

BY JOHN M. REDMAN & WILLIAM AMT



T O O L S F O R P R A C T I C E

THE TSUNAMI, PHOENIX, TEQUILA SUNSET AND FEDEX SCENARIOS

Trade Policy and the Future of
America's Rural Apparel Industry



The Aspen Institute
Community Strategies Group

BY JOHN M. REDMAN & WILLIAM AMT



TOOLS FOR PRACTICE

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John M. Redman
Manager, National Program Evaluation
Manufacturing Extension Partnership
Building 301, Room C100
National Institute on Standards and Technology
Gaithersburg, MD 20899

Phone: 301-975-5627

Fax: 301-926-4340

E-mail: jredman@mep.nist.gov

The signals are clear: Over the next 20 years, the U.S. apparel industry will undergo major changes that will significantly alter its size and composition. The forces that are driving these changes include the usual suspects—ongoing advances in communication and production technology along with changes in consumer demands and product market structures. In addition, though, two new, important, international trade agreements promise—or threaten—to fundamentally transform the structure and vitality of the apparel industry in this country.

The first of these agreements, the **NORTH AMERICAN FREE TRADE AGREEMENT (NAFTA)** enacted in early 1994, will eventually incorporate Mexico into a free trade zone with the United States and Canada, and sets the stage for expanding the zone to other nations. The second, a new **GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT)**, will eliminate U.S. quotas and reduce tariffs on imported apparel and apparel fabric. (The particulars of these agreements are detailed in the next section.)

Both of these trade agreements will intensify the already formidable global challenge testing U.S.-based apparel producers. Indeed, all by themselves, rapidly changing technology and apparel product markets continue to compel industry restructuring. The coupling of these powerful forces with liberalizing trade is fast redefining the competitive position of many apparel producing communities around the world.

Many of the communities that must struggle to survive—much less thrive—in this volatile economic environment are nestled in our nation's rural hills and valleys. These communities and the companies that have located there have been kept alive for years by people who work hard for their money—and for their families. The economic plight of these communities, their citizens and their employers in the era of free trade and growing internationalization must concern responsible leaders in both the public and private sectors.

We offer this guide as essential food for thought as well as a call to action for policymakers and development practitioners who are grappling with the real-world implications of these transforming events in our states and communities.¹

WHY SCENARIOS?

We offer these scenarios as a starting point for a state or local economic development team that is working to design policy or initiatives to help the rural apparel industry in a region. These scenarios are one tool that community and business leaders and policymakers can use to stretch their thinking, advise their analysis and help reach consensus before they make decisions that will affect their region's economy.

NORTH AMERICAN FREE TRADE AGREEMENT (NAFTA)

NAFTA will eventually eliminate trade and investment barriers between the United States, Mexico and Canada. NAFTA was passed by the U.S. Congress in November 1993, and signed by President Bill Clinton on December 8, 1993. Canada and Mexico officially endorsed the pact shortly after U.S. approval was given.

NAFTA was primarily designed to bring Mexico into the free trade zone created under the 1989 Canada-U.S. Free Trade Agreement. Essentially, over the next 15 years, the pact eliminates all tariffs and most trade barriers between these three nations. It also guarantees that businesses in NAFTA countries can invest more easily and securely throughout North America.

GLOSSARY: ON TERMS WITH THE INDUSTRY

Like any industry, apparel has its own vernacular—its set of unique terms and acronyms that refer to events, trends or processes within the industry. For definitions of some unfamiliar or specialized terms or phrases that you run across in this guide, please see the Glossary on page 137 at the back of this book.

The forces that spurred NAFTA’s passage came from inside and outside North America. Most significantly, regional trade agreements like NAFTA recently have been gaining popularity around the globe. In 1991, Colombia, Bolivia, Ecuador, Peru and Venezuela signed a new Andean Pact. The same year, the European Community’s 12 nations joined with the European Free Trade Association’s seven nations to form the European Economic Area. The following year, Estonia, Latvia and Lithuania formed a regional pact; in Southeast Asia, Thailand, Indonesia, Malaysia, the Philippines, Singapore and Brunei formed the Association of Southeast Asian Nations Free Trade Area.

GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT)

After World War II, the nations of the world signed a General Agreement on Tariffs and Trade (GATT). This agreement was a tool for handling international economic relations. Specifically, GATT was designed to prevent trade wars like the one that produced America’s protectionist Smoot-Hawley tariffs, which many economists believe contributed to the ensuing Great Depression of the 1930s, both here and abroad.

Four principles underlie GATT:

- ❖ Member nations should work toward reducing trade barriers and quotas.

- ❖ Member nations should apply their trade policies on a nondiscriminatory basis.
- ❖ Member nations can't rescind tariff concessions without compensating affected countries.
- ❖ Member nations should use consultation to settle trade conflicts.

By signing the current GATT document, nations agree both to these principles and to a set of rules for implementing them. They also agree to be bound to the agreement until a new one is negotiated and signed.

In late 1986, the 117 GATT signatory nations began the eighth round—the so-called Uruguay Round—of talks to update their global trade deal. At the end of 1993, these nations ironed out an agreement that will substantially liberalize world trade by dramatically reducing tariffs, import quotas and export subsidies. Agriculture and high-tech industries are expected to receive the greatest benefits. Textile and apparel manufacturers are among the sectors expected to face the greatest challenges as the existing system of quotas and tariffs are replaced by GATT's more liberal policies. U.S. participation in the new GATT agreement was approved by Congress and signed by President Clinton in late 1994.

MULTIFIBER AGREEMENT (MFA)

The MFA is an international system of quotas, in effect for more than a decade, which limits the quantity of specified fabric and clothing items that a producer country can export to a consuming country. Typically, the United States negotiates its bilateral MFA agreements with producer countries; each agreement sets unique quota limits for each of the several product categories that the producing country exports to us. Other industrialized countries establish similar MFA agreements with producer nations, covering varying time periods.

The U.S. Apparel Industry

WHAT IS THE APPAREL INDUSTRY?

In this guide, we define the **APPAREL INDUSTRY** to include most of the sectors that undergird the production and sales of clothing. That specifically includes:

- ❖ yarn, fabric and fabric finishing sectors supplying raw material to the clothing manufacturing sector

- ❖ clothing manufacturing sector, both knit and nonknit
- ❖ apparel distribution network, most importantly the retail sector
- ❖ textile and clothing machinery sectors.

In this case, **APPAREL** refers to all of these sectors collectively. We use **CLOTHING** to refer only to those activities that cut whole fabric into pieces, assemble these pieces into a final garment, or form yarn directly into a completed garment without first cutting pieces from fabric (e.g., hosiery). We use **TEXTILE** to refer to both yarn and fabric production and fabric finishing.

CURRENT STATUS: WHAT'S HAPPENING IN THE APPAREL INDUSTRY?

Although clothing accounts for about 37 percent of total U.S. fiber consumption, it represents about 62 percent of total cotton fiber use and around 26 percent of other (primarily man-made) fiber use.² So, apparel consumption is much more important to cotton growers and processors than to the small number of multinational producers, such as DuPont, that dominate world markets for man-made fiber.

Already, the apparel industry has weathered extensive change. Although U.S. consumers continue to spend lots of money on clothing products—some \$125-

A NOTE ABOUT SIC CODES

Throughout this guide, segments of the apparel complex are referred to by Standard Industrial Classification (SIC) codes. These codes, created by the Office of Management and Budget, organize industrial activity data into a hierarchy based on general similarities among products produced and technologies used.

- ❖ *Two-digit* codes represent major industrial groups—22, for example, is textiles.
- ❖ A *third digit* facilitates distinctions among an industry's component parts—221 is broadwoven fabric mills (cotton), 225 is knitting mills, 228 includes yarn and thread mills.
- ❖ A *fourth digit* identifies actual product lines—2251 is women's hosiery, except socks.

150 billion a year, with expenditures for women's clothing almost twice that of men's and three times that of children's³—the rate of increase in apparel sales slowed during the 1980s. Indeed, between 1984 and 1990, retail sales growth barely exceeded inflation. This industrywide sluggishness has been tied to the slowed growth rate of the population and the increasing proportion of older people who tend to spend less on clothing. Bottom line? To increase sales, producers must carve out a bigger slice of a more slowly growing pie.

Producers have responded in recent years by differentiating their products in what has almost become the “old-fashioned” way: They've developed and advertised both standard and fashion goods that carry brand names or designer labels. Now, almost daily, production is becoming even more niche-oriented, or targeted to specific subgroups of consumers. Within these niches, the number of fashion seasons has increased sharply, and the number of styles, materials and finishes offered typically exceeds “traditional” levels. Consequently, standardized products like women's hosiery and men's underwear now comprise only about one-fifth of the apparel market.

WHY—AND WHERE—DOES APPAREL COUNT?

Rural policymakers should care about the apparel industry for a simple reason: Many nonmetro areas in our country depend on it. (*See Figure 1.*) And many of the counties that depend on it most heavily also are among the nation's poorest. Thus, the industry's fate will strongly influence the economic well-being of many very vulnerable rural families.

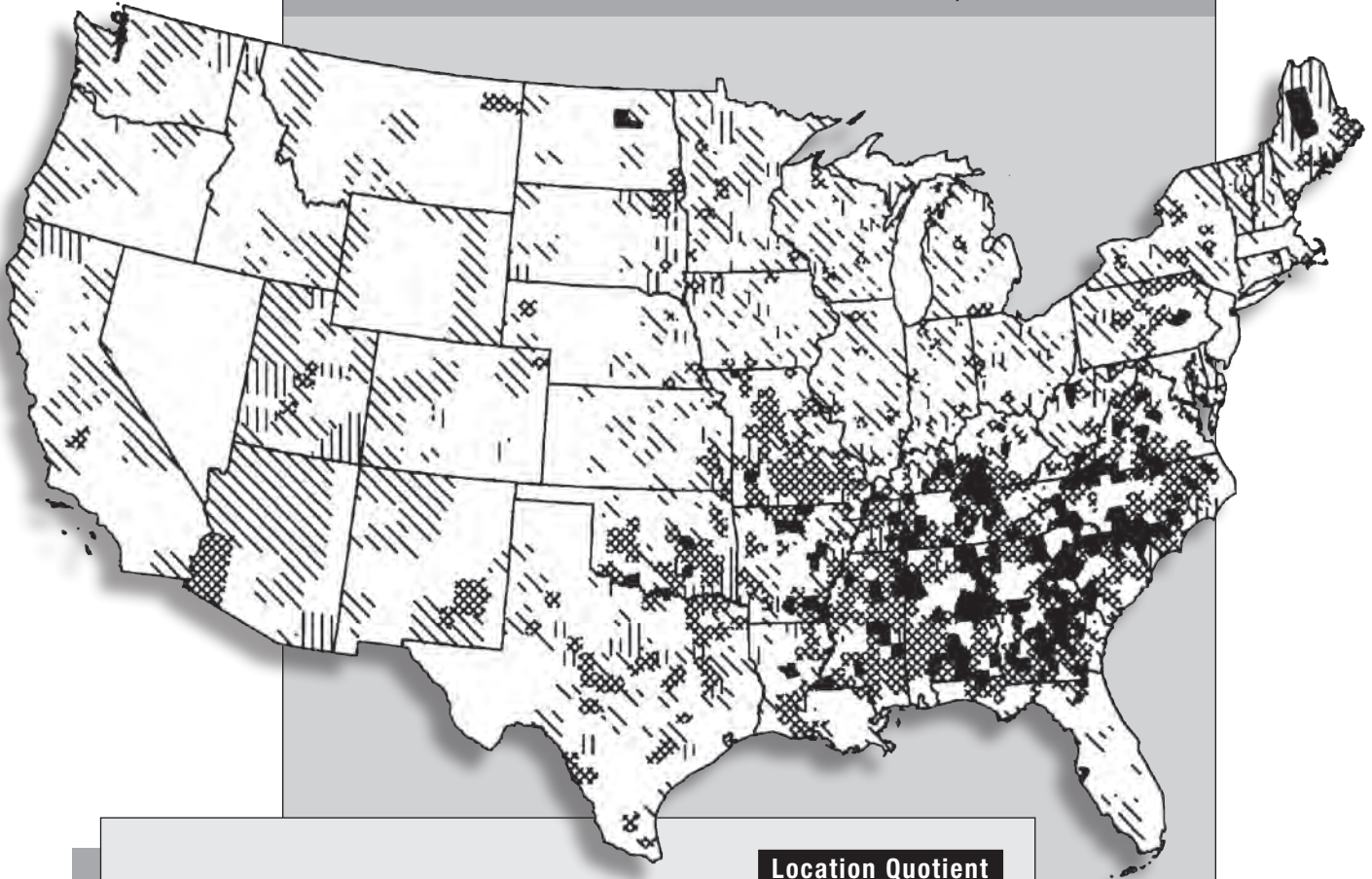
In just ten southeastern states in 1987, in 209 (27 percent) of their 771 nonmetro counties, at least one-fifth of the working residents who weren't farming or employed by government were engaged in apparel fabric and clothing work. Nearly half of these same counties could count 10 percent or more of their working residents in these sectors.

For individual counties and communities, however, the importance of apparel employment extends well beyond these percentages. As with any manufacturing enterprise, most—if not all—of the textiles and clothing produced are sold in markets quite distant from the production facilities. For the communities where the plants are based, and for the employees who live and work there, these products qualify as “exports”—whether they are sold in the next county, the next state or across the ocean. Exports are important because anything sold outside the area brings the county and its citizens an influx of new income—in the

FOR MORE ON THE U.S. APPAREL INDUSTRY

For more detail on the *structure* of the U.S. Apparel Industry, please see *Appendix A: Major Sectors in the U.S. Apparel Industry*. You will find more detail on many of the specific technology, marketing and production *trends* that are affecting the apparel industry explained in the text of the premises underlying the four scenarios.

FIGURE 1. U.S. APPAREL INDUSTRY EMPLOYMENT LOCATION QUOTIENTS: NONMETRO COUNTIES, 1987



Location Quotient



A location quotient is the ratio of the percentage of county employment within a given industry compared to the percentage of total U.S. employment within that industry. So, if a county has 10 percent of its employment within the apparel industry, and the U.S. as a whole has 5 percent of its employment in the apparel industry, the county's location quotient is 2—that is, 10/5.

Note: The data presented here are for employment in the textile mill products sector (SIC code 22) and the apparel and other textile products sector (SIC code 23).

Data Source: U.S. Census Bureau, County Business Patterns. Tabulations by authors.

form of wages, salaries and profits—rather than simply recycling dollars that already exist in the community. In effect, exporting “expands the pie” of assets that are available for local investment and consumption.

Of course, local recipients spend or invest much of this “imported” income on locally produced goods and services, which makes community businesses (and government) stronger. This “multiplier effect” expands the local income beneficiaries well beyond the initial “export-related” owners and employees.

Organization of This Guide

The main text of this guide sets out four scenarios. Each depicts a path along which the apparel industry may—or may not—evolve in the next 10-20 years. Each scenario path differs, based on the varying impact of specific events or developments—like trade agreements, industry modernization efforts, or regional trends—as projected by a wide range of apparel industry and economic observers.

Each scenario is based on several premises and positions published by industry groups, trade journalists, government agencies or academics; interviews with knowledgeable experts within and outside the industry; and information developed from our own data analysis. Under each scenario, we assume that NAFTA and/or GATT is in effect: Both reduce the level of protection that the U.S. apparel industry now enjoys.

The scenarios are not *predictions* of what will happen in any sense. Instead, they follow a variety of current and foreseeable trends to their logical conclusions, explaining and describing key factors that likely will affect the apparel industry down the road. In reality, the future will undoubtedly be shaped by some combination of factors illustrated in these scenarios, most probably by the interaction of factors from all four.

THE FOUR SCENARIOS

We present each of four scenarios from an advocate’s standpoint. Each paints a vivid picture of how the apparel industry might change in the coming decades in response to competitive forces and a newly defined trade environment. We’ve named each scenario to characterize its driving force or major impact:

❖ **THE TSUNAMI (OR GREAT ASIAN TIDAL WAVE) SCENARIO:** A new GATT causes the United States to lose more than three-quarters of its apparel industry employment within a decade.

- ❖ **THE PHOENIX SCENARIO:** The apparel industry prospers with a new GATT, as apparel markets and technology change in ways that favor U.S. producers and generate a vigorous industry renewal.
- ❖ **THE TEQUILA SUNSET SCENARIO:** NAFTA opens trade with Mexico and then with other nearby nations, causing at least 300,000 lost jobs for the U.S. apparel industry.
- ❖ **THE FEDEX SCENARIO:** The United States loses most of its market niches and domestic employment as East Asian and other foreign producers respond to changing market needs almost as quickly as U.S. producers.

FOR MORE INFORMATION

For context and historical perspective, we offer two appendixes that describe how the industry has evolved in the United States during the past 30 years.

- ❖ **APPENDIX A: MAJOR SECTORS IN THE U.S. APPAREL INDUSTRY** includes data for 1960-89 on real output, employment, real investment, real capital stock, multifactor productivity growth, the number of companies and establishments and industry concentration for the major sectors in the U.S. apparel industry.
- ❖ **APPENDIX B: THE GEOGRAPHY OF U.S. TEXTILE AND APPAREL EMPLOYMENT** presents information for 1969-88 on regional employment distribution and growth patterns in the U.S. apparel industry.

This introduction and the scenarios draw on and highlight some, but not all, of the information contained in the appendixes. Data and industry analysis contained in the appendixes offer a useful primer to those who know little about apparel—and a refresher to those who do have experience with the industry.

HOW TO USE SCENARIOS

We offer these scenarios as a starting point for a state or local economic development team that is working to design policy or initiatives to help the rural apparel industry in a region. These scenarios are one tool that community and business leaders and policymakers can use to stretch their thinking, advise their analysis and help reach consensus before they make decisions that will affect their region's economy.

We suggest that interested users of these scenarios begin by identifying themselves and their communities among the trends and factors that the four

scenarios illustrate. In particular, we encourage follow-up discussions with industry personnel, who often have the most up-to-date and relevant information. Based on this and other evidence, a policy team ultimately must itself define the relative probability that a given trend (or mix of parallel trends) will emerge as the dominant one and, based on these probabilities, the team must tailor its own working policy scenario.

We hope that community stakeholders follow up any analysis by working together to take reasonable and responsive action, whether it be to mitigate potential negative impact or to exploit the business opportunities brought about by freer trade and modernization.⁴

CHAPTER 1. THE TSUNAMI SCENARIO

Under the Tsunami (or Great Asian Tidal Wave) Scenario, prospects for the U.S. apparel industry are at best gloomy, at worst terminal.

Today's U.S. apparel industry is a labor-intensive "sunset" industry. With relatively high wage rates, severe structural problems that limit its ability to grow and modernize, and high-quality competition from established producers, the industry probably won't survive in the United States under a liberalized trade regime.

In fact, the main reason apparel remains a large U.S. industry in 1994 is the extensive protection it gets through the Multifiber Agreement (MFA)—a comprehensive system of quotas and higher-than-average tariffs covering apparel imports from less industrialized countries to the United States. A new GATT will override these MFA protections. Indeed, an array of lower-wage competitors in other nations produce high-quality products—often of higher quality than that achieved by many U.S. firms—at a much lower price; only quotas and tariffs limit their share of the U.S. market.

The domestic industry suffers from a constrained supply of fabric, a lack of flexibility among many large manufacturers and the very uneven quality of industry output. Only a small portion of apparel firms operate internationally, and most small and medium-size enterprises (SMEs)—firms with fewer than 500 employees—have no direct channels to either export or domestic markets. They can hardly adapt to changing market conditions. In addition, severe human resource problems plague the industry and will grow worse during the 1990s.

Moreover, the industry probably won't benefit anytime soon from a breakthrough in assembly technology. Even if one occurred, the rate of technology diffusion in the industry will be too slow, or the breakthrough too capital-intensive—or both—to offset the effects of rapid import growth after MFA is superseded by more liberal trade policies.

The public sector has few programs in place to address these issues. At best, it provides a fraction of the support received by SMEs that pay similar wages in our industrialized competitor countries.

THE TSUNAMI SCENARIO

The United States and other nations conclude a General Agreement on Tariffs and Trade, eliminating quotas under the Multifiber Agreement and reducing tariffs on imported clothing and textile products.

GATT liberalizes trade to allow greater access to the U.S. market, causing rapid, wholesale dislocations of workers, many of whom suffer significant adjustment problems. Overall, the United States loses more than three-quarters of its industry employment to imports within GATT's 15-year term.

THE TSUNAMI SCENARIO: PREMISES

EACH OF THESE PREMISES, WHICH TOGETHER FORM THE FOUNDATION FOR THE TSUNAMI SCENARIO, IS EXPLAINED IN DETAIL IN THIS CHAPTER.

1. Despite protections, the U.S. clothing trade deficit grew and employment fell rapidly in recent years.
2. Firms in U.S. competitor nations pay lower wages.
3. Foreign—particularly East Asian—competitors provide world-class quality and service.
4. U.S. product quality often is below world-class standards.
5. The existing U.S. apparel industry is inefficient.
6. The existing U.S. apparel industry is slow to innovate.
7. Widespread improvements in U.S. apparel industry productivity are unlikely anytime soon.
8. The apparel industry has limited domestic research and development (R&D) capability.
9. Domestic fabric availability is constrained.
10. Large U.S. manufacturing firms often deal inflexibly with retailers.
11. Many U.S. firms lack well-developed marketing channels.
12. The U.S. industry lacks an export orientation.
13. Most U.S. firms face severe human resource shortages.
14. Government—and industry—support for apparel industry SMEs is weak.

In short, the U.S. apparel industry is very vulnerable to an opening of trade. Most firms will fail if they try to remain in the United States.

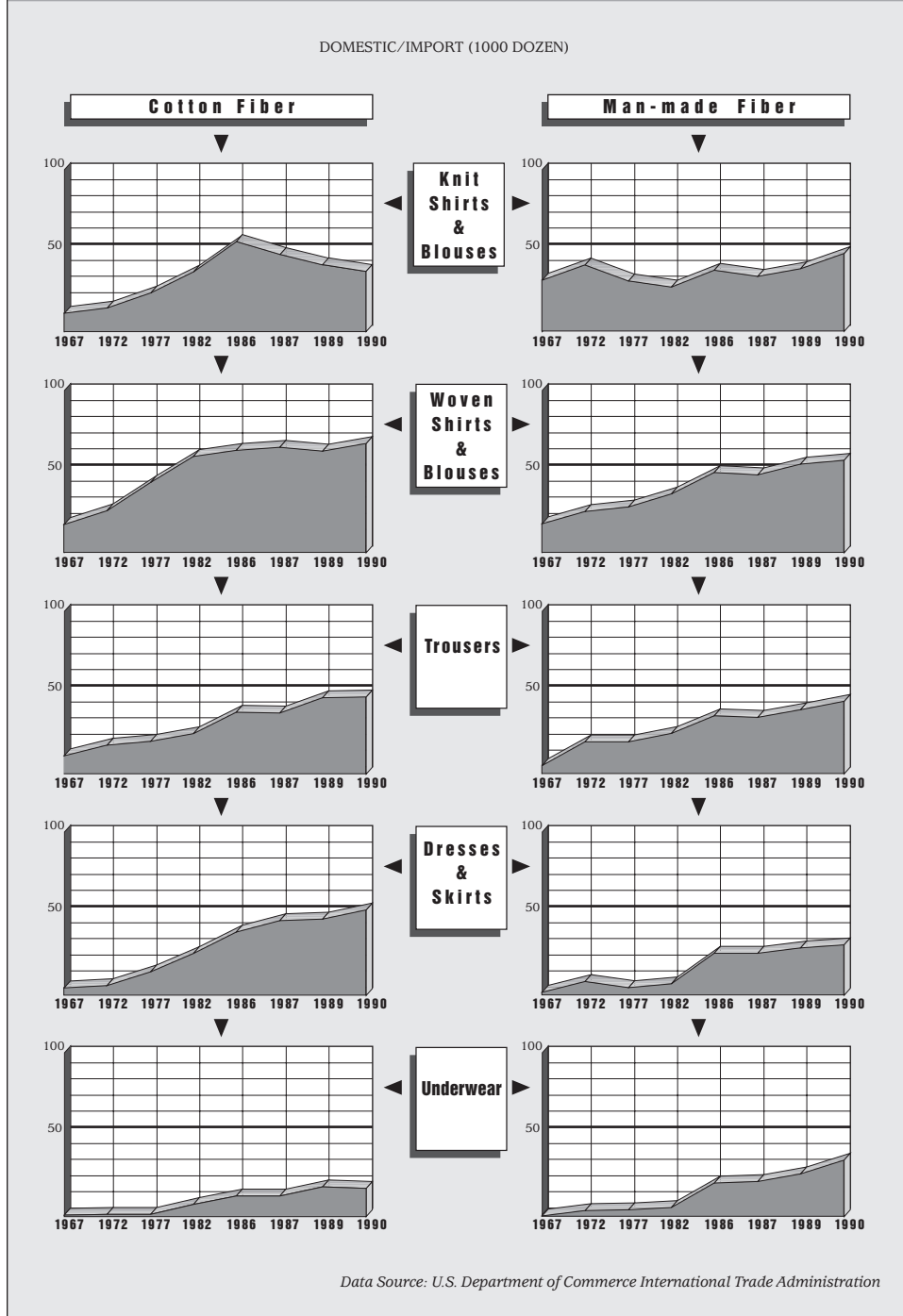
Premise 1

DESPITE PROTECTIONS, THE U.S. CLOTHING TRADE DEFICIT GREW AND EMPLOYMENT FELL RAPIDLY IN RECENT YEARS

Throughout the 1980s, the U.S. apparel industry enjoyed heavy protection under an extensive, complicated system of quotas and tariffs embodied in the MFA. To get a sense of the extent and impact of these protections, in 1988, bilateral agreements that placed quotas on imports to the United States were in place with 40

countries and covered 147 product categories. The U.S. International Trade Commission (USITC) estimated that U.S. tariff duties on clothing imports averaged 19 percent of import value, while the “tariff equivalent” of quota protection (these latter are additional price increases to U.S. importers associated with the

FIGURE 2. U.S. IMPORT PENETRATION RATIOS FOR SELECTED CLOTHING PRODUCTS, COTTON AND MAN-MADE FIBER: 1967-90



quotas' supply-restricting impacts) effectively boosted import fees to an additional 47.3 percent of the product's value.

