Chapter 9

Apparel

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SUMMARY[1]

U.S. imports of clothing, primarily from Asia, have been rising for years, from $2.5 billion in 1974 to more than $26 billion in 1991—roughly 40 percent of U.S. spending on apparel. Meanwhile, U.S. employment in the garment industry has shrunk-from more than 1.3 million workers during the 1970s to about 1 million currently. More than 150 low-wage countries ship apparel to the United States. While some U.S. apparel jobs will move to Mexico in the years ahead, Mexico has so far been a minor supplier of garments to the United States and will have difficulty dislodging established Asian producers. The threat to U.S. apparel jobs is global, not regional.

Apparel production is highly labor-intensive and, as in other manufacturing sectors, it is assembly (sewing) that has been most difficult to automate, and hence most susceptible to low-wage competition. Equipment is inexpensive, easy to buy and to use. The sewing machines found in many apparel factories cost well under $1,000.

Two broad sectors characterize the U.S. industry. Companies in one produce large quantities of basic, standardized commodities such as blue jeans and underwear. The other sector manufactures smaller runs of fashion-sensitive goods, much of it women's wear. Both sectors have been under severe pressure from imports. Women's outerwear-the largest fashion-sensitive category-accounts for about one-third of total U.S. apparel employment. Much of this employment is concentrated in the garment centers of New York and California, reflecting the continuing importance of design in this industry; production takes place near both major retail markets and styling centers.

The Mexican share of U.S. apparel imports has risen from 2 to 6 percent since the early 1980s, almost all of this from *maquiladora* plants that sew clothing originally cut in the United States. Finished garments shipped to the U.S. markets are charged duty only on the value added in Mexico. Production in the *maquiladora* sector is based on very long runs of standard items; like mass production everywhere, plant operations are designed to minimize skill requirements and to accommodate a high-turnover workforce. While the United States imports large volumes of women's wear, very little comes from Mexico. Asia is the major source, with much of the apparel air freighted to the United States in a global version of ''Quick Response.

Production workers account for a greater share of U.S. employment in apparel than in other manufacturing industries-nearly 85 percent, compared to 68 percent for all of U.S. manufacturing. Moreover, the apparel workforce is dominated by sewing machine operators, About two-thirds of all workers in the industry are classified as operators, and another 6 percent are laborers or material handlers; only about 10 percent of the workforce hold technically oriented jobs such as mechanic or precision production worker.[2] Although sewing requires considerable skill, operators with little formal education or training can become proficient in a matter of weeks or months. Thus, U.S. apparel producers have tended to locate in areas with huge supplies of low-wage labor: in immigrant communities in the Northeast and California, and in the Southeast.

In early 1992, sewing machine operators< in Mexico's *maquiladora* sector earned between $7 and $10 a day, compared to an average of $6.25 per hour in the United States— a difference so large that it may seem inconceivable that U.S. production could survive direct, unprotected competition with Mexico. To date, a complicated set of import quotas has limited apparel imports into the United States

[1] This chapter is based on "The North American Free Trade Agreement and the U.S. Apparel Industry, " report prepared for OTA under contract No. 13-0615 by Thomas Bailey and Theo Eicher, May 1992. The Bailey and Eicher report is based on interviews in Mexico and the United States, data and information from the Mexican and U.S. Governments, and industry sources including unions and employer associations. It also draws on other studies conducted by the authors over the last 3 years, including site visits to more than 40 U.S. apparel factories. For OTA, the first author visited companies in Mexico City, Aguascalientes, and Tijuana. Some of these plants produce for the Mexican market, others are *maquiladoras* shipping to the United States. He also interviewed representatives of the national and the

from Mexico, at least on paper. If a North American Free Trade Agreement (NAFTA) ended these restrictions, it might appear that U.S. apparel jobs would quickly melt away. To make matters worse, many U.S. apparel workers have relatively little education, and face limited opportunities in the labor market-particularly those living in rural areas in such States as Georgia and the Carolinas.

In practice, the quotas negotiated by the U.S. and Mexican governments have been only a minor drag on Mexico's shipments of apparel to the United States. Nevertheless, a NAFTA would further stimulate growth of *maquila-like* production. U.S. imports of apparel from Mexico doubled between 1987 and 1991. With a NAFTA, the current ***maquila*** sector would continue expanding, perhaps at a higher rate (while coming to be identified by its export-oriented character, rather than the special trade rules under which it was established). ***Maquiladora*** apparel plants currently employ in the neighborhood of 45,000 people, a figure that could grow to as much as 130,000 by the end of the decade. Not all of these jobs would replace U.S. jobs one-for-one. But if they did, that would represent about 8 1/2 percent of current employment in the U.S. industry. Even without a NAFTA, the *maquila* sector would probably continue to expand. The simple fact is that production of basic apparel costs much less in Mexico than here. Because of Asian competition, on the other hand, exports of fashion-oriented apparel from Mexico to the United States, almost nonexistent today, seem unlikely to grow rapidly.

THE U.S. AND MEXICAN INDUSTRIES

Apparel Products and Apparel Jobs

The apparel industry is extremely diverse, producing one-of-a-kind gowns that sell for thousands of dollars as well as millions of identical copies of plain white t-shirts worth only a few dollars. It is possible to make a broad distinction between standardized commodities, sold year round and produced in large runs, and more fashion-sensitive items. The latter, produced in large numbers of styles that change from season to season and year to year, include much women's wear and a good deal of men's and children's clothing. Fashion-sensitive clothes are not necessarily expensive: mass market retailers like Walmart and J.C. Penney have been leaders in popularizing marketing strategies based on ever-changing styles of low-priced clothing. Standardized, commodity-like items include work clothes and white dress shirts.

Table 9-1 breaks down U.S. apparel employment—84 percent of which is in direct production—into three groups: Group 1, women's outerwear; Group 2, men's outerwear; and Group 3, underwear, nightwear, and infant and children wear. Women's outerwear, the most fashion-sensitive group, accounts for nearly 44 percent of U.S. employment. The most standardized goods are found in Group 3, which accounts for less than 20 percent of U.S. apparel jobs, with the men's wear group falling in the middle of the standardized to fashion-sensitive range and accounting for nearly 40 percent of employment.[3]

Imports in all three categories have been increasing for years, with women's outerwear above the average, primarily as a result of high import ratios for sweaters and blouses. Group 3, dominated by underwear and nightwear, shows the lowest import penetration.

