
Defining Import-Competing Manufacturing Job Loss

This chapter develops a working definition of an import-competing manufacturing industry. That definition will be applied to a nationally representative sample of displaced workers to identify a sample of import-competing displaced workers. Because this is a study of manufacturing jobs and workers, it will be helpful to the narrative to start with an overview of US manufacturing from the late 1970s to the late 1990s. The overview provides some perspective on the definition of import competition.

Manufacturing, in Brief

From the perspective of manufacturing employment, the two decades from the late 1970s to the late 1990s posed one difficulty after another. The sector as a whole was rocked by two recessions, a deep one in the early 1980s and another, not so deep, in the early 1990s; sluggish productivity growth; continued shifts in US consumer demand away from manufactured goods and toward services; technological change, particularly in the form of computer-aided production and design; and an increase in the flows of imports and exports.

Manufacturing employment was in slow but steady decline, from 21 million in 1979 to 18.5 million in 1999. Manufacturing's share of total nonagricultural employment plunged during the same years, from 23.4 to 14.4 percent, while its share of output fell from 22.2 to 16.1 percent. The sector's openness to trade increased dramatically: goods exports as a share of sector gross domestic product (GDP) increased by 41.3 percent

to .465, and goods imports as a share of sector GDP increased by 87 percent to .698.

If the time period is divided up, we can see in a bit more detail the changes in the composition of employment, across industries and over time. During the late 1970s and early 1980s, employment declined, often sharply, in many manufacturing industries. Several large, visible industries—notably apparel, machinery, and motor vehicles—sustained sizable employment losses, with declines of 11-17 percent (for the sector overall, employment fell by 8.5 percent from 1979 to 1985). A number of smaller industries, particularly in traditional heavy manufacturing, experienced significant percentage declines in employment: blast furnaces, – 63.4 percent; iron and steel foundries, – 53.2 percent; railroad locomotives, – 81.4 percent; watches and clocks, – 81.1 percent; and farm machinery and equipment, – 62.5 percent.¹

Very few industries saw employment rise, and for the most part, growing industries were not a part of traditional heavy manufacturing (printing and publishing, + 18.6 percent; office and accounting machines, + 26 percent; computers, + 52 percent; and miscellaneous paper products, + 10.8 percent). The average rate of job loss (calculated as the ratio of the number of workers permanently laid off to industry employment) was 5.6 percent, with a wide range, from some industries with low job-loss rates (beverages, 1.4 percent; paperboard, 2.0 percent; and drugs and pharmaceuticals, 2.1 percent) to other industries with high job loss rates (footwear, 10.9 percent; leather products, 10.1 percent; wood buildings and mobile homes, 12.3 percent; and farm machinery and equipment, 10.1 percent).

On the trade side, from 1979 to 1985 the strong dollar contributed to a 14 percent decline in import prices, and the market share of imports rose 4 percentage points on average (a 50 percent increase). Apparel, footwear, leather products, blast furnaces, engines and turbines, and toys all had increases in import share exceeding 10 percentage points. With the strong dollar, exports plunged, falling 25 percent on average. Textiles, apparel, and steel and metals all had export declines exceeding 50 percent. Leather products, apparel, and knitting mills all had a combination of the largest increases in import share and largest decreases in exports. Domestic demand was essentially flat, falling 1.6 percent, and it provided little relief to manufacturing from the combination of rising imports and falling exports.

Overall, conditions improved in manufacturing during the 1985-94 period, and then more steadily starting in 1995, as the economy strengthened. For the sector as a whole, employment fell 4.8 percent from 1985

1. Although the last three industries listed had dramatic percentage declines, they were not large-employment industries at the start of the period. Arithmetically, a given number divided by a small base produces a larger percentage change than the same number divided by a larger base.

to 1994 and rose a scant 0.1 percent from 1995 to 1999. A number of industries expanded employment, and just a few industries had large declines, notably electrical machinery and apparel. Employment continued to fall sharply in a number of smaller traditional import-competing industries (e.g., footwear, leather products, steel and metals, radio and television, and toys and sporting goods). Import prices rose from 1985 to 1994, and then declined in the late 1990s. The import share overall rose 4 percentage points (a 30 percent increase) by 1994.² There was strong domestic demand for manufactured goods, rising slowly from the economic expansion starting in 1993, and gaining strength through the end of the decade. From 1985 to 1994, exports surged across the board, with the falling dollar. Export growth was more restrained in the late 1990s, with a stronger dollar and weaker foreign demand.

From this overview of manufacturing during the past two decades, we turn to a summary of how changes in foreign competition, employment change, and job loss are related across and within manufacturing industries. This summary finishes setting the stage for an analysis of manufacturing jobs and workers.

Imports, Exports, Employment, and Job Loss

Cross-industry evidence shows that increasing imports are associated with employment reductions, whereas increasing exports (and domestic demand) enhance employment (Kletzer 2001). Within an industry, year to year, the employment-enhancing effects of expanding exports are significantly greater than the employment-reducing effects of increasing imports. Increasing foreign competition, measured as a decline in relative import price, is associated with a decline in employment (see also Revenga 1992).