Despite this heavy protection, the U.S. trade deficit in clothing nearly quintupled, rising from \$4.5 billion in 1979 to \$21.6 billion in 1990. Meanwhile, U.S. employment in clothing plummeted from 1.2 million in 1979 to 982,000 in 1989;⁵ and from 536,000 to 379,000 in yarnmaking, broadwoven and knit fabric production, and fabric finishing.⁶ By 1989, import penetration levels (as measured in numbers of garments, and defined as the share of the market for a given product or products accounted for by imports of that product) far exceeded 50 percent for many clothing items. (See *Figure 2*.)

The share of Multifiber Agreement quota allocations filled by many major competitor countries—most importantly, China, Hong Kong, Taiwan and South Korea, which together account for about one-half of all U.S. clothing imports—often exceeded 80 percent, the percentage that USITC uses as a rough indicator of when quotas begin to constrain imports. Trends in another measure of international competitive advantage—the Relative Trade Advantage (discussed further in *Appendix A*)—confirm that the U.S. apparel industry's international position deteriorated sharply during the 1980s.

Premise 2

FIRMS IN U.S. COMPETITOR NATIONS PAY LOWER WAGES

A major source of competitive strength among foreign apparel producers is that they pay much lower wages than their U.S. counterparts. In 1991, hourly manufacturing labor costs in the U.S. apparel industry—including fringe benefits and social charges, such as the mandated costs of child care and transportation—were about twice the levels in Hong Kong and Taiwan, and about three times the rate in South Korea. Estimated hourly labor rates in China (24 cents) and Indonesia (18 cents) are even lower. Many other apparel manufacturing countries, such as Pakistan, India and Sri Lanka, pay less than 50 cents an hour.⁷

These lower wages more than offset the generally lower productivity in developing-world firms, and they result in prices that can't be matched by firms in higher-wage developed countries. For example, when comparing the cost of producing a generic \$100 dress in the United States against low-wage overseas competitors, or the European and low-wage overseas production costs for a cotton dress shirt, it is easy to see that foreign manufacturing costs are much lower. (See *Figure 3*.)

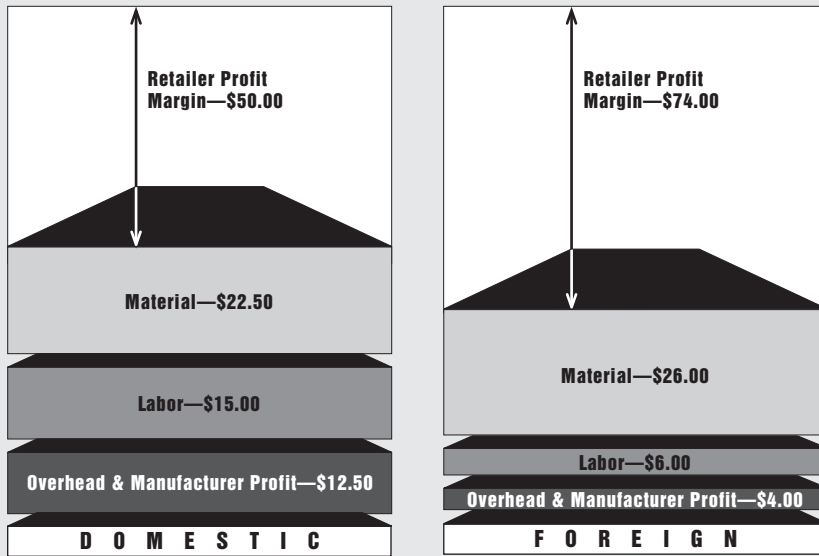
Labor-cost advantages translate not only into lower assembly costs, but also into lower fabric costs (depending on where the fabric is produced) and lower

costs for such labor-intensive capital expenses as construction. Lower foreign costs for employee benefits and for public income security programs funded by mandatory payroll deductions (for example, social security and unemployment compensation) also significantly lower overall costs.

FIGURE 3. U.S. VERSUS LOW-WAGE FOREIGN MANUFACTURING COSTS: SELECTED GARMENTS

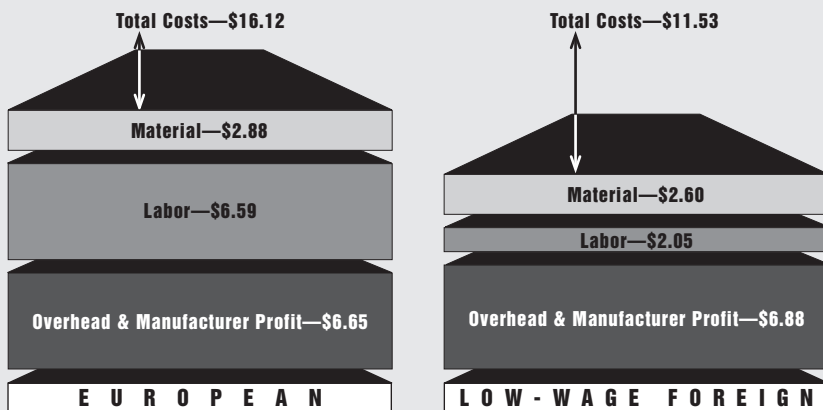
U.S. DOMESTIC VS. LOW-WAGE FOREIGN MANUFACTURER

PRODUCTION COSTS AND PROFIT FOR \$100 DRESS (RETAIL)



EUROPEAN VS. LOW-WAGE FOREIGN MANUFACTURER

PRODUCTION COSTS FOR COTTON DRESS SHIRT (WHOLESALE)



Data Source: Kurt Salmon Associates (production costs for dress) & World Bank (costs for dress shirt)

While manufacturing cost differentials vary widely depending on the product and the nation producing it, differences of at least 30 percent are common between developed and industrializing competitors. Given these differences, it becomes clear that the great majority of domestic producers survive thanks to higher-than-average tariffs, quota rents and, to a much lesser extent, transportation and insurance costs associated with importing foreign-made apparel.⁸

Premise 3

FOREIGN—PARTICULARLY EAST ASIAN—COMPETITORS PROVIDE WORLD-CLASS QUALITY AND SERVICE

Many firms in lower-wage East Asian countries—notably Hong Kong, South Korea and Taiwan—have developed sophisticated production capabilities that deliver world-class-quality goods.⁹ The *unit value* of apparel goods imported into the United States—that is, the dollar value of imported products divided by the number of products imported—from those three nations is much higher, often at least 100 percent higher, than that of imports from other major U.S. suppliers such as the Philippines, Indonesia and Sri Lanka.¹⁰

CHINA: AN EMERGING FORCE

Most observers view China as generally producing less-sophisticated, lower-quality, “lower-end” products. But mid- to upper-end fashion producers, such as Liz Claiborne, source some work in China as well. In the coming years, Chinese production of these more sophisticated goods undoubtedly will become more common.

The MFA encouraged high-quality competition from East Asia. By defining quotas in terms of physical *quantities* of goods—such as the number of shirts—rather than a dollar value, the MFA system made it attractive for a quota-constrained country to upgrade and add value to the products in a given category; to shift, say, from producing inexpensive basic blouses to high-priced designer-label blouses. Generally, these upgraded items are less price-sensitive and more profitable, selling well in markets once dominated by firms in industrialized countries.

Partly due to this pressure to upgrade, buyers for U.S. retail stores now frequently find East Asian quality and detail clearly superior to what they can readily find in the United States. And though fashion *designs* may still originate in the Western world, East Asian firms now routinely produce the actual goods.

How good can these low-wage nations get? As one example, *Consumer Reports* recently gave a sample of Liz Claiborne women’s suits almost perfect scores in all of its tests, ranking it the best-quality suit overall among 14 well-known brands tested.¹¹ Liz Claiborne sources very little in the United States—and very heavily in East Asia.

Finally, many East Asian companies offer U.S. retail and clothing firms *total packaging*—the ability to perform all or most functions linked to developing and producing a given product or line (including, for example, design assistance, fabric acquisition, sample making, cutting and assembly, packaging and shipping). U.S. producers don't typically provide this service, which is considered invaluable when sourcing garment production. In this regard, the U.S. Office of Technology Assessment (OTA) notes that "Some U.S. firms, 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."¹²

Generally, the sophisticated servicing capabilities of East Asian and other overseas firms reflect the garment industry's true internationalization during the last two decades. Many overseas operations are no longer just low-cost assembly sites. Rather, with advanced communications linkages, overnight mail and computer-aided design and manufacturing (CAD/CAM) systems, they work cooperatively with customer firms to develop and manufacture new, high-quality products. Today a product might incorporate a U.S. design, use fabric from Japan, be assembled in China and be shipped to Western European markets. In the coming years, the feasibility and efficiency of such cooperative transactions will only increase.

COOPERATION CHANGES TRADITIONAL POLITICS

Increasing globalization and international cooperation in apparel making has changed the politics of trade issues. Through the mid-1980s, the American Apparel Manufacturers Association (AAMA) and its textile industry counterpart, the American Textile Manufacturers Institute (ATMI), strongly opposed any elimination of MFA quota protection. Since then, AAMA has become neutral on the issue.

Premise 4

U.S. PRODUCT QUALITY OFTEN IS BELOW WORLD-CLASS STANDARDS

Quality isn't necessarily crucial to the success of low-wage competitors with very low prices. But under a liberalized trade regime, the high-wage U.S. industry must offer world-class quality to remain competitive.

Unfortunately, the quality of U.S.-produced clothing frequently is not good. A buyer for a major retail chain, one which sources heavily offshore, commented that overseas purchasing often is driven not by price differentials, but by an inability to find comparable quality in domestically produced goods. Many people associated with the industry share this perspective, which has been documented in a series of studies.

A 1987 U.S. International Trade Commission (USITC) survey of fabric purchasers, for example, revealed that 38 percent of respondents cited "better product

quality” as a significant reason why their company chose to import foreign fabric.¹³ One Alabama study estimated the known standard garment defect rate among the state’s SMEs at 15 percent. Half the problems were directly attributable to defective fabric. “Obviously,” the authors wrote, “with 15 percent defects *known*, a considerable number of *undetected* defective garments reach the buying public.”¹⁴

In another recent study, Clemson University apparel researchers found the average defect rate in 30 plants to be 7.2 percent. This study included only plants that subsequently implemented modular or unit production system manufacturing methods—that is, plants very likely to be among the industry’s better-managed.¹⁵

Fabric defects may become a substantially less important problem in the future as the shuttleless loom (which improves fabric quality) and new defect-detection technology are embraced by the industry. Time, however, remains a serious factor, since there is little promise that even existing technologies will provide the basis for a meaningful response to quality problems in the face of liberalizing trade.

Premise 5

THE EXISTING U.S. APPAREL INDUSTRY IS INEFFICIENT

The average production efficiency in U.S. clothing manufacturing is far below best-practice levels. “Several studies have shown that the average productivity in U.S. apparel could be raised 30-35 percent with little difficulty,” the American Apparel Manufacturers Association (AAMA) noted in the mid-1980s, in a strikingly critical appraisal of its industry’s performance.¹⁶

AAMA personnel believe that overall industry efficiency has improved since then. But our conversations in 1991-92 with state industrial extension engineers who work with apparel companies in Georgia, Alabama, Pennsylvania, New York and North Carolina confirmed that the typical clothing plant still could easily, and significantly, raise its productivity level.

To be sure, widespread inefficiency exists not only in clothing, but in manufacturing in general. It is exacerbated in clothing, however, because a disproportionately high percentage of clothing firms are small and generally less able to keep current with advances in the industry.

This inefficiency encompasses not only conventional management deficiencies, like poor inventory management or quality control, but also a failure to incorporate competitiveness-enhancing innovations. A distinct minority of U.S. firms now uses or accesses such proven innovations as computer-assisted design, automated cutting or electronic data interchange. Even fewer employ such

new, promising concepts as modular manufacturing and unit production systems (UPS), according to recent studies by AAMA and others.¹⁷ (For descriptions of these systems, see the *Phoenix Scenario and Appendix A*.) These innovations not only improve competitiveness, AAMA and many other industry experts say, but will be necessary for the survival of many domestic firms.

Admittedly, many manufacturers in lower-wage competitor nations are not close to using best practices either. But because U.S. producers must also overcome the disadvantage of much higher costs, their failure to use best practices poses a greater threat to their competitive position.

Premise 6

THE EXISTING U.S. APPAREL INDUSTRY IS SLOW TO INNOVATE

Several factors are slowing the innovation that might lead to greater U.S. apparel industry efficiency. Most are related to the nature of the thousands of SMEs, which constitute the vast majority of U.S. clothing firms—and which strongly value their independence.

STAFF HAVE LIMITED TECHNOLOGY EXPERTISE AND EXPOSURE. Many SMEs are marginally profitable family-owned businesses run by people with little or no management or engineering training. Few SMEs have the in-house engineering capability to realistically determine the payback on a given change in plant, equipment or management practice. Researchers Bernard Schroer and Carl Ziemke note that many of the “engineers” in such firms “are actually time-study personnel who came up ‘through the ranks.’”¹⁸

Given their limited familiarity with new concepts, their inability to find spare time and their constrained financial positions, most SME managers assign low priority to systematic evaluation of existing operations, new practices and new technologies. The AAMA notes:

“Most apparel executives have been exposed to only one manufacturing system—their own—during their careers, and many have only a glancing acquaintance with other approaches. Few manufacturers have had to analyze what they do in the plant or question why they do it that way. Fewer still have had the opportunity to evaluate alternative systems and possibly change over to them. No one wants to disturb the status quo.”¹⁹

INDUSTRY INNOVATIONS ARE TOO CAPITAL-INTENSIVE FOR MANY SMES.

Compounding the problem is the expectation held by many industry firms that

new investments must provide paybacks within one to three years—a relatively short time frame. By itself, that expectation constitutes a formidable deterrent to new investment. But there is another key barrier to modernization: Some recent innovations in garment production are too capital-intensive for most SMEs to handle. Moreover, they increase production capacity far beyond the firms' needs.

For example, higher-speed automated sewing equipment—like an Adler collar runstitcher, collar topstitcher and collar-band attacher—may cost \$50,000 per unit and require at least 150 employees per shift to operate at capacity.²⁰ A Gerber automated cutting unit, which increases speed, cutting precision and flexibility, now costs several hundred thousand dollars and demands around-the-clock high-volume use for optimum payback. The Gerber cutter alone could easily exceed a typical small firm's current *total* capital investment, and its output could be many times greater than the firm's normal level of operation. According to AAMA personnel, one facility owned by a major shirt manufacturer cuts enough fabric with this cutter to supply the needs of five different assembly plants.

Premise 7

WIDESPREAD IMPROVEMENTS IN U.S. APPAREL INDUSTRY PRODUCTIVITY ARE UNLIKELY ANYTIME SOON

Even if machinery manufacturers developed more affordable equipment that small firms with smaller production demands could use profitably, it is not clear that the industry's near-term prospects would improve significantly. Data on the use of best-practice technologies suggest that the current diffusion of new technology through the industry's independent SMEs would be too slow to forestall the massive dislocation of U.S. apparel workers being brought on by the rapid elimination of trade protections.

The prospects are also poor that major technological breakthroughs in garment assembly will greatly increase labor productivity and dramatically improve industry competitiveness. As Dean Vought, the former president of the Textile/Clothing Technology Corporation (TC2), the largest U.S. apparel research organization, recently put it:

“The wide variety of style changes and limp fabrics that must be accommodated in manufacturing make it unlikely that we could reduce direct labor content by more than 25 percent through all currently conceivable mechanization and automation. Even if a 50-percent cost reduction were possible, our factory cost sheets by themselves couldn't compete with those in low-wage countries.”²²

Premise 8

THE U.S. APPAREL INDUSTRY HAS LIMITED DOMESTIC R&D CAPABILITY

Robust domestic research and development (R&D) might eventually accelerate industry productivity growth, and produce a true breakthrough in assembly technology. But few domestic apparel firms have substantial, independent R&D capabilities. The United States, in fact, has progressively lost most of its once world-leading apparel machinery industry to foreign competition over the last 20 years. These days, foreign machinery firms are responsible for most major advances in fabric and clothing machinery.

While TC2, Georgia Tech, North Carolina State, Clemson University, Auburn University, the U.S. Department of Agriculture and a few other public institutions actively conduct apparel-related research, their budgets are small and unstable. In recent years, they also have focused greater attention on applied research, demonstration and information dissemination than on the speculative basic research that is most likely to generate fundamental advances in assembly automation.

Premise 9

DOMESTIC FABRIC AVAILABILITY IS CONSTRAINED

Technical efficiency has increased more rapidly for the fabric sector than for the clothing sector. Even so, apparel manufacturers say they often can't find U.S.-made fabric that meets their needs, particularly if they want only a small quantity or *short run* of fabric.

Most large fabric producers have traditionally demanded minimum orders of 8,000-10,000 yards, and offer a limited range of yarn types, colors, styles and other fabric characteristics. In a 1987 USITC survey of U.S. fabric customers, 45 percent of respondents cited the lack of domestic availability as an important reason they imported fabric. An identical percentage cited their inability to obtain exclusive designs or styles from U.S. mills as a major disincentive to buying American.²³

TEXTILE AND APPAREL R&D: UNDERNOURISHED

R&D barely registers as a concern among textile and apparel firms (SICs 22 and 23). Only 463 out of about 20,000 of them spent money on it in 1987, according to a National Science Foundation (NSF) study.²¹ And that group had the highest percentage of low spenders of any manufacturing group—86 percent spent less than \$200,000. Moreover, according to NSF, textile and apparel firms also had the lowest ratio of R&D scientists and engineers per employee (four per thousand) of all major manufacturing groups.

Even these dismal figures clearly overstate the research activity within those segments of the apparel complex that NSF studied: Many of the most R&D-intensive sectors (rugs, carpets and nonwoven fabric) are not, in fact, in the apparel complex as we defined it earlier in this guide. Moreover, a portion of the research that companies claim to be performing is really market intelligence activity.

Likewise, foreign clothing producers look elsewhere for fabric. In a 1992 study of the Mexican textile market, the U.S. Commerce Department found that:

“{Mexican} Garment manufacturers favor imports from Europe and the Orient (mainly Japan)...The rationale for their behavior is that Europeans and Asians will sell them cloth and material in any amount they might need, which usually spells ‘small quantities’...Usually a U.S. manufacturer will demand very large minimums...{when supplying} garment manufacturers. This is a situation Mexican businessmen cannot afford, especially in the high quality, high fashion trade, for they simply do not produce vast amounts considering that the market is limited.”

U.S. fabric producers’ inability to satisfy even domestic markets prompted the Retail Industry Trade Action Coalition (a group representing many large department and specialty stores) to argue that NAFTA’s “rules of origin” provisions exempt more than 100 fabrics it maintains are not generally available from U.S. producers. (NAFTA rules of origin will require that most apparel entering the United States be made from yarn and fabric produced within NAFTA’s free trade zone.) The American Textile Manufacturers Institute disagreed, arguing that domestic supplies were sufficient and that the fabrics should not be exempt.

Although U.S. manufacturers ultimately may find fabric to fill their needs, dependence on imported fabric makes the job of domestic manufacturers that much more difficult. Delays in acquiring fabric can especially jeopardize time-sensitive sales opportunities, such as restocking retail inventories of seasonal goods.

Premise 10

LARGE U.S. MANUFACTURING FIRMS OFTEN DEAL INFLEXIBLY WITH RETAILERS

Retailers complain that large U.S. manufacturers often won’t work with them to design a specific garment or clothing line for a specific market. Instead, retailers say they are pressured to settle for manufacturers’ standard lines. In response, many retailers have become manufacturers themselves, contracting out for the design and production of “private-label” garments that their salespeople think will sell. Such activity now accounts for an estimated 25 percent of all clothing sales.

Much of this retailer-initiated private-label activity is sourced in the Far East—partly because U.S. retailers can’t easily identify competent, competitively priced domestic firms. According to a recent study for New York City’s Garment Industry Development Corporation, Kurt Salmon Associates found that many private-label programs were initially placed offshore to achieve low cost and high markup.

Now, as time becomes a more important factor and traditional Far East locations become more expensive, alternative sources—including domestic ones—are being sought.

But Far East sourcing offers yet another benefit that keeps private-label developers across the Pacific: an agent. Far East agents provide extremely valuable services, including locating contractors, placing the work, monitoring production and quality and ensuring that shipping instructions are followed. These services, vital to the retail private-label developer, are difficult—if not impossible—to replicate domestically.²⁴

Clearly, not all of the increase in private-label activity is a response to manufacturer intransigence; some retailers simply want to design and produce their own clothing lines. We know of no study that has sought to understand the relative importance of these two motivations behind private-label activities; both, however, are important.

Premise 11

MANY U.S. FIRMS LACK WELL-DEVELOPED MARKETING CHANNELS

The International Ladies Garment Workers Union (ILGWU) estimates—an estimate consistent with census data—that 90 percent of all U.S. apparel firms are single-plant companies.²⁵ The economic health of most of these firms is determined by a few large orders for one or two products from one or two larger clothing manufacturers, retailers or other intermediaries. The size and orientation of these companies almost guarantees that they are captive to the product development and marketing decisions of their larger customers.

Because they probably have not developed independent channels to domestic or foreign markets, these companies are less able to respond to changing market conditions. Notable exceptions are successful mail order and factory outlet operations.

Premise 12

THE U.S. APPAREL INDUSTRY LACKS AN EXPORT ORIENTATION

The relatively small size of most industry firms is not the only reason U.S. exports are rare. Historically, high U.S. wage rates, the huge size of the domestic market, and foreign trade barriers have combined to discourage export activity. Even many larger U.S. firms export little, and when they do, their efforts are proportionately much smaller than their European and Japanese counterparts.

In this era of trade liberalization, however, many firms will have to reshape their traditional production and marketing strategies if they intend to survive. Unfortunately, in the immediate future, the prospect of selling to world markets might not affect American workers: Most of the U.S. firms now in a position to export are large U.S.-based multinational clothing manufacturers that are as likely to source offshore as in the United States.

Premise 13

MOST U.S. APPAREL FIRMS FACE SEVERE HUMAN RESOURCE SHORTAGES

The apparel industry's structural weaknesses are exacerbated by severe human resource shortages, particularly acute in the clothing sector.

In the rural Southeast, for example, typical annual labor turnover in clothing plants is 40-50 percent, and many firms experience much higher turnover. Workers are so difficult to find and keep that one study reported 67 percent of the manufacturing plants it surveyed listed sewing operators as a "critical labor shortage category."²⁶ One plant studied by Alabama researchers lost 60 percent of its inexperienced, entry-level employees within two weeks, and only half of the people responding to its advertisements for sewers had previous sewing experience.²⁷

Finding labor has become such a problem that companies have begun to offer bonuses to employees bringing in a new worker who stays at least six months.²⁸ Several factors underlie this problem.

ENTRY WAGES ARE VERY LOW. In the apparel industry, entry-level salary rates frequently are at or near minimum wage, and are much lower than average rates for the industry. Employers have a rationale: At the Georgia Tech Research Institute, apparel engineers estimate that, at prevailing piece rates, entry workers rarely produce enough to justify even minimum wages; typically, their output is some 5-12 percent below what would earn the minimum wage. Consequently, the owner must pay a substantial out-of-pocket subsidy to new entrants, termed a "makeup" cost.

Since entry wages are, with few exceptions, based on piece rates, inexperienced operators must improve their sewing speed in order to increase their wages. It often takes new workers many months of low-paid on-the-job experience to attain higher speeds. Also, many entry-level workers with no previous sewing experience simply can't adapt to the regimented industrial sewing environment. Not surprisingly, then, work in fast-food restaurants or other low-paying service jobs often appears preferable to the novice sewing operator. Many leave within the first few weeks.

