



U.S. Gender and Trade Network Working Paper

Trade-Related Job Losses: A Gender Analysis

Abstract

This research evaluates gender biases in trade-related employment changes in the U.S. manufacturing industries. We find that existing patterns of occupational segregation have ensured that female workers are more vulnerable to trade related insecurities. We also find that the patterns of segregation make it less likely that female workers will benefit from potential gains from trade. We believe that the extent of this bias highlighted here should provide a strong motivation to evaluate the effectiveness of trade-related employment compensation and adjustment programs from a gender perspective.

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Introduction:

This paper presents a gender analysis of the trade-related employment insecurities in the U.S. manufacturing sector. We find that existing patterns of occupational segregation in manufacturing have made the trade-impact particularly gender biased. Women are consistently at a higher risk for trade-related job losses since they are overrepresented in industries that are facing a high degree of import competition. Moreover they are also consistently underrepresented in industries that are more export oriented and have higher export growth rates. We argue that understanding this occupational segregation effect is crucial for evaluating policies that seek to address and compensate for the dislocation caused by trade.

Traditional trade theorists argue that there are net gains from trade and specialization. That is although some sectors of the economy will shrink as countries increase trade integration there are bigger expansions in other sectors that are more in line with the country's comparative advantage. However if the shrinking sectors disproportionately add to the economic insecurities of people that have a history of discrimination and economic disadvantage, then the net impact is not very relevant since it will add to the level of inequality in the economy. Given the history of gender discrimination in employment and wages, the finding of disproportionate trade-impact on female dominated industries has important implications for the gender wage gap and other measures of discrimination.

Moreover, part of a successful trade strategy is also adequate compensation and help in transitioning workers from the import competing sectors to the expanding export sectors. While the labor market outcomes and constraints are traditionally different for men and women, the intersection of occupational segregation and trade-related job losses places an additional constraint on dislocated female workers. Therefore, understanding the origins and extent of the gender bias in job losses would be important to motivate a review of compensation policies from a gender perspective.

The analysis in this paper is focused on the manufacturing sector. In the United States, the major losses from trade related adjustment have been felt in the manufacturing sector. Moreover it is still very crucial for workers and their living standards since the average compensation for the sector is higher than the average compensation in the service sector (Scott 2001 estimates a 13% higher compensation in manufacturing compared to the service sector). Increases in the gender bias in this sector would therefore have strong implications for the overall gender wage gap.

We begin this research by identifying the manufacturing industries that are trade-sensitive and therefore have a high potential for trade-related employment changes. We then present an analysis of the gender composition of employment in these industries.

Focus on Manufacturing Industries:

While estimates of the actual amount of trade-related job loss vary, previous research has established that the trade-impact has been most severe on the manufacturing sector. Kletzer (2004) estimates that in the 1993-99 out of the total jobs lost in the US, 10.7% can be attributed to the North American Free Trade Agreement (NAFTA)-related import changes. But when focusing solely on the manufacturing sector, the NAFTA impact is much higher – 24-27% of manufacturing jobs losses can be attributed to changes in trade patterns due to NAFTA. Rothstein and Scott (1997) and Scott (2001) estimate that 65%-70% of the NAFTA related job changes were in the manufacturing sector. Sachs et al. (1994) estimate that increases in imports contributed to a 7.2 percent job loss in low-skilled production jobs in manufacturing during the period 1978-90. Kletzer (2001) also estimates that for the extended period 1979-1999 about 38.4% of manufacturing job losses came from manufacturing industries that faced high levels of competition from imports.

Some of the reports also compare the jobs losses to the jobs gained in manufacturing. Rothstein and Scott (1997) and Scott (2001) conclude that for the manufacturing sector, the NAFTA related job losses

are far greater than the job gains. Kletzer (2001) finds that export changes have had a stronger job creation impact than the job loss impact of imports. For the period 1979-99, Kletzer estimates that a 10% increase in export sales led to a 7% increase in employment whereas a 10% increase in imports led to a 4% decline in employment. Bednarzik (1993) reports that industries classified as import-sensitive due to their high import ratios were more likely to report job losses greater than 15,000 for the period 1982-1987 than export-sensitive industries.

