21.8%	18.0%	7.1%	-34.1%	0.4%
Other	25.8%		7.2%	12.4%	9.2%	28.2%	21.8%	24.6%	-3.1%	-20.9%	-6.1%

*Assumes import and export shares in output remained at their 1979 level. Excludes effects on wholesale and retail trade and advertising.

**Wage ranges are percentile of the real 1979 wage distribution.

about 2.3 million jobs. On net, then, expanded trade cost the United States about 2.4 million jobs during this period (see the last column for “net exports”). These jobs were lost as a result of the \$99.5 billion (in real 1987 dollars) net increase in the U.S. goods and services trade deficit.

The finding indicates that the growth in trade deficits was responsible for both **eliminating or failing to create** 2.4 million trade-related jobs in comparison to a situation in which the ratio of **imports and exports to output** had remained constant at its 1979 level. The impact has been in both actual jobs and in a shift from high-wage to low-wage jobs in the economy’s labor composition. Even if one assumes that employment levels are controlled by macroeconomic factors (such as the intervention of the Federal Reserve), the effect of large, chronic trade deficits will still present itself in the shifting composition of jobs (i.e., a shift from manufacturing to service sector jobs) and in deteriorating job quality (i.e., falling wages for large segments of the workforce).

Of these lost job opportunities, a net 2.2 million occurred in the manufacturing sector. The reason the vast majority of the jobs sacrificed came from manufacturing was due to an increase in net exports from other industries (such as mining, construction, and transportation) that created 145,000 net jobs, which offset smaller losses in other sectors. Trade explained fully 83% of the total 2.7 million job decline in manufacturing employment between 1979 and 1994, representing a much larger share than indicated by Sachs and Schatz (1994), who used a similar methodology but examined a shorter and slightly different period of time.

The remaining rows of Tables 1 and 2 demonstrate who lost and who won. Across the board, almost all groups lost, regardless of sex, race, or educational background. High- and low-paid workers and those in agriculture, manufacturing, and services sectors all lost more jobs through import competition than they gained through higher levels of exports.

Tables 1 and 2 also show that some disadvantaged workers suffered disproportionately from the reallocation of jobs from import-competing to export-competing industries. Hispanics and other minorities as well as workers with less than a high school degree lost a higher share of the jobs sacrificed to imports and suffered a disproportionately high net loss of jobs relative to their share of total employment (Table 2). For example, workers with less than a high school education accounted for 23% of the jobs lost due to imports, but filled only 17% of the jobs created by exports. Overall, these workers experienced 29% of the job loss due to trade although they made up only 19% of the labor force (Table 2).

The tables also clearly reveal that the effects of trade were not limited to manufacturing industries. Increased imports between 1979 and 1994 cost 254,000 jobs in agriculture and 9,000 jobs in services, while creating 145,000 jobs in other nonmanufacturing industries such as mining, construction, and transportation. Export expansion over the same period replaced only a fraction of these nonmanufacturing jobs. Agricultural export shares, particularly after 1989, fell below their 1979 level, meaning that export developments actually reduced employment in that sector by 17,000 jobs between 1979 and 1994 (Table 1).

One of our most striking findings was the large net loss of highly skilled, highly paid jobs, summarized in Table 1 and **Table 3**. Increased import shares over the past 15 years have displaced almost twice as many high-paying, high-skilled jobs as increased export shares have created. Between 1979 and 1994, rising import penetration reduced employment of college-educated workers by 750,000; rising export shares, however, created only 460,000 new jobs for the college educated, for a net loss of 290,000 of these jobs (Table 1). High-paying jobs fare about the same. Imports cut employment in the highest-paying

TABLE 3
Trade and Job Quality* (Thousands of Jobs)

	1979-89	1989-94	1979-94
(a) Wages			
Well Paid**			
Exports	229	399	655
Imports	(578)	(460)	(1,129)
Total	(349)	(61)	(475)
Low Pay**			
Exports	234	343	610
Imports	(903)	(537)	(1,526)
Total	(670)	(194)	(916)
(b) Education			
College			
Exports	148	293	460
Imports	(362)	(324)	(750)
Total	(215)	(31)	(290)
Non-college			
Exports	717	1,069	1,880
Imports	(2,267)	(1,425)	(3,956)
Total	(1,550)	(356)	(2,076)

• Excludes effects on wholesale and retail trade and advertising.