REAL WAGES ARE FALLING. An industry that already paid wages far below the U.S. manufacturing average recently grew even less attractive to prospective employees. Between 1977 and 1989, “real wages” (that is, the nominal wage rate adjusted for inflation) in each of the five main three-digit clothing sectors (SICs 231-4 and 236) fell an average of 8.2 percent. Additionally, the five-sector wage average fell from 59.1 to 57 percent of the overall manufacturing average. Contributing to this decline was the fact that over the last 20 years, clothing production facilities had been moving from higher-wage northeastern locations to low-wage central southeastern states like Mississippi and Alabama. (*See Appendix B.*)

LABOR-MANAGEMENT RELATIONS ARE POOR. Money is only one unattractive aspect of employment in the apparel industry. Labor-management relations generally are very poor—and often hostile. Most managers make production decisions with little or no structured employee input. The physical working environment is austere and regimented, typically consisting of large, open sewing rooms in which operators sit in rows at individual sewing machines. Although the work is repetitive, it demands constant attention to detail. The fragmented nature of the production process reduces job satisfaction; further, sewers seldom see the final product to which they contribute.

The typical plant has few amenities such as cafeterias or daycare centers, and employee benefit packages often are meager or nonexistent. Employer payments for employee benefit programs beyond those required by law averaged 14 percent of payroll for all manufacturing in 1989. The comparable figure for the clothing sector was about 9 percent.²⁹

The extent of worker dissatisfaction is evident in a recent survey by the Lehigh Valley (Pennsylvania) Apparel and Textile Industry Labor-Management Innovation Network. The survey contacted over 3,000 workers who had worked at least five years in the industry and who had left at least two years before the survey. According to the report, almost 60 percent of those leaving the industry in the five previous years left voluntarily, not as a result of layoffs or shop closings. The primary factors cited for leaving were treatment issues—supervision, underutilized abilities, lack of opportunities for advancement and the pressures of the piece-rate system. These four factors accounted for 51 percent of the recorded responses as the primary reason for departure. Pay was the main factor for only 25 percent of those responding.³⁰

DISLOCATED CLOTHING WORKERS HAVE TROUBLE FINDING JOBS. One final dimension of the industry’s exposure to foreign competition—perhaps an ironic point in an industry experiencing severe labor shortages and high turnover—is the fact that dislocated clothing workers have had much greater than average difficulty in recent years finding new jobs relatively quickly and at comparable pay levels.

Over the 1985-89 period, 26 percent of displaced clothing workers were unemployed longer than half a year, compared to 15 percent of textile workers and 18 percent of all manufacturing employees. Even more striking, only 37 percent of dislocated clothing workers found a new job that paid more than the one they lost, compared to 59 percent of textile workers and 40 percent of all dislocated manufacturing workers. This clothing percentage appears even poorer if we consider the already relatively low average clothing worker's wage.³¹

The demographic characteristics of these workers undoubtedly account to some extent for these comparatively poor outcomes. Compared to those of the average dislocated worker, clothing workers had lower educational levels and were more likely to be older, female and a member of a minority group. Lower educational levels, greater age, and being either female or a minority are all characteristics associated with greater labor market difficulties.³² It's also possible that dislocated textile worker outcomes were better than in clothing because textile employment is more heavily concentrated in states whose economies (both rural and urban) grew very rapidly during the latter 1980's—for example, the Carolinas, Georgia and Virginia.

NO RELIEF SOON. The human resource situation in the apparel industry probably will continue to deteriorate. Overarching demographic factors—such as the ongoing population decline in the number of entry-age workers—will cut the number of new labor market entrants in the 1990s, and the continued diversification of the Southeast's economy will expand the range of work opportunities. People in many rural areas also subscribe to a cultural taboo against men working as sewing operators, thus perpetuating a situation in which high male unemployment can coexist with large, persistent shortages of sewing operators. The desire of many current sewing operators that their children find better occupations will further reduce the labor supply.

Premise 14

GOVERNMENT—AND INDUSTRY—SUPPORT FOR U.S. APPAREL INDUSTRY SMEs IS WEAK

Relatively little publicly funded technical assistance is available for apparel industry SMEs. This is unfortunate, since these firms tend to be ill-equipped to keep abreast of market and technological changes.

Exact estimates of apparel-specific publicly funded support are not available. However, the Office of Technology Assessment reports that “the Japanese Government provides about 20 times more financial aid to small business than the U.S. Government does.” Further, Japan provides more than ten times the U.S.

amount for direct technical extension services.³³ In Europe, too, the level of public and private assistance available to small apparel firms is much higher than in the United States, according to many observers.³⁴ Reuben Schwartz, former head of USITC's textile office, noted that in recent years "the Japanese Government spent more than \$65 million to assist {its} textile and clothing industries in improving automation, {and} the European Community has targeted \$700 million for research and development for manufacturing industries, a significant portion of which is slated for textiles and apparel."³⁵

Moreover, Japanese firms also receive much greater technical support from their major customers. Unlike many of their European and Japanese counterparts, few U.S. SMEs belong to associations that facilitate routine access to good technical advice, or have a customer or supplier that provides such access.

CHAPTER 2. THE PHOENIX SCENARIO

Under the Phoenix Scenario, apparel's prospects are not nearly as bleak as the oversimplified Tsunami Scenario suggests. In general, if the Tsunami Scenario depicts a U.S. industry in ashes, the Phoenix Scenario postulates its reemergence from those ashes in revitalized form over the next 20 years.

According to Phoenix advocates, the industry will *not* inevitably sunset; Tsunami's proponents exaggerate current problems and ignore positive long-term prospects. With continued, though reduced, tariff protection, U.S. producers will continue to be competitive with fashion and other unique goods that are less price-sensitive, and with products that have low labor content, like jeans and underwear.

Market forces are sharply increasing the premium that retailers will pay for very rapid inventory replenishment, a trend that heavily favors domestic producers. Moreover, in the next 10-15 years, the U.S. industry will begin to offer made-to-measure clothing at off-the-rack prices, and be able to deliver finished custom garments to a local retail outlet or a customer's home 24-48 hours after an order is placed. Also, a near-term breakthrough in the automation of the garment assembly process will dramatically shift the international competitive advantage to U.S. producers.

To be sure, rising productivity and trade liberalization will continue to cut into domestic apparel employment. But an improved competitive position will make this downsizing far less severe than the Tsunami Scenario suggests. Real apparel wages will rise with overall U.S. wages as apparel industry skill requirements, productivity and industry competitiveness all increase. Thus, even if an apparel job in the year 2005 may be relatively low-paid by manufacturing standards, it will still provide a considerably higher absolute standard of living than many service jobs.

THE PHOENIX SCENARIO

The United States and other nations conclude a General Agreement on Tariffs and Trade, eliminating quotas under the Multifiber Agreement and reducing tariffs on imported clothing and textile products.

Apparel markets and technology continue to change in ways that favor U.S. producers and ensure the post-MFA viability of a large U.S. apparel industry. These forces, in fact, generate vigorous industry renewal over the next 20 years, capping job losses due to trade liberalization at 15-20 percent of the current industry total.

Premise 1

CURRENT PROTECTIONS ARE NOT PREVENTING A TIDAL WAVE OF APPAREL IMPORTS—BECAUSE THERE IS NO TIDAL WAVE.

Despite the claims of Tsunami proponents, the existing MFA system is not preventing a tidal wave of imports from inundating domestic producers. MFA's

restraining effect on imports is much more modest, according to several recent studies.³⁶

THE PHOENIX SCENARIO: PREMISES

EACH OF THESE PREMISES, WHICH TOGETHER FORM THE FOUNDATION FOR THE PHOENIX SCENARIO, IS EXPLAINED IN DETAIL IN THIS CHAPTER.

1. Current protections are not preventing a tidal wave of apparel imports—because there is no tidal wave.
2. Foreign import penetration is lower *in value* than it is in *volume*.
3. GATT will maintain substantial tariff protections.
4. The labor content in the cost of many U.S. apparel goods is low—and falling overall.
5. Industry wage trends are working against East Asian competitors.
6. Cost isn't everything—value is what counts.
7. Clothing sector productivity is growing more rapidly than is generally perceived.
8. The new economics of “quick response” greatly helps U.S. apparel firms.
9. Retail consolidation may speed the growth of U.S. quick-response partnerships.
10. Technology breakthroughs could revolutionize prospects for the U.S. apparel industry within the next 10-15 years.
11. A mix of public policy and private initiative can help address current industry problems and opportunities.

For example, by comparing quota-fill data from 1989 and 1991, we see that MFA's effect is greatly overstated. (See *Figure 4*.) If the only obstacle to a rapid increase in imports from East Asia was constraint, quota usage should have remained uniformly high despite a drop in domestic U.S. shipments after 1989. This, however, was not so. Among the “Big Four”—Hong Kong, Taiwan, South Korea and China—for example, Taiwan's usage of its total quota (in square meter equivalents) fell from 85 percent in 1989 to 74 percent in 1991. More dramatically, South Korea's usage fell from 95 percent to 63 percent.

Moreover, USITC's latest published estimates indicate that even if *all* quotas and tariffs from *all* countries were eliminated, U.S. textile and clothing employment would drop only between 13-16 percent.³⁷

**FIGURE 4. U.S. IMPORT QUOTAS FILLED BY THE "BIG FOUR":
PERCENTAGE CHANGE, 1989-91**

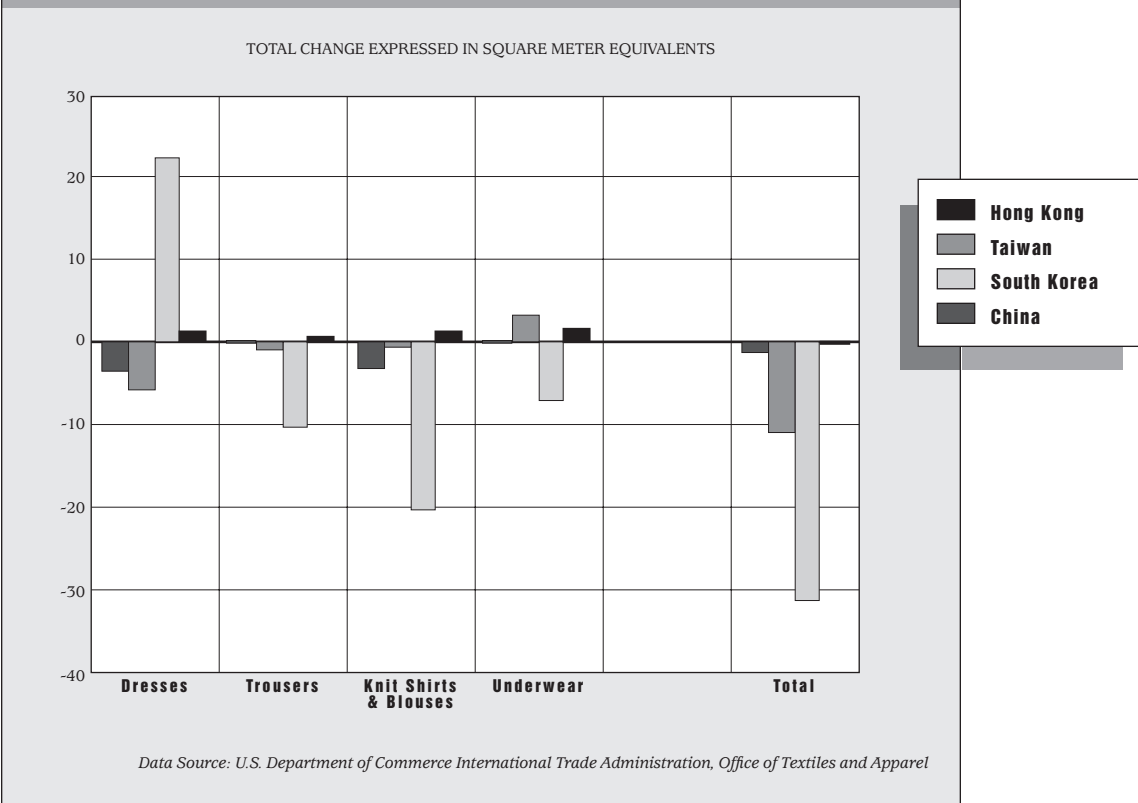
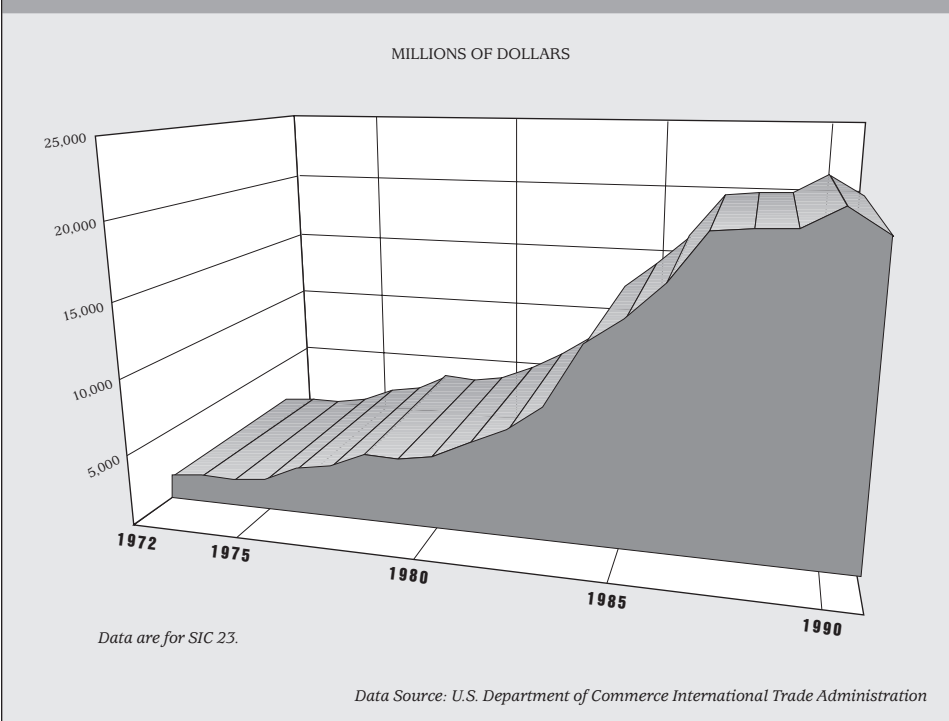


FIGURE 5. U.S. CLOTHING TRADE DEFICIT: 1972-91



How does the argument that there is no threat of a tidal wave of imports jibe with the dramatic increase in imports and the high use of quotas by many major producers in the 1980s?

THE DOLLAR'S VALUE FLUCTUATED. To begin with, a huge upward revaluation of the dollar in the early 1980s caused a sudden and dramatic drop in the relative price of foreign goods. As a consequence of the strong dollar, many manufacturing industries—not just the apparel industry—experienced unprecedented trade deficits because U.S. goods became more expensive compared to those from other nations. However, the dollar's value began to sink in 1985, and the increase in U.S. apparel imports began to subside. On a dollar basis, net clothing imports have shown little change since 1987. (See Figure 5.)

QUOTA RESTRICTIONS FOSTERED IMPORT DIVERSIFICATION, NOT IMPORT REDUCTION. Quota constraints did not cap imports, it merely shifted the production locale of those imports. Thus, despite efforts by major East Asian producers to maximize exports to the United States during the 1980s, U.S. imports from producer nations not subject to quotas (including the European Economic Community) rose rapidly.

How did this happen? The Congressional Budget Office remarked that the MFA created a “generation of apparel Marco Polos,” combing the world for production sites with unused quotas.³⁸ In general, as quotas constrained the big three producers of the 1970s—Hong Kong, Taiwan and South Korea—the industry simply turned to the ample supply of nations with unused quotas. This phenomenon contributed to a decline in the average share of U.S. clothing imports from Hong Kong, Taiwan and South Korea, which dropped from about 60 percent in 1978-80 to about 50 percent in 1985-87. Concurrently, the import share of the non-Caribbean developing world rose from 20 to 30 percent.

Relocating production between countries is relatively quick and easy because garment operations are extremely mobile. Experienced producers can create them from scratch within a few months, if not weeks. In 1984-85, for example, the number of garment plants in Bangladesh—established in part because Hong Kong had reached its quota limits and sought offshore operations to produce for the U.S. market—increased from 40 to 545.³⁹

Another way in which production locale can be shifted is for constrained countries to use contractors in an unconstrained country, thus avoiding the problems of creating their own operations. Those contractors can then expand production themselves and sell into the U.S. market.

IMPORT PROTECTIONS DON'T COVER ALL APPAREL PRODUCT IMPORTS. Foreign producers also evaded U.S. import quotas by shifting to product lines for which

NO QUOTA ON QUOTAS

Despite the hue and cry about import quotas on foreign apparel products, the majority of product categories and/or producers are not covered. In 1988, USITC noted that, "Some large suppliers may have as many as 100 [product] categories under restraint but some new or smaller suppliers may have fewer than a dozen categories under restraint."⁴⁰ The next year, Economist Richard Rothstein echoed that, noting: "There are more than 150 product categories covered by MFA, and more than 150 countries ship apparel to the United States. Of more than 20,000 possible quotas, the U.S. has thus far negotiated some 1,500. In an unusually active year, 1986, U.S. negotiators were able to conclude agreements on a total of 200 product quotas with 39 different countries."⁴¹

no quotas existed. Under MFA, the U.S. Commerce Department negotiates quotas only on individual products when domestic producers complain about import levels. At the beginning of the 1980s, many products had no assigned quotas. Thus, foreign competitors could easily switch from a controlled product line to an uncontrolled one. Frequently, the switch necessitated only a slight change in the original product. Constrained producers also upgraded their products to higher-priced lines.

Other technical provisions of MFA permitted further expansions. For example, producers could borrow against future quotas or carry unused quotas into the following year. Also, illegal evasions of regulations sometimes occurred, such as transshipment of product from a constrained country to the United States through a third, unconstrained, country.

Overall, then, although high quota usage constrained some (mainly East Asian) producers, imports could and did rise significantly after the dollar's dramatic revaluation. So while imports surely would rise if quotas were eliminated, no Tsunami of imports from Asia would follow. Rather, production would simply shift back to major East Asian or other constrained producers if they still offered better values than other production sites.

Premise 2

FOREIGN IMPORT PENETRATION IS LOWER IN VALUE THAN IT IS IN VOLUME

For specific apparel products, import penetration as measured by the number of garments far exceeds penetration based on dollar value. This is true for two reasons:

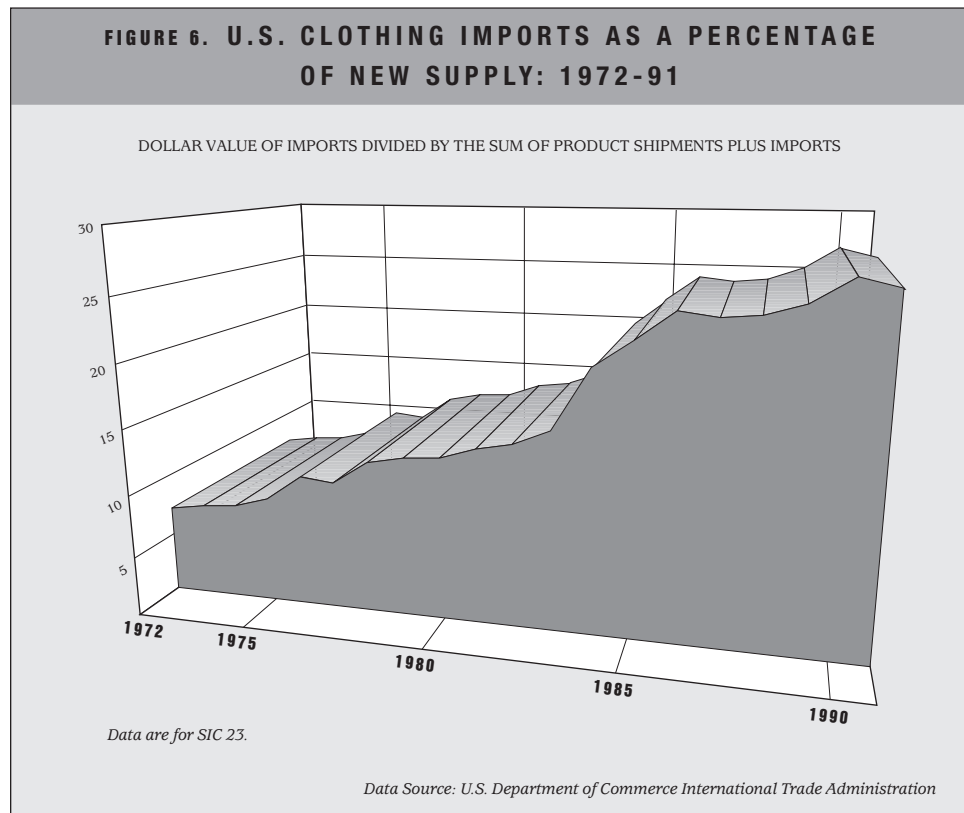
- ❖ Import penetration is measured only for products that are subject to quotas; it does not include products for which there are no MFA quotas—which are precisely the ones that U.S. firms produce most competitively.
- ❖ Despite the fact that foreign producers are selectively upgrading the value of what they export to the U.S., imports typically still have a lower unit value than do products made in the United States.

Consequently, the value of U.S. clothing imports represents less than 30 percent of the domestic market and, like net imports, has changed little since 1987. (See Figure 6.) In other words, despite the rapid surge in imports during the early 1980s, domestic producers still control more than two-thirds of the market's total value.

Premise 3

GATT WILL MAINTAIN SUBSTANTIAL TARIFF PROTECTIONS

Proponents of the Tsunami Scenario conveniently ignore the fact that, while GATT eliminates quotas on clothing imports from the nations that sign the agree-



ment, it also includes continued tariff protection for apparel products. This protection averages about 17 percent of import value across product categories.⁴² Thus, tariffs still will provide the industry with protections that go a long way toward offsetting any wage discrepancies that persist among nations—even as those discrepancies become less critical, as the next few premises forecast.

Premise 4

THE LABOR CONTENT IN THE COST OF MANY U.S. APPAREL GOODS IS LOW—AND FALLING OVERALL

One reason that some U.S.-based operations *can* compete against those in countries with much lower wages is that product lines vary widely in terms of the amount of labor a given garment requires. So, while a simple t-shirt may take only six minutes to assemble and a pair of men's knit briefs just two to four minutes, a man's jacket might require well over an hour to assemble.

Average labor content in the U.S. clothing industry has fallen very rapidly since the mid-1960s. Its drop—whether calculated as a percentage of the value of total shipments or as a percentage of value added—has far exceeded that of manufacturing as a whole. If this trend continues, payroll as a percentage of shipments will fall below 20 percent by the year 2000. Best-practice U.S. firms in less labor-intensive and/or more automated product lines (like blue jeans) are far below that level already.