Table 9-2 shows that imports are highest in fashion-sensitive categories-the categories in which, according to table 9-1, U.S. employment remains highest.[4] Two opposing forces are at work in fashion-sensitive clothing. Because such items are made in small lots with hand labor, offshore plants in low-wage countries can undercut U.S. costs substantially. But frequent design changes and the importance of timely delivery to retailers help U.S. plants overcome cost disadvantages through superior customer service. At the same time, well-managed foreign operations, especially in Asia, have

[3] In terns of market share, basic products sold year-round account for about 20 percent of U.S. apparel sales, ''seasonal' products, with a 20-week life, roughly 45 percent of sales, and "fashion" products, with a 10-week life, the remaining 35 percent. *The U.S. Textile and Apparel Industry: A Revolution in Progress (Washington DC: Office* of Technology Assessment, April 1987), p. 16. Thus it appears that about two-fifths of the industry, whether measured by employment or sales, is quite sensitive to fashion, while about one-fifth is accounted for by basic, commodity garments.

[4] The range within the categories in table 9-2 extends from a low of 11 percent for women's s wimsuits

Table 9-1—US. Apparel Employment by Product Category, 1991[a]

	Number (thousands)	Percent of total
Group 1, women's outerwear		
WMJ blouses, shifts and dresses (2331, 2335)[b]	102.6	
WMJ suits, skirts, and coats (2337)	36.9	
WMJ outerwear, NEC (2339)	187.2	
	326.7	*43.5%*
Group 2, men's outerwear		
MB suits and coats, trousers (231, 2325)	132.4	
MB shirts (2321)	63.8	
MB work clothing (2326)	43.3	
MB clothing, NEC (2329)	49.5	
	289.0	38.5%
Group 3, underwear, nlghtwear and Infant's and children'swear		
WMCl undetwear and nightwear (2341)	50.0	
MB underwear and nightwear (2322)	16.8	
GCl outerwear, NEC(2369)	34.5	
GCl dresses, blouses and shirts (2361)	22.8	
Foundation garments (2342)	11.4	
	135.5	18.0%
Total for Groups l, 2, and 3	751.2	100%

GCI = girl's, children's, and infant's
MB -men'sandboy's
NEC = not elsewhere classified
WMCI = women's, misses, children's, and infant's
WMJ = women's, misses, andjunior's

[a]Excludes 203,000 workers employed in miscellaneous fabricated textiles (SIC 239, which includes home furnishings and a variety of industrial products), 43,400 in miscellaneous apparel and accessories (SIC 238),and 26,500inhats, fur goods, and

made with similar production methods and cheaper labor almost anywhere in the world.[5] Unless U.S. plants can maintain cost advantages through further automation (which itself cuts into job opportunities), production of these price-sensitive goods will continue to move to low-wage countries.

Shorter Product Cycles

Today, even the most basic apparel items, which previously came in only one style and color (denim jeans, sweatshirts) now can be bought in many styles and colors, while shifts in consumer tastes and retail marketing strategies have led to a proliferation of fashion seasons. In earlier decades, there were three fashion seasons; now some designers change their lines six times a year, and retailers seek almost continuous changes in stock. Although design has always been important at the upper end of the market, constantly changing style and fashion have come to dominate much larger segments in the last two decades, as innovative producers and retailers marketed fashion-oriented goods to low- and middle-income consumers.

Segmentation of markets and rapidly changing styles have cut deeply into opportunities for producing long runs of identical items sold on a year-round basis. The result has been to increase the importance of timely response to market shifts, and production flexibility generally.[6] At the same time, product quality has become more important.

Traditional Production: **The Bundle System**

Most U.S. apparel plants continue to base production on the "bundle" system, in which cut garment parts are delivered to operators tied into bundles of about 30 pieces. The operator performs one, usually very small, task—such as sewing a hem or attaching a pocket-on each item in the bundle. After completing the bundle, she processes a work ticket to keep track of her output, reties the bundle, and begins work on another.

By fragmenting the production process, engineers in bundle-system plants can focus on maximizing productivity at each step. Operators can be paid piece rates, according to their actual output. Work-in-process (WIP) inventories isolate each task from disruptions that might occur elsewhere in the production chain. Because a man's shirt, for example, requires between 40 and 60 operations, and each operator usually has two bundles waiting at her station for processing, at any given time there will be thousands of garment pieces sitting on the factory floor in bundles. Thus typical plants carry 15 to 20 days of WIP inventory for garments requiring no more than 20 standard minutes of labor.[7] As in other production systems with large stocks of in-process inventory, quality suffers because problems can accumulate for long periods of time before they are discovered. Moreover, piece workers who see errors or quality problems have little incentive to report or correct them since their pay is based solely on the number of operations they perform.

Automation and **Skills**

Complete automation of apparel manufacture is not yet possible because it is so difficult to manipulate limp fabric, particularly partially assembled garments **that have taken on three-dimensional shape. Once the design has been completed, "markers' (patterns, one for each size, used for cutting the cloth** for each piece of the garment) can be generated and stored in a computer, which then guides an automated cutter. Such operations as making button holes (and sewing on buttons), preparing collars, and

5 Group 3 production in the United States

attaching pockets can be completed before assembly. But eventually, operators must guide the pieces by hand through a sewing machine.

Through the middle 1980s, many in the U.S. garment industry saw straightforward, labor-reducing automation as the key to meeting foreign competition .[8] But predictions of 'lights-out' factories, freed from the ''labor element, ' disregarded investment costs, which frequently could not be justified based on the small amounts of labor saved. Highly automated apparel production has so far proved cost effective only for large production runs of standardized goods. In particular, it has not made sense to install specialized material handling equipment in factories that produce many different and constantly changing styles.

If automation could not eliminate workers, many apparel firms hoped it could reduce labor costs by reducing the skills needed to assemble garments. The savings would come, not through lower wages for less-skilled workers—because apparel companies pay low wages already-but through reductions in training costs as automated systems replaced moderately skilled sewing machine operators with machine tenders.[9] Like automation, deskilling has its greatest impacts in production of standardized goods: the division of labor can be taken to its logical extreme, with workers specializing in a single task and no requirement for broad skills.