• * Wages in well-paid jobs are at or above the 75th percentile of the 1979 wage distribution (in real terms). Low-paying jobs are at or below the 20th percentile in the 1979 wage distribution (in real terms).

jobs--those in the top 10% of the 1979 wage distribution (labeled 90-99 in the tables)--by 545,000 between 1979 and 1994. At the same time, exports created only 315,000 high-paying jobs, for a net loss of 230,000 high-wage jobs. Even relatively well-paid jobs in the top 25% of the 1979 wage distribution were lost--exports created 655,000 jobs while imports eliminated 1,129,000 job opportunities, for a net loss of 475,000 well-paid jobs (Table 3). Every group considered in Table 3, regardless of income or education level, suffered a net loss in jobs between 1979 and 1994. Losses are proportionately larger for low-paying jobs and for non-college-educated workers (net losses are a larger share of total losses, and much larger in proportion to export gains).⁵ This is one of the reasons that globalization has been considered a factor in the growth of wage inequality.

In conclusion, rising trade deficits have resulted in a net loss of high-paying job opportunities between 1979 and 1994. The greatest losses occurred between 1979 and 1989, when the dollar was often overvalued, but job losses have continued to accumulate since 1989. (The losses mount to this day. The U.S. deficit in goods and services trade has continued to grow between 1994 and 1996, and is up sharply in the first two quarters of 1997.⁶) These findings contrast sharply with frequent assertions that trade has

created good jobs. The effects of increased imports and diminishing export growth mean that more high-paying jobs were lost than gained in the push for more trade.

Throughout this section we have discussed trade's impact on workers by examining data from 1979 to 1994 for 183 industries in all sectors of the economy. Like the important work of Sachs and Shatz (1994), we calculate changes in net exports (exports minus imports) by industry and then use **industry**-level "input-output" analysis to estimate the number of jobs associated with a given change in trade flow. Our analysis builds upon that of Sachs and Shatz in several respects. First, we extend the period analyzed from 1978-90 to 1979-94 (with the data from the early 1990s providing some pertinent contrasts to earlier periods). Second, we take into account more demographic characteristics in each industry. While Sachs and Shatz focus solely on trade's impact according to workers' skills (measured roughly by distinguishing between production and non-production workers), we examine trade's impact according to education, race, and gender. Finally, we report the impact of gross exports and gross imports separately and then consider the impact of exports minus imports. Import growth displaces a different set of workers than those employed by growth in exports, making it more illuminating (and relevant to policy discussions) to examine these effects separately.

In terms of methodology, our analysis of trade's effect on employment has three stages. First, we determine how changes in international trade have altered demand for output from domestic industries. Second, we estimate how these changes in demand affect domestic employment, both directly in trade-competing industries and indirectly in other industries. Finally, we use job and worker data in affected industries to draw some inferences about how job quality and workers benefit and suffer from expanded trade.

In the first stage we identify the impact of trade on domestic industries. The simplest way to measure the effect of trade would be to assume that exports and imports were frozen at a given level (e.g., their level in 1979) and calculate how much domestic demand would have changed if all subsequent exports were lost and all subsequent imports were met with domestic production. However, in a complex, growing economy, where some industries expand while others contract, it might be inappropriate to assume that trade levels could be frozen at a particular dollar amount. Instead, we assume for our analysis that the share of exports and imports in total domestic production remained constant at their 1979 level throughout the 1979-94 period. To determine the impact of trade on domestic demand since 1979, we first calculate the difference between export and import levels in 1994 and then determine what they would have been in 1994 if they represented the same proportion of domestic output as they did in 1979. Since the share of both exports and imports expanded considerably over the 1979-94 period, our calculations generally show that export changes over the period increased demand for domestic output, while import changes reduced domestic demand.⁷ The data used in our analysis of imports and exports include both goods and services, expressed in constant dollars.⁸