These results, along with the vast majority of the research literature, use industry net employment change as the lens through which labor market effects are viewed (wages are also examined). This net change results from changes in the gross flows of new hires, recalls, quits, displacements, temporary layoffs, and retirements. Job displacement—permanent job loss—is the most visible of these events, and the one that most concerns workers, the general public, and policymakers.

Recent findings indicate that workers face a high risk of job loss in industries with a rising share of imports in domestic supply (first reported in Kletzer 1998a, and extended in Kletzer 2000 and 2001). There is a subset of industries—those with both high and increasing import shares, where the rate of job loss is high—that confront sustained import competition. Beyond this subset, the relationship between rising import share and high

2. As explained below, the industry import data run continuously through 1994.

rate of job loss is considerably weaker. This means that growing imports play a small role in job loss in the economy as a whole, but a large role in traditional import-competing industries. Within a given industry, more competitively priced imports (with falling relative import prices) are associated with job loss (see also Haveman 1998).

In sum, increasing imports and declining import prices are related to industry job loss. But this relationship is stronger in the subset of traditional import-competing industries than overall. Moreover, an open economy leads to more exports along with more imports, and these growing exports reduce job loss.³ In short, some jobs are lost when imports rise, but other jobs are maintained or created when exports rise.

With our background discussion complete, we turn now to the primary task: defining trade-related job loss and understanding how workers who lose import-competing jobs adjust to their loss.

Defining Trade-Related Job Loss

“Trade-related job loss” is a familiar phrase with great political value. It is one of the prime suspects in the increased job insecurity reported by many American workers. It requires a clear, precise definition, one that is perhaps narrow but can be measured with available data.

As commonly understood and implemented in policy, trade-related job loss means job loss due to increasing imports, with little or no attention paid to the export side of trade. This import focus is unfortunate and unrealistic. Trade is more than imports. In fact, the link between exports and jobs is also widely recognized. Manufacturers of exports (and their workers) clearly understand the sensitivity of jobs to declining or sluggish export growth. In what follows, I do stay largely within the tradition of emphasizing imports, but I will discuss industry export activity when relevant.⁴

To isolate job loss related to increasing imports, most trade displacement studies have used the US Department of Labor’s Trade Adjustment Assistance (TAA) administrative data because “increased imports” are one of several criteria used to certify displaced workers so that they will be eligible for adjustment assistance. For TAA (and NAFTA-TAA⁵) workers, certification establishes that the (former) firm experienced an increase in

3. A 10 percent increase in overall sales due to exports lowers the industry job loss rate by 2.2 percent (see Kletzer 2001).

4. Kletzer (2001) contains a more complete discussion of industry exports and job loss.

5. North American Free Trade Agreement-Transitional Adjustment Assistance is a NAFTA-specific TAA program.

imports.⁶ TAA is first and foremost a program of targeted labor market assistance and not a means of *identifying* a representative group of import-displaced workers. Workers (and firms) must apply, and be eligible, for TAA. The application process is not transparent; unionized workers and workers in large firms are more likely to apply for and receive assistance.⁷ These criteria raise selection questions; for example, workers who apply for program benefits may be those expecting difficult adjustments.

This book takes a different approach.⁸ As an extension of the industry-level trade and job loss research reported here, a number of trade measures are used to classify industries by their degree of import competition. By applying this import-competition definition to the Displaced Worker Surveys (DWSs), supplements to the Current Population Survey (CPS), I offer an exhaustive three-way classification of all manufacturing industries by degree of import competition: high, medium, and low (described in detail below). Once an industry is classified as high import competing, all workers displaced from that industry are counted as “import-competing displaced,” simply on the basis of the industry’s high degree of import competition. The resulting sample is formally a sample of workers displaced from increasing import industries—initially, as if each and every job loss were caused by increasing imports.⁹

By focusing on the differences between import-displaced workers and other workers displaced from manufacturing (from less import-sensitive industries), I control, somewhat crudely and implicitly, for other sources of displacement, such as technological change or business-cycle variation. The remaining difference can be ascribed, with some confidence, to high import competition alone.¹⁰

6. Currently, the US Department of Labor TAA certification investigation focuses on whether (1) a significant number of workers have lost their jobs or are threatened with job loss, (2) the company’s sales or production has decreased, and (3) imports of articles “like or directly competitive” have increased and “contributed importantly” to both the total or partial separation of workers and to the decline in sales or production (US General Accounting Office 2000). The importance of increased imports in TAA certification has varied somewhat over time. In the first years of TAA, eligibility criteria were quite strict, yielding few certifications. In the mid-1970s, much looser criteria greatly expanded the program.

7. Eligible petitioners include a group of three or more workers, a union (or other duly authorized representative), or a company official.