Technological progress in yarnmaking and fabric production has brought labor costs down significantly: In the more efficient yarn firms, for example, labor probably represents about 10-15 percent of total production costs; industrywide, 17 percent of production costs are accounted for by labor.⁴³

In weaving, 1989 labor costs totaled about 20 percent of shipments—thanks in part to such recent innovations as shuttleless looms and computer-integrated manufacturing techniques. Further, as *Textile World* recently reported:

“Even with full automation, as currently available, labor will be required for weaving. It can be expected, however, that the labor content will be reduced by about 50-70 percent of that required in a traditional weaving

SARA LEE: ON THE SPINNING EDGE

Recent trade publications contain frequent examples of very highly automated yarn operations. In a Tennessee yarn plant recently opened by Sara Lee, a large U.S. apparel manufacturer, only two categories of workers are routinely involved in the production process—those who take the raw cotton bales off the truck at the front end and those who load the finished packaged yarn onto delivery trucks at the process's back end.

operation . . . this reduction should bring the labor component to 8-12 percent of total cost."⁴⁴

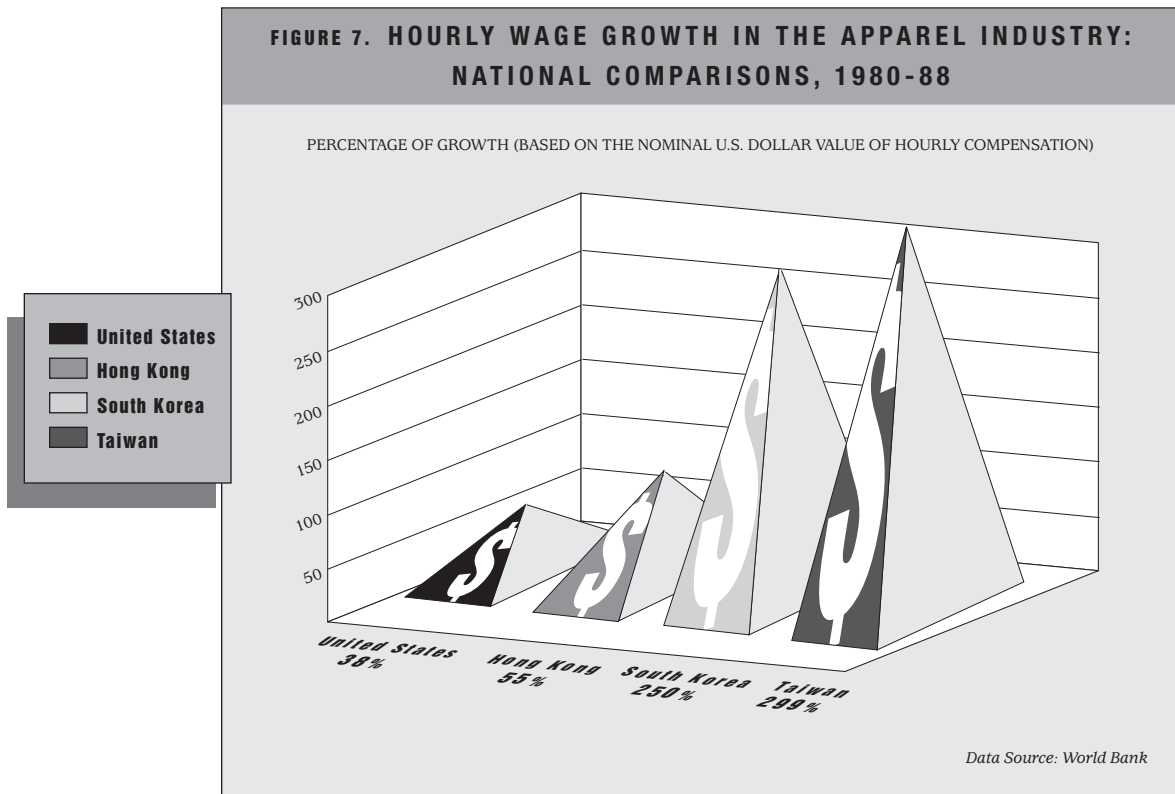
In the next several years, labor content should continue to fall sharply as these new technologies diffuse more widely. In 1987, census data on textile machinery showed that only 50 percent of installed looms were shuttleless. Given its three- to fourfold speed advantage over shuttle technology, the diffusion of shuttleless technology alone should greatly reduce labor content across the industry.

Currently available technology facilitates automated clothing design and fabric cutting. If the assembly phase of the production process were also automated, a further, final reduction in labor costs would be achieved.

Premise 5

INDUSTRY WAGE TRENDS ARE WORKING AGAINST EAST ASIAN COMPETITORS

East Asian wage rates have been rising much faster than U.S. rates. (See Figure 7.) Obviously, if current trends continue, U.S. and East Asian wage differentials will continue to narrow.



Premise 6

COST ISN'T EVERYTHING—VALUE IS WHAT COUNTS

In fashion, many consumers do not think twice about paying a few dollars more for a mid- to upper-end fashion good, provided its originality and/or workmanship are superior. Consequently, a buyer for a retail chain will often choose more expensive garments because he or she thinks it offers a better overall balance of price, styling and quality—that is, *value*.

For these less price-sensitive products, innovation, design leadership and high quality can more than offset a moderate cost disadvantage. Thus, manufacturers will more readily consider domestic production for such apparel goods, even if they require higher labor costs. Examples include fashion goods, in which styles change frequently, and other somehow unique or “niche” goods targeted to a very specific consumer need (for example, running jackets made from Gore-Tex fabric).

Premise 7

CLOTHING SECTOR PRODUCTIVITY IS GROWING MORE RAPIDLY THAN IS GENERALLY PERCEIVED

MULTIFACTOR PRODUCTIVITY measures how much an industry’s or a firm’s real output has increased, after accounting for increases in labor, capital and materials. Many economists consider multifactor productivity to be the single best measure of overall productive efficiency that can be calculated from publicly available data.

Of the 13 sewn-clothing sectors (defined here as four-digit SIC industries) with 1989 employment of at least 30,000, eight had 1979-89 multifactor productivity growth rates above the median rate for all manufacturing sectors. Six of those eight had growth rates in the top third of all manufacturing sectors.

To be sure, this good performance partially reflects a weeding out of less efficient firms during the 1980s. But, more critically, part also is due to the introduction of microelectronic technology into sewing equipment (including the basic sewing machine), and to “leaner and meaner” management practices in the face of greatly intensified foreign competition.

In knitwear also, the hosiery sector achieved superb productivity growth over the entire 1960-89 period. The rate of productivity growth in women’s and

“other” hosiery (SICs 2251-52) ranked, respectively, 4th and 52nd among the 450 manufacturing sectors.

Premise 8

THE NEW ECONOMICS OF “QUICK RESPONSE” GREATLY HELPS U.S. APPAREL FIRMS

If evidence regarding the U.S. apparel industry’s short-term prospects sharply challenges the credibility of the Tsunami Scenario, longer-term trends erode it much further.

INCREASING PRODUCT DIFFERENTIATION GENERATES “QUICK RESPONSE.”

Since the 1980s, one trend dominating the market for apparel goods has been the fragmentation of product offerings into a much greater number of differentiated product categories. This phenomenon has at least three aspects:

❖ APPAREL CONSUMPTION HAS BECOME MUCH MORE NICHE-ORIENTED.

Producers are developing or modifying products to attract narrowly defined market segments—for example, “office fashion for professional working

women in their 30s with household incomes in the \$40,000-60,000 range.”

Though it’s always been important in high-end fashion goods, differentiation is now important in many mid-range markets as well.

❖ PRODUCT DIFFERENTIATION WITHIN EACH NICHE HAS INCREASED.

Even for commodities that once were very standardized, differentiation is becoming the norm. For example, compared to 10 years ago—not to mention 20 or 30 years ago—blue jeans are now available in a much wider variety of colors, styles, finishes and levels of quality. Of course, many standardized prod-

QUICK RESPONSE: A BIG PLUS FOR RETAILERS

Quick response can help increase industry profits by minimizing the mismatch between what’s produced and what sells. Retailers gain three main advantages from quick response:

- ❖ It lets them avoid “stockouts”—sales lost because they don’t have a particular item in stock that a customer otherwise could have purchased.
- ❖ It reduces forced markdowns—times when retailers must put slow-selling goods on sale to clear space for new arrivals.
- ❖ It lets them hold lower levels of inventory, because production is better tuned to what’s actually selling.

ucts—underwear, women’s hosiery—change little, if at all, throughout a year. However, these standardized goods account for just 18 percent of the clothing market, according to one recent estimate.⁴⁵

❖ **THE NUMBER OF FASHION SEASONS HAS GREATLY INCREASED.** Fashion styles today change much more frequently than in the past, so total production of any particular product typically has shrunk. Retailers now place a much greater premium on ordering closer to a season’s opening—so that better intelligence on current consumer trends can shape the size and composition of the initial (and largest) orders—and on replenishing fast-selling items very rapidly. With five or six different seasons a year in cycles of eight to ten weeks, retailers must be able to restock hot items quickly before a season ends.

The intensified emphasis on product differentiation brought on by these changes has generated the new economics of **QUICK RESPONSE**, which will dramatically increase the industry’s competitive strength.

WHAT IS “QUICK RESPONSE?” In general, quick response can help increase industry profits by minimizing the mismatch between what’s produced and what sells. Hatched in the 1970s, and popularized in the mid-1980s by Kurt Salmon Associates, a leading industry consulting firm, quick response is a system of just-in-time inventory based on partnerships among retailers, clothing manufacturers and fabric, yarn and raw fiber producers. Product sales data are linked among the part-

QUICK-RESPONSE SUCCESSES: PARTNERSHIPS FOR PROFIT

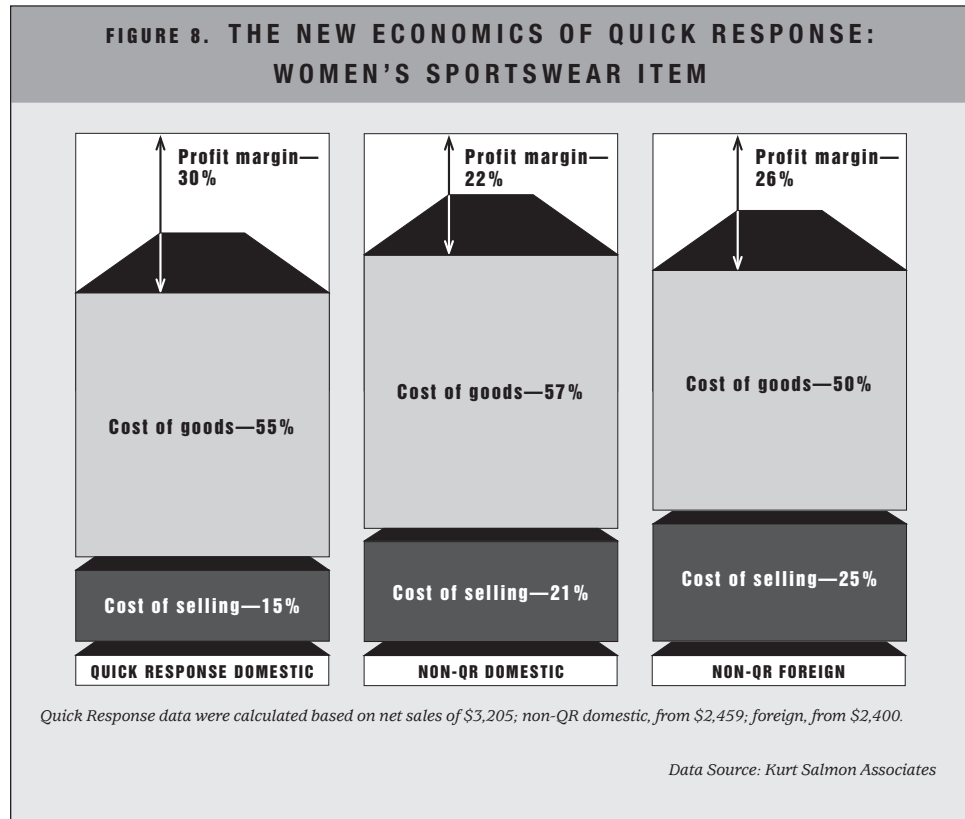
According to AAMA personnel, the industry had, as of early 1993, completed more than 100 quick-response pilot projects—and produced some impressive results that make a strong empirical case for aggressively pursuing quick-response partnerships:

- ❖ JCPenney increased tailored clothing sales 59 percent and inventory turns 90 percent through a quick-response partnership with Oxford Industries and Burlington.
- ❖ Wal-Mart increased sales and inventory turns of basic slacks by 31 percent in its partnership with Seminole and Miliken.
- ❖ Dillard’s increased blouse sales 42 percent and inventory turns 45 percent through a partnership with Cluett Peabody.
- ❖ Belk’s increased sales of leisure slacks and jackets 25 percent and inventory turns 67 percent in partnership with Haggar.

ner firms through electronic data exchange; thus, each can continually adjust its production so that retailers can maintain predetermined stock levels of final garments. In other words, what's selling gets produced; what's not hot, does not.

Quick response can benefit producers, distributors and sellers of standardized goods for the same reasons a just-in-time inventory system holds advantages for producers of most manufactured products. Wal-Mart, for example, may know about how many pairs of a given type of jean it will sell over a given period. More important for Wal-Mart, though, is having a quality product on the shelves at the *right time*, while minimizing inventory levels. Currently, retail orders must be placed six to twelve months before the season opens; sea transport of goods takes at least eight weeks. By contrast, quick response lets retailers order closer to a season's opening and/or rapidly replenish hot items. Initial orders can be placed as few as eight weeks before a season's opening, and stocks can be replenished in two or three days, according to quick-response advocates.⁴⁶

QUICK RESPONSE CAN YIELD HIGH PREMIUMS TO U.S. PRODUCERS. Industry projections on how quick-response partnerships can increase profits are quite dramatic. The Haggar Company believes that quick response can improve sales by 15-25 percent, reduce lost sales due to stockouts by 50 percent and lower retail inventories by 20-25 percent.⁴⁷ VF Corporation, another major U.S. clothing firm, thinks its quick-response program can cut costs 20 percent and cut inven-



**FIGURE 9. THE NEW ECONOMICS OF QUICK RESPONSE:
WOMEN'S SPORTSWEAR ITEM**

	QR Domestic	Non-QR Domestic	Non-QR Foreign
Unit Cost	\$14	\$14	\$12
List Price	\$30	\$30	\$30
Units Sold	125	100	100
Net Retail Sales <i>(List & Markdowns)</i>	\$3,205	\$2,459	\$2,400
Cost of Goods	\$1,750	\$1,400	\$1,200
Gross Margin	\$1,455	\$1,059	\$1,200
Costs of Selling <i>(Sourcing, Selling, Space, Inventory and Terms)</i>	\$465	\$518	\$588
Profit Margin	\$990	\$541	\$612

Data Source: Kurt Salmon Associates

ories 30 percent. VF's board chairman and CEO believes that replenishment turnaround time can be cut to fewer than seven days "in an environment where 60 to 90 days used to be considered good practice."⁴⁸

What does this add up to overall? Recent data developed by Dillard's Department Stores estimate that sales on a "typical" fashion item could rise 25 percent through a quick-response strategy, while forced markdowns, space utilization and inventory costs would simultaneously drop. The combined impact on a retailer's bottom line would allow the retailer to pay a 32-percent premium for domestic quick-response over non-quick-response domestic or foreign sources—and still make the same profit.⁴⁹ (See Figures 8 and 9.) Obviously, U.S. producers could operate within a huge competitive margin if they were able to provide true quick response.

Kurt Salmon Associates applied similar quick-response economics to the \$100 dress example we used in the Tsunami Scenario. (See page 23.) The result is that adjustments to retail profit margins reduce the comparative advantage on the foreign-produced item, thus producing a *higher* return on the domestic item (31%) versus the foreign (25%), even though offshore manufacturing costs are only half the domestic cost.

OVERSEAS QUICK-RESPONSE PARTNERSHIPS HAVE LIMITED VIABILITY. Two others factors favor U.S. apparel firms in the industry's adoption of quick-response systems. Both concern conditions that severely limit the advantages of creating quick-response partnerships with East Asian firms to meet the U.S. customer market.

**GET THE REAL THING:
BEWARE QUICK-RESPONSE PRETENDERS!**

Policymakers and industry leaders could easily become confused by arrangements that claim the quick-response name—but not the practice. Indeed, the “quick-response” label is being inaccurately applied to a wide variety of product delivery systems.

One major retailer, for example, has built a network of suppliers in the southeastern United States that it calls a “quick-response” network. This system, however, is *not* a true just-in-time system, but one in which suppliers hold enough finished goods to replenish retail shelves within days. This strategy may reduce response time, but it does not reduce inventories—or the costs of maintaining them. The term “quick response” also has been wrongly applied to the use of point-of-sale data for modestly cutting the lead time for offshore ordering.

- ❖ **TIMING IS EVERYTHING.** The time required for overseas transit, as noted earlier, precludes rapid replenishment of seasonal or standardized goods. Moreover, it does not allow retailers to do their initial ordering very close to a season’s opening.
- ❖ **CONVENIENCE—AND RISK—ARE EVERYTHING ELSE.** Overseas sourcing also makes it difficult to coordinate production, ensure quality control and meet delivery schedules. Consequently, the final product has a greater chance of failing to meet product specifications, not arriving on time—or both. (Retailers routinely charge higher markups on foreign items to compensate for these problems.⁵⁰) The simple inconvenience of having to deal with firms halfway around the world can, by itself, sway a buying decision to a domestic producer.

To sum up, quick response rapidly pulls goods through the system in response to demonstrated consumer demand. Using time as a competitive weapon, it attunes production to market signals and enables U.S. producers to more fully exploit the advantages of market proximity.

Premise 9

**RETAIL CONSOLIDATION MAY SPEED THE GROWTH
OF U.S. QUICK-RESPONSE PARTNERSHIPS**

To our knowledge, full-scale, quick-response, just-in-time networks are still few in number, have generally consisted of partnerships among large companies

and have focused on long runs of standardized goods like blue jeans and men's slacks. But the consolidation trend that has pervaded the retail sector of apparel in recent years might help diversify and accelerate the adoption of quick-response practices.

In the 1980s, retail concerns consolidated quickly, leaving a small number of companies with huge buying power. The 13 largest retail groups—Dayton Hudson, May Department Stores, Robert Campeau Federated, Allied Stores, Macy's, Dillard's, Carter Hawley Hale, British-American Tobacco, Belk, Nordstrom, Mercantile, Neiman-Marcus and Hooker—accounted for over \$56 billion in 1988 apparel sales, or between one-third and one-half of the U.S. market, according to one estimate.⁵¹

These groups control not only the vast majority of major department stores, but a large number of other stores selling into discount or specialty markets. If we add a few large discounters (Wal-Mart, Kmart, Zayre), national chains (JCPenney, Sears, Montgomery Ward) and specialty chains (The Limited, The Gap), it's apparent that relatively few large organizations account for the bulk of U.S. apparel sales.

If domestic companies could form true quick-response partnerships with these large retail organizations, such partnerships would encompass a big portion of retail capacity. Several of these groups, including The Gap, Wal-Mart and Dillard's, already have proactive programs to expand their domestic sourcing capacity.

Domestic companies can, however, afford to be more aggressive in pursuing this path. As Donald Fisher, chairman and CEO of The Gap, notes:

“Competitive American-based manufacturers can compete for our business, and quite frankly, I'm surprised more don't. Our sourcing people tell me that in any given week they receive ten faxes from offshore companies seeking our business for every one that we receive from domestic manufacturers. And believe it or not, we have very few manufacturers ringing our doorbell.”⁵²

Premise 10

TECHNOLOGY BREAKTHROUGHS COULD REVOLUTIONIZE PROSPECTS FOR THE U.S. APPAREL INDUSTRY WITHIN THE NEXT 10-15 YEARS

Two technology breakthroughs now on the horizon could radically alter prospects for U.S. apparel producers over the next decade or so.

MADE-TO-MEASURE. TC2 offers an exciting—and feasible—vision of what the U.S. apparel industry could soon become, given a bit more technological progress and aggressive support of technology diffusion.⁵³ Specifically, the industry could provide custom-tailored clothing at off-the-rack prices with turnaround times of 24 to 48 hours between initial body measurement and delivery to a customer's home. The process would include the following steps:

- ❖ A local computerized body-scanning facility would measure a customer's body contours electronically, and telecommunicate these measurements to a clothing producer.
- ❖ The producer would feed the measurements into a software package that would automatically lay out the needed pattern while minimizing fabric use.
- ❖ The design software would send the pattern coordinates to new automated cutters—cutters that are inexpensive and fast enough to permit economical cutting of a single fabric ply.
- ❖ Workers in modules would immediately and rapidly assemble the cut pieces.
- ❖ The producer would send the finished garment, via overnight mail, to the person's house or to a nearby outlet.

Because the producer's computer would now have the person's measurements in its memory, the customer would need only to provide information on the type of garment and fabric selection on subsequent orders. A customer could review fashion options via cable TV, videotape or other electronic media, or at a local outlet that carried samples of available offerings.

As with quick response, this "made-to-measure" strategy seeks to better exploit U.S. producers' market proximity by taking advantage of a window of initial consumer enthusiasm at the prospect of receiving a competitively priced, tailor-made garment within a day or two. TC2 officials believe that consumers are most likely to pursue this option if delivery is possible within seven days—feasible under their scenario and, just as important, not feasible via sea voyage. They believe made-to-measure demand is a potentially enormous market niche, but one that will require much faster process times and higher quality.

Currently, at least one investor group is conducting detailed feasibility studies of automated made-to-measure operations. This group asserts that such operations potentially could boost domestic employment by 200,000 jobs.

ASSEMBLY TECHNOLOGY. Several analysts contend that microelectronics will revolutionize the apparel industry within a decade or two, facilitating automated

assembly. This development will dramatically reconfigure the competitive advantages among nations. According to a recent World Bank study:

“New technologies would have a significant impact on all developing country suppliers if experiments in automated production technology were successful. Since a major breakthrough in automated production technology is expected within the next 10 to 15 years, this could have a devastating effect on countries where the competitive advantage in garment production is based on low wages . . . Engineering models indicate that robotic technology would greatly improve the U.S. competitive position in mass produced goods vis-à-vis countries with extremely low-wage costs.”⁵⁴

Another study suggests that the global apparel industry ultimately will split into two tiers: highly automated operations in industrialized nations, and very low-cost operations in such countries as China and India. Hong Kong, Taiwan and South Korea will form a “vanishing middle”—countries that have both insufficient capital resources to afford thorough automation and wages that are too high to compete without automation.⁵⁵

MADE-TO-MEASURE: EXCEPTION TO THE RULE

Professor Kitty Dickerson points out that part of what makes made-to-measure a potential competitive opportunity for U.S. apparel producers is the fact that products with short life cycles (like fashion goods) and luxury goods (for which price is not an issue) are exceptions to what economists call the “product life cycle.”

This cycle, as described by economists, begins with a new product, first invented and produced in the more industrialized countries. As time goes by, however, the technology to produce it becomes more standardized and widely understood, and production moves to less industrialized areas with lower labor costs.

To Dickerson’s list of exceptions to this cycle we might add products with a unique service dimension, such as the very quick turnaround TC2 believes possible on made-to-measure goods.

Premise 11

A MIX OF PUBLIC POLICY AND PRIVATE INITIATIVE CAN HELP ADDRESS CURRENT INDUSTRY PROBLEMS AND OPPORTUNITIES

Despite the potential of changing prospects, numerous problems and opportunities currently face the U.S. apparel industry. For example:

- ❖ Few domestic firms currently can respond flexibly and rapidly to changes in demand.
- ❖ Still fewer have formed true quick-response networks.



- ❖ Small and medium-size enterprises have a limited capacity to sort through technology options.
- ❖ Domestic fabric availability is constrained.
- ❖ U.S. product quality often is below world-class standards.
- ❖ Domestic total packaging capability is rare.
- ❖ The U.S. apparel industry lacks an export orientation.

However, none of these points to an intractable structural problem. An appropriate mix of public policy and private initiatives can help resolve many U.S. industry limitations and take advantage of market opportunities. While the existing public programs that encourage critical changes in the apparel industry are relatively small and financially unstable, a service delivery structure does exist that might be utilized more fully to advance U.S. industry performance. And some industry process innovations can tackle worker retention and product quality at the same time. Several of the most promising initiatives follow.

FOR INDUSTRY R&D: THE NATIONAL TEXTILE CENTER PROGRAM. While it has little independent design and manufacturing capability, the United States does have some great strengths it could bring to apparel machinery production—such as world leadership in computers, computer software and telecommunications—

BUNDLE TO MODULE: TOWARD TOTAL QUALITY

The corporate move toward total quality management is exerting competitive pressure on producers to use methods like modular manufacturing to upgrade worker skill levels and autonomy so as to help enhance quality control.

For example, operators in the “bundle” system of garment manufacturing have little monetary incentive to ensure quality, since they get their piece-rate pay regardless of whether the garment is defective. In a “modular” system, proper training can create an expectation that quality assurance is a team responsibility, and that each garment exiting a module should be defect-free. In effect, each operator becomes a quality control inspector for the work of all preceding operators.

In some plants, modular teams receive team quality bonuses based on module defect rates, and at least one major manufacturer has moved from a piece-rate to a salary system to accommodate team-based production.

and few comparative disadvantages. A well-designed research, development and dissemination effort could lay a foundation upon which to rebuild a world-class machine industry.

In 1992, Congress funded the National Textile Center Program, a 5-year, \$12.5 million, cooperative, public-private research effort led by a university consortium including Clemson, Auburn, Georgia Tech and North Carolina State. The program's goal is to develop a comprehensive R&D program for the apparel complex. Initially, its research agenda will focus on quick-response manufacturing, appropriate automation, systems integration and the energy and environmental aspects of production.

The center plans to vigorously disseminate its results. Along with its own publications and direct outreach, it aims to work through such intermediaries as the Textile/Clothing Technology Corporation (TC2), state extension services, the Institute of Textile Technology (a private textile research organization in Charlottesville, Virginia) and industry "fellows" who will work with faculty and graduate students on research projects.⁵⁶

FOR SME PERFORMANCE: FLEXIBLE BUSINESS NETWORKS. Other relatively inexpensive policies could significantly upgrade the performance potential of SMEs. Networking is one possible policy alternative that could help nourish a large core of world-class companies capable of providing high quality, quick response and total packaging to major domestic retail groups and competitive goods for international markets.

For example, states could encourage a program of SME networking around jointly owned automated design and cutting facilities. This would give network firms access to equipment that they could not afford or fully use individually, but which could substantially improve production quality, increase flexibility and reduce material waste through the more efficient use of fabric.