Next, we determine how employment is directly and indirectly affected by the previously estimated changes in exports and imports. To do this, we rely on "input-output" and related tables produced by the Bureau of Labor Statistics.⁹ These tables summarize the output and employment connections across all major industries in the economy. For 1993, the base year in the input-output analysis, the BLS covered all aspects of economic activity by dividing the economy into 183 industries in agriculture, mining, construction, manufacturing, services, or government. The BLS then calculated the number of jobs generated

directly in each of the 183 industries for every \$1 million increase in industry output. Next, the BLS conducted a more complicated analysis of how that same \$1 million expenditure affected demand and employment indirectly in the economy's other 182 industries. A \$1 million expenditure in aerospace, for example, creates jobs in the steel industry and in some services, as well as in aerospace.

Given the industry-by-industry changes in exports and imports and the implied impact on employment, we can then proceed to the third stage of the analysis, which involves estimating the effect of trade changes on different types of workers and jobs. Since we know the number of jobs lost and gained in each of the 183 industries and the characteristics of those industries, we can draw some inferences about the actual job changes. For example, we know each industry's average wage as well as its workers' education level, sex, and race. If we assume that trade-induced changes in demand affect the workers in an industry proportionally, we can draw some conclusions about which workers gain and lose from trade.¹⁰

In keeping with Sachs and Shatz (1994), our analysis removes the net effects of trade on wholesale and retail trade and advertising.¹¹ The implicit assumption in this analysis is that distribution of imported, exported, and domestically produced goods generates equivalent amounts of activity in these particular sectors, so the decision to source or sell products internationally should have no effect on direct or indirect employment in these industries.

Job Quality in Export and Import Intensive Industries

In this section, we examine the quality of jobs currently exposed to import and export competition. Adopting Bednarzik's methodology (1993), we measure import and export sensitivity in two ways. First, we select industries with high import or export penetration ratios-those where imports or exports represent more than a fixed percentage of total industry consumption (in the case of imports) or output (in the case of exports). We use two percentage-point cutoffs, a more inclusive 20% share of consumption or output, and a more exclusive 30% share. Examples of industries with high import penetration include *metalworking machinery* and *motor vehicles and parts* (at the 20% level); *computer and office equipment* and *home audio and video equipment* (at the 30% level). On the export side, industries with high shares include *measuring and controlling devices* and *watches and clocks* (at the 20% level); *computer and office equipment* and *aerospace products* (at the 30% level).

Another means of determining whether industries are sensitive to foreign trade involves the *growth* of the import and export shares. Again, we employ two cutoff levels: industries where the average annual growth in import or export share is 1% or greater, and those where growth is 2% or greater.¹² This measure of trade sensitivity shows where trade's impact is growing the fastest. We measure job quality in both trade-sensitive and nontrade-sensitive industries in two ways: first, by the industry's average wage; and, second, by the industry's share of college-educated workers.

As **Table 4** reveals, the industries characterized by high import and export shares represent a very small portion of total U.S. employment. The nine industries exporting 30% or more of their output, for example, make up just 2.0% of total domestic employment; even the 19 industries with a 20% or greater export share account for only 3.8% of U.S. jobs. Industries where the import share is 30% or greater represent 1.7% of all employment; industries with a 20% share or greater represent 4.1% of the total. When viewing these data, it is important to note that trade estimates used in this report include both

TABLE 4
Characteristics of Jobs in Import and Export Competing Industries
(1996 Dollars)