8. Kruse (1988) and Bednarzik (1993) are also exceptions in their use of non-TAA data.

9. The Bureau of International Labor Affairs (ILAB) of the US Department of Labor sponsored a number of empirical studies of trade-affected workers in the 1970s and early 1980s. See Aho and Orr (1979, 1981) and studies and citations in Dewald (1978).

10. If the import-competing industries face more intense foreign competition—and, from that competition, more technological advance—then my comparisons between import-competing displaced workers and workers displaced for other reasons will be less strongly due to increasing imports. In addition, workers in the less import-competing industries may also be displaced by import competition.

Measuring Imports, Exports, and Job Loss

This book focuses on import competition within the manufacturing sector for three reasons. First, historically, trade-flow data concentrated on goods (hence their name, merchandise trade statistics). Second, although trade now clearly involves services, data on them are much more limited. Third, public debate over “trade and jobs” very much concentrates on manufacturing.

Briefly, the trade-flow data were obtained from the National Bureau of Economic Research (NBER) Trade Database.¹¹ Data on imports, exports, and shipments are available for manufacturing industries defined at the detailed, 4-digit Standard Industrial Classification (SIC) level for the period 1958-94. The data on job displacement were obtained from the DWSs.¹² The industry classification scheme used by the CPS is the less detailed, 3-digit Census of Population Industrial Classification (CIC), which is used to report data on employment and job displacement. To bring together the two datasets thus required combining the SIC data at the CIC level. Because the DWS data are less well known, I will describe them briefly. (For the details on all data and sources, see appendix A.)

The Displaced Worker Survey is administered biennially as a supplement to the Current Population Survey. The first survey was done in January 1984 and the most recent in February 2000. The time series of surveys provides coverage of displacements during the period 1979-99. In each survey, adults (20 years and older) in the regular monthly CPS were asked if they had lost a job in the preceding 3- or 5-year period due to “a plant closing, an employer going out of business, a layoff from which he/she was not recalled, or other similar reasons.”¹³ If the answer was yes, a series of questions followed concerning the old job and period of joblessness. Other causes of job loss, such as quits or firings, are not considered displacements.¹⁴ This categorization is consistent with our common understanding of job displacement: It occurs without personal prejudice, in that terminations are the result of the operating decisions of the employer and are independent of individual job performance.¹⁵

11. This dataset is described in Feenstra (1996) and can be obtained from the NBER Web site, <http://www.nber.org>.

12. Information about this publicly available dataset can be obtained from the US Department of Labor's Bureau of Labor Statistics Web site, <http://stats.bls.gov>.

13. For the 1984-92 surveys, the recall period was 5 years. Starting in 1994, the recall period was shortened to 3 years.

14. Individuals who respond that their job loss was due to the end of a seasonal job or the failure of a self-employed business are also not included.

15. There is some ambiguity: The displacements are “job” displacements, in the sense that an individual displaced from a job and rehired for a different job with the same employer is considered displaced.

A key advantage of the DWS is its large-scale, representative nature. As part of the CPS, it draws upon a random sample of 60,000 households, which is weighted to be representative of the US workforce. As a result, the surveys yield large numbers of displaced workers, from a large set of industries. In exchange for breadth of coverage, the DWSs suffer two weaknesses that are relevant here. First, they have a relatively short-term horizon. Individuals are surveyed just once, providing information on one postdisplacement point in time, rather than about their experiences over time. The second weakness is the lack of a readily available comparison group of nondisplaced workers. Without such a group, we cannot investigate what would have happened to these workers if they had not been displaced. The lack of a comparison group leads to some unavoidable errors in measuring outcomes, such as postdisplacement reemployment and earnings losses. I will discuss these errors where relevant. (Appendix A discusses data construction in more detail, and appendix C discusses displacement research using comparison groups.)

Defining an Import-Competing Industry

A widely accepted operational definition of an import-competing industry is one with a high import penetration rate (also called import share). In principle, this measure is not quite right, because it is changes in import share that are conceptually related to changes in employment (through changes in demand or sales), and job loss occurs from changes in employment. Empirically, industry-level studies establish changes in import share as one measure of changing import competition. The appropriateness of changes in import share also is highlighted by the language of Trade Adjustment Assistance, which makes certification for eligibility depend on an administrative determination that *increased* imports have contributed to worker layoffs.¹⁶

A set of high import-competing industries initially is defined here as those ranking in the top 25 percent in import share changes during the period 1979-94. This top quartile contains industries with an increase in import share exceeding 13 percentage points. With this cutoff as the primary criterion, I then adjust the group based on employment size and history of import competition.¹⁷

16. In practice, the two measures—level of import share and changes in import share—are highly correlated, and a classification of import-competing industries by one measure produces a list that is very similar to a list produced by the other measure.

17. Methodologically, some may claim that the conceptually correct way to measure import competition is to use changes in import prices and not changes in import quantities. This distinction is not at issue in this book. I discuss this point at some length in Kletzer (2001). I note here that for a large country such as the United States, import prices are also endogenous to forces determining production, employment, and job loss, and therefore changes in import prices are not clearly the conceptually correct choice.