However there are currently no detailed gender analyses of the trade-impact in the manufacturing sector. Kletzer (2001) does find that 55 percent of the workers that the study classifies as being "trade displaced" or facing job losses due to intensive import competition are women. She notes that the higher percentage of female job losses is due to the fact that women are concentrated in industries that face higher levels of import competition. However she does not present a systematic evaluation of this to see the extent to which women are over-represented in import competing industries. Moreover she also does not compare the import-sensitive industries to the export-sensitive industries. In this study we explore the overrepresentation of women in the industries that are import competing industries and compare it to their presence in the export-intensive sectors in order to determine the overall trade effect. The emerging patterns give some indication of the links between occupational segregation and trade-related economic insecurities.

Import and Export Intensive Industries: Methodology

Defining what constitutes a trade-related shift in employment has many difficulties. For instance, in general we may consider a trade-related job loss to be defined as loss of employment due to imports. However it is difficult to specifically separate out jobs lost due to imports from jobs lost due to technology and domestic demand changes since all three may be occurring simultaneously. In such cases we may overstate the job-losses from trade. Similarly it is also difficult to distinguish between jobs resulting from exports and jobs resulting from domestic demand changes. However, despite the difficulties it is crucial to have some practical, if imperfect, way to at least narrow down a list of potential industries and groups that are most at risk. Without such an exercise there would be no voice for those most at risk to shape appropriate compensation policies.

One way to identify the groups of workers facing high levels of trade-related insecurities is to look at the number of applications for the Trade Adjustment Assistance (TAA) program. The TAA is the current method of compensation for workers who lose employment due to trade related competition. The program provides a combination of income replacement, retraining and relocation funds. In order to qualify for TAA assistance, a group of workers (three or more from the same place of employment) have to jointly submit a petition to the department of labor declaring that their jobs have been impacted due to trade-related competition. If the petition is accepted then the group of workers becomes eligible for the TAA benefits.

The data on the number of petitions and the number of petitions accepted (or "certified") therefore provides some information about industries and groups most at risk. In fact the current statistics do indicate that more women than men have faced trade related losses. According to the U.S. Department of Labor statistics, women accounted for 55 percent of the total TAA recipients in 2004.

However as Kletzer (2001) points out the TAA statistics tend to underestimate the job loss impact since the process of application and certification eligibility for the program is not very transparent. In order to qualify for the assistance an application has to be made by a group of workers. This group action is more likely to occur in the case of larger unionized firms while workers in smaller, non-union firms will tend not to go through the application process. For our analysis this is particularly crucial since women are more likely than men to work in smaller, non-unionized settings. There is also increasing evidence from individual case studies that the certification process involves many complexities and long delays (see Brooks-Rubin, 2005). Moreover the TAA would of course not be much use for identifying groups or

industries that have gained from trade. So it would not be possible to make a simultaneous and consistent comparison of the gains and losses from trade.

We therefore go beyond the TAA statistics and follow the method of identifying trade-intensive industries by the import and export penetration ratios previously adopted by Bednarzik (1993), Addison, Fox and Ruhm (1995) and Kletzer (2001, 2004). Industries are classified as import-intensive based on the ratio of imports to the sum of domestic shipments and imports. The industries with a high import ratio face relatively higher levels of competition and therefore the workers in these industries are identified as the ones facing a high potential for trade-related employment insecurities. This method of course does not give us an actual number for the jobs lost due to imports and therefore we avoid the difficulties regarding overestimation or underestimation discussed before. However it does provide us some idea about the industries and therefore the group of workers that face a greater risk of trade-related employment pressures. Similarly the export-to-shipment ratios are used to classify industries as having a higher potential for export-related gains since a larger share of the output of these industries is being exported.