	Whole Economy	Industries With:									
		Average 1992-94 Import Share Greater Than		Annual Growth in Import Share, 1979-94 Greater Than'		Average 1992-94 Export Share Greater Than		Annual Growth in Export Share, 1979-94 Greater Than'			
		30%	20%	2%	1%	30%	20%	2%	1%		
(a) All Industries											
Average Wage	\$14.15	\$13.82	\$15.63	\$14.73	\$15.09	\$18.86	\$18.23	\$14.09	\$14.41		
College Share	20.8%	17.0%	16.1%	22.2%	22.0%	27.5%	24.4%	19.2%	19.8%		
Jobs per \$1 m											
Direct	22.8	10.9	8.6	14.2	13.5	6.7	7.2	16.2	15.3		
Indirect	7.7	7.6	8.1	a.4	8.5	6.1	7.1	10.3	10.2		
Total	30.5	18.5	16.7	22.6	21.9	12.6	14.3	26.5	25.5		
No. of Inds.	183	183	183	183	183	183	183	183	183		
Emp. Share	100.0%	1.7%	4.1%	19.7%	22.9%	2.0%	3.8%	39.5%	45.1%		
(b) Manufacturing											
Average Wage	\$15.38	\$13.39	\$15.59	\$15.33	\$15.62	\$18.97	\$18.17	\$14.81	\$15.39		
College Share	15.3%	16.2%	15.4%	15.8%	15.8%	28.2%	24.7%	15.1%	15.0%		
Jobs per \$1 m											
Direct	8.7	11.8	8.8	9.0	8.6	6.7	6.9	8.9	8.6		
Indirect	8.8	8.4	8.2	8.2	8.3	5.7	6.4	9.1	8.7		
Total	17.5	20.2	17.0	17.2	16.9	12.4	13.4	18.0	17.3		
No. of Inds.	98	9	20	68	77	5	14	59	78		
Emp. Share	16.4%	9.2%	23.2%	73.0%	83.8%	11.6%	18.7%	63.7%	85.0%		

* Comparing average import and export shares in 1979-81 with average shares for the 1992-94 period.

goods and services. Thus, for example, there are a number of service industries that have large import and export penetration ratios, which explains why the number of industries affected by trade in the whole economy (panel a in Table 4) is larger than the number of industries affected within manufacturing (panel b).

Although currently only a small share of the economy's jobs are in industries with high import or export shares, a much larger share of workers are in industries where imports and exports are *growing* rapidly in importance. For example, industries where the export share is growing more than 2% per year account for 39.5% of all employment and about 63.7% of manufacturing employment; industries where the import share is growing at the same pace make up 19.7% of total employment and 73.0% of manufacturing (Table 4). These industries experiencing such rapid import and export growth may tell us more about how further expansion of trade will affect the U.S. wage and skill structure.¹³

In some sense, the industries currently experiencing a high level of import or export competition represent "past" trade expansion. Highly technological, capital-intensive export industries tend to pay high

wages and also tend to compete well in world markets.¹⁴ Import-competing industries, often with lower technology and capital demands (such as footwear, apparel, and toys) have already seen wages eroded by decades of import competition, particularly from low-wage countries.

Table 4 also summarizes our analysis of job quality in trade-sensitive industries. When we focus on industries with high shares of imports or exports, we find, as other researchers have demonstrated (Richardson and Rindal 1996; Bernard and Jensen 1995), that jobs in high-export industries pay wages above the national average. For example, industries in which 20% or more of output is exported pay an average hourly wage of \$18.23 versus a national average of \$14.15; the average wage in industries that export 30% or more of output is even higher (\$18.86). (All figures in this section are expressed in 1996 dollars). These same high-export industries also employ a somewhat larger-than-average share of college-educated workers (from 24.4% to 27.5% of total industry employment, compared to 21% for the economy as a whole). (Table 4.)

Many industries facing high levels of import competition also pay wages above the national average. Industries with a 30% or greater import share pay a few cents an hour less than the national average, while the larger group of industries with a 20% or higher import share pay, on average, \$15.63 per hour, or \$1.48 above the national hourly average. Thus, while industries with high export shares do pay high wages, many jobs in import-competing industries also pay high wages.

Trade sensitivity, however, can be measured in other ways. When considering the much broader range of industries that have seen the fastest expansion of trade, the evidence in Table 4 shows that *industries where the export share is growing rapidly pay only average wages*. Industries where the export share is growing faster than 2% per year pay only \$14.09 per hour, or 0.4% less than the \$14.15 average. Industries that have achieved growth in export share above 1% per year are little better at \$14.41 per hour (1.9% above average). One reason that wages are not very high in export-expanding industries is that much recent export expansion is taking place in low-wage industries outside of manufacturing, particularly agriculture and some services. Even when the analysis is limited to manufacturing industries, jobs in export-expanding industries pay wages less than or no different from manufacturing's average.