Table 2.1 lists the high import-competing (or import-sensitive) industries. These industries are the most likely to produce an import-competing displaced worker, and workers displaced from these industries form the group of import-sensitive displaced workers.¹⁸ Industries are defined and listed in table 2.1 at a 3-digit CIC level of detail.¹⁹ For readability, some 3-digit industries are grouped together under more aggregated (or 2-digit) headings. Industries are listed in order of estimated total number of workers displaced during the period 1979-99, from largest to smallest. For each industry, from left to right, the table reports the total number of workers displaced, share of total manufacturing displaced, average job loss rate, change in import share, 1979 level of import share, and change in exports.²⁰ The last column, labeled “importer or exporter?,” is a description of each industry’s export as well as import intensity, and is explained in more detail below.

My judgments moved several industries into the high-import category: Motor vehicles, tires and inner tubes, blast furnaces, other primary metals, and cycles and miscellaneous transport all have a history of import competition, are large and visible employers, but experienced increases in import share just below the top quartile cutoff. One industry, aircraft and parts, was moved from the high-import to the medium-import group, despite its increase in import share, because it had little history of import competition (on the basis of a low level of import share in the mid-1970s).

Industries with smaller changes in import share and/or lower levels of import share are classified as “medium” and “low” import competing. Appendix table D.1 lists all manufacturing industries under this classification, with more detailed industry information. These medium and low industries will be used extensively in the analysis for comparison with the high-import group. By comparing the high-import group with the rest of manufacturing, I am implicitly controlling for other sectorwide structural economic changes within manufacturing that are associated with job loss, such as technological change, changes in consumer demand, and restructuring.

The high-import group contains the handful of industries commonly considered to be import competing: apparel, footwear, knitting mills, leather products, textiles, blast furnaces, radio and television, and toys and sporting goods. For the most part, these industries all faced considerable increases in import competition (all had increases in import share of at least 15 percentage points), and they have faced sustained import competition over time. In other words, these industries were in the top 25 percent on the basis of the average level of import share, and almost

18. The summary characteristics reported in table 2.1 (and conclusions) are robust to the subjective adjustments in the definition of “high import competing.”

19. This means that an “industry” is a 3-digit CIC industry.

20. The change in exports is the change in $\log(\text{exports})$.

all industries started the period with a high import share.²¹ As noted above, some industries enter the group with high levels of import share without large increases in import share. Two industries stand out: motor vehicles and cycles and miscellaneous transport. Both industries had a high average level of import share during the period, but neither experienced a sizable increase in import share. Both industries received some protection from imports: In cycles, import restrictions in the 1980s were likely related to the measured fall in import share, and motor vehicles likely benefited from Japanese voluntary export restraints. Blast furnaces enters the group as an adjustment also, as a large employer with high average import share, but a mid-range increase in imports.

Table 2.1 reports an estimate of the total number of workers displaced from each industry during the period 1979-99. Details of the estimation method are discussed in appendix A. Some of the biggest increases in import share occurred in small-employment industries, such as watches and clocks, office and accounting machines, and leather products. Other traditional import-competing industries were associated with considerable displacement: apparel, electrical machinery, footwear, and radio and television.

Note that the high import-competing group contains many, if not most, of the usual suspects: footwear, apparel, leather products, and toys. The grouping also yields some surprises (or at least nuances): Most of the steel industry—here labeled metal industries—is in the medium import-competing group, with moderate increases in import share and a low initial import share. These industries are large employers, and some had considerable job loss, but not large increases in import share. Only blast furnaces and other primary metals are in the high import-competing group. Similarly, note that not all of textiles is included in the high import-competing group. Most textile job loss occurs from the industries in the medium import-competing group, due to the large size of the yarn and threads industry. The cases of metals and textiles—where job losses were extensive throughout the 2-digit industry, yet where import share increased in some but not all detailed (3-digit) industries—highlights the roles of other factors underlying job loss, including technological change.

The industry composition of NAFTA-TAA certifications provides a useful benchmark for the robustness of my criteria for import competition. Figure 2.1 reports the top 10 industries, in share of NAFTA-TAA certifications, as of August 2000.²² Apparel, electrical machinery, and motor vehicles dominate in number of workers certified, just as they do in table 2.1

21. Schoepfle (1982) adopted a 15 percent import share cutoff as his definition of “import-sensitive.” Bednarzik (1993) used a 30 percent import penetration ratio cutoff.