We created a list of export and import intensive industries for the period 1990-2001. The data on industry level manufacturing exports and imports are collected from the NBER trade database. The NBER data is disaggregated at the 4-digit Standard Industry Classification (SIC) level and is available up to 2001. For this analysis we choose the period 1990-2001. The range is restricted to 2001 due to the availability of data. The initial year of the database extend into the 60s. However we choose to begin from 1990 since this range would include an equal number of years pre and post-NAFTA and might therefore be a useful marker of the changes brought about by trade integration.

The industry shipment data is available from NBER and the Bureau of Economics Affairs (BEA). The shipment data is however available at the 3-digit SIC code level. The bulk of the work in calculating the import and export penetration ratios therefore involved the collapsing of the trade data from SIC-4 to SIC-3 levels and matching it with the shipment data.

Once the datasets have been merged we calculate the import and export penetration ratios. The average import penetration ratio for all the 3-digit industries is 0.16 percent. We classified industries that are one standard deviation above the average as being import-intensive and export-intensive respectively. Table 1 presents the list of industries. This gives us a list of 19 import-sensitive industries and 17 export sensitive industries. The threshold of one standard deviation is arguably arbitrary. Therefore in the gender composition analysis that follows, results for varied thresholds such as industries with the top 10 and top 20 import and export penetration ratio are also reported.

The import-intensive industries conform to what we might expect to see, given popular perceptions regarding trade and job losses. There is a predominance of textile and apparel related industries as well as electronics and electronic parts such as clocks, watches and audio and video equipment. The list also includes as expected some motor vehicle industries. As a comparison we compiled lists of the top TAA-certified industries for selected states for the years 1994-2000. The tables presented in Appendix A list the top 10 industries in terms of the number of workers certified for 5 states. These states were chosen on the basis of having had the largest number of TAA certifications. The industries were once again aggregated at the 3 digit SIC code level. Textile, apparel and household audio and electronics such as household audio and video equipment and motor vehicles are the top TAA certified industries for all the 5 states. This state level list therefore very closely mirrors the broad categories in our import list. As discussed earlier, the TAA statistics cannot be used to identify export-intensive industries.

TABLE 1: Import-Intensive and Export-Intensive Industries			
<u>Industry</u>	<u>Import Ratio</u>	<u>Industry</u>	<u>Export Ratio</u>
Rubber and Plastic Footwear	0.77	Misc. Manufacturing	0.84
Girl's and Children's outerwear	0.69	Pulp Mills	0.63
Watches, Clocks, Watchcases and parts	0.68	Agricultural Chemicals	0.60
Footware exc rubber	0.67	Footware cut stock	0.59
Handbags and personal leather goods	0.63	Misc. Furnitures and Fixtures	0.50
Jewelry Silverware and Plated Ware	0.61	Household Audio and Video Equipment	0.45
Leather Gloves and Mittens	0.59	Primary nonferrous metals	0.45
Luggage	0.58	Aircraft and Parts	0.40
Household Audio and Video Equipment	0.57	Ordance and Excessories, NEC	0.39
Footware cut stock	0.55	Computer and Office Equipment	0.38
Misc. Furnitures and Fixtures	0.56	Construction and Related Machinery	0.34
Misc. Apparels and Accessories	0.50	Engines and turbines	0.33
Toys and Sporting Goods	0.44	Musical Instruments	0.33
Motorcycles, Bicycles and Parts	0.44	Misc. Electrical Equipment and Supplies	0.30
Musical Instruments	0.42	Motorcycles, Bicycles and Parts	0.30
Pottery and related products	0.37	General Industrial Machinery	0.29
Primary nonferrous metals	0.37	Measuring and Controlling Devices	0.29
Men's and boy's furnishings	0.37		
Hats Caps and Millinery	0.37		

Source: Author's Calculations from the NBER trade Database

Gender Composition of Employment:

In order to trace the occupational segregation patterns in trade-intensive industries, we identify the gender composition of the workforce for the above list of industries. Table 2 presents the percentage of female employment for the export and import-intensive industries. The data for the percentage of female workers is obtained from the Women in the Labor Force Data book compiled by the Bureau of Labor Statistics (BLS). The BLS data (table 14 employed persons by detailed industry and sex, annual averages) is not provided by precise SIC codes. The table conforms to the North American Industry Classification System (NAICS). However by using the NAICS and SIC correspondence table provided by the U.S. Census Bureau, it was possible to find relatively close matches for the industries in our import and export lists.