In standardized apparel, then, plant location decisions turn on the costs of automated production versus traditional methods in low-wage offshore plants, and on whether low-wage countries have the technical infrastructure to efficiently operate plants with high levels of automation. For style-sensitive items, product variety and short production runs work against attempts to routinize, automate, and deskill production. These segments depend on versatile workers who can move from one task to another as needed. Lacking possible advantages through automation and deskilling, U.S. producers have turned to immigrant workers to reduce their labor costs. Lacking employment alternatives, many immigrants have been willing to accept low wages.[10]

Fashion-sensitive production, especially of women's wear, concentrates in New York City and Los Angeles in part for easy access to immigrant labor. In addition, these cities are centers of apparel design and marketing, with a constantly shifting mix of small shops providing a broad range of services.[11] These services-many of them provided internally in large firms producing standardized clothing—include design, cutting, technical support, repair, equipment leasing, credit, warehousing, trucking, and specialized apparel-related educational institutions. These cities are also at the centers of large regional markets, which is particularly important for small producers of fashion-sensitive items, where constantly changing styles and short selling seasons put a premium on close cooperation among designers, producers, and retailers. As figure 9-1 shows, women's wear (Group 1) accounts for more than three-quarters of apparel jobs in California-the only State to enjoy significant growth in apparel employment during the 1980s. And while New York has two-thirds of its jobs in Group 1, Texas has a lower than average percentage, suggesting that apparel workers there may be especially vulnerable if a NAFTA accelerates transfers of standardized production to Mexico.

Quick Response

It can be a year from the time a retailer orders clothes until they arrive.[12] Retailers want to be able to stock new styles in modest amounts that can be

[8] A typical example, from the trade press:

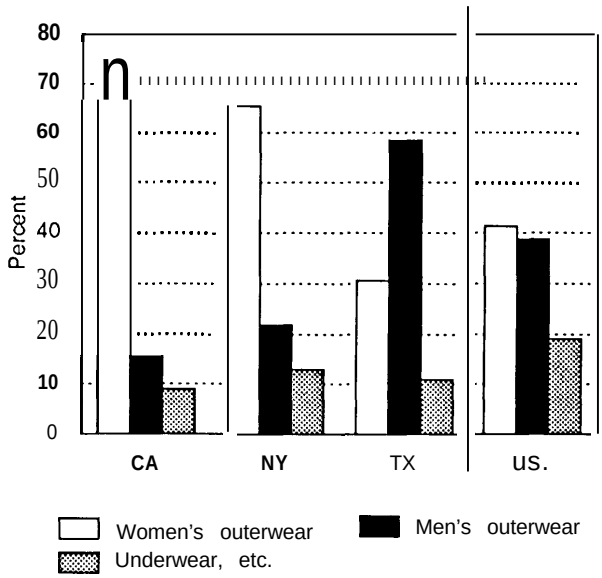
> Our main hope for a return of production of basic apparel items to the U.S. mainland is automation of the production process. Only with the labor element essentially eliminated through robotic automation can the advantages of the emerging countries be overcome by the U.S. manufacturer.

Sid Riley, "The Industrial Revolution: Our Time Has Arrived," *Bobbin,* April 1987, pp. 67-88 (quote on p. 76).

[9] Plant surveys suggest that *training times* for attaching collars can be cut by 60 percent, for setting hip pockets in trousers by 40 percent, for making button holes and attaching the buttons by 30 percent, for setting front pockets in jeans by 70 percent, and for decorative embroidery stitching by 90 percent. Kurt Hoffman and Howard Rush, *Micro-Electronics and Clothing: The Impact of Technical Change on a Global Industry (New York, NY:* Praeger, 1988).

[10] Many arrive in the United States with some sewing skill or experience. See Thomas Bailey and Roger Waldinger, ''primary, Secondary, and

Figure 9-l-Distribution of Apparel Employment, 1989



SOURCE: *County Business Patterns.*

replenished quickly, rather than risk having to mark down goods that do not sell or run out of styles that prove popular. Many U.S. managers **assert that** quick response (QR, box 9-A) strategies are critical for the continued viability of apparel manufacture in this country.

But implementation of quick response has been slow. Existing practices have become deeply entrenched in apparel firms. For over a hundred years, production has shifted first from the Northeast to the Southeast, and then abroad, as companies sought cheaper labor. U.S. plants also remain attached to the piece-rate system, resisting internal QR reforms based on employee involvement and a workforce with better skills and a broader understanding of the overall production process. Such reforms almost always imply a shift from piece rates at least to hourly rates and often to group incentive schemes. Apparel workers themselves sometimes resist abandonment of piece rates and the added responsibilities implied by group-based production systems. Thus, a 1988 survey found that fewer than 10 percent of U.S. apparel workers held jobs in plants with such features of internal QR as modular manufacturing or group incentive schemes.[13] Preliminary data from **a survey** of apparel producers conducted in 1991 and early 1992 show some increase, but only to the 10 to 15 percent range, and mostly in large plants producing standardized apparel-the firms in Groups 2 and 3 in table 9-1, rather than women's wear producers or the more fashion-sensitive men's wear manufacturers.[14] The large majority of U.S. garment factories still use traditional high-inventory production systems and pay workers piece rates.

Why this resistance? Despite a good deal of experience in other industries, and some in apparel, the advantages of internal QR have been hard to pin down. Innovators keep quiet about the details of their successes. Common measures of productivity, such as value added per production worker hour, or standard labor minutes required to produce a particular garment, fail to capture benefits associated with flexibility. Work reorganization may not reduce labor inputs (it may actually increase them) even though it reduces throughput time from days or weeks to a few hours, but apparel producers have no systematic way of evaluating the payoffs. Nor is it clear how much benefit can be achieved through external QR without internal QR. Put another way, how much will retailers pay for shorter delivery times?

A final set of questions relates directly to production in Mexico: Can QR serve to offset high U.S. labor costs, slowing the movement of jobs southward? Conversely, might a NAFTA cause some U.S.-based manufacturers to look to Mexico for cheap labor rather than implement QR here? Will U.S.-based firms implement QR strategies in which Mexican production is an integral component, thus displacing U.S. labor while helping U.S.-based firms meet competition from other developing countries?

13 *Making the Revolution Work: How to Implement Flexible Manufacturing Through People* (Washington, DC: American Apparel Manufacturers Association, 1989).

14 These preliminary results come from a survey being conducted by Thomas Bailey of a random sample of 1,000 apparel and textile plants. As OTA's report was being completed, responses were available from 240 apparel plants. Even in plants which have instituted some features of internal QR, the approach tends to be piecemeal-best viewed as a series of techniques rather than a fundamental reorganization of production. Thomas Bailey, "Organizational Innovation in the Apparel Industry: Technique or Strategy," *Industrial Relations,* forthcoming.