22. A searchable NAFTA-TAA database is available from Public Citizen at <http://www.citizen.org/pctrade/NAFTATAA>.

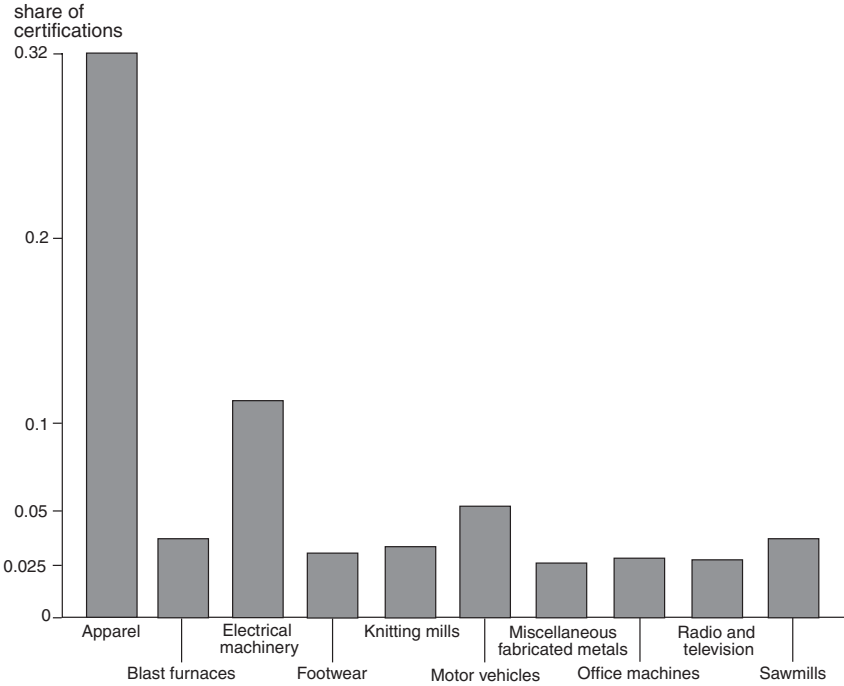
Table 2.1 High import-competing industries and job displacement, 1979-99

High import-competing industry	Total displaced, 1979-99	Share of total manu- facturing displaced	Mean job loss rate	Change in import share		1979 import share (percent)	Change in exports, 1979-94 (percent)	Importer or exporter? Balanced or unbalanced?
				1979-94	1979-85			
Electrical machinery, I	1,576,095							
Electrical machinery	1,180,706	0.0703	0.0402	0.2063	0.0712	0.1351	1.1721	Balanced importer
Radio and television	395,389	0.0235	0.1052	0.147	0.0458	0.1012	1.312	Unbalanced importer
Apparel, I								
Apparel	1,135,668	0.0676	0.0562	0.2497	0.1034	0.1464	1.3434	Unbalanced importer
Transportation equipment, I	985,760							
Motor vehicles	918,066	0.0546	0.0431	0.1012	0.0857	0.0156	0.7828	Unbalanced importer
Cycles and miscellaneous transport	67,694	0.0040	0.0838	-0.0631	-0.0221	-0.041	0.9753	Balanced importer
Machinery, except electrical, I	905,514							
Electronic computing equipment	513,988	0.0306	0.0454	0.384	0.086	0.298	1.1805	Balanced exporter
Construction and material moving machines	350,900	0.0209	0.0526	0.1771	0.0905	0.0866	-0.1908	Unbalanced exporter
Office and accounting machines	40,626	0.0024	0.0297	0.3715	0.0827	0.2888	0.1494	Balanced importer
Metal industries, I	494,660							
Blast furnaces	361,428	0.0215	0.0531	0.0709	0.0739	-0.003	0.017	Unbalanced importer
Other primary metals	133,232	0.0079	0.0719	0.0024	0.0222	-0.0198	0.189	Balanced importer

Miscellaneous manufacturing industries	335,091	0.0199	0.0505	0.1902	0.1099	0.0803	0.1857	0.0331	Unbalanced importer
Leather and leather products	246,451								
Footwear	184,417	0.0110	0.0871	0.3587	0.2192	0.1395	0.3478	1.3752	Unbalanced importer
Leather products	57,337	0.0034	0.1217	0.3906	0.195	0.1957	0.2694	0.7729	Unbalanced importer
Leather tanning and finishing	4,697	0.0003	0.074	0.1173	0.0725	0.0448	0.16	0.5605	Balanced exporter
Professional and photographic equipment	240,200								
Scientific and controlling instruments	163,503	0.0097	0.0278	0.154	0.0424	0.1116	0.0743	0.7092	Balanced exporter
Photographic equipment	67,754	0.0040	0.0321	0.1396	0.0519	0.0877	0.1206	0.0279	Balanced importer
Watches, clocks	8,943	0.0005	0.0913	0.4129	0.2261	0.1868	0.3873	-0.0476	Unbalanced importer
Rubber and miscellaneous plastics	192,960								
Other rubber products	113,144	0.0067	0.0437	0.1567	-0.0125	0.1692	0.0861	0.8918	Unbalanced importer
Tires and inner tubes	79,816	0.0048	0.0452	0.096	0.038	0.058	0.1295	1.0439	Unbalanced importer
Textiles, I	159,177								
Knitting mills	137,725	0.0082	0.0342	0.1585	0.0973	0.0612	0.0606	1.4413	Unbalanced importer
Miscellaneous textiles	21,452	0.0013	0.0449	0.0146	0.0142	0.0005	0.1186	0.7878	Balanced importer
Toys and sporting goods	155,970	0.0093	0.0597	0.2781	0.148	0.1301	0.2292	1.0191	Unbalanced importer
Pottery and related	26,471	0.0016	0.0733	0.1326	0.1054	0.0271	0.3126	0.7543	Unbalanced importer
Totals/means	6,454,017	0.3842	0.0594	0.1846	0.0846	0.1000	0.1689	0.6984	

Sources: Author's calculations from the National Bureau of Economic Research Trade Database and the Displaced Worker Surveys, 1984-2000.