TABLE 2: Gender Composition Export and Import Intensive Industries

<u>Import-Intensive Industries</u>	<u>Female Employment Percentage</u>	<u>Export-Intensive Industries</u>	<u>Female Employment Percentage</u>
Rubber and Plastic Footwear	55.5	Misc. Manufacturing	40.2
Girl's and Children's outerwear	67.2	Pulp Mills	21.1
Watches, Clocks, Watchcases and parts	31.2	Agricultural Chemicals	35.2
Footware exc rubber	55.5	Footware cut stock	55.5
Handbags and personal leather goods	55.5	Misc. Furnitures and Fixtures	28.2
Jewelry Silverware and Plated Ware	40.2	Household Audio and Video Equipment	36.1
Leather Gloves and Mittens	55.5	Primary nonferrous metals	20.6
Luggage	55.5	Aircraft and Parts	23.4
Household Audio and Video Equipment	36.1	Ordance and Excessories, NEC	19.3
Footware cut stock	55.5	Computer and Office Equipment	31.3
Misc. Furnitures and Fixtures	28.2	Construction and Related Machinery	14.8
Misc. Apparels and Accessories	67.2	Engines and turbines	22.2
Toys and Sporting Goods	37.4	Musical Instruments	40.2
Motorcycles, Bicycles and Parts	23.9	Misc.Electrical Equipment and Supplies	35
Musical Instruments	40.2	Motorcycles, Bicycles and Parts	23.9
Pottery and related products	20.1	General Industrial Machinery	22.2
Primary nonferrous metals	20.6	Measuring and Controlling Devices	31.2
Men's and boy's furnishings	67.2	Electronic Components and Accessories	32.4
Hats Caps and Millinery	67.2	Girl's and Children's Outerwear	67.2
Computer and Office Equipment	31.3	Leather Tanning and Finishing	55.5
Average (One standard Deviation)	46.30		29.43
Average (top 20)	45.55		32.77
Average (Non-overlapping Industries)	51.93		26.9
t-stat (mean comparison one standard deviation threshold export and import industries): 3.72*			
t-stat (mean comparison top 20 export and import intensive industries): 2.67 *			
t-stat (mean comparison export and import intensive non-overlapping Industries): 5.34*			
*Significant at the 95% confidence level			
Source: Bureau of Labor Statistics Women in the Labor Force Databook 2004			

The average percentage of female workers in the import-intensive industries at 46.3 percent is substantially higher than the average for the export intensive industries (29.43 %). In order to compare the two mean, a t-test was conducted. The t-value for the difference between the two averages is 3.72, indicating a statistically significant difference at the 95 percent confidence interval. In order to test for the robustness of our one standard deviation above the mean threshold for the export and import ratios, we also calculate and compare the gender composition for other thresholds. Here we report the average female employment ratio for an expanded group of top 20 export and import-intensive industries. We also report the average gender employment pattern for non-overlapping industries, that is, industries that are only present in either the import or the export list. In each case, the female employment percent for the import group is higher than the export group and the difference is statistically significant. Moreover the percentage of female workers for all manufacturing industries is 30.3 percent, which is very close to the export-intensive group averages and therefore substantially lower than the import-intensive group averages. We are therefore able to establish a clear indication of the extent to which women are over-represented in the 'at risk' import-sensitive group.

The above table however does not necessarily provide sufficient evidence that women are also simultaneously underrepresented in industries that are gaining from trade. It can also be argued that the export-intensive industries may not necessarily gain from trade either. To the extent that exports also face pressures from low-wage international competition, the workers in these industries also can be classified as being sensitive to trade-related insecurities. In order to pin down gains from trade, we calculated the growth in exports for all industries for the period 1991-2001. Table 3 presents industries with the highest export growth rates and table 4 presents the gender composition for these industries.