Box 9-A-Quick Response: Lean Production in the Apparel Industry

During the **1980s, employers, employer associations, consultants, and unions began seeking alternatives to traditional production methods based on the bundle system, with its high inventory levels and division of production into narrowly defined tasks. Emerging** Quick Response strategies represent the industry's attempt to create a system yielding better quality, lower throughput times, and greater flexibility-hence quick response to market shifts.

As in "just-in-time" or "lean" production systems in other industries, QR strategies have two basic components. ''External" QR (outside the plant) entails better communication and coordination among firms in the vertical production chain-fiber and textile suppliers, apparel manufacturers, and retailers. "Internal" QR (inside the plant) entails changes in the production process itself. By working together more effectively with their suppliers and customers, apparel firms can coordinate their production schedules and deliveries to reduce the time that materials and finished goods spend on loading docks, in warehouses, and in transit. With shorter lead times, retailers can adjust their orders depending on what sells. With lower inventory levels inside the plant, and new forms of work organization, apparel firms can turn out finished garments faster and with higher quality. Moreover, to the extent that QR shortens delivery times and helps U.S. plants produce a greater variety of apparel, it offers advantages relative to foreign plants. Nearby producers are in the best position to work interactively with textile firms and retailers; although many QR techniques can be used with international sourcing of fabric, person-to-person contact remains important.

Despite many expressions of support and enthusiasm for internal QR by industry managers, they have moved to implement external QR much more rapidly. Industry representatives worked out bar coding practices to facilitate electronic data interchange during the mid-1980s, and have devoted much effort to management of in-transit inventories and deliveries and procedures for reordering. The 1992 death of Sam Walton brought to public attention the sophisticated links between his Walmart stores-the nation's largest retail chain-and their hundreds of suppliers. Each supplier gets information in real time about the sales of their products in each Walmart store. Such practices have spread to other retail chains.

In many cases, apparel makers have chosen to meet the accelerated delivery requirements of their customers through the simple expedient of holding larger inventories of finished goods. Such an outcome represents little more than a transfer of inventories from retailers to apparel producers. To reduce their finished goods inventories, apparel

Table 9-3-Growth oft he *Maquiladora* Apparel Sector

	1986	1987	1988	198919901991		
Employment (thousands) . . .	25.3	30.3	34.7	42.4	40.9	45.7
Exports to the United States (millions of dollars)	$360	$410	$468	$565	$657	$844
Value added in Mexico (millions of dollars)... . . .	$84	$101	$128	$183	$200	$250

SOURCE: *Instituto Nacional de Estadística,*

longer runs, more time-and-motion study .20 Indeed, *maquiladoras* fight for fewer styles and larger orders. In contrast, domestically-oriented firms lament their fate as producers of small lots, feeling that they cannot justify investments in new technology or more sophisticated work organization practices without much longer runs.

While many of the *maquilas are* U.S.-owned, and others have longstanding contractual ties with U.S. manufacturers, distributors, and retailers, interviews conducted for OTA indicate that QR techniques hardly exist in the country. For instance, modular production evidently has not been tried in Mexico. Interviews revealed only limited awareness of this and other teamwork-based, low-inventory approaches, although consultants have begun advising Mexican firms and industry associations about these and other QR techniques.[21] Early in 1992, the government announced plans to encourage QR as part of a program to revive the import-battered industry .22 The intent would be to take advantage of QR for exporting to the United States, capitalizing on delivery times that should be shorter than for Asian producers shipping by sea. The slow spread of QR in the United States suggests that it may be equally difficult for Mexico to move in this direction.

Trade Management

Quotas and Tariffs

The primary effect of a NAFTA would be to reduce or eliminate U.S. tariffs on Mexican exports and weaken or do away with import quotas. The United States has protected its apparel and textile industries for many decades.[23] For the last 30 years, the Multi-Fiber Arrangement (MFA), in place since 1974, and its predecessors, the 1961 Short-Term Agreement and the 1962 Long-Term Agreement, have provided a structure for controlling the rate of growth of imports of apparel and textiles. The early agreements covered cotton textiles and clothing; the MFA extended coverage to wool and manmade fibers. In 1986, the agreement was further extended to ''new-MFA" fibers such as linen, ramie, and silk blends.

MFA signatories negotiate bilateral agreements concerning quotas on covered textile and apparel items. The United States restricts imports from about 40 countries, nearly all of them developing economies. Despite tariffs averaging 17 to 18 percent—one of the highest duty levels imposed by the United States-and MFA-sanctioned quota restrictions, which have the effect of an additional tariff averaging an estimated 28 percent, U.S. apparel imports have increased steadily.[24] Multilateral negotiations as part of the Uruguay Round, in progress under the auspices of the General Agreement on Tariff and Trade (GATT), seek an agreement on phasing out the MFA, which limits the ability of Third World countries to export in a sector in which many have significant competitive advantages.[25] While the developing world sees the agreement as egregiously protectionist, the industrial countries see it as a necessary means of cushioning adjustment in sectors employing large numbers of relatively low-skilled workers who have limited prospects for alternative employment. Proponents also argue that by creating a multilateral framework, the MFA has forestalled

21 For example, "promoters" at a training center started by the Mexican labor ministry (see ch. 5) in the state of Tlaxcala, visited by OTA staff in May 1992, have arranged for small local apparel shops to learn the rudiments of production management and the benefits of reducing in-process inventories

22 ''Mexican Government Initiative to Revitalize Textile and Apparel Industry, ' op. cit., footnote 15.

With a good cleat of pent-up demand to be satisfied, economic growth in Mexico will stimulate domestic clothing sales. A revived and restructured Mexican industry should be able to take back some of the market share recently lost to imports from the Far East. But growing Mexican demand will not stimulate U.S. exports; the United States sends little except partially assembled garments south today, and will not be able to compete on price in the future.

23 The U.S. Tariff Act of 1922 placed high duties on imported cotton and woolen goods. Quotas on textile and apparel imports from Japan date to

Box 9-B-Quotas on Apparel From Mexico

Since 1%3, the U.S. tariff code has included provisions under which goods assembled abroad **from U.S.-made parts or components are charged duties only on foreign value added. Originally Item 807, these provisions are now found under Item 9802** of the Harmonized Trade Schedule, which took effect in 1989. It is Item 807/9802 that has **permitted the export of textiles or cut fabric to Mexico or (elsewhere), with duties charged when** assembled clothing is reimported only on the value **added in the *maguiladora* plant. The 807/9802** share of total U.S. apparel imports (from all countries) rose to 10 **percent in the late 1970s, and remains at roughly that level. Essentially all imports of clothing from Mexico enter under 807/9802. Table 9-4 illustrates typical cost advantages of 807/9802 production.**

Table M-Costs for U.S. and Offshore Production of Men's Shorts

	Unit cost (dollars)	
	Us.	Offshore (807/9802)
Fabric and cutting...	$1.91	$1.91
Assembly labor and overhead. .	1.88	.58
Freight and duty.		.59
	$ 3.07	$3.07

NA = Not applicable.