Figure 2.1 Top 10 industries for NAFTA-TAA certifications, as of August 2000



NAFTA-TAA = North American Free Trade Agreement-Transitional Adjustment Assistance.

Source: Author's calculations from Public Citizen's NAFTA-TAA database.

in accounting for the largest shares of manufacturing displaced. The only real difference between my set of import-competing industries and a NAFTA-TAA defined list is sawmills, which is on the NAFTA-TAA list due to Canadian imports. Sawmills is a medium import-competing industry in my categorization, and is listed in appendix table D.1.

Using the conservative count of displaced workers explained in appendix A, 16.8 million workers lost jobs in all of manufacturing during the period 1979-99, about 37 percent of the total nonagricultural job loss of 44.9 million.²³ Yet during this period, manufacturing represented, typically, about 18 percent of total nonagricultural employment (23.4 percent in 1979, 16.0 percent in 1994, and 14.3 percent in 1999). It is clear that

23. This number will be different from the often-cited declines in employment in manufacturing. Manufacturing employment decline is a net loss in employment, the difference between employment gains (through new hires, rehires, and recalls) and reductions in employment (through quits, layoffs, displacements, retirements, and deaths).

manufacturing workers are overrepresented among displaced workers, relative to their employment share. To get a perspective on the scale of job loss and employment decline in manufacturing, nearly as many workers lost manufacturing jobs during 1979-99 (16.8 million) as were employed in manufacturing in 1999 (18.5 million). Employment in manufacturing has traditionally been more sensitive to business cycle fluctuations than employment in utilities, wholesale and retail trade, and services.²⁴

The high import-competing group accounted for 38.4 percent of manufacturing displacement, at 6.45 million workers. Yet during the period 1979-99, these industries accounted for just under 30 percent of manufacturing employment. Thus import-competing industries account for a greater share of job loss than their share of employment. We can see this quite clearly when we compare the high import-competing group with the total (nonagricultural) labor force. Averaged over the period 1979-94, the high import-competing manufacturing industries accounted for 5.2 percent of total nonagricultural employment. By my measure, job losses from these industries accounted for 14.2 percent of nonagricultural displacement.

A bit of additional perspective on the size of these job loss numbers can be gained by considering, briefly, other measures of US labor market turnover. The US labor market is characterized by substantial turnover, even when overall employment is stable. Flows in and out of jobs, employment creation and destruction, are all sizable. Two examples: for 2000, the average monthly gain in payroll employment was 219,000 jobs. And in April 2001, as the economy slowed down, payroll employment fell by 223,000. From a point of overall labor market strength to one of weakening, we can see the swings are reversed, with similar magnitude.

By any measure, there is a lot of job loss in the US economy, even in good times. In 1999, with an average unemployment rate of 4.2 percent, 2.5 million workers lost their jobs. From its Mass Layoffs Statistics (MLS) program, the Bureau of Labor Statistics reported 120,370 nonseasonal extended mass layoffs for the second quarter of 2000.²⁵ At this same rate, on a yearly basis, there would have been 481,480 layoffs. Using a less restrictive definition of job loss, in the most recent DWS (February 2000), 7.6 million workers, from all levels of job tenure, reported a job loss between January 1997 and December 1999. On a yearly basis, that would

24. This difference narrowed in the 1990s, as compared with the 1980s. Throughout, however, job loss rates in manufacturing show a countercyclical pattern, rising in recessions and falling during recoveries (see Kletzer 2000). For an extended discussion of job loss over time, see Farber (1997, 2001).

25. Nonseasonal layoffs exclude those due to the end of seasonal work (primarily in food production), extended layoffs last more than 30 days, and mass layoffs involve 50 workers or more from an establishment.

be about 2.5 million displaced workers. During the 21-year period of this sample, 6.45 million workers lost jobs in import-competing industries; that is 307,142 workers per year.

There is notably less manufacturing displacement now than was the case from the late 1970s to the mid-1990s. Manufacturing displacement during the period 1997-99 affected 1 million workers, or 333,333 a year, less than the 1979-94 manufacturing annual average of 750,000 workers.