At the same time, *industries where the import share is rising rapidly pay above-average wages*. Industries where the import share is growing faster than 2% per year pay, on average, \$14.73 per hour, or about \$0.58 (4.1%) more than the average job; when the analysis is limited to manufacturing, the industries experiencing the fastest increases in import competition still pay only \$0.05 (0.3%) less than the average manufacturing job. Thus, *industries where imports are growing rapidly pay more than industries where exports are growing rapidly*. Among all trade-sensitive industries, those facing the fastest increases in import share pay about \$0.64 (4.5%) an hour more than those industries where export shares are growing fastest. Among manufacturing industries, the difference is slightly smaller (about \$0.52 per hour or 3.6%) but still in favor of import-competing industries. A similar pattern holds when we look at the education level of workers in trade sensitive jobs. *Industries where import shares are growing employ a higher share of college-educated workers than industries where the export share is growing*.

This analysis suggests that popular assertions claiming "jobs in exporting sectors pay 13% to 16% more than the average U.S. wage" must be qualified in at least three ways. First, many jobs in import-intensive industries also pay above-average wages. Second, only a small number of industries, with less than 5% of total national employment, have high levels of import or export penetration. Finally, a much

larger range of industries are subject to rapidly growing import and export shares, and when comparing these industries, those with rapidly growing import shares pay more than those with rapidly growing export shares.

As the trade deficit and globalization of U.S. industries have grown, we have lost more good jobs in industries with rapidly growing import shares than we have gained in the lower-paying sectors experiencing rapid export growth. Consequently, trade has had a negative effect on the distribution of wages and job opportunities in the U.S. between 1979 and 1994. In addition, our analysis suggests that if we are to debate *expanding* trade, it is important to pay attention to the very different job profiles in industries where exports and imports are growing rapidly. Even a balanced expansion of imports and exports would not lead to a better, higher-paying mix of jobs and might even lower wages.

Conclusion

Between 1979 and 1994, the \$99.5 billion (in real 1987 dollars) increase in the U.S. goods and services trade deficit eliminated a total of 2.4 million job opportunities. About 2.2 million of the lost job opportunities occurred in the manufacturing sector, primarily because net exports of services and some commodities increased in this period. Trade accounted for fully 83% of the total 2.7 million job decline in manufacturing that occurred between 1979 and 1994.

While wages are higher than the national average in industries that export a large share of output, they are also higher in industries with large import shares (both exports and imports are dominated by manufactured goods). However, only a small number of industries, employing fewer than 5% of all workers in each case, are highly sensitive to trade in this way. The number of industries in which the shares of imports and exports in output are growing rapidly is much larger, and these sectors involve 20% to 57% of total employment. In these sectors on the cutting edge of globalization, wages in **import-competing** industries are 3.6% to 4.5% higher than they are in sectors with rapidly growing export shares. At the margin, where trade is having its largest impact, imports have been destroying better-than-average jobs, while exports increasingly compete in markets using low-wage labor.

Trade has eliminated proportionately fewer job opportunities for college-educated workers, and relatively more opportunities for non-college-educated workers (especially those with less than a high school education). In the end, however, no group has been spared: increasing trade deficits have resulted in a net decline in demand for both college-educated and non-college-educated workers.