SOURCE: "The US Textile Industry: Challenges and Opportunities," The *Working Papers of the MIT Commission on Industrial Productiv-/ty*, vol. 2 (Cambridge, MA: MIT Press, 1989), p. 20.

Until 1986, and the establishment of the Caribbean Basin Initiative (CBI), apparel items entering under Item 807/9802 were charged against the relevant quotas (i.e., as negotiated with the country of origin under the MEA). The CBI contained a special access program for apparel known as Item 807A. Under 807A, apparel imported from CBI countries (including Mexico) assembled from "U.S. cut and formed" fabric was subject to "generous" quotas referred to as "Guaranteed Access Levels' (GALs). These quotas are in practice unlimited. According to the U.S. Department of Commerce, "the GALs may be increased on request by the exporting government and barring unusual circumstances of market disruption, increases are virtually automatic and unlimited. '

Apparel assembled from components cut and prepared in the United States but made of fabric produced elsewhere is subject to separate quotas referred to as Designated Consultation Levels (DCLs) and Specific Limits (SLs) which are set lower than the GALs. Apparel assembled from foreign-made but U.S.-cut fabric remains eligible for Item 9802 tariff treatment, however.

The 1989 "Special Regime" agreement between the United States and Mexico included another set of provisions. Articles assembled from U.S.-formed fabric or from other fabric were all subject to DCLs and SLs. Because U.S.-formed and cut fabric was no longer eligible for GALs, there was no longer a presumption, as there was under Item 807A, that quotas would be raised more or less on request. But in many cases, a large share of the quota (as high as 80 percent) has been reserved for Special Regime garments. The remaining quota could be used for 807/9802 items made from non-U.S.-formed fabric (cut in the United States for Mexican assembly) or items not eligible for 807/9802. If Special Regime items exceeded their share of the quota, any remaining quota for the relevant category of apparel could be used. But non-Special Regime items are limited to their share of the quota even if the Special Regime share is not fully utilized. Thus the Special Regime not only encouraged the use of U.S.-formed fabric, it also restricted the available quota for non-807/9802 items-for example, Mexican-assembled garments made from Mexican, Asian, or European fabric that was not cut in the United States.

Mexico accounted for about one-fifth of all 807/9802 apparel imports in 1990, and 70 percent of Mexico's 807/9802 apparel imports came in under the Special Regime. But there is little evidence that the Special Regime either promoted Mexican imports or boosted the 807 share.[2] Despite the complexities of this system of quotas, it rarely if ever appears to limit Mexico's shipments to the United States.

Quotas set in annual bilateral negotiations apply to about 75 categories of apparel imports from Mexico. During the year, Mexico's government allocates shares of the quota for each item to exporters. In interviews, both apparel manufacturers and Mexican experts on the subject noted that until the late 1980s the quota allocation system was cumbersome and often corrupt. Managers spent a great deal of time traveling to Mexico City to negotiate quota

[1] This quotation is from an unpublished 1987 Commerce Department summary of the program.

[2] The sharp rise in 807/9802 shipments after the Special Regime took effect in 1989 was paralleled by growth in

allocations with government officials. In many cases, quota allocations had to be "purchased" Since 1987, the system has been reformed and decentralized to Mexico's major garment centers.

Midyear changes in the quotas to which the two governments have agreed are common.[3] For example, the quota for underwear was doubled during such an adjustment in 1987, and was still more than 95 percent filled by the end of the year. At the end of 1988, 10 quotas had been fried to the 80 percent level or higher; 9 of these had been raised during the year. The need for mid-year adjustments dropped off in 1989 and 1990; only 7 quotas were more than 80 percent full during those years, and most of those received adjustments. The categories that tend to fill are those in which Mexican suppliers specialize. Trousers is the largest export category and it also has had the highest utilization rates and the most adjustments.

Thus the quotas have not been irrelevant. But neither have they been holding back a potential flood of imports. Indeed, the frequency of mid-year adjustments and year-to-year quota increases suggests that quotas follow rather

Table **9-5—U.S. Apparel Imports by Country of Origin**

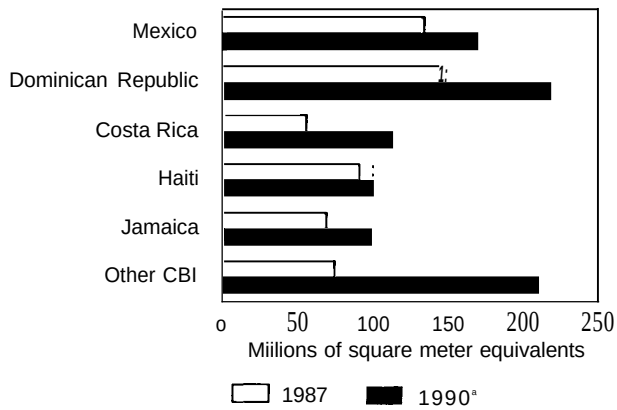
	1991		First 4 months (January-April) (billions of dollars)	
	Value of imports (billions of dollars)	Share of all imports (percent)	1991	1992
Hong Kong	$3.52	13.7940	$1.01	$1.12
China	3.46	13,5	0.96	1.37
Taiwan	2.60	10.1	0.76	0.76
South Korea	2,59	10.1	0.69	0.76
Mexico	$1.49	5.80/0	$0.40	$0.58
Philippines	1.01	3.9	0.36	0.39
Dominican Republic	0.94	3.7	0.25	0.33
Italy	0.77	3.0	0.27	0.26
India	0.69	2.7	0.25	0.35
Others	8.63	33.6	2.68	3.44
Total[a]	$25.70	100.070	$7.63	$9.36

NOTE: Many apparel exports from Hong Kong and Taiwan originate elsewhere in Asia, including China. Transshipment, in part to evade MFA quotas, has been common in this industry.

[a]Totals may not add due to rounding.

SOURCE: Office of Technology Assessment, 1992, based on official statistics of the U.S. Department of Commerce.

Figure 9-2—U.S. Apparel Imports from Caribbean Basin Initiative (CBI) Countries



[a]Year ending June 30, 1990.