Because a few import-competing industries are large employers, there is some further concentration, by industry, in import-competing displacement. Three industries, electrical machinery, apparel, and motor vehicles, accounted for 19 percent of manufacturing displacement. At the beginning of the period, they accounted for 17 percent of manufacturing employment. The top five, adding electronic computing equipment (computers) and blast furnaces, accounted for just under 25 percent of displacement, and 22 percent of 1979 employment. These industries all had high and rising import shares during the period.²⁶

Is the risk of job loss higher in import-competing industries? Not clearly so, using a measure of the likelihood of job loss—the job loss rate—reported in table 2.1. An annual job loss rate for an industry is the ratio of the number of workers displaced to average employment. Table 2.1 reports a mean job loss rate for each industry. The mean job loss rate for 1979-99 was 5.9 percent of employment in the high import-competing group, relative to 6.2 percent in the medium group and 4.2 percent in the low group.²⁷ So there was a higher risk of job loss in the most import-sensitive industries, in comparison with the least import-sensitive (or more insular), but a similar risk of job loss in the set of industries less sensitive to rising imports. This reveals that the link between job loss and rising import share is complicated: some of the industries with high job loss had large increases in import share (e.g., leather products, pottery and related products, and radio and television), but within and across industries, the relationship between rising import share and the risk of job loss is considerably weaker.

Exports and Import-Competing Industries

As was noted above, the traditional discussions of the “costs of trade,” both academic and in policy circles, focus almost singularly on imports. Trade, of course, includes both imports and exports, and many industries, including our high-import industries, do both. The simple view of trade—that the

26. For a detailed analysis of industry changes in import share (and exports) over this time period, see Kletzer (2000).

27. The group (high, medium, low) mean job loss rate was calculated by weighting each industry mean by beginning-period industry employment.

United States imports watches and apparel and exports airplanes and bulldozers—is wrong. A more realistic view is that the United States imports and exports all four of these goods, as either intermediate or final goods.

Up to this point, our discussion considers industries as “importers,” but it is important to note that three of the top five US export industries in 1994 are members of our import-competing group: electrical machinery and equipment (accounting for 11.4 percent of total manufacturing exports); motor vehicles (10.8 percent); and electronic computing equipment (7.0 percent). The remaining two industries are medium import-competing: aircraft and parts (8.3 percent) and nonelectrical machinery (5.8 percent).

More generally, to varying degrees, our import-competing industries are engaged in two-way trade, with flows of exports as well as imports.²⁸ We have seen so far that all the industries in the high-import group faced increased competition from imports since 1979. Allowing for two-way trade allows us to see that, to some degree, these same industries were engaged in production for foreign markets.

An established method for measuring the degree of intraindustry trade (or trade overlap) is available from a method first presented in Grubel and Lloyd (1975). Appendix B describes a simple version of the Grubel-Lloyd trade overlap index. In this version, the value of the index ranges from 0, when an industry only exports or imports but does not do both, to 1, when an industry’s exports and imports are equal. The higher the value of the index, the greater the degree of trade overlap, or intraindustry trade. Restated, we can think of balanced industries as those with a high degree of trade overlap, where flows of exports and imports are equal or nearly so. Unbalanced industries are those where one of the flows dominates the other in size.

A simple alteration of the Grubel-Lloyd measure, using positive or negative net exports, reveals not only whether trade is balanced, but also whether an industry is relatively more export oriented or import oriented. With this alteration, I can make a straightforward judgment as to whether an industry is an exporter or importer, balanced or unbalanced. My revised Grubel-Lloyd index yields values near 0 for unbalanced exporters, values closer to 1 (but less than 1) for balanced exporters, values close to 1 (but greater than 1) for balanced importers, and the largest values for unbalanced importers (see appendix B for more details).

My own characterization of an industry’s level of engagement in world trade (balanced or unbalanced) and direction (exporter or importer) is

28. An extensive literature explains and measures within-industry, or intraindustry, trade (see Kletzer 2001 for a summary). Lovely and Richardson (2000) present a useful characterization of intraindustry trade. Between industrial countries (North-North), trade flows within an industry are differentiated as skill-intensive intermediate or final goods. Between industrial and newly industrialized countries (North-South), the North exports skill-intensive intermediate or final goods, and the South exports labor-intensive intermediates. Southern production of labor-intensive intermediates (or the labor-intensive assembly component of final goods) is also known as Northern “outsourcing,” the import of intermediate inputs.

reported in the last column of table 2.1 for the high import-competing industries. The indices themselves are reported in the more detailed appendix table D.1.²⁹ Nineteen of 23 industries in this group are importers, with 13 (56 percent) unbalanced importers. These unbalanced importers import far more than they export. This is what we expect from this group. These industries (among them apparel, motor vehicles, blast furnaces, radio and television, footwear, toys and sporting goods, knitting mills, leather products, and watches and clocks) are perhaps the most strongly associated with import competition. It is perhaps notable that of the industries listed in table 2.1 that are “traditional import competing” (in the sense of being the industries long identified as import sensitive), all are unbalanced importers.³⁰ The balanced industries are the next set, with six importers and three exporters. Trade flows are more balanced in durable goods than in nondurable goods. Two industries with some of the largest increases in import share are, upon reflection, more balanced trade industries (electronic computing equipment and office and accounting machines). In each of these industries, both exports and imports rose strongly, with exports dominating in electronic computing equipment, and imports in office and accounting machines.