TABLE 3: Export Growth Industries (1991-2001)	
<u>Export-Growth Industries</u>	<u>Export-Growth Ratio(1991-2001)</u>
Paperboard Mills	8.62
Jewelry Silverware and Plated Ware	3.39
Greetings Cards	2.37
Girl's and Children's outerwear	2.21
products of purchases glass	2.16
Drugs	2.15
Knitting Mills	2.08
misc. primary metal products	1.87
Electronic Components and Accessories	1.82
Ophthalmic Goods	1.80
Railroad Equipment	1.68
Misc. Plastics Products	1.58
Hose and Belting and Gaskets and Packing	1.55
Paper board containers and boxes	1.55
Soaps, cleaners and toilet goods	1.53
Medical Instruments and Supplies	1.44
Screw Machine Products, Bolts etc	1.33
Paints and Allied Products	1.32
Misc. Fabricated Metal Products	1.30
Partitions and Fixtures	1.30
Source: Author's Calculations from the NBER trade Database	

The average female employment ratio for the export growth industries, at 34.04 percent, is once again substantially lower than the import-intensive group of industries. The t-statistics comparing the mean of the two groups is also statistically significant. The export-growth list also includes two industries- Jewelry Silverware and Girl's and Children's Outerwear- that are also part of the import-intensive list. If we remove these industries and focus only on the non-overlapping industries, the average female employment for the export growth list drops 31.58 percent.

The above tables provide a clear picture of the extent of the impact of occupation segregation on trade-related insecurities. The overrepresentation of women in the 'at risk' industries is not compensated by a presence in the gaining group. In order to evaluate the full impact of this overrepresentation, we also compare the employment changes in the import-intensive and the export-growth industries. Table 5 presents the change in employment in the industries for the period 1991-2001.

The employment data is from the Current Employment Survey. Once again the data is available according to the NAICS. The appropriate matches were found using the correspondence tables. According to the correspondence table, some industries in the import-intensive list had to be merged (details in the table). For some other industries there no data was available as indicated by the missing values in the table.

TABLE 4: Gender Composition Export Growth Industries

<u>Export-Growth Industries</u>	<u>Female Employment Percentage</u>
Paperboard Mills	25.20
Jewelry Silverware and Plated Ware	40.20
Greetings Cards	37.60
Girl's and Children's outerwear	67.20
products of purchases glass	28.70
Drugs	46.10
Knitting Mills	48.80
misc. primary metal products	19.30
Electronic Components and Accessories	32.40
Ophthalmic Goods	46.20
Railroad Equipment	23.90
Misc. Plastics Products	30.20
Hose and Belting and Gaskets and Packing	30.20
Paper board containers and boxes	25.20
Soaps, cleaners and toilet goods	57.80
Medical Instruments and Supplies	46.20
Screw Machine Products, Bolts etc	16.10
Paints and Allied Products	21.10
Misc. Fabricated Metal Products	19.30
Partitions and Fixtures	19.20
Average	34.04
Average (excluding industries also present in the import-intensive list)	31.86
t-stat (mean comparison export-growth and import intensive industries): 2.43*	
t-stat (mean comparison export-growth and import excluding overlapping industries): 2.71*	
* Significant at the 95% confidence level	