SOURCE: *Textile Highlights,* American Textile Manufacturers Institute, September 1991, Table 5.

Imports of clothing from Mexico have been concentrated in a few standardized items; imports of more expensive and fashion-sensitive items—women's dresses, skirts, and blouses; men's suits, jackets, and shirts-have come from other countries. As table 9-6 suggests, Mexican suppliers have specialized in inexpensive men's wear (trousers and coats), and in similar items for women. Mexican imports have grown most rapidly in underwear and nightwear; imports of 'other' apparel grew at lower than average rates. By 1990, pants, underwear, and nightwear accounted for about 60 percent of all apparel entering from Mexico.

IMPACTS OF A NAFTA

Any trade agreement is likely to provide a lengthy transition period and perhaps substantial residual protection for the U.S. apparel industry. Even so, there could be some acceleration in the growth of *maquila* production of standardized commodities in expectation of a more predictable future. Most Mexican suppliers would probably continue to operate as contractors to U.S. companies. The current 807/9802 structure creates incentives for *maquilas* to limit their production to assembly of material supplied from the United States. Because U.S. textiles are generally cost-competitive, there will be no great incentive in the near term to switch to materials from third countries.[28] Still, U.S. producers offer rather limited ranges of textiles compared to many foreign suppliers (Japan, Taiwan, Germany), while fabrics from low-cost producers like China might suffice for many of the standardized goods produced by *maquiladoras. American* textile manufacturers sought yarn forward' North American content requirements as part of a NAFTA to

28 The better U.S. textile mills are among the world's low-cost producers. By contrast, Mexican mills have costs that can be more than twice those here. *The Likely Impact on the United States of a Free Trade Agreement with Mexico,* op. cit., footnote *18,* p. 4-39. Also see *Trade Restraints and the Competitive Status of the Textile, Apparel, and Nonrubber-Footwear Industries,* op. cit., footnote *23.*

Table 9-6--U.S. Imports of Apparel From Mexico

	Millions of square meter equivalents and proportion of total imports from Mexico		1985-1990 Increase
	1985	1990	
Men's and boy's trousers	18.9 (17%)	31.6 (20%)	67%
Underwear	6.1 (6%)	27.3 (16%)	344%
Women's, girl's, and infants' trousers	14.5 (13%)	22.5 (14%)	55%
Nightwear	2.8 (3%)	14.1 (9%)	406%
Brassieres	6.0 (5%)	7.0 (5%)	18%

interior, where both wages and turnover have been substantially lower (table 9-7). Indeed, between 1981 and 1988, plants in the interior increased their share of all *maquila* apparel employment from 20 to 40 percent.[29]

Border firms have so far lived with their turnover problems: a mass production system with highly structured tasks is well suited to absorbing new workers with little or no training. Given this approach, *maquila* apparel firms should be able to continue tapping rural reserves through busing or moves to the interior, thus maintaining downward pressure on wages.

2. *Workforce skills. Maquiladora* apparel firms provide entry into the industrial labor force for surplus rural labor, and stepping stones for migrants moving north.[30] Mexico's rural reserve is large and likely to grow as workers in the agricultural sector are forced off the land. Given current production methods, lack of skills is not a serious problem in *maquila* apparel plants. But skill deficiencies will make it difficult for these firms to implement new competitive strategies, including computerized cutting and QR.

   Skill pools differ considerably between the border region and the interior. Although the border cities have large transient populations, there are many workers with industrial experience of one sort or another. Expansion in interior cities and rural areas more often means beginning with a nonindustrial workforce.- Skilled workers, particularly those able to maintain and repair electronic equipment, pose the greatest difficulties. But there is still very little of this equipment; managers stated that sophisticated electronics were not expected to play a significant role in currently planned expansions. Skill deficiencies, then, do not appear to be a fundamental barrier to more widespread hiring of workers in rural areas except as they limit the ability of Mexican suppliers to adopt more flexible, QR-related strategies.

3. *Infrastructure.* Mexico's deteriorated infrastructure presents a problem particularly for the smaller apparel firms. Nonetheless, while better roads might take a day off of the 2-day trip from Aguascalientes to the border, this is only a small decrease in the typical 3-week turnaround time for *maquila* operations in interior cities.

   Note that turnaround time and inventory levels also depend on the size of production runs. Given transportation problems, producers ship full truckloads. Very small firms may take several days to fill a truck, while high volume apparel firms can fill several per day. Again, small firms suffer more than large.

In the years ahead, and given their advantages over other Mexican apparel makers-notably greater access to capital and to U.S. *markets--maquiladora* apparel firms will continue to expand. A NAFTA would probably accelerate this expansion. But the emphasis on mass production of standard items seems likely to continue. The highest volume products account for about 150,000 U.S. jobs (Group 3—table 9-1)-less than 20 percent of the total. Some of these jobs will be lost to Mexico in the years ahead, but others will remain in the United States because costs can be lowered through capital-intensive automated production-which will also cut into jobs and job opportunities.

Nonbasics Production in Mexico

It would be very difficult for Mexico to ship substantial volumes of tailored or other fashion-sensitive clothing to the United States in the near term. Mexico has never been an important source for such items. Export growth since 1985 has not taken

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29 Hanson, "U.S.-Mexico Free Trade and the Mexican Garment Industry," op. cit., footnote 16, table 6, p. 71.

In interviews conducted for OTA, managers in border plants worried that freer trade would hurt them because it would lead to higher wages. According to a company in El Paso, there is already little advantage in assembling apparel across the border in Ciudad Juarez because wages are rising and much higher turnover offsets existing labor cost advantages.

Interior cities have atso felt the pressures of a tightening labor market. For example, all of the employers interviewed in Aguascalientes claimed that wages had risen sharply in the last 2 years. They anticipated more pressure after the opening of a Nissan assembly plant that would employ several thousand workers. One apparel firm with several hundred workers sent buses up to 25 miles from the city to tap the still substantial rural labor reserve.