Network members also could undertake cooperative activities, perhaps including:

- ❖ acquisition of better information on technologies, market opportunities or best management practices
- ❖ joint purchase of materials, insurance, equipment, training and other inputs
- ❖ joint development of applied research projects around common interests
- ❖ joint establishment of a multiuse center to handle these and other tasks under one roof.

A network coordinator might explore establishing quick-response partnerships with major retailers. Network forums also could provide a focal point for delivering public services—for example, updates on National Textile Center research—to help network members improve productivity. Member needs, in fact, could drive the center’s agenda.

FOR WORKER SATISFACTION AND PRODUCT QUALITY: MODULAR AND UNIT PRODUCTION SYSTEMS. The efficiency, quality and worker satisfaction problems associated with the progressive bundle system—the most common approach to garment assembly—have given rise to a new and increasingly popular system of modular manufacturing.

Under the bundle assembly system, a worker seated at a sewing machine performs the same task on batches of garments. The garments arrive at each station in tied bundles that the operator unties, completes the single task, reties and passes on to the next operator. The system not only promotes tedium, but is proving ill-suited for short production runs of numerous styles.

The modular approach offers an increasingly popular alternative. It is organized according to teams and depends on operators who are capable of performing numerous different tasks. The “module” itself is a series of sewing stations that are equipped to perform all the steps required to transform cut pieces into a completed garment. In the TC2 version, operators, carrying the garment-in-progress with them, make their way through as many workstations as they can before they meet another operator, at which point the garment is handed off. The empty-handed worker then goes back up the line and starts again.

A more capital-intensive version of the modular system is the unit production system (UPS), which employs a similar philosophy but uses computer-controlled conveyors to move the garments between stations.

Not only have modular manufacturing techniques been shown to reduce production times and increase flexibility and product quality, they also can greatly improve employee job satisfaction. Workers must obtain more training, autonomy and responsibility. They vary their tasks. They become members of a team—less isolated—and share responsibility for producing a fully finished product. Higher morale is reflected in marked reductions in turnover in plants that have implemented this new manufacturing process.

One study, conducted by Clemson University, reported that apparel plants that convert from bundle to modular or UPS procedures cut their average annual turnover rates from 51 percent to 31 percent.” Plants that had also implemented “effective employee empowerment programs reported even better results.”⁵⁷

FOR WORKER SKILLS: THE FEDERAL-STATE JOB TRAINING SYSTEM. One way to address human-resource and quality issues, and generally upgrade SME performance, is for the public sector to dedicate resources under the extensive federal-state job training system. The objective would be to target the development of strategically selected worker skills—a list that might include training in the multiple sewing skills needed in modular assembly; computerized pattern making and grading; small-lot weaving, dyeing or clothing design; and quality control techniques. High school apprenticeship programs in textiles and clothing might be particularly effective in preparing new entrants.

CHAPTER 3. THE TEQUILA SUNSET SCENARIO

Under the Tequila Sunset Scenario, although the technology and marketing innovations described in the Phoenix Scenario may flourish, NAFTA will extinguish the competitive advantages they create. NAFTA will codify much more favorable rules governing investment and trade between the United States and Mexico. It will end tariffs and quotas on imports into the United States from Mexico, and foreign firms will have better access to the Mexican market. Soon, nations throughout the Caribbean and Central and South America will co-sign the treaty, creating a huge free trade zone.

For U.S.-based multinationals, these new rules will further enhance the already strong appeal of ample low-wage labor supply and the close physical proximity to the U.S. market that these countries offer. Consequently, U.S. multinational companies will expand foreign operations on this continent far more aggressively than they did under the Caribbean Basin Initiative of the 1980s. The region also will attract capital from European, Japanese, East Asian and other interests for the same reasons.

In sum, Mexican competitiveness will be enhanced during the next five to ten years by a rapid expansion of direct U.S. and other foreign investment, and by intensified efforts of Mexican-owned firms to sell into the United States. Policymakers should assume a large, sophisticated Mexican clothing sector by the year 2005.

Industry operators reluctant to leave the United States will confront withering, hemispherewide competition from a legion of sophisticated multinationals. These latter firms will be armed with the financial resources to make extensive investments in plant, equipment and worker training, and to employ the most up-to-date production systems—all the while paying wages that are a fraction of what remaining U.S. firms must pay.

The Phoenix Scenario, in short, can't survive NAFTA. Even without the new GATT, much of the U.S. industry will die over the next ten to twenty years, with substantial dislocation occurring within five to ten years.

THE TEQUILA SUNSET SCENARIO

Mexico and the United States conclude the North American Free Trade Agreement, extinguishing whatever competitive advantages U.S. producers could enjoy under the Phoenix Scenario.

The accord opens trade first with Mexico and then, in short order, with other Caribbean and Central and South American countries. The U.S. apparel industry suffers significant and very rapid dislocations in the first decade of the accord. At least 300,000 apparel jobs are lost to Mexico and other free trade zone partners.

THE TEQUILA SUNSET SCENARIO: PREMISES

EACH OF THESE PREMISES, WHICH TOGETHER FORM THE FOUNDATION FOR THE TEQUILA SUNSET SCENARIO, IS EXPLAINED IN DETAIL IN THIS CHAPTER.

1. Even before NAFTA, Mexico offered U.S. clothing multinationals attractive reasons for investment.
2. NAFTA makes it easier—and more profitable—for U.S. clothing firms to invest in Mexico.
3. NAFTA also makes it more attractive for U.S. textile firms to invest in Mexico.
4. NAFTA also offers East Asian and European firms significant incentives to invest in Mexico.
5. Other Caribbean and Latin American countries seek free trade zone status with the United States.
6. U.S. workers also lose jobs to other free trade zone partners.

Premise 1

EVEN BEFORE NAFTA, MEXICO OFFERED U.S. CLOTHING MULTINATIONALS ATTRACTIVE REASONS FOR INVESTMENT

Some recent studies argue that because the actual levels of U.S. imports from Mexico are low, as is the quota usage, the Mexican apparel industry won't explode into a truly disruptive force for the United States.⁶⁰ The Mexican industry, these studies contend, depends heavily on U.S. clothing and retail firms for export orders, has very limited independent design and marketing capabilities, suffers from lower productivity and garment quality than U.S. producers, has an acute shortage of experienced mid-level managers, and struggles with a deficient national infrastructure. Together, these problems will preclude the industry from moving more than modestly into U.S. markets.

However, it is irrelevant whether the existing Mexican industry is competitive if U.S.-owned multinational firms open new operations or expand existing ones in Mexico—allowing them to compete more effectively both for the U.S. market *and* for new market opportunities in Mexico. In fact, many U.S. multinationals already have large operations in Mexico or other Caribbean Basin sites; several major U.S. apparel manufacturers were planning large new investments in Mexico contingent upon NAFTA's passage, according to informed observers.

In short, prior to the passage of NAFTA, Mexico already offered several attractions to multinationals.

A GOOD WAGE-PRODUCTIVITY RELATIONSHIP. Mexican-based producers pay much lower wages than operations in the United States, Hong Kong, Taiwan and South Korea. Mexico's 1991 wages were about 50-75 percent of East Asian rates, and 15-30 percent of current U.S. levels, according to various estimates. This wage-rate advantage shows up not only in lower labor costs for production, but also for construction, warehousing and transportation.

At the same time, with appropriate training and competent management, Mexican workers can achieve labor productivity levels comparable to those in similarly equipped U.S. plants. With regard to U.S. operations based in the Caribbean and Latin America, *Bobbin* magazine reports that "When U.S. firms start up in these regions, they usually train and upgrade the work force to the level of a U.S. company...the efficiency levels of the operators tend to improve up to 25 percent."⁶¹

A LONG-TERM ABUNDANT LABOR SUPPLY. U.S. companies relocating to, or expanding in, Mexico won't face the serious problem of labor availability that they now confront in the United States—a problem which, as noted earlier, likely will worsen as the number of new workers entering the U.S. market shrinks in the 1990s. In Mexico, a tremendous potential pool of unemployed or underemployed labor already exists. Moreover, most of Mexico's population has not yet entered prime childbearing age—a fact whose implications are difficult to appreciate, given Mexico's already enormous socioeconomic problems. Consider these figures from the Office of Technology Assessment:

"If GDP [gross domestic product] growth averages 3 percent over the 1985-2000 period, Mexico can expect some 10 million 'excess' workers by the turn of the century; if GDP growth averages 5 percent, the predicted excess would still reach 6 million. It seems highly unlikely that Mexico's economy could expand fast enough to absorb all new labor force entrants; this would take an unprecedented growth rate of more than 10 percent annually."⁶²

Mexico's excess labor supply will exert considerable downward pressure on wages. Not even a strong economic expansion that follows trade liberalization should significantly erode Mexico's low-wage appeal.

ACCESS TO THE MEXICAN MARKET. Because workers earn low incomes, the effective Mexican market generally is considered to be much smaller than the Mexican population. Several analysts suggest it includes 20-30 million consumers who tend to purchase goods in the middle- and lower-price ranges. Nonetheless, the Mexican market is large, underserved and growing. To compete

for it, U.S. producers eventually must establish assembly plants in Mexico and take advantage of lower Mexican production costs.

AN EASY MOVE. Multinationals could expand in, or relocate to, Mexico with relative ease. First, many have experience in establishing and operating in the Caribbean region. It typically takes a long time for significant numbers of firms and their personnel to learn how to operate efficiently in an unfamiliar environment. Many U.S. multinational producers opened operations in Mexico and other Caribbean Basin countries in the 1980s. By now, U.S. multinationals have accumulated sufficient experience to permit a rapid expansion of their Mexican production, given the proper incentives.

Second, garment production equipment is highly mobile and relatively inexpensive, operator training requirements are modest, and the traditionally cooperative Mexican unions are likely to support quick-response operations by helping implement flexible modular or unit production system manufacturing techniques.

The industry already has tested, with good results, bringing flexible manufacturing techniques to the Caribbean region. For example, plant personnel in a multinational clothing manufacturer we visited in the U.S. while doing research for this guide had worked with a member of their state's industrial extension service for six months to design and implement a flexible assembly module. After the project's successful conclusion, company headquarters ordered the module disassembled and reinstalled at its Costa Rica plant.

Premise 2

NAFTA MAKES IT EASIER—AND MORE PROFITABLE—FOR U.S. CLOTHING FIRMS TO INVEST IN MEXICO

If a great amount of U.S. capital was going to move into Mexico, why hasn't it already done so? After all, advantages were in place. Under the Maquila program, U.S. tariffs were applied only to the value Mexican workers added to cut pieces of U.S. fabric, primarily through garment assembly. And U.S. quota policy had been very supportive of the Reagan and Bush Administrations' regional economic development efforts.

Since foreign producers already had the opportunity to access low-wage Mexican assembly labor under these policies, why does NAFTA make much difference? It's because both NAFTA and other Mexican regulatory changes now make it even easier—and more profitable—for U.S. multinationals to invest in Mexico.

Until recently, foreign firms could not hold controlling interests in Mexican facilities other than Maquilas—that is, assembly plants in Mexico, especially those along the U.S.-Mexican border, to which foreign materials and parts are shipped and from which the finished product is returned to the original U.S. market. And Maquila owners could not sell Maquila output to the domestic Mexican market. Recent regulation now permits foreign ownership of Mexican facilities and sales of plant output into the domestic Mexican market. In response, a vanguard of U.S. retail and manufacturing firms has started new Mexican-based ventures to serve that country's market.

Even more has been changed by NAFTA. Chief among the Mexican-investment benefits induced by NAFTA are:

NAFTA OFFERS A STRATEGIC RESPONSE TO GATT. Some argue that the giant carrot of NAFTA offers a strategic response to the giant stick of GATT, in that it offers the best chance for U.S.-based firms not only to survive under the new trade regime, but to prosper. As Mary O'Rourke, Vice President of Strategic Planning for Werner International, explained:

“NAFTA brings with it one certainty for U.S. apparel manufacturers—a vehicle for increased competitiveness over key Far Eastern suppliers, including Hong Kong, Taiwan and South Korea. Never have U.S. companies been as close to a vehicle which will allow them to take back some of the Asian production. It will be interesting to see [to] what degree U.S. firms take advantage of this opportunity.”

In the absence of an East Asian response, the higher earnings accruing to U.S. firms from simply displacing East Asian production could be huge. In 1991, apparel imports from Hong Kong, Taiwan and South Korea alone totaled about \$9 billion, or about 15 percent of *total U.S.* industry shipments that year.⁵⁸

NAFTA ENDS THE UNCERTAINTY TIED TO QUOTAS. In the late 1980s, whenever U.S. quotas on Mexican apparel imports approached full utilization, the Bush Administration routinely raised them. Thus, some argue, quotas have been only a minor drag on Mexican apparel exports to the United States.

But, even if quotas have not been a constraining factor, a producer considering major, long-term investments in Mexico would be very imprudent to assume that this accommodating policy would continue indefinitely. NAFTA simply eliminates quotas immediately, and ends this uncertainty.

NAFTA REDUCES TARIFFS ON MANY CLOTHING ITEMS. Some analysts claim that tariff reduction under NAFTA won't significantly affect the relative cost of most

types of garment production in Mexico. They point to the pre-existing Maquila program, a unilateral U.S. policy that established tariff and other advantages for firms using U.S. fabrics and selling into the United States.

Under the Maquila program, U.S. tariffs applied only to the value *added* in Mexico to cut pieces of U.S. fabric, that is, basically the value added in assembly. OTA estimated the average effective tariff rate under the Maquila program at 5-10 percent of import value. Meanwhile, USITC estimated the effective duty at 5 percent or less on 73 of 210 categories of U.S. clothing imports from Mexico, and 10 percent or less on another 75 categories.⁶³

However, the USITC data also indicate that 20 categories still had effective rates of between 10 and 15 percent, and another 42 had effective rates above 15 percent. Moreover, some of these goods used man-made fabric; and the U.S. nominal (and effective) tariffs are higher on these than on cotton goods.

Thus, while previous initiatives already had reduced some effective tariff rates considerably, NAFTA substantially reduces many more. Even modest tariff reductions of 5-10 percent on other clothing items can profoundly influence sourcing decisions. The international apparel industry is extremely competitive, with many firms working on very slim margins. If, with U.S. tariffs in place, Mexican production costs are comparable to those at U.S. production sites, a firm could significantly improve its bottom line by shifting activity to Mexico once tariffs are eliminated.

Moreover, before NAFTA, producers also still had to pay Mexican duty on imported supplies and capital goods not intended for use in Maquilas. These duties substantially raised the cost of using established supply lines to support production for the Mexican market. Together with the tariffs Mexico placed on apparel imports, these strictures effectively blocked most U.S. firms from actively competing for the Mexican market.

NAFTA ends these tariffs, permitting the duty-free extension of existing supply channels into Mexico. This change will also make it easier for U.S. retailers to entice their established U.S. suppliers into Mexico to support their new retail operations.

NAFTA SHAKES LOOSE MAQUILA CAPITAL FOR INVESTMENT ELSEWHERE IN MEXICO. Maquila operations suffer at least two big competitive drawbacks. First, by concentrating foreign investment in a relatively small physical area, the Maquila program has raised operating costs for facilities along the U.S.-Mexican border. As a result, the border has become a labor-short, high-wage area compared to many interior regions of Mexico. It also suffers extremely high labor turnover rates, in part because workers often are on their way north.

Second, under the Maquila regime, participating operators have been barred from performing fabric cutting or various finishing operations—such as laundering blue jeans—in Mexican plants. Consequently, they've had to maintain multiple facilities. In fact, many operators have twin plants across the border from each other. Obviously, it's been difficult to make this kind of arrangement as technically efficient as possible.

By ending Mexican and U.S. tariffs, NAFTA substantially diminishes the advantages that existing Maquila locations enjoy over alternative Mexican sites. In this way, NAFTA will force companies to reassess the relative profitability of these facilities. In many cases, this reassessment will shake loose capital for new, more competitive facilities elsewhere in Mexico.

NAFTA SIMPLIFIES DAY-TO-DAY U.S.-MEXICO COMMERCE. NAFTA will cut or end other nagging non-tariff, non-quota barriers to U.S.-Mexican trade. In the past, for example, trucks passing through border points to and from the United States had to change from U.S. to Mexican drivers (and vice versa) before proceeding into the other nation's interior. Now, under NAFTA, a license from one country will be accepted in the other as well.

NAFTA SOLIDIFIES MEXICO'S COMMITMENT TO FOREIGN PARTICIPATION IN ITS ECONOMY. Historically, economic policy in Latin American and Caribbean nations has been redefined often—and dramatically. The resulting uncertainty has long discouraged aggressive investment in the region, and left foreign companies wary of the commitments Latin American governments make.

NAFTA breaks sharply with this past and prompts potential investors to apply a new paradigm to Mexican opportunities. The agreement codifies, for the first time in international treaty form, a long-term commitment to free markets, currency convertibility, majority foreign ownership of enterprises, and open borders. It also provides a legal mechanism through which foreigners can challenge any change in domestic Mexican legislation or regulation that they believe violates treaty provisions.

Such a commitment to full foreign participation in the domestic Mexican economy has, until now, been politically unthinkable. Now, embodied in treaty form, it is a commitment Mexico is unlikely to break under any plausible scenario short of the collapse of the Mexican economy. At the very least, even hardened skeptics must concede that the guarantees contained in NAFTA go far beyond anything previously offered to foreign investors by most, if not all, other nations with comparably low wages.

Even without NAFTA, registered foreign investment in Mexico doubled from 1990 to 1991, rising to \$4.4 billion.⁶⁴ NAFTA's additional guarantees will accel-

erate that flow and make it easier for the Mexican government to achieve its goal of securing \$60 billion in new foreign investment during the 1989-95 period.

NAFTA PUBLICITY PROMOTES CONSIDERATION OF THE “MEXICAN OPTION.”

Among its more important dimensions, NAFTA is producing a publicity bonanza for Mexico, spotlighting the appeal of the “Mexican option.” Thousands of media quotes about the “competitive threat” from Mexico, coupled with intensified coverage of U.S. investments in Mexico, have fostered a climate that encourages producers to examine—or reexamine—this option.

Ironically, despite the NAFTA publicity, many in the industry, particularly SMEs, know little about either the treaty or Mexico. In fact, during the research conducted for this guide, we found numerous southeastern fabric and clothing plant managers who were unaware of the then-ongoing NAFTA negotiations.

Much more recently, we spoke with the owner of a sophisticated, mid-sized (280-employee) U.S. garment manufacturing company. This owner had just returned from Central America and Mexico. When asked why he had only now begun active pursuit of a Caribbean option, he responded “I’m like the rest of the industry—lazy and slow.”

Actually, he is neither. His delay reflects not just the heavy demands of day-to-day management, but also a domestically oriented industry focus which has kept the typical U.S. firm from routinely exploring overseas options. His views also typify the competitive concern that many other firms, particularly SMEs, will express as the publicity about NAFTA prompts a serious look at Mexico. In his words: “Why would I continue to pay \$20,000 for something when I can get the same thing for \$2,000?”

NAFTA PROMOTES THE CONSOLIDATION OF U.S. APPAREL PRODUCTION IN

MEXICO. The confluence of all the above factors will prompt U.S.-based apparel producers to make large new investments in Mexico’s more interior regions, at the expense of investments in the United States. As indicated earlier, these operations will tap cheaper, deeper labor pools and be closer to Mexico’s major urban markets. Ultimately, they will replace higher-cost, older U.S. facilities, as U.S. multinationals—pursuing economies of scale—consolidate production for (at least) the U.S., Canadian and Mexican markets.

Alternatively, U.S. firms that try to sell to the Mexican market from U.S.-based facilities will find it very hard to be competitive with Mexican-based plants—at the very least, because of their higher payroll costs. The problem will be particularly acute for more standardized, price-sensitive items such as

underwear and hosiery. Hypothetically, a company might maintain U.S. capacity because production in Mexico's interior could compromise its ability to service major U.S. and Canadian clients. But in truth, Mexican plants could provide a full line of products and services, and could do so with quick-response production.

In addition, although Mexican tariffs will still apply to East Asian apparel imports after NAFTA, U.S. producers are not likely to be competitive against East Asian producers from U.S.-based facilities. As noted earlier, East Asian quality and service often are better, and, of course, East Asian wage rates remain much lower than U.S. rates. To illustrate this point, in 1988—the year before President Salinas accelerated trade liberalization—the U.S. share of total Mexican apparel imports was 79 percent. By the end of 1990, the U.S. share had fallen to 48 percent, with losses to Hong Kong accounting for two-thirds of this precipitous drop.⁶⁵

Premise 3

NAFTA ALSO MAKES IT MORE ATTRACTIVE FOR U.S. TEXTILE FIRMS TO INVEST IN MEXICO

The U.S. fabric industry will follow the clothing industry to Mexico because of two NAFTA-induced changes.

First, tariff reductions—which may not significantly affect the relative cost of producing a given garment in Mexico—do affect the attractiveness of investing in Mexican-based fabric production. For fabric, the relevant effective U.S. tariff rate is a nominal 12 percent, which is more than double the effective rate on some types of Maquila-assembled clothing. An end of U.S. tariffs, then, would cut the cost of producing fabric in Mexico by the full amount of the tariff rate. So a move to Mexico would mean substantial savings in labor and total costs, as payroll costs for U.S. broadwoven fabric still run about 15-20 percent of fabric shipments.

Second, Mexican-based production would provide a more convenient, less expensive fabric source than would U.S. fabric for the burgeoning Mexican clothing industry. In response, the U.S. fabric industry will have to relocate in Mexico.

The shift in fabric production will not occur as rapidly as in clothing; there is much more capital “sunk” in U.S. fabric production. But the shift will come, as U.S. operators update capacity and as the supporting Mexican infrastructure—water, power, transportation, waste treatment systems—improves. Any

significant technological change, such as the development of more flexible technology, will accelerate this shift by speeding the obsolescence of in-place capital.

Premise 4

NAFTA ALSO OFFERS EAST ASIAN AND EUROPEAN FIRMS SIGNIFICANT INCENTIVES TO INVEST IN MEXICO

U.S. firms will not be alone in their growing post-NAFTA interest in Mexico. NAFTA will trigger a major capital infusion into Mexico from apparel producers based in East Asia and Europe as well because it offers these nations:

- ❖ a more secure investment climate
- ❖ enhanced competitiveness through lower Mexican wages⁶⁶
- ❖ greater availability of Mexican labor
- ❖ an immediate end to U.S. quotas and tariffs
- ❖ a cut in nontariff barriers to trade
- ❖ easy overland access to the U.S. market
- ❖ improved access to the Mexican market

FOLLOW THE LEADER: THE FIRST-MOVER ADVANTAGE

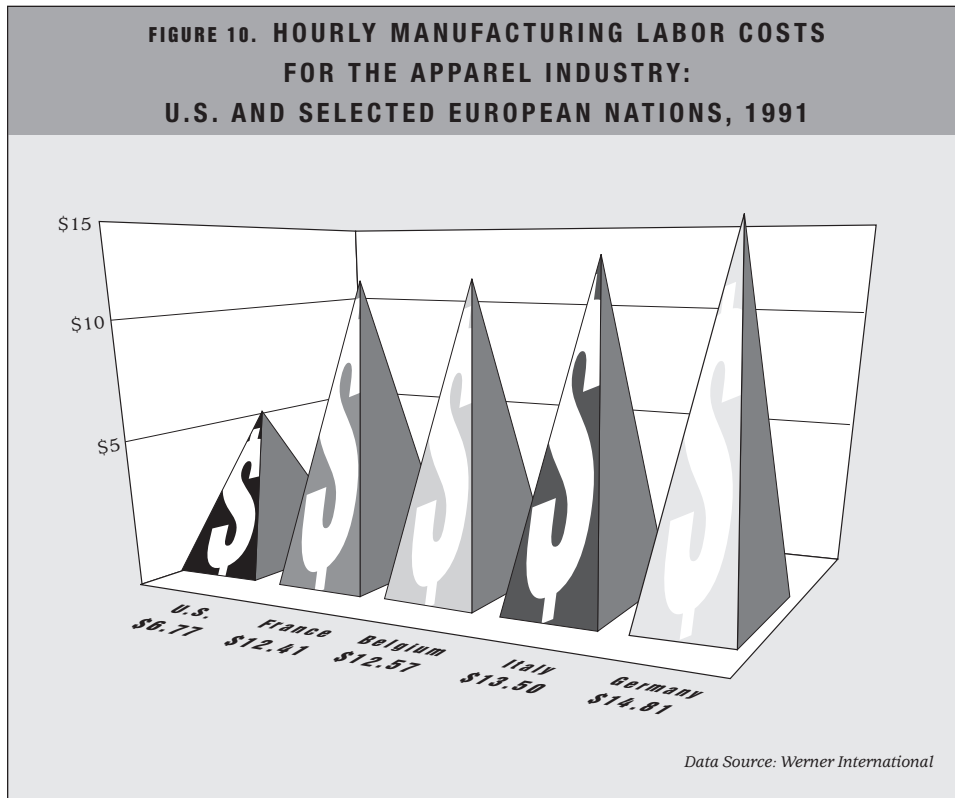
Once begun, the normal competitive struggle among U.S. clothing and textile producers will force a rapid acceleration of U.S. investment in Mexico because of the desire to capture “first-mover” advantage.