Source: Bureau of Labor Statistics Women in the Labor Force Databook 2004

TABLE 5: Employment Changes 1991-2001			
<u>Import-intensive</u>	<u>Employment Change</u>	<u>Export-Growth</u>	<u>Employment Change</u>
Footware (Includes Rubber and Plastic Footwear, Footware exc rubber and Footware cut stock	-66.13	Paperboard Mills	-15.67
Girl's and Children's outerwear	-57.4	Jewelry Silverware and Plated Ware	-21.97
Watches, Clocks, Watchcases and parts	...	Greetings Cards	...
Luggage and handbags and personal leather goods	-33.47	Girl's and Children's outerwear	-57.40
Jewelry Silverware and Plated Ware	-21.97	products of purchases glass	13.81
Household Audio and Video Equipment	-19.52	Drugs	23.89
Misc. Furnitures and Fixtures	25	Knitting Mills	-43.10
Misc. Apparels and Accessories, Gloves and Mittens and Hats and Caps	-25.06	Misc. primary metal products	...
Toys and Sporting Goods	-35.69	Electronic Components and Accessories	1.83
Motorcycles, Bicycles and Parts	...	Ophthalmic Goods	...
Musical Instruments	...	Railroad Equipment	-0.71
Pottery and related products	-1.48	Misc. Plastics Products	13.24
Primary nonferrous metals	-14.5	Hose and Belting and Gaskets and Packing	24.78
Men's and boy's furnishings	-58.31	Paper board containers and boxes	0.95
Computer and Office Equipment	-17.9	Soaps, cleaners and toilet goods	-0.62
		Medical Instruments and Supplies	5.52
		Screw Machine Products, Bolts etc	6.12
		Paints and Allied Products	-7.16
		Misc. Fabricated Metal Products	26.59
		Partitions and Fixtures	13.06
Average	-27.2		-0.99
Average (excluding overlapping industries)	-24.70		4.16
Source: BLS Current Employment Survey			

The large declines in employment in the import-intensive industries provide further indication that these are the industries that face the most trade-related employment insecurities. There is only one industry in the list –Misc. Furniture and Fixtures- has seen gains in employment. Most of the others have faced declines in employment well over 15 percent. In the export growth list on the other hand, 10 industries record gains in employment for the period. Only 4 industries faced declines in employment over 15 percent. Of these, two industries- jewelry and girl's outerwear also present in the import-intensive list and the two also have high female employment percentage. A third industry – knitting mills also has a

relatively high female employment ratio of 48.8 percent compared to the group average of 34.04 percent.

A consistent pattern of gender bias in trade-related employment changes has emerged through this analysis. Specifically this bias can be attributed to the links between trade-patterns and occupational segregation. Industries that are subject to high-degrees of import competition have faced high levels of employment declines. These industries also have substantially higher percentages of female employment compared to the average female employment rates in manufacturing. On the other hand industries that have experienced export growth have seen employment growth or at least relatively low declines in employment and they have relatively low ratios of female employment.

Economic Implications and Further Research Issues:

It could be argued that manufacturing as a sector is losing comparative advantage in the US and is compensated for by gains in the service sector. Similarly the gender bias in manufacturing employment insecurities can be compensated for by gains in service industries. However as mentioned earlier the average compensation in manufacturing continues to be higher than average compensation in services. Reductions in female employment opportunities in manufacturing therefore can have a significant influence on the gender wage gap.

Along similar lines, Kletzer (2004) finds that amongst workers displaced from industries with high import-ratios, reemployment in manufacturing results in lower earnings loss compared to reemployment in other sectors. That is workers losing jobs due to import competition are more successful in maintaining their past wages if they are able to find other jobs in manufacturing. But the occupational segregation pattern amongst the losing and gaining manufacturing industries presented here suggests that reemployment in manufacturing would be a greater probability for men. The impact on the gender-wage gap therefore becomes a significant consideration. In fact the rise of trade-related employment insecurities in the 1990s particularly post-NAFTA coincides with the relative stagnation in the gender-wage gap after considerable progress in the 1980s. This connection between the trade-bias and the gender wage gap could be further investigated in future research.

In addition to the wage-impact the gender trend in displacement also has implications for the policies that address the displacement impact directly. The TAA program has been attracting growing criticisms recently. Some argue that the program may be counter-productive and reduce incentives for workers to find new jobs (Baicker and Rahavi 2004). In other words, job losses from trade should be treated similar to all other job losses in the economy and introducing any specific compensation is an unnecessary burden that impedes the flexibility of the economic system. On the other hand much of the economics literature has also long held that the presence of gains from trade makes the compensation a valid and affordable claim (Dixit and Norman 1980, 1986). Moreover Scheve and Slaughter (2001) also show that public opinions about trade are also more favorable when the issue of compensation is addressed. The presence of a definite gender trend provides further justification that trade-related job losses are very different from normal turnover in the economy and need to be addressed.