30 California apparel firms also seem to benefit. California is the only State with a large apparel industry in which employment has

Table 9-8—Employment, Wages, and Productivity in Apparel[a]

	Total employment	Production worker employment	Production worker share of employment	Real hourly wages	Labor productivity index	Union members as share of production workers	Estimated hourly wages: Mexican apparel and textile *maquilas*	U.S.-Mexico wage ratio
	(thousands)		(percent)	(1991 dollars)			(1991 dollars)	
1978	1,332	1,145	85.9%	$7.91	100	NA	NA	NA
1979	1,304	1,117	85.6	7.80	96.3	NA	NA	NA
1980	1,264	1,079	85.4	7.62	95.8	NA		NA
1981	1,244	1,060	85.1	7.62	100.0	NA	$1;:	5.6
1982	1,161	981	84.5	7.55	109.8	NA	0.95	7.9
1983	1,163	984	84.6	7.45	111.7	32.1%	0.77	9.7
1984	1,185	1,003	84.6	7.39	118.5	26.8	0.78	9.5
1985	1,121	945	84.3	7.34	126.8	27.3	0.70	10.4
1986	1,101	927	84.2	7.26	131.4	24.0	0.56	13.1
1987	1,099	923	84.0	7.09	137.5	22.8	0.52	13.7
1988	1,088	915	84.1	7.01	138.3	22.4	0.63	11.1
1989	1,074	906	84.3	6.94	133.6	21.0	0.69	10.0
1990	1,028	862	83.8	6.85	NA	19.3	0.70	9.8
1991	1,024	856	83.6	6.75	NA	18.1	NA	NA

NA = Not available.

[a]SIC (Standard Industrial Classification) 23.

SOURCES: U.S. employment and wage data—*Employment and Earnings*, March 1992. Union membership-Barry T. Hirsch and David A. McPherson, "UnionMembership and Contract Coverage Data from the Current Population Survey," Department of Economics, Florida State University, May 1992. Mexican wages—*Maquiladora Industry Analysis*, CIEMEX-WEFA, September 1991. Labor productivity—Wayne Gray, Clark University, and the National Bureau of Economic Research.

place in these categories. While Mexican firms make women wear for domestic consumption, they do so using traditional production processes that are neither technologically advanced nor suited to fast turnaround. Quality is poor by U.S. standards. The firms in this part of the industry have no existing distribution in the United States, little access to financing and to imported fabrics, and little or no experience in what is a highly competitive business internationally.

In addition, most of the obstacles to *maquiladora* expansion also apply to this sector; indeed, workforce skill problems are more serious. High quality, rapid turnaround, and QR-related techniques require greater workforce skills and management sophistication than needed in either the *maquiladoras* making standard items for export or in domestically oriented Mexican fins. In interviews, large U.S. manufacturers that currently supply many of their commodity needs from *maquilas* report that they expect to implement QR through their U.S. plants.

If Mexico could move into nonbasics, it would be the California and Texas industries that would suffer first and more than New York's (because of logistics). But the California industry, centered in the Los Angeles area, is growing today, with an emphasis on women's outerwear. In most categories of women's wear-which accounts for over 60 percent of California apparel employment—less than half the Mexican import quota has been used. Large wage differentials have not been enough to drive this production across the border.

Effects on U.S. Jobs

During the past 15 years, U.S. apparel employment has declined by more than 300,000 jobs (table 9-8). Some cities with large apparel sectors, such as New York, have experienced particularly severe job loss. Despite the low average wages in the industry, about 30 percent of displaced apparel workers who found new jobs in the 1979-1989 period suffered earnings declines of 25 percent or more (ch. 4, table 4-3). Moreover, displaced apparel workers left the labor force during the 1980s at rates about 30 percent higher than for manufacturing as a whole, while more than a quarter of those who lost jobs had not found new work by the time they were surveyed. Many apparel workers have poor basic skills (e.g., reading, arithmetic). They have been poorly served by existing training and retraining programs. Global competition and the threat of relocation to low-wage sites will place continuing downward pressure on wages for production workers in apparel; real wages will probably continue to decline.

Job Loss in Standardized Production

From an overall perspective, the pattern of Mexican imports contrasts sharply with the pattern of U.S. apparel employment. Underwear (including brassieres) accounts for about 30 percent of U.S. imports from Mexico, but provides jobs for only about 8 percent of U.S. apparel workers; underwear plus men's and women's trousers accounts for almost two-thirds of imports from Mexico but about 30 percent of U.S. employment.

Thousands of U.S. jobs remain in basics, and these jobs are at risk (along with the job opportuni-

Box 9-C—Apparel Production in Guatemala[1]

From around 2,000 workers in 1984, Guatemala's export-oriented apparel assembly industry has mushroomed to 70,000 workers, mostly women between the ages of 14 and 25—more than in Mexico's ***maquiladora*** apparel sector. Between 1986 and 1991, Guatemala's garment exports to the U.S. rose from $22 million to $350 million, putting Guatemala behind only Costa Rica and the Dominican Republic among CBI countries. The growth of the Guatemalan industry illustrates both the potential for rapid expansion of the Mexican apparel industry in remote rural areas and the intense competition that these areas will face from even lower wage regions.

While Guatemala passed regulations designed to encourage export assembly production in the 1960s, these had little impact until the election of a civilian government in 1986. The new government implemented a stabilization program similar to Mexico 's. As in Mexico, this led to depreciation of the national currency and rapid inflation. Guatemala's wages dropped to around 20 cents per hour-perhaps l/30th of U.S. levels and one-quarter of wages in Mexican ***maquiladora*** apparel plants. To help investors take advantage of these very low wages, Guatemala's government established a "One Stop to Export" licensing center for new plants, while the U.S. Agency for International Development provided financial, technical, and marketing support for local entrepreneurs.

By comparison with apparel industries in other parts of the Caribbean, Guatemala has a much higher concentration of Asian, primarily Korean, investment. Since 1988, the number of Korean-owned plants has jumped from 6 to 50, accounting for about half of apparel exports. Korean multinationals own a dozen of these plants (Samsung alone has five), most of them large; small and medium-sized firms account for the rest. For Korean apparel manufacturers, Guatemala provided a way around U.S. quotas and a means to contain costs following Korean currency appreciation and wage increases in the second half of the 1980s. An estimated 300 to 500 Koreans work as managers and supervisors in Guatemala, with others in the United States handling marketing and distribution. Korea's Embassy acts as an intermediary for investors.

Alongside the Korean operations stand over 200 locally-owned firms, typically employing less than 100 workers each. U.S. firms account for only 10 percent of total investment in the Guatemala industry. Van Heusen, the biggest U.S. player, employs over 1,000 workers assembling 20,000 men's shirts per month. Since 1989, Van Heusen has been helping San Pedro, an indigenous village 20 miles outside Guatemala City, move into production for export. San Pedro is a traditional center of production for the domestic market, with over 3,000 sewing machines distributed through homes or shacks each containing 6 to 20 machines.