The advantage is simple: If one competitor begins or expands production in Mexico while others do not, the latter’s position obviously becomes most tenuous. Furthermore, the competitors who land first on the scene will be in a better position to identify and “lock up” the best available production and distribution capacity, and to establish brand-name recognition in the Mexican market.

Investment by these countries is still more attractive due to the intense publicity surrounding NAFTA and the accelerating rates of U.S. investment in Mexico.

For East Asian producers, NAFTA holds the promise of making them even more competitive in the U.S. market. But, as noted, it simultaneously poses a serious threat to their U.S. position if they don't take advantage of the Mexican opportunity. As for European producers, their competitive position would—at least at prevailing exchange rates—improve far more than would U.S. firms', if both moved into Mexico. Apparel's 1991 hourly manufacturing labor costs in key European countries were about twice as high as U.S. rates, according to Werner International. (See Figure 10.) Consequently, the dollar equivalent of labor-cost savings would be dramatically higher for firms from these countries than they would be for U.S. firms.

Significant amounts of East Asian and European capital moved into the Caribbean in the 1980s; in fact, non-U.S. foreign investment in the Caribbean apparel industry exceeded U.S. investment during that period, according to USITC personnel. New non-U.S. investments in Mexico would simply continue this trend. The experience of many East Asian firms in producing high-quality fabric and in providing total packaging will facilitate a sourcing shift to Mexico.



The handwriting is on the wall. The attraction of lower costs and better market access will draw foreign capital to Mexico. A flood of new investment there is inevitable and, whether U.S. capital or foreign capital goes first, both must go.

Premise 5

OTHER CARIBBEAN AND LATIN AMERICAN COUNTRIES SEEK FREE TRADE ZONE STATUS WITH THE UNITED STATES

NAFTA will put great pressure on the United States to grant similar concessions to all other Caribbean and Latin American nations—many of which have lower wages than Mexico. Such concessions would, in turn, expose U.S.-based operations to competition from a host of other low-wage competitors. The key sources of the pressure to extend NAFTA throughout the Caribbean and South and Central America are detailed below.

U.S. failure to extend cosignatory status would risk significant economic distress in many Caribbean nations, greatly straining their relationship with the United States. If the United States doesn't allow these nations to co-sign, job shifts to a now-favored Mexico could severely damage the growth prospects of these largely impoverished countries.⁶⁷

The flip side of this situation is the effect on U.S.-based multinationals. While some U.S. firms might oppose the extension of cosignatory status, many will favor it. Firms in industries well positioned to take advantage of market openings—such as machinery, telecommunications, computer software and producer services—will be most likely to favor an extension of NAFTA privileges. Many U.S. apparel firms also have invested heavily in the nations of the Caribbean and Americas. Even setting aside considerations of sunk capital, wages in many of these nations are even lower than in Mexico. A multinational might therefore improve its competitive position by producing outside Mexico in other Caribbean or Latin American nations.

The apparel industry is particularly interested in obtaining additional NAFTA cosignatories and is, notably through AAMA, lobbying for “Caribbean parity”—the extension of NAFTA treatment to other Caribbean Basin Initiative nations. Apparel accounts for an average of more than one-third of total employment in the English- and Spanish-speaking countries of Central America and the Caribbean.⁶⁸ Apparel and other firms that already operate facilities in these nations will lobby hard for additional cosignatories, hoping to avoid having their competitive position undermined by preferences granted to Mexican-based producers.

A perceived U.S. tilt to Mexico would greatly strain U.S. relationships not only with Caribbean Basin nations, but with much larger, wealthier South American nations such as Brazil and Argentina. The Bush Administration and its negotiators explicitly and frequently said that the United States would quickly craft bilateral agreements with any hemispheric nation accepting the principles embodied in a U.S.-Mexican accord. The Clinton Administration restated that invitation. By reversing its position at some future date, the United States would violate widely held assumptions about the direction of U.S. relations with its other southern neighbors—neighbors whose collective population (and market size) is several times that of Mexico.

Also, the extension of cosignatory status would be fair. Caribbean nations have become very dependent on the apparel industry because of the Caribbean Basin Initiative's 807 and 807A programs; these granted generous U.S. tariff and quota preferences to Caribbean and Central American operations that assembled cut pieces of fabric imported from the United States. The Reagan and Bush Administrations strongly urged companies to invest throughout the region. Many did so. The United States should not now implement a policy that makes a serious liability of a dependence it so actively fostered.

In addition, when the more recent 807A program became law, Mexico complained that it unfairly discriminated against *its* industry because other Caribbean Basin Initiative nations would receive more favorable treatment. In response, the United States extended similar treatment to Mexico under the current Special Regime. This precedent further increases the problems lawmakers will have if they attempt to reject requests from Caribbean Basin countries for cosignatory status.

Denying cosignatory status to any hemispheric neighbor will do little to protect U.S. interests. Mexico already has entered into free trade agreements of its own with Chile and Brazil, and is pursuing agreements with others. Thus, if U.S.-based firms are unable to gain barrier-free access to Caribbean and Latin American markets, they will have additional incentive to consolidate production in Mexico. From there they could access other Caribbean and Latin American markets under more favorable conditions than they could from the United States.

Premise 6

U.S. WORKERS ALSO LOSE JOBS TO OTHER FREE TRADE ZONE PARTNERS

U.S. job losses under the assumptions in the Tequila Sunset scenario will be much greater than those directly attributable to the move of U.S.-based multinationals from the United States to other locations in a free trade zone. Jobs also will

be lost as large manufacturers shift subcontracted work from domestic SMEs to production facilities located in the new low-wage free trade locations. Many of these SMEs, for reasons detailed under the Tsunami Scenario, simply can't compete on their own. They will fall to unrelenting competition from various sophisticated multinational firms that have invested heavily in new plants, equipment and worker training; that use the most up-to-date production systems; and that pay wages a fraction of what U.S. SMEs must pay.

CHAPTER 4. THE FEDEX SCENARIO

Under the FedEx Scenario, the attractive economics of air freight—combined with an increased reliance on modern communication and CAD/CAM systems (mentioned in the Tsunami Scenario)—will progressively undermine the Phoenix Scenario.

In many product markets, air shipment is a viable and widely used alternative to sea- and land-based transport. Offshore producers will increasingly use air freight in the years ahead, as the premium on rapid response to retailer and customer needs increases, and as freight-airport capacity expands. Thus, neither the new economics of quick response nor the near-term development of quick-turnaround, made-to-measure capability in the United States will prevent intense overseas competition in even the most time-sensitive market niches.

Barring a breakthrough in assembly automation—a prediction based on hope rather than fact—competition from overseas producers should intensify dramatically in all foreseeable U.S. product markets, including the very time-sensitive quick-response and made-to-measure markets.

THE FEDEX SCENARIO

The United States and other nations conclude a General Agreement on Tariffs and Trade, eliminating quotas under the Multifiber Agreement and cutting tariffs on imported clothing and textile products.

In response, U.S.-based producers rapidly establish true quick-response partnerships and accelerate development of made-to-measure capabilities. To counter this competitive threat, East Asian and other offshore producers make increased use of telecommunications and air freight to match U.S. producer turnaround times in all but the most standardized product lines. Consequently, within 15 years of the GATT accord, the United States loses much of its “last great hope” market niches and three-quarters of its domestic industry employment.

Premise 1

THE IMPROVING ECONOMICS AND AVAILABILITY OF AIR FREIGHT ARE DISPLACING RELIANCE ON SEA TRANSIT FOR THE SHIPMENT OF APPAREL GOODS

The Phoenix Scenario assumes that the time requirements (that is, the time *disadvantage*) of a sea voyage will insulate U.S. apparel producers from overseas competition—especially from East Asia—in time-sensitive, quick-turnaround markets here in North America. In fact, it argues, U.S. producers might be more competitive for initial orders if they can fill them very close to a season’s opening and deliver quick-response replenishment throughout the season.

THE FEDEX SCENARIO: PREMISES

EACH OF THESE PREMISES, WHICH TOGETHER FORM THE FOUNDATION FOR THE FEDEX SCENARIO, IS EXPLAINED IN DETAIL IN THIS CHAPTER.

1. The improving economics and availability of air freight are displacing reliance on sea transit for the shipment of apparel goods.
2. Overnight air delivery negates potential U.S.-based advantages in a made-to-measure industry.

However, the improved economics and availability of air freight are making sea transport obsolete. Many Hong Kong firms and large U.S.-based companies like Liz Claiborne, The Gap and M.A.S.T. Industries are routinely using air freight to transport goods from East Asia to the U.S. market. These companies contract for dedicated cargo space and bring large volumes into the United States overnight for distribution to retail outlets. About one-third of U.S. apparel imports now arrive by air—a dramatic shift from even 10 years ago when the great majority arrived by sea.

One factor underlying this recent reliance on air shipping is a new ability to convert planes easily from passenger to freight use. One state industrial extension agent

has been working with a firm that specializes in such conversions. For a modest cost, the firm installs an “invisible” 10-foot-wide cargo door in the passenger compartment and quick-release seat tracks in the cabin floor. An operator can then remove all passenger seats and convert the entire plane to cargo use in just 30 minutes. These convertible planes fly freight at night when there’s little passenger traffic, thus doubling the number of travel miles for which they can charge. Federal Express is among the firm’s major customers.⁶⁹

Air freight makes economic sense because the weight and bulk of many garments is relatively low compared to their final value. For example, a 1980

study by Frobels, Heinrichs and Kreye estimated a garment’s air freight cost from Southeast Asia to Western Europe in that year at just \$.50-1.00. This fact extends even to relatively low-value, standardized commodities. The Gap, for example, routinely uses air freight to transport blue jeans from Hong Kong to the United States. In this context, Dr. Kitty Dickerson notes that garments are “low-bulk, low-weight commodities, ideally suited to the new international division of labor.”⁷⁰

AIRBORNE CLAIBORNE

Liz Claiborne is using the air freight option to conduct a staged approach to quick-response production and supply, according to an industry source. The company’s first clothing shipments for a season come by air freight—and contain enough fast-selling items to meet short-term demand. Sea shipments then bring over the rest of the season’s supply.

In sum, then, while air costs still far exceed sea charges, the economics of rapid replenishment often more than justify air freight.

Premise 2

OVERNIGHT AIR DELIVERY NEGATES POTENTIAL U.S.-BASED ADVANTAGES IN A MADE-TO-MEASURE INDUSTRY

Cost- and time-efficient international air freight challenges the commercial superiority of TC2's vision of reviving the U.S.-based apparel industry using a made-to-measure strategy. This vision is partly based on pitting U.S. market proximity against sea transport. Data indicate, however, that East Asian and other offshore producers can use air delivery almost as cheaply as U.S. producers. Federal Express and UPS shipping rates for a two-pound package from Hong Kong to any U.S. location within two to three days are only marginally more expensive than shipping within the United States. (See Figure 11.)

In other words, a producer in Hong Kong can get very rapid delivery from the plant's back door to a U.S. retail outlet or a home almost as fast and about as cheaply as a producer in Georgia.

FIGURE 11. INTERNATIONAL VS. DOMESTIC SHIPPING RATES			
OVERNIGHT DELIVERY RATES FOR TWO-POUND PACKAGE TO ANY POINT IN U.S.: HONG KONG VS. DOMESTIC U.S., 1995			
SERVICE	COST (TWO-POUND PACKAGE)		
	DOMESTIC U.S.	HONG KONG TO U.S.	DIFFERENCE
FEDERAL EXPRESS			
List	\$16.50	\$22.23	\$5.73
22% volume discount	\$12.87	\$17.34	\$4.47
30% volume discount	\$11.55	\$15.56	\$4.01
40% volume discount	\$9.90	\$13.34	\$3.44
UPS			
List, w/ customer drop-off	\$14.00	\$19.40	\$5.40
w/ 25% volume discount	\$10.50	\$14.55	\$4.05
List, w/ UPS pick-up	\$17.25	\$19.40	\$2.15
w/ 25% volume discount	\$12.94	\$14.55	\$1.62
<i>Note: Volume discounts are available to large users</i> <i>Data Sources: Federal Express and United Parcel Service</i>			

A FEW MORE KEY QUESTIONS

Each of our scenarios contains important questions for which there are no easy answers. Several important issues that state and local policymaker and practitioner teams should consider—and monitor—as they proceed are listed below.

Each of these questions has a rural/urban dimension. Indeed, after GATT and NAFTA, the rural Southeast's apparel industry could evolve quite differently from that of New York City or Los Angeles. The competitive effects of, say, NAFTA, GATT, the development of quick response, or the use of air freight may vary between rural and urban areas, depending on variation in the mix of products and services that result, the markets into which these products and services sell, and the structure of corporate ownership and activity (for example, branch-plant versus independent establishment; multinational versus strictly domestic operations).

The puzzles of apparel job loss and turnover

- ❖ *Since high labor turnover in the southeastern—mostly rural—apparel industry creates many new job openings each day in the clothing industry, why are the national data on post-displacement outcomes so poor? Aren't rural areas representative of the national picture?*
- ❖ *Is the turnover problem much more severe in the rural Southeast?*
- ❖ *For one reason or another, are dislocated rural sewing operators not aware of—or not easily matched with—other apparel job opportunities within their local labor markets? Are there simply few other apparel job opportunities within commuting distance?*

These questions are key to estimating the reemployment problem in rural communities—and in defining appropriate adjustment strategies.

The China question

- ❖ *Will quotas on imports from a unified China and Hong Kong end, and, if so, what are the ramifications?*

Some observers believe that China's competitive strength is already so overwhelming that Chinese trade will need to be managed by international rules that

are completely separate from those that might emerge under a new GATT. The consistently very high levels of Chinese (and Hong Kong) quota utilization support this notion. The strength of a China unconstrained by quotas obviously matters in assessing future U.S. prospects.

On the other hand, China still has not entered GATT. Quotas thus could remain in place indefinitely, effectively capping the growth rate of imports from China.

The slowness of quick response

- ❖ *Why, if the quick-response payoff is so high, have so few companies established true quick-response partnerships? Is the industry too sluggish and divided? Is the payoff not that high? Or is it high for only a few product areas?*
- ❖ *Is the idea too new to have been understood and embraced by the technologically reticent apparel industry?*
- ❖ *How much does the U.S. domestic industry's limited ability to produce small fabric lots and short garment assembly runs constrain quick-response effectiveness?*
- ❖ *Are there serious technical barriers to partnership development?*

These quick-response issues are important in defining the long-term competitive viability of U.S. producers.

NAFTA/GATT connections

- ❖ *How will firms within a state, particularly those that already have Mexican or other Caribbean operations, respond strategically to the free trade agreement with Mexico, assuming the parallel approval of GATT?*
- ❖ *Would these strategic decisions change if the United States extends NAFTA signatory status to other Latin American and Caribbean Basin Initiative countries?*

NAFTA is a source of immediate concern because its effect on the domestic industry is likely to be felt sooner than that of the new GATT.

Air freight or wait?

- ❖ *How favorable are the economics of air freight for various products and various types of markets?*

While air freight's use clearly has expanded rapidly in the last few years, it is still a relatively new phenomenon, and its cost will vary widely from one location to another. For example, Federal Express and United Parcel Service rates from Hong Kong are considerably lower than rates from other East Asian countries. Also, the Defense Department's Defense Logistics Agency, which is actively developing a quick-response program for military procurement, found the use of air freight for quick response from Puerto Rico too expensive to justify.⁷¹ In general, however, we failed to identify any recently published studies that analyzed, in detail, air freight's applicability to various product/country sourcing combinations. Private consultants might have better data.

One dimension of the air freight issue a team should investigate is its use by U.S. apparel industry producers—now with lower wages than many of their European and Japanese competitors—to provide quick response cost-effectively to European and Japanese retailers.

APPENDIX A. SHORT PROFILES OF MAJOR SECTORS IN THE APPAREL INDUSTRY

This appendix presents background data on the yarnmaking, apparel fabric, clothing and retail sectors of the apparel complex. Specifically, it includes hard data on industry performance over the last 30 years, focusing on employment, productivity, industry structure, foreign competition; and changes in technology, production techniques and management. This information provides a context in which to understand and further explore the scenarios presented earlier in this guide.

The Textile Sector

For purposes of this study, the activities of interest within the textile mill product sector (SIC 22) are those that:

- ❖ produce yarn (SIC 228)
- ❖ produce/finish apparel fabric (SIC 221, 222, 223, 224, 2257 and 226)

STATISTICAL SOURCES

Unless otherwise noted, data on employment, number of companies and establishments, and industry concentration ratios are from the U.S. Census Bureau's Census of Manufactures and Annual Survey of Manufacturers. At the time of this writing, data on employment were available through 1989; data on number of companies and establishments, and on industry concentration ratios were available only through 1987.

Annual data on real output, real investment, real capital stock and multifactor productivity are from the Productivity Database. This database was developed jointly by the Census Bureau, Stanford Research Institute, the University of Pennsylvania and the National Bureau of Economic Research; it uses published census data and other publicly available data to estimate price-adjusted values for each of these measures. The available data span the period 1958-89. Here we use data for the 1960-89 period only, since 1960 and 1989 were peak years in the business cycle. (Economists prefer to use such similar end points to avoid, for instance, comparing employment levels during a recession with those of a rapidly growing economy.)

About 50 firms control slightly over half of all SIC 22 shipments. Many of these firms operate in a broad range of product areas—both apparel-related (such as yarn, broadwoven fabric and knit fabric) and non-clothing-related (for example, rugs, nonwoven fabric, upholstery filling and tire cord).⁷² These firms coexist with almost 5,000 smaller companies, most of which produce one or a small number of products.

Few textile firms produce clothing. Their relations with the clothing industry have traditionally been at arms' length, although recent trends indicate that textile and apparel firms will increasingly be drawn into more stable partnerships.

YARNMAKING SECTOR

Yarnmaking is the process of transforming raw fiber into a form suitable for fabric production. For cotton yarn, the process begins with the opening and blending of cotton bales to achieve the desired raw fiber type and quality. The cotton is then cleaned, prepared for spinning and spun into finished yarn. The process for producing man-made yarn is similar, but does not require such extensive front-end preparation.

About one-third of the yarn produced is sold to outside customers; producers consume the other two-thirds themselves in weaving, knitting or carpet manufacture. USITC reports that weaving firms produce about 90 percent of the yarn they use in weaving operations, while knitting firms produce only about 24 percent of the yarn used in their knitting operations. Most yarn sold for knitting use goes into knit apparel and accessories, such as hosiery, hats and gloves. In general, mills that produce knit fabric also produce the yarn.⁷³ Thus, data on the yarn sector, which includes only those establishments primarily making yarn for sale, considerably understate yarnmaking activity.

In 1987, the yarnmaking sector had about 400 operating companies with 600 establishments. Employment in 1989 totaled 102,000 workers.

TECHNOLOGICAL DEVELOPMENTS. Yarnmaking has experienced extremely rapid technological developments in recent years. Best-practice establishments now operate on an almost totally automated basis. At least two major innovations deserve mention:

- ❖ Automatic carding has greatly reduced the labor required to prepare raw cotton for processing into yarn. It has also improved workplace cleanliness and safety.
- ❖ New open-end spinning technology has increased spinning speeds for coarser yarn four to five times over conventional ring-spinning technology.⁷⁴

Both the speed and quality of ring spinning, which produces both coarse and finer yarns, also have increased significantly.

The diffusion of automatic carding has been very rapid; open-end spinning has been adopted less widely.⁷⁵ As a share of all cards, automatic cards rose from 31 percent in 1978 to 83 percent in 1988, according to census data. Such diffusion is partly due to the industry's need to address the health problem of brown lung disease, which is tied to the persistent inhalation of cotton dust. By contrast, only about 5 percent of spindles in operation in 1988 were open-end spindles; this percentage surely will rise significantly in the coming years.

In the 1980s, multifactor productivity growth in non-wool yarn mills—the sector that provides the vast majority of industry employment—far exceeded the average for the manufacturing sector. Growth averaged 1.5 percent annually, ranking this sector 102nd among 450 manufacturing sectors.⁷⁶

INDUSTRY CHANGES. In response to these technological changes, many observers and industry officials believe that workforce skill requirements have begun to rise significantly—and will continue to do so. Particularly important skills and abilities for industry workers include a sound mastery of basic math and reading, and the abilities to learn multiple tasks, to work well in teams and to perform basic process control activities with computerized equipment.

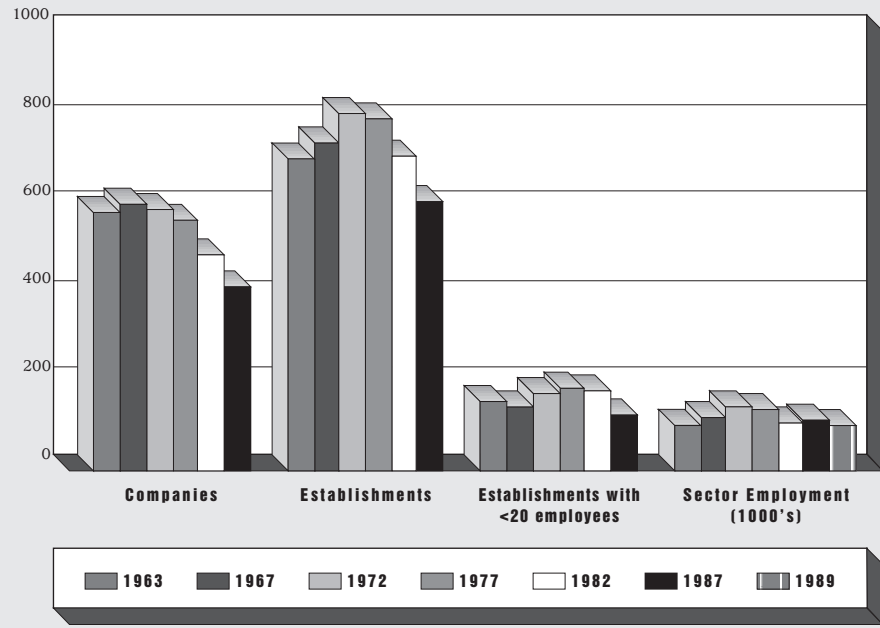
Other performance data reflect a pattern of changes that might be expected for a rapidly automating industry that is consolidating around fewer companies, fewer establishments and lower employment levels.

Employment fell from a peak of 157,000 in 1973 to its 1989 level of 102,000. The number of companies fell by almost a third since 1967, and the number of establishments by about 25 percent since 1977. (*See Figure A-1.*)

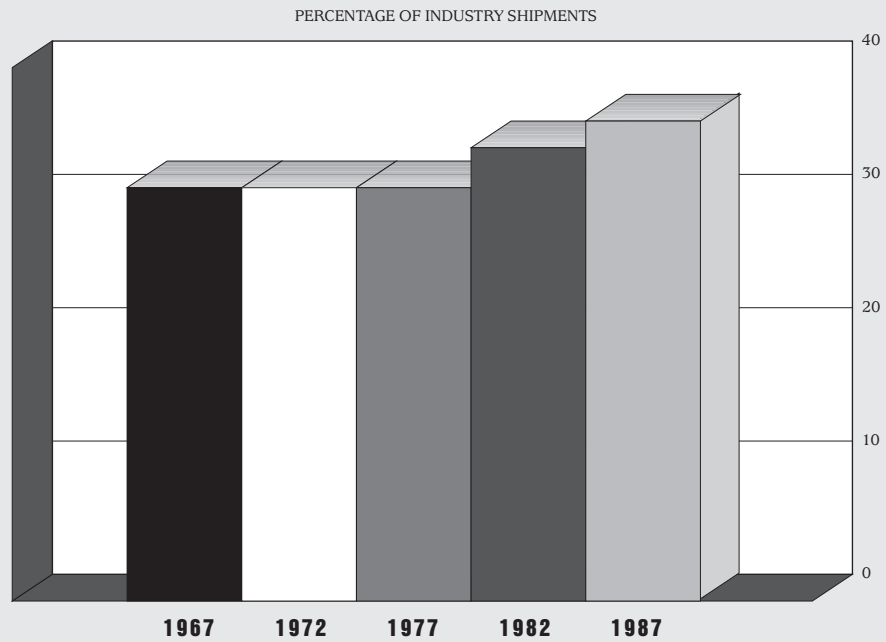
The eight-firm concentration ratio—that is, the percentage of total industry shipments accounted for by the industry's eight largest firms—in yarn mills (SIC 2281) held at about 30 percent in the 1970s. The ratio began to rise in the 1980s, exceeding 35 percent of shipments by 1987. (*See Figure A-2.*) The eight-firm ratios in throwing and winding mills (SIC 2282) and in thread mills (SIC 2284) are much higher: 64 percent and 74 percent, respectively.