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Endnotes

1. Since 1973, U.S. production workers have experienced an almost steady decline in their real wages and earnings. After rising steadily at an average rate of 22.2 cents per hour (in 1996 dollars) through 1973, real compensation began to decline thereafter at a rate of 5.5 cents per hour. Workers in the bottom 10% of the labor force fared even worse—losing \$1.10 per hour between 1979 and 1995 (a 17% decline). These declines contrast sharply with the continued growth in real hourly earnings of the top 10% of the labor force, which has been maintained throughout the 1980s and 1990s. As a result, earnings inequality, the gap between the top, the middle, and the bottom of wage earners, has increased sharply—the ratio between the top and the bottom deciles of workers increased 21 percentage points between 1979 and 1995 (Mishel, Bernstein, and Schmitt 1997, 163).
2. See Lee (1997) for a recent review and synthesis of this literature and its policy implications,
3. See, for example, the *Journal of Commerce* (1997), which claimed in an editorial that “one-third of all growth is due to trade.”
4. See, for example, the Executive Office of the President’s report to Congress titled Study on *the Operation and Effects of the North American Free Trade Agreement (1997)*, which claims that “jobs in exporting sectors pay 13 to 16 percent more than the average U.S. wage.”
5. Note that the wage quintiles are defined according to the 1979 wage distribution. This explains why there appears to be a disproportionate concentration in the bottom quintile. To illustrate: suppose that a worker in 1990 earns \$6 an hour. She may be in the second quintile in 1990, but in 1979, that wage would have put her among the lowest-earning 20% of U.S. workers.
6. U.S. **Commerce News**, “National Income and Product Accounts, Second Quarter 1997 GDP,” BEA 97-23, July 31, 1997. In 1996, the real net export deficit was 9.4% higher than in 1994, and the deficit for the first two quarters of 1997 (at an annualized average rate) was 20% higher than in 1996 (annual total).
7. While exports contributed to growth in both of the subperiods considered below (1979-89 and 1989-94), growth in export share was greatly reduced in the earlier period because of the dollar’s overvaluation in the early- and mid-1980s. Most employment growth due to increased exports occurred between 1989 and 1994, as shown in Table 1. Our model uses changes in shares of exports and imports at the sectoral level to estimate the employment impact of trade. The export share of output was 4.14% in 1979, 5.29% in 1989, and 6.96% in 1994. The import share of output was 4.30% in 1979, 6.15% in 1989, and 8.12% in 1994.
8. Data were obtained via the Internet from a site maintained by the Bureau of Labor Statistics, Office of Employment Projections (file *outdem.zip* in directory *macro/demand/io*). Data for industry output were also obtained from the same file.
9. The input-output data are prepared by and available from the BLS, Office of Employment Projections.
10. Industry characteristic data are drawn from the 1% public use microdata sample of the 1990 decennial census.
11. These are BLS industries 120, 121, and 136, respectively. All direct and indirect effects of trade on these sectors were ignored in our analysis. Because this revision was done after calculating the employment effects of trade, it produces slight inconsistencies in the totals of imports, exports, and net exports in Table 1.
12. Note that Bednarzik uses both the import or export level **and** the growth rate to determine which industries are export- and import-sensitive. He also uses less inclusive measures for exports (cutoff of 20% share and 1% growth). We chose instead to keep all four categories separate, as we felt this was more illuminating in the present context. In addition, three industries (BLS industries 27, 149, and 166, respectively, nonferrous foundries; producers, orchestras, and entertainers; and research and testing services) had initial exports shares of 0 in the data set, but shares of 0.5% or more in the final period. These cases were arbitrarily assigned to the 1% growth group if the final exports share exceeded 0.5% of output, and to the 2% group if the final share exceeded 1.0%.
13. Examples of service industries with rapid import share growth include research and testing services (exceeding 1% per year) and engineering and architectural services (at the 2% level); on the export side those with rapid growth include depository institutions (where growth exceeds 1% per year) and motion pictures and a wide range of other services, including accounting, health, legal, and educational services (at the 2% level).
14. Some proponents of expanded trade argue that exporting, in and of itself, raises wages, and if we could somehow get particular industries or plants to export more, then wages in those industries would improve. This might be possible through export subsidies or a directed industrial policy, but seems highly unlikely if left to the market alone. It is not that exports produce high wages, it is that, given the U.S. comparative advantage, high-wage industries export. This does not rule out the possibility that exporting could **lower** the wages of workers in export-sensitive industries, since workers must now compete on price in markets where other workers may be cheaper because of foreign government subsidies, exchange rate fluctuations, lower labor, health, safety, and environmental standards, or other reasons that may or may not have to do with the free workings of the market. Recent cost-cutting pressures at successful U.S. exporter Caterpillar are one example. Strong pressures to lower labor costs in Germany, which has been extremely successful in export markets, are another.

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