While the export apparel industry has brought badly needed employment to Guatemala, the new jobs have been accompanied by low wages, very long hours, poor health and safety standards, child labor (particularly in rural areas), and weak protection of worker rights to organize. Attempts to form unions have been met with bribery, discharge, threats of plant relocations, actual relocations, and death threats. Many workers move from job to job to escape bad treatment or in search of slightly better pay, leading to turnover of 15 to 30 percent per month-and 25 to 40 percent in Korean plants, known for intense pace and harsh discipline. Guatemala's need for investment has discouraged government action to improve labor standards.

Guatemalan plants do not assemble high-fashion goods, but they do produce a range of apparel that goes well beyond the most standardized items. Recent capital-intensive investments promise to increase the industry's ability to meet the needs of large U.S. distributors, showing that, with good management-in this case from Korea-low-wage countries can rapidly increase production and move into wider ranges of apparel products. Finally, experience in Guatemala demonstrates that, in this industry at least, the issue of labor standards may have to be addressed in a broader venue than just North America-perhaps the Organization of American States or GATT. If garment trade with CBI countries is liberalized following a NAFTA, or if the MFA is phased out, the United States and its trading partners might consider basing liberalization (or growth in quotas during a transition period) on respect for worker rights, perhaps including the enforcement of a minimum wage scaled to a country's average wage or per capita income. Lacking such provisions, trade expansion would come at the expense of Mexican and Guatemala as well as U.S. workers.

[1]This box is based on Kurt Peterson, *The Maquiladora Revolution in Guatemala* (New Haven, CT: Orville H. Schell Jr. Center for International Human Rights, Yale Law School), July 1992). Also see Shelley Emling, "U.S. May Probe Alleged Labor Abuses in Guatemala," *Washington Post,* August 1, 1992, p. A18.

ing, many Asian firms are broad-line suppliers. Some U.S. fins, such as M.A.S.T. Industries, have been successful with a comprehensive approach to order packaging, but U.S. apparel makers generally appear to be well behind in developing a complete packaging strategy. There have been no signs so far of movement of fashion-sensititve production from garment centers in cities such as New York or Los Angeles to Mexico. A NAFTA, by itself, seems unlikely to make such transfers attractive. Moreover, given that Mexico would bring little in the way of the skills needed for competing with the strategies of Asian fins, a NAFTA would not directly strengthen the North American apparel complex as whole in segments less sensitive to labor costs. Rather than U.S. producers in these segments moving to Mexico, a NAFTA seems more likely to attract Asian firms seeking to transfer their commercial skills and take advantage of guaranteed access to the U.S. market.

NAFTA and **Quick Response in the United States**

Would a NAFTA encourage or discourage movement toward QR in the United States and/or in Mexico? Thus far, much of the implementation of QR has involved planning and coordination among firms (external QR), with relatively few changes in actual production processes (internal QR). A NAFTA would not slow the movement toward greater interfirm coordination in the United States, and could accelerate it. *Maquiladoras* that supply U.S. firms could be incorporated into external QR without much difficulty, since some are U.S.-owned and many others are contractors that already work closely with large U.S. firms. An extra day or two in transit will not be a barrier. This implies that successful implementation of external QR in the United States would not necessarily prevent shifts of production to Mexico.

The effects on production processes and internal QR are more problematic. Despite the demonstrated success of workplace reorganizations based on employee involvement and work groups in other industries, U.S. apparel firms have shown little enthusiasm. But some of the firms that have made the most progress in internal QR are basics producers-the same group of companies that have transferred production to Mexican *maquiladoras.* These firms may be tempted to move even more production to Mexico, opting for cheap and pliable labor rather than implemention of internal QR in the United States.

At the same time, because Mexico is not a significant force in fashion-sensitive markets, it seems unlikely that a NAFTA would have much impact on the spread of internal QR among producers of such apparel. Nor is it likely that producers in Mexico would move quickly towards technologically and organizationally sophisticated systems of flexible production; so long as they see the solution to their problems in terms of long runs and "not changing anything,' ' they will resist QR even more than U.S. firms. Thus, Mexican production using either traditional or more modem methods does not seem a very attractive option for U.S. firms seeking to compete more effectively in fashion-sensitive goods. Instead, the primary strategic alternatives to Asian imports appear to lie in continued reliance on low-cost immigrant labor, combined with the agglomeration economies in existing U.S. apparel centers, with or without internal QR techniques. Only if tighter limits on Asian imports accompany a NAFTA will it have a major effect on the choices facing makers of fashion-sensitive goods.

The Uruguay Round and the MFA

Among the forces at work in the world apparel and textile industries today, some of which might push the Mexican industry and U.S.-Mexican trade in unforeseen directions, the most significant is the ongoing Uruguay Round GATT negotiations. An end to the MFA would create opportunities for growth in many countries that have labor costs well under those in Mexico. On a smaller scale, a NAFTA that liberalized U.S. imports of apparel from Mexico would probably mean eventual liberalization for other CBI countries. These countries will seek to keep their playing field level with Mexico's, and the U.S. Government will find it difficult to say no.

On the other hand, should the Uruguay Round come to nothing, while a NAFTA took effect, the United States might well seek tighter restrictions on Asian apparel imports in government-to-government negotiations. NAFTA provisions would probably limit transhipments from Asia into the United States via Mexico. But it is not so clear that a NAFTA would discourage Asian investments in Mexico. If it did not, sophisticated producers based in Hong Kong and elsewhere would have strong incentives to set up close to the lucrative U.S. market.

CONCLUDING REMARKS

In the United States and the rest of the world, apparel employment has grown during early stages of national economic development. The industry is typically one of the frost large manufacturing sectors in developing countries and often provides the first industrial jobs for agricultural workers. As development proceeds and wages rise, apparel jobs migrate to lower wage regions. Thus, during the 1960s, Japan accounted for about one-third of all U.S. apparel imports, but by the 1980s Japan's share had dropped below 5 percent.

In the United States, apparel jobs migrated from the Northeast to the Southeast during the decades after World War II. During the 1970s and 1980s, the Southeast lost jobs to Asia and the Caribbean. A NAFTA, if it generated rapid economic growth in Mexico with wage increases, would accelerate the process through which Mexican producers would lose advantages based on low wages alone. Within Mexico, this process has already started. Apparel *maquilas in the* border cities must now compete with other manufacturers, at least some of which can afford to pay higher wages. But continuing competition for Mexican producers in both labor markets and product markets provides little consolation for U.S. workers who have lost, or will lose, jobs to Mexico.