In contrast to declines in employment and in the numbers of establishments and firms, total capital stock rose rapidly in the mid-1970s and has remained stable ever since. Real output is at historically high levels, and real investment between 1985 and 1989 was actually higher than in either of the preceding five-year periods. (*See Figure A-3.*)

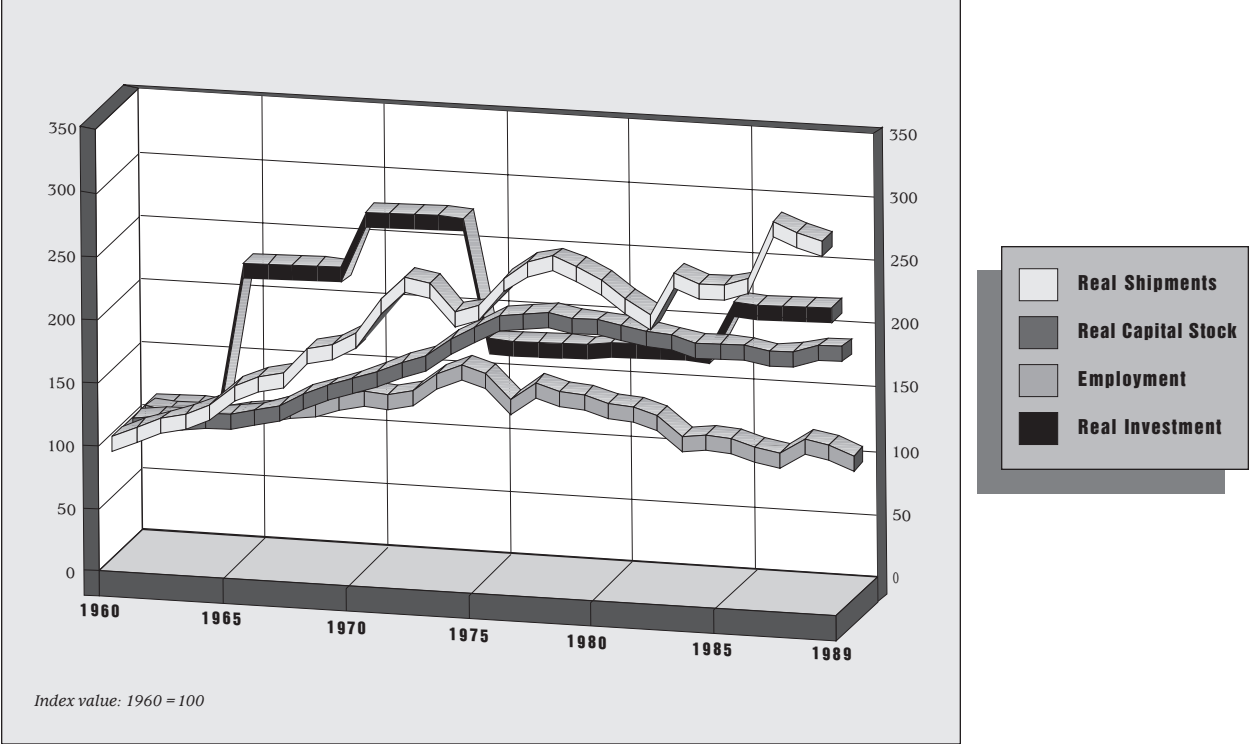
**FIGURE A-1. U.S. YARNMAKING SECTOR:
COMPANIES, ESTABLISHMENTS AND EMPLOYMENT, 1963-89**



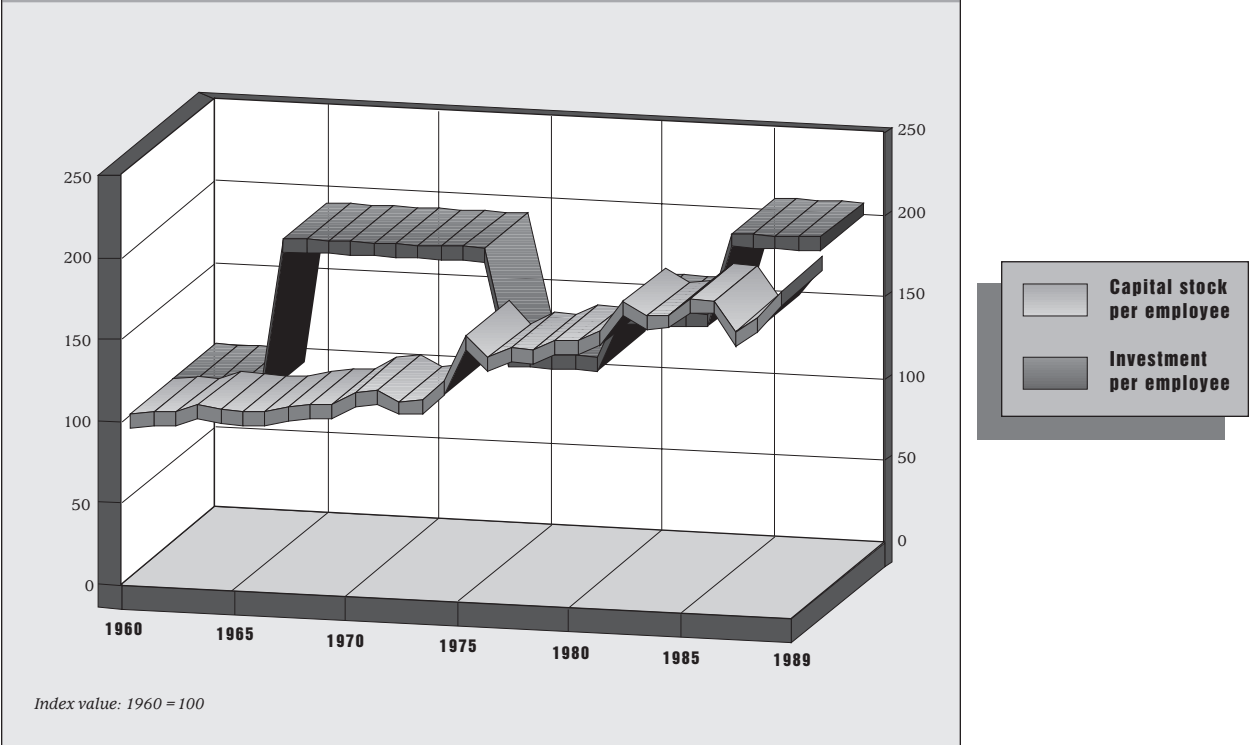
**FIGURE A-2. U.S. YARN MILLS:
EIGHT-FIRM CONCENTRATION RATIOS, 1967-87**



**FIGURE A-3. U.S. YARNMAKING SECTOR:
SELECTED INPUT AND OUTPUT MEASURES, 1960-89**



**FIGURE A-4. U.S. YARNMAKING SECTOR: CAPITAL STOCK AND
REAL INVESTMENT PER EMPLOYEE, 1960-89**



Given the marked employment decline, capital stock per employee and real investment per employee have risen to unprecedented levels. Average labor costs now account for only 17 percent of total costs (about the average for manufacturing firms); best-practice firms are well below that level. (See *Figure A-4*.)

FOREIGN COMPETITION. In the yarnmaking industry, import levels have remained low (3-5 percent) over the last two decades. In 1987, the United States enjoyed a modest international competitive advantage in yarn over major rivals in both the developed and developing world, according to the Relative Trade Advantage index, a measure of international competitiveness. Thus, the great bulk of recent employment losses is attributable to the combined influence of productivity increases, the expansion of yarnmaking capability in integrated fabric facilities and the loss of downstream customers (for example, weaving plants) to foreign competition.

While innovation in U.S. yarnmaking industry will continue, European and Japanese firms will largely shape the type and rate of innovation, at least for the foreseeable future. The U.S. textile machinery industry, once the world leader, is no longer competitive in most product lines.⁷⁷ And, due partly to leveraged buy-out activity in the 1980s, which greatly reduced the funds available for industry research, few U.S. textile or textile machinery firms now have independent R&D capabilities.

Relying on foreign-developed machinery, domestic firms must constantly upgrade their technology through machinery imports in order to remain competitive. Such dependence also implies that they lack whatever advantages may exist from close proximity to machinery producers. This situation makes for both vulnerability and opportunity during the next decade in all U.S. textile and clothing sectors.

Apparel Fabric Sector

Two sectors make most of the fabric used in apparel:

- the broadwoven fabric sector, which makes woven fabric on looms
- the knit fabric sector, which uses a completely different process called circular knitting

Both sectors use primarily cotton and man-made fibers. In 1989, man-made broadwoven fabrics accounted for 40 percent of total shipments from these two industries, cotton broadwoven was responsible for 25 percent, and knits for 19 percent.

DOES LACK OF A DOMESTIC MACHINERY INDUSTRY MATTER?

Whether the lack of a domestic machinery industry burdens domestic operations is a subject of some dispute. Based on case studies of several dozen industries, Michael Porter—in *The Competitive Advantage of Nations*—says proximity to world-class suppliers is critical to attaining and keeping world leadership.⁷⁸ It allows suppliers and buyers to interact frequently about buyer needs, and promotes a quicker diffusion of innovation to immediately surrounding areas.

Others say that foreign machinery producers, which are frequently corporate affiliates of textile manufacturers, will not routinely make the latest generation of machinery available to manufacturers in competitor nations, thus helping manufacturers in their own country maintain a competitive edge.

Domestic producers, however, don't see themselves as strongly disadvantaged by the lack of a domestic machinery industry, according to an International Trade Commission survey of U.S. firms in SIC 22.⁷⁹ And, in any case, many Japanese and European machinery firms have opened offices in the southeastern United States in order to be closer to their clientele.

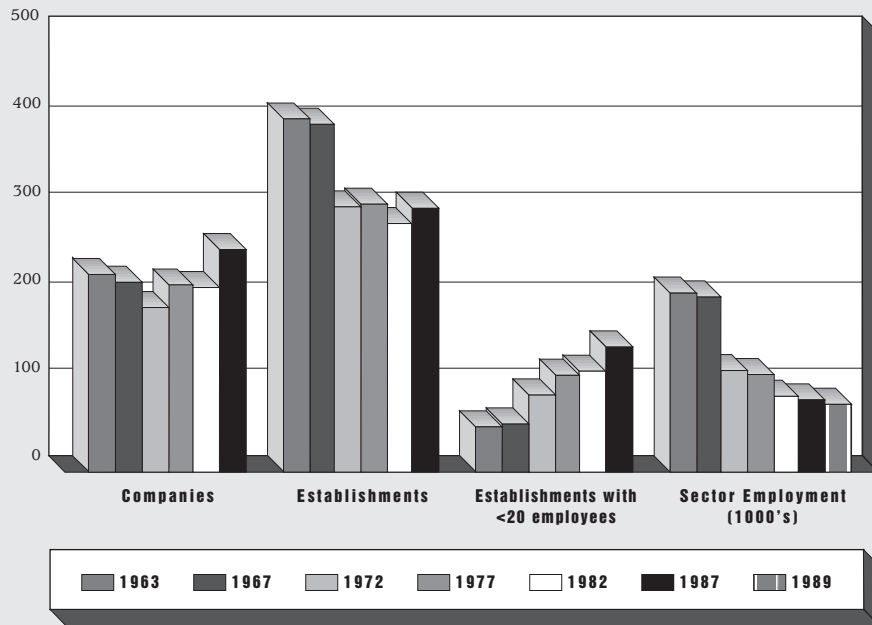
BROADWOVEN FABRIC SECTOR

The two primary broadwoven fabric sectors are the cotton and man-made broadwoven fabric mill sectors. Other broadwoven sectors include wool broadwoven fabric production, which employed only about 17,000 workers in 1989, and narrow fabric mills which employed another 18,000. We focus here on the two main sectors.

In 1987, the cotton sector, which produces fabric made primarily of cotton fibers, had 246 companies and 301 establishments; its 1989 employment was 67,000. (See *Figure A-5*.) In 1987, the man-made sector, which produces fabric made primarily of man-made fibers, had 315 companies and 436 establishments. In 1989, sector employment was 88,000. (See *Figure A-6*.)

Many larger companies have plants in both sectors, so figures on operating companies include some double-counting. Also, plants can switch from making primarily man-made to primarily cotton fabric without great difficulty; thus, the cotton—man-made mix is elastic.

**FIGURE A-5. U.S. COTTON BROADWOVEN FABRIC SECTOR:
COMPANIES, ESTABLISHMENTS AND EMPLOYMENT, 1963-89**



**FIGURE A-6. U.S. MAN-MADE BROADWOVEN FABRIC:
COMPANIES, ESTABLISHMENTS AND EMPLOYMENT, 1963-89**

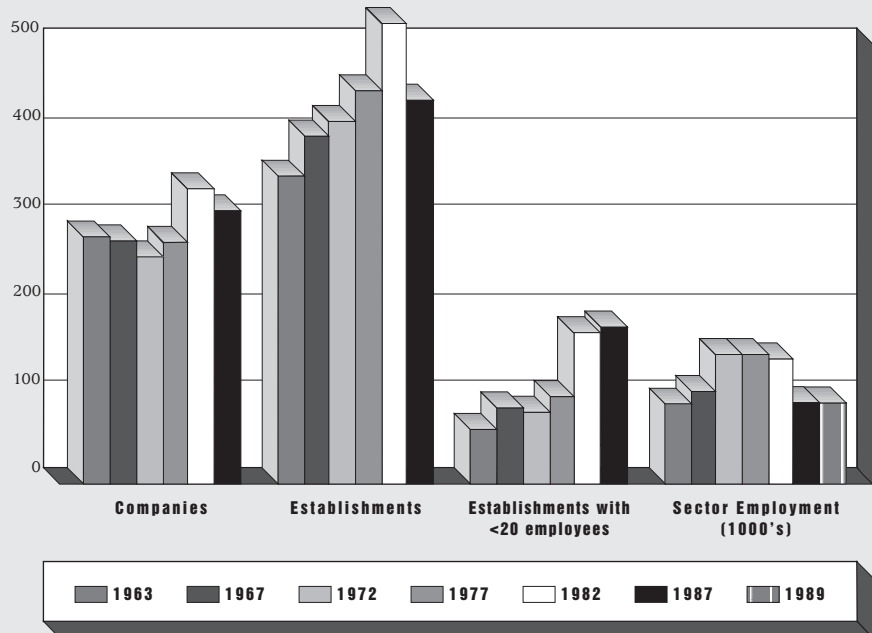


FIGURE A-7. U.S. COTTON AND MAN-MADE BROADWOVEN FABRIC SECTOR: SELECTED INPUT AND OUTPUT MEASURES, 1960-89

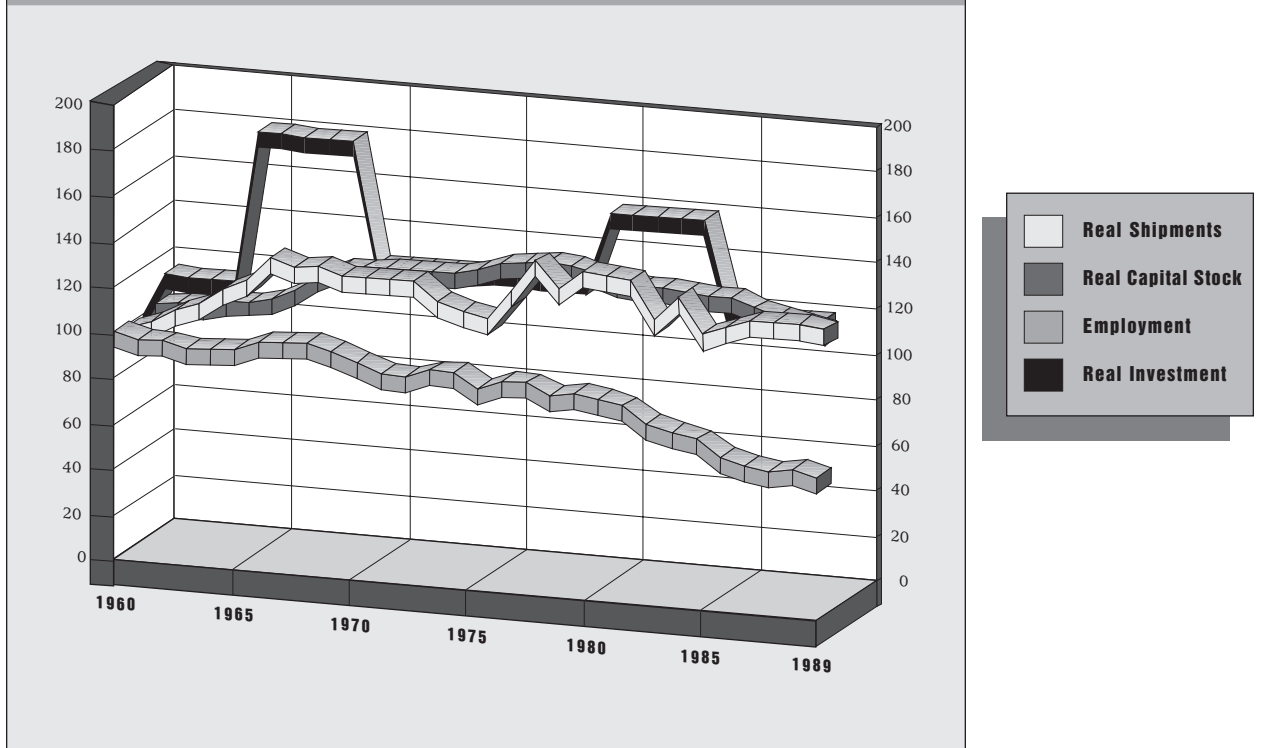
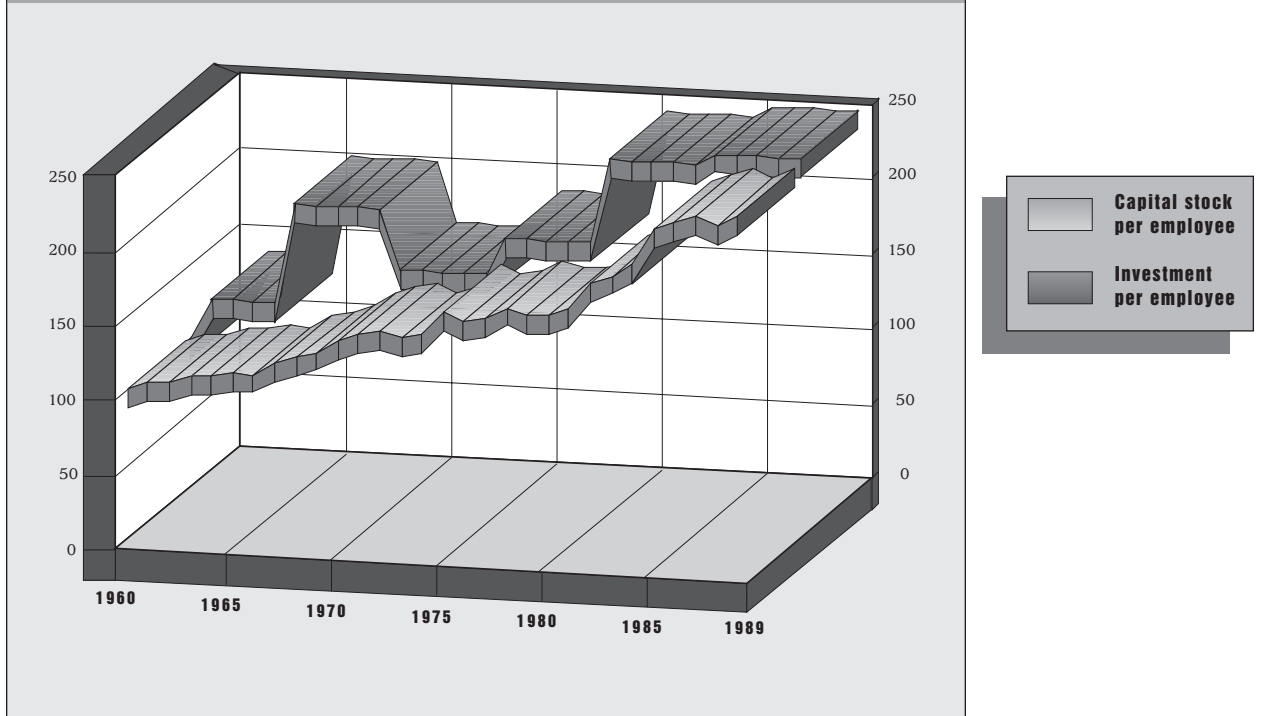


FIGURE A-8. U.S. COTTON AND MAN-MADE BROADWOVEN FABRIC SECTOR: CAPITAL STOCK AND REAL INVESTMENT PER EMPLOYEE, 1960-89



INDUSTRY CHANGES. Total weaving employment has fallen by about half since 1960, 40 percent of this drop occurred since 1979. (See *Figure A-7*.) While cotton employment has followed a long downward trend, man-made employment surged through the early 1970s as consumers switched to man-made fabrics or blends. Since then, however, man-made employment has dropped back sharply to its 1963 level.

Along with employment, real output and capital stock fell from their peaks in the late 1970s. Most of this drop occurred in the cotton sector, but man-made capital stock has fallen each year since its peak in 1985. Average annual real investment in 1985-89 also was lower than in either of the two previous five-year periods.

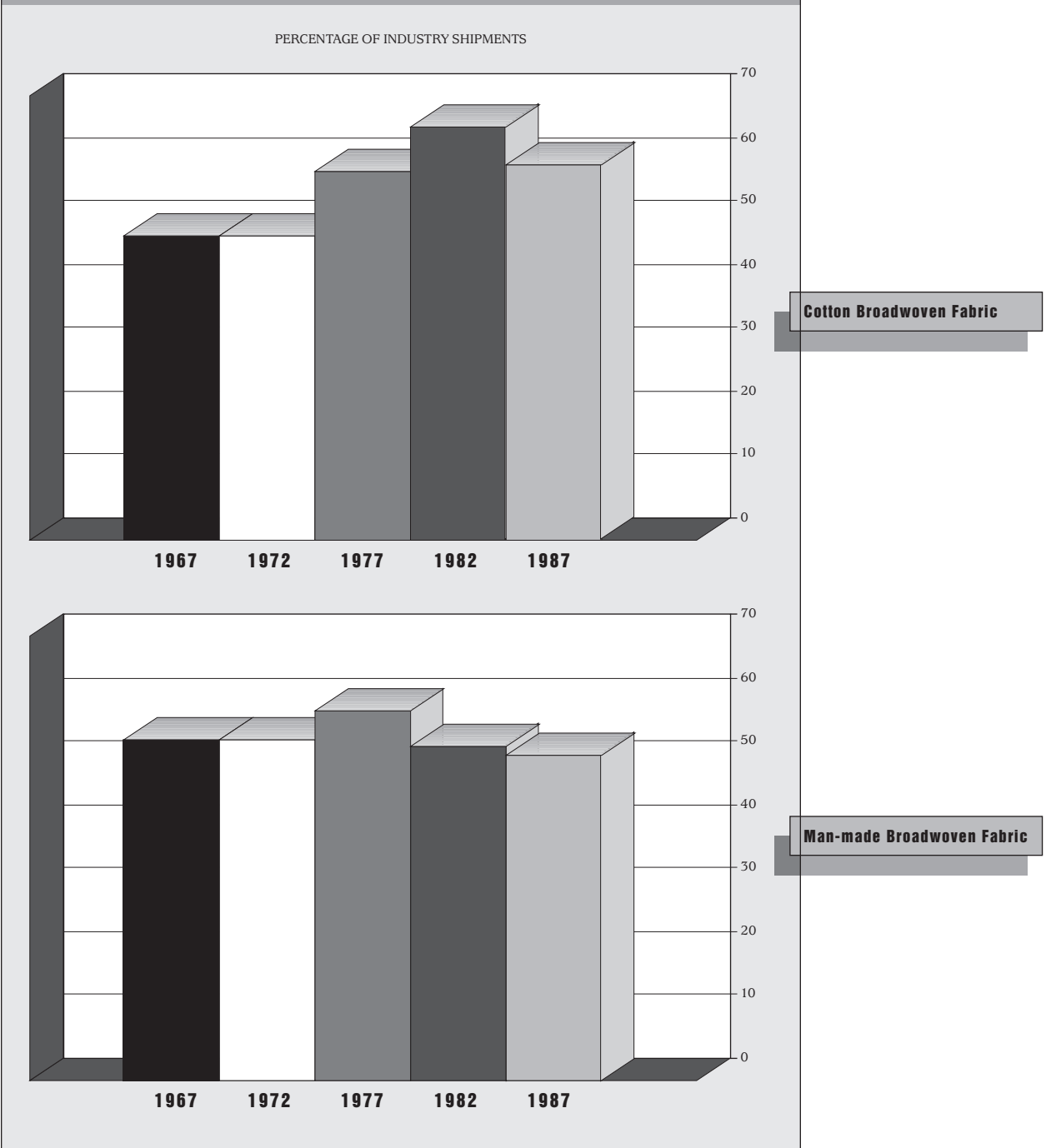
Steadily, the industry has become more capital-intensive as employment declines have more than offset the drop in either investment or capital stock. Average real investment per employee during the 1985-89 period was more than 30 percent higher than in 1975-79, and 1989 capital stock per employee was 45 percent higher than in 1979. (See *Figure A-8*.)