More specifically, the provisions of the TAA also need to address the gender bias. For example the TAA program has provisions for retraining workers so they might find other jobs. However given the nature of the gender bias in the job-loss industries, training choices and options would need to make a conscious effort to break traditional notions of gender skill orientations. There is scant evidence and research to indicate that the TAA program has focused on the nature of training and the gender differences in training. In fact in a case study of displaced workers, Beneria and Santiago (2001) find that although women reported a higher degree of participation in training programs than men, they have longer periods of unemployment following displacement and report greater earnings loss. This could be an indication that training programs are yet to address the occupational segregation considerations. There is a need for more specific case studies.

There have also been suggestions to narrow trade assistance to wage insurance and do away with the unemployment compensation and training components (Lawrence and Litan, 1986 and Kletzer and Litan, 2001). Wage insurance makes up a portion of the lost wages, when the new job that the worker finds pays less than the job lost due to trade-displacement. A limited wage insurance component was introduced to the TAA in 2002. The benefit under wage insurance only starts once a new job is found. It is argued that this provides an incentive for quicker reemployment. Since our analysis indicates women more likely would have to accept lower paying reemployment outside manufacturing, the wage insurance might be beneficial to women. On the other hand, since it does not address the issue of gender bias in the alternative employment availability, the wage insurance might in fact increase the tendency for women to accept inferior jobs. This would once again be an issue for the gender-wage gap particularly since the insurance would only be available for a limited period of time (for instance the current cap is two years). Moreover to the extent that wage-insurance emphasizes immediate reemployment, it does not address the issue of occupational segregation and appropriate retraining.

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Data Sources:

- National Bureau of Economic Research International Trade Data
- Bureau of Labor Statistics "Women in the Labor Force: A Databook." 2005
- Trade and Jobs in U.S. manufacturing

Appendix A

The top 10 industries with highest number of workers certified under TAA 1994-2002 in Pennsylvania, North Carolina, New York, California, and Texas.

SIC_CODE	Pennsylvania	SIC_CODE	North Carolina
232	Men's and boy's furnishings	232	Men's and boy's furnishings
374	Railroad Equipment	225	Knitting Mills
367	Electronic Components and Accessories	221	Broad Woven Fabric Mills, Cotton
346	Metal Forgings and Stampings	233	Women's, Misses and Juniors Outerwear
371	Motor Vehicles and Equipments	363	Household Appliances
233	Women's, Misses and Juniors Outerwear	367	Electronic Components and Accessories
225	Knitting Mills	251	Household Furniture
231	Men's and boy's suits and coats	306	Fabricated Rubber Products
311	Leather Tanning and Finishing	228	Yarn and Thread Mills
356	General Industrial Machinery	366	Communications Equipment

SIC_CODE	New York	SIC_CODE	California
367	Electronic Components and Accessories	232	Men's and boy's furnishings
331	Blast furnaces and basic steel products	233	Women's, Misses and Juniors Outerwear
364	Electric Lighting and Wiring Equipment	357	Computer and Office Equipment
239	Misc. Fabricated Textile Products	367	Electronic Components and Accessories
384	Medical Instruments and Supplies	394	Toys and Sporting Goods
386	Photographic Equipment and Supplies	382	Measuring and Controlling Devices
208	Beverages	366	Communications Equipment
267	Misc. Converted Paper Products	384	Medical Instruments and Supplies
233	Women's, Misses and Juniors Outerwear	342	Cutlery handtools and hardware
349	Misc. Fabricated Metal Products	239	Misc. Fabricated Textiles

SIC_CODE	Texas
232	Men's and boy's furnishings
233	Women's, Misses and Juniors Outerwear
366	Communications Equipment
394	Toys and Sporting Goods
372	Aircraft and Parts
367	Electronic Components and Accessories
346	Metal Forgings and Stampings
371	Motor Vehicles and Equipments
362	Electrical Industrial Apparatus
344	Fabricated Structural metal products