There is considerable balanced trade in leather tanning and finishing, miscellaneous textile mill products, machinery, farm equipment, and cycles and miscellaneous transport, where high import share is combined with high export intensity. These industries again face significant import competition but are also highly engaged in exporting. There is only one industry that I call an “unbalanced exporter,” construction and material moving machines. This industry started from a low level of import competition, experienced a sizable (17 percentage points) increase in import share, and saw its high level of exports decline during the 1979-94 period (by 19 percent). When the dollar was strong during the 1979-85 period, this industry was vulnerable to both rising imports and declining exports. As a large-employment industry with an above-average job loss rate, it contributed notably to manufacturing job loss.

Appendix table D.1 reports on the full set of manufacturing industries. A few observations: In the medium-import group, where we might expect a more balanced engagement with the world, we see just that: 32 percent are unbalanced importers; 59 percent are balanced, tilted either toward

29. At the level of aggregation in this dataset, it is not surprising that industries are both importers and exporters. For example, in motor vehicles (defined here as CIC 351), where finished cars are included with parts, firms located in the United States import parts for US production (Honda; Toyota; the NUMMI plant in Fremont, CA), and parts are exported for Canadian production. Of course, finished cars are imported and exported.

30. See Schoepfle (1982) for a list of import-sensitive industries using data from the 1970s. His methodology for classifying industries is similar (although he uses 4-digit SIC industry codes), and the resulting industry list is very similar.

imports or exports; and 11 percent are unbalanced exporters. The low-import group contains industries that tend to be domestically oriented, with little import or export activity, along with industries that actively export. Industries balanced with very little trade (high domestic orientation) include dairy products; bakery products; paperboard containers; printing and publishing; cement, concrete, and gypsum; and fabricated structural metal. This group also includes the unbalanced and high-export industries: logging, tobacco, grain mill products.

Note that not all the industries listed in table 2.1 are unbalanced importers. Although the list is generated from changes in import share, which makes sense from a job loss perspective, a rapid or large rise in import share need not necessarily mean a loss of competitiveness. As indicated by the balanced importers and exporters, a rise in imports, accompanied by a rise in exports, may signal intraindustry trade and/or product specialization. In addition, the fact that high import-competing industries are not just unbalanced importers indicates the dynamic notion of import competition.

Exports and imports have increased over time in many industries. Even where there is far more trade in one direction than the other (unbalanced trade), the smaller of the flows increased during the study period. Sixty percent of manufacturing industries were more balanced in trade by 1994 than in 1979 or in comparison with the average measure reported in appendix table D.1. Exports represent a small, although far from trivial, share of domestic shipments in traditional import-competing industries, such as footwear, watches and clocks, leather products, pottery, and toys and sporting goods. Other traditional import-competing industries have more balanced trade, such as leather tanning and finishing, cycles and miscellaneous transport. Yet the direction of future trade orientation of these industries is unclear, because 13 of the 23 high import-competing industries became less balanced (increased their degree of unbalanced importing) during the period.

We can draw out some relationships between job loss and an industry's trade orientation. Unbalanced importers dominate the group of high import-competing industries (13 of 23, or 56 percent). These industries account for 60.5 percent of the group's total job losses (3,909,465 workers), whereas they accounted for 55 percent of beginning employment. Seven of these 13 industries have job loss rates higher than the manufacturing average, and the 3 industries with the highest job loss rates are all unbalanced importers. The 6 balanced importers accounted for 21.3 percent of group job losses (1,378,232 workers), from a 26 percent beginning-employment share. Just 2, or a third, of these industries had average job loss rates higher than the manufacturing average. The numbers of exporters are a bit smaller, making summary statistics more tenuous. The 3 balanced exporters produced 682,188 job losses, 10.5 percent of the

group total. One industry, leather tanning and finishing, had an above-average job loss rate. Together, the 9 balanced industries accounted for 31.8 percent of group job losses and 36 percent of employment. Some of the industries with the lowest job loss rates are balanced-trade industries.

On balance, this accounting shows that the risk of job loss is greater in unbalanced importers and that these industries produce a slightly greater share of job loss than employment. This is consistent with earlier statements noting the greater risk of job loss from industries with a high, rising import share. These industries are the unbalanced importers. More balanced-trade industries have less job loss and a lower risk of loss.

Beyond offering a more realistic view of these manufacturing industries, including exports in our trade picture allows job loss to be mitigated by increasing exports or increased by falling exports. American jobs are not just vulnerable to rising imports; they are vulnerable to falling exports. This point is not missed by those decrying the large US trade deficit.³¹ From this appraisal of industry trade engagement and trends in job loss, we turn to the workers: who they are and how they adjust to job displacement.

31. For an interesting set of discussions, see the Web site and final report of the US Trade Deficit Review Commission, <http://www.ustdrc.gov>.