Despite the industry's downsizing and increased capital intensity, the total number of establishments in 1987 was about the same as in 1977, and the number of companies operating in each sector actually increased. Moreover, the share of establishments with fewer than 20 employees rose sharply—from 29 percent in 1977 to 43 percent in 1987—and the share of industry employment and capital investment in establishments with 500 or more employees fell from more than 70 percent to below 60 percent between 1977 and 1987. The eight-firm concentration ratio in the man-made sector fell several percentage points, though it remained about the same in the cotton sector. (See *Figure A-9*.)

Some analysts suggest that this pattern reflects the increasing competitive advantage of small, flexible establishments that specialize in producing limited-run lots of fabric (less than 5,000 yards) customized to individual client needs.⁸⁰ (Competing foreign producers, such as the Japanese and Italians, also have targeted this market niche.)

This niche exists, analysts believe, because large companies consider it substantially more profitable to produce only longer runs of fabric—10,000 yards or more. The logic is that producing longer runs minimizes the considerable production downtime that results when yarn type, fabric texture, color or finishing process are changed frequently—which is what short runs require—and avoids the difficulty of adapting long-run production machinery to multiple short-run applications. The inflexibility exhibited by long-run-only producers, the argument concludes, compromises competitiveness in an international marketplace that is increasingly oriented to customer needs and smaller batches.

FIGURE A-9. U.S. COTTON AND MAN-MADE BROADWOVEN FABRIC SECTORS: EIGHT-FIRM CONCENTRATION RATIOS, 1967-87



On the other hand, the growth in the number of small establishments may simply reflect a general trend toward downsizing that reshaped the industry between 1977 and 1987.

Published census data are not very helpful in solving this riddle. While the data show how the shape of the establishment size distribution changed between

census years, they show nothing about establishment births, deaths, expansions or contractions. Thus, their meaning is ambiguous. So, for example, the rise in the share of establishments with fewer than 20 employees between 1977 and 1987 could be due to any one or a combination of several factors, including:

- ❖ the reclassification of establishments that had more than 20 employees in 1977 but lost enough employment during the next decade to fall below that level
- ❖ a high birthrate of establishments with fewer than 20 employees
- ❖ a high death rate among larger establishments
- ❖ data problems.

Anecdotal evidence also suggests that, in recent years, larger companies have become more willing to produce shorter fabric runs—such as 2,000-5,000 yards—in response to changing market conditions.

In the 1980s, recession and intense leveraged buyout activity greatly weakened many of the largest firms. Thus, evidence of deconcentration also may reflect a one-time industry restructuring, not a longer-term trend driven by rising market segmentation and an increasing need for flexibility.

TECHNOLOGICAL DEVELOPMENTS. The industry's rising capital intensity reflects, in part, the incorporation of significant increases in automation and process speeds. Particularly noteworthy is the introduction of the shuttleless loom, the newer versions of which operate three-to-four times faster than the fastest shuttle looms.⁸¹ In just the last five years, the average number of square yards produced per loom hour has jumped by almost two-thirds.⁸² Fabric width and quality also have increased substantially: One operator reports that his "seconds-quality" (flawed) cloth fell from 10-15 percent of output to 2-3 percent after the arrival of shuttleless looms.⁸³ Moreover, the impact of the shuttleless loom's diffusion will continue to be felt for some time, as only about half of U.S. looms operating in 1988 were shuttleless.⁸⁴

In the 1990s, operating speeds will continue to increase, and the production process will rely on more computerized control and monitoring and automated materials handling. Concurrently, decisionmaking structures within the plant will be reorganized, and worker skill requirements will increase.

Labor-cost disadvantages may become a secondary factor in U.S. competitiveness. In fact, many observers view the industry as already relatively immune to foreign competition that is grounded solely in low wage rates.

Despite impressive technical advances in the 1980s, however, some believe the industry may be losing technological momentum. Multifactor productivity growth in the man-made sector averaged just 0.2 percent annually in the 1980s, ranking the sector 249th among 450 manufacturing sectors. Hence, at the very least, the considerable progress in weaving technology likely brought along commensurate increases in capital costs.

The cotton sector's multifactor productivity growth was much better: a 2.2-percent annual rate, and a ranking of 68. This increase may be linked, however, to the one-time abandonment of less efficient plants in the face of recession and a significant loss of market share to foreign competition.

FOREIGN COMPETITION. During the 1980s, foreign competition continued to weaken both the cotton and man-made fabric industries, but the effect varied greatly between the two. In the cotton broadwoven sector, imports (measured in yards of fabric with more than 85-percent cotton content) rose from below 10 percent of the market in the 1970s to 45 percent in 1990. The origin of U.S. cotton fabric imports has changed dramatically over the last 20 years, with the industrialized countries ceding shares to less industrialized nations. (See Figure A-10.)

Based on the Relative Trade Advantage measure, China holds a very strong competitive position in cotton fabric; Multifiber Agreement quota-fill data for 1989 support that conclusion. China's cotton fabric exports to the United States were almost twice that of any other country subject to quota restraints; it filled almost all quota allocations in each subproduct category.

Of the four next-largest exporters, none used as much as 90 percent of their allocations in any one category. China's competitive potential suggests that, despite recent and anticipated reductions in labor content, the U.S. cotton fabric sector still may be vulnerable to market erosion.

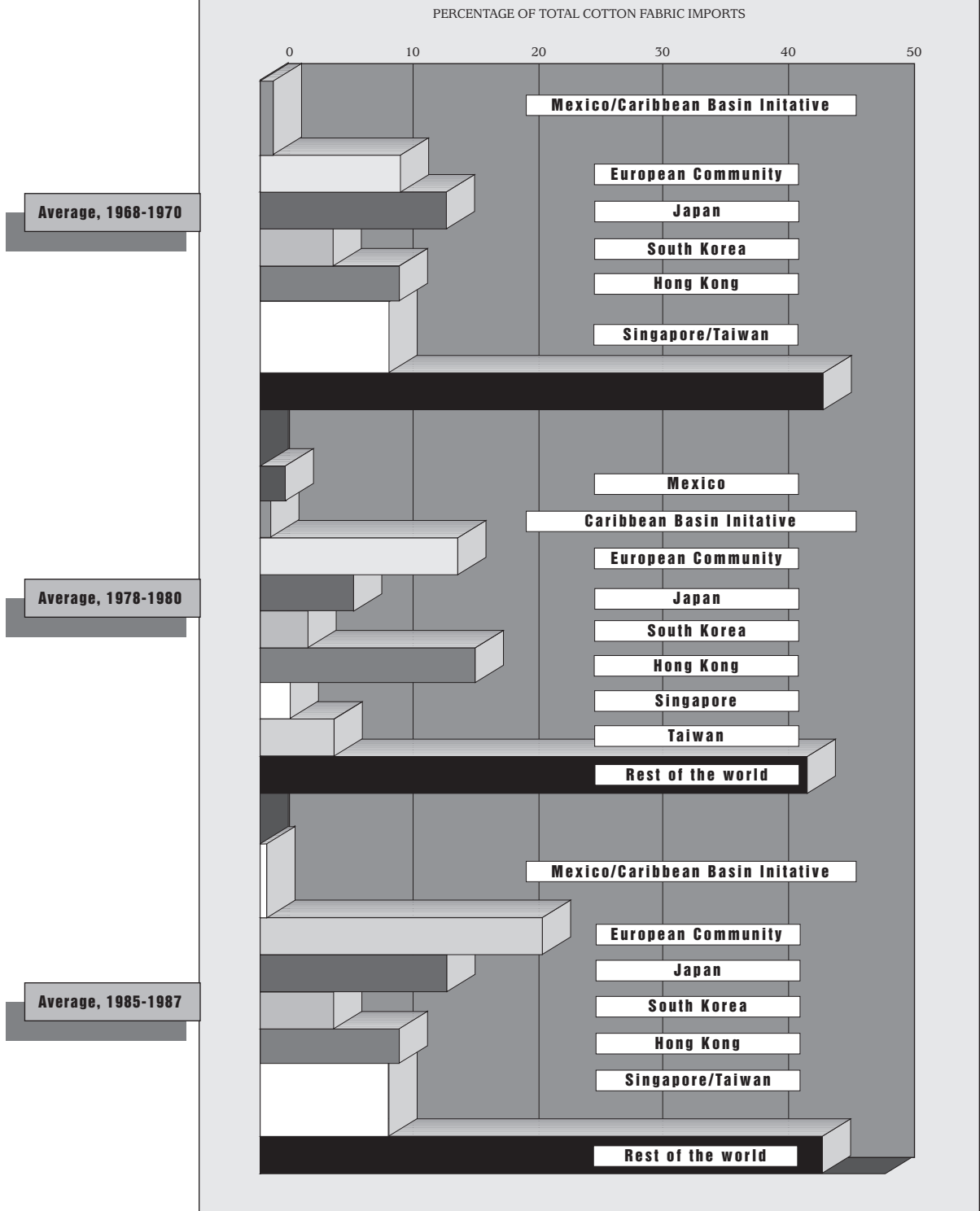
Like the cotton sector's, the international position of the non-cotton, primarily man-made, apparel fabric industry also deteriorated in the 1980s. But there the similarity with the cotton sector ends. For although the rate of import penetration rose for man-made fabric, it remained low overall and was much lower than for the cotton sector. As measured in yards of man-made fabric, imports rose from below 5 percent to about 10 percent of the market in 1989 and 1990.

Also, import origin for man-made fabric is quite different from that of cotton broadwoven imports. Between 1985 and 1987, an average of 62 percent of non-cotton fabric imports originated in either Europe or Japan. (See Figure A-11.) This

WHAT IS QUOTA-FILL DATA?

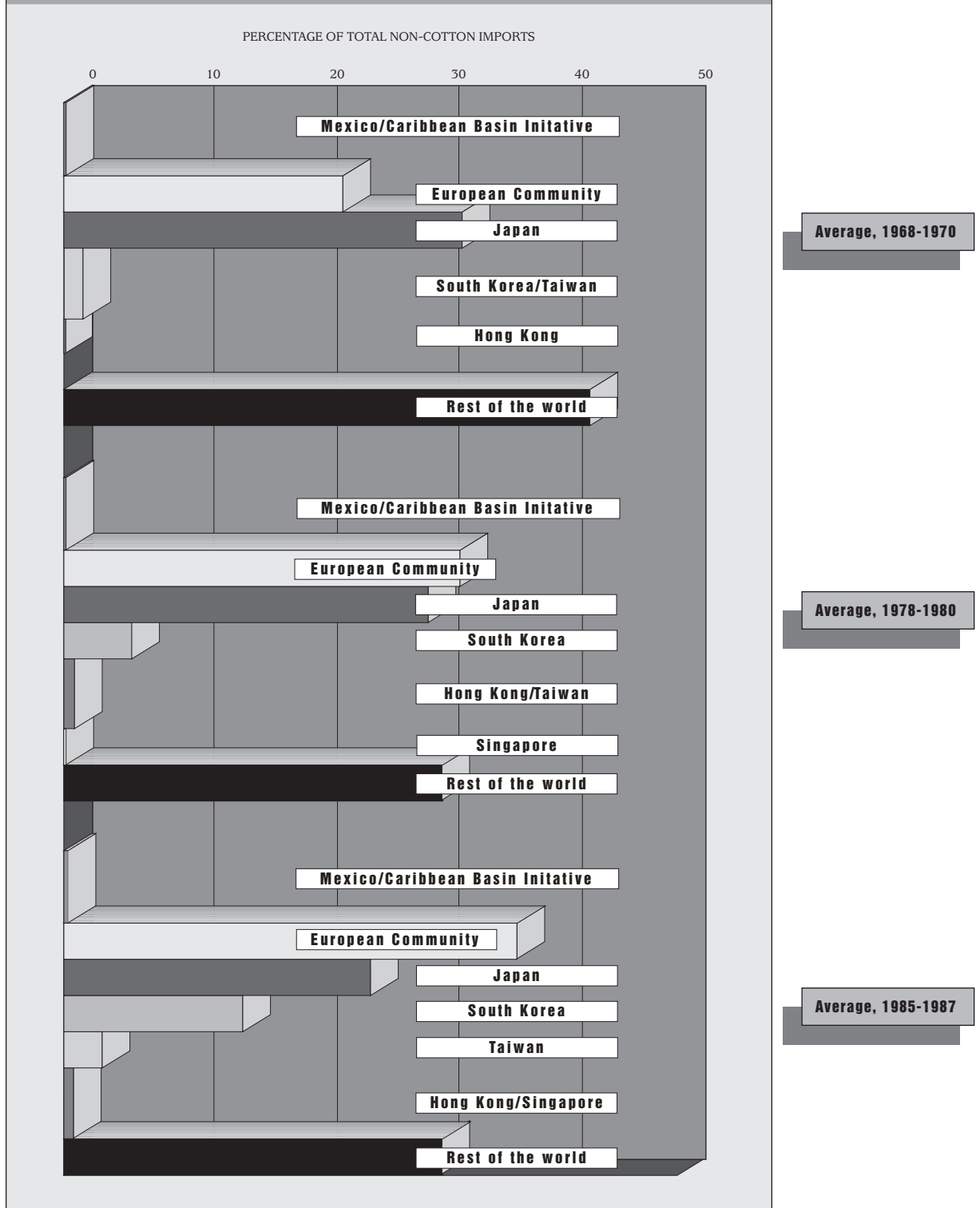
Quota fill refers to the percentage of a country's quota allocation under the Multifiber Agreement that is actually used during the period of the agreement. These data are compiled by the International Trade Administration of the U.S. Department of Commerce. Here we use 1989 data since that was the peak year in the business cycle; also, by 1989, the dollar had devalued to what many observers felt was a much more "normal" rate.

FIGURE A-10. GEOGRAPHIC ORIGIN OF U.S. COTTON FABRIC IMPORTS: SELECTED AVERAGES, 1968-87



percentage is about six points higher than the 1968-70 average and the same as the 1978-80 average.

FIGURE A-11. GEOGRAPHIC ORIGIN OF U.S. WOVEN TEXTILE (NON-COTTON) IMPORTS: SELECTED AVERAGES, 1968-87



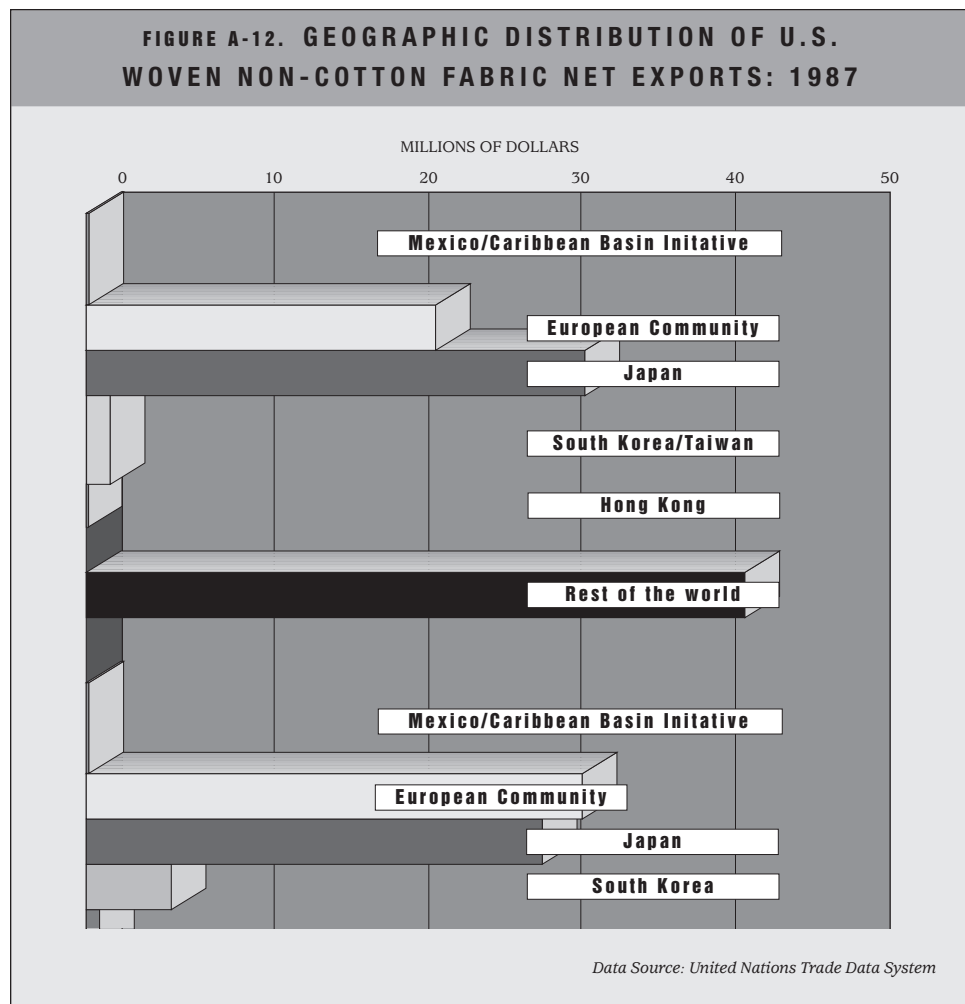
In other words, most man-made fabric imports originate in countries with higher labor operating costs. Examining U.S. net exports—U.S. imports minus ex-

ports—of woven non-cotton fabric demonstrates this point. (See Figure A-12.) Moreover, these higher-wage countries have increased their share of U.S. man-made fabric imports in the last 20 years.

The Relative Trade Advantage Index further highlights this dichotomy. Unlike cotton fabric, in which China held an overwhelming advantage, Italy and Japan were international leaders in man-made fabric, along with China and South Korea. (Taiwan also is generally viewed as a world leader, but comparable world trade data for Taiwan were not available.)

Quota-fill data also show a strong advantage for Japan among countries covered by quotas in 1989—the last year in which Japan was subject to quota restraints. Imports to the United States from Japan were almost twice as high as those of the next largest U.S. supplier, South Korea.

The quota-fill data further illustrate the relative U.S. strength in man-made (compared to cotton) fabric. In man-made fabric, Chinese and Taiwanese exports



to the United States clustered in sectors that account for a relatively small share of total U.S. production. In cotton fabric, however, the structure of imports covered a wide range of products, resembling the overall structure of U.S. production.

This does not imply that China and Taiwan are somehow incapable of assuming much stronger positions in U.S. man-made fabric markets, but rather that U.S. man-made fabric producers now enjoy relatively good competitive positions in their home markets in most product areas.

The predominance of man-made fabric imports from industrialized nations tends to support the “inflexibility” position outlined above. But the low aggregate import penetration ratio—that is, the low level of man-made fabric imports compared to total U.S. consumption of man-made fabric—suggests that the problem is, for now, not critical to continued U.S. competitiveness in the man-made fabric sector. (It may, however, influence the competitiveness of U.S. clothing producers.)

NAFTA may create a serious strategic challenge for the U.S. industry, although the new GATT will clearly put many more balls in the air. As discussed under the Tequila Sunset Scenario, a big shift of clothing jobs to Mexico or other low-wage hemispheric competitors would pressure U.S. textile producers to establish operations there. The pressure would arise not only—or even primarily—from labor-costs savings, but from an enhanced ability of Mexican-based facilities to serve Mexican-based clothing operations. This chain of events would represent a classic case of what economists call “backward linkage” from clothing into fabric/yarn production.

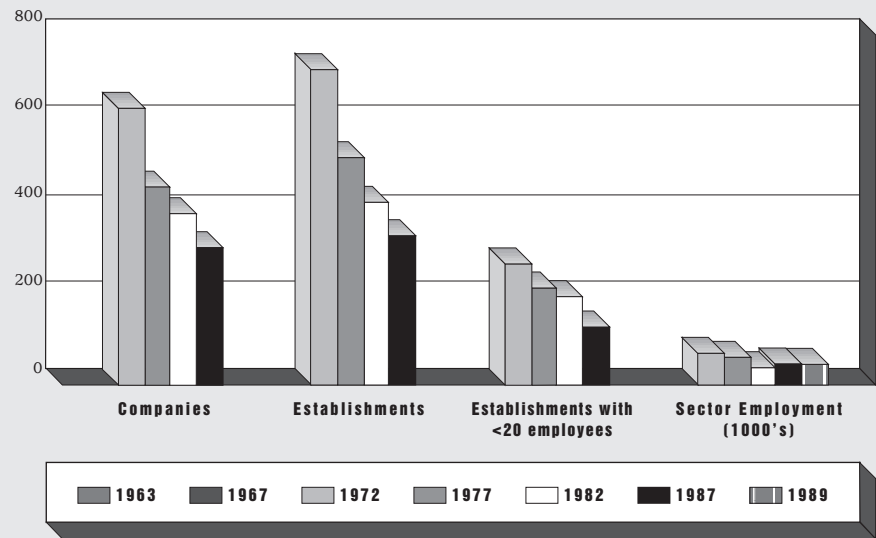
If U.S. producers don't respond to this pressure, they will grow vulnerable to Far Eastern or European capital inflows into Mexican fabric production—something that, in any event, NAFTA will encourage by eliminating U.S. tariffs and quotas on fabric imports from Mexico.

KNIT FABRIC SECTOR

The major source of knit fabric for apparel use is the circular knit fabric industry. It produces knit fabric by looping yarn into a series of interconnected loops, rather than interlacing strands of yarn as in weaving. The knit fabric sector had 305 companies and 334 establishments in 1987; it employed 34,000 workers in 1989. (See *Figure A-13*.)

INDUSTRY CHANGES. The industry had superb productivity growth over the last 30 years, averaging 2.9 percent annually in the 1980s (ranking 36th), and 2.2 percent over the 1960-89 period (ranking 32nd). The industry is now highly automated, and enjoys “high future prospects of more automation.”⁸⁵ Labor costs averaged 16 percent of unit costs in 1989, matching the average for all manufacturing.

**FIGURE A-13. U.S. KNIT APPAREL FABRIC SECTOR:
COMPANIES, ESTABLISHMENTS AND EMPLOYMENT, 1972-89**



**FIGURE A-14. U.S. KNIT APPAREL FABRIC SECTOR:
EIGHT-FIRM CONCENTRATION RATIOS, 1972-87**

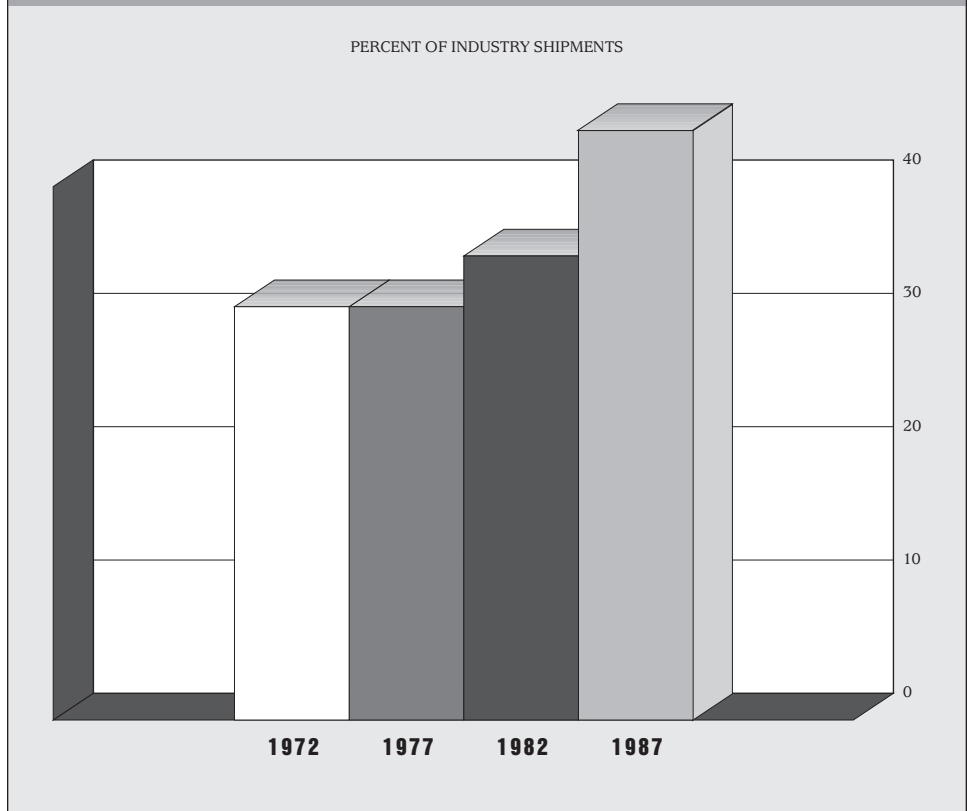


FIGURE A-15. U.S. KNIT APPAREL FABRIC SECTOR: SELECTED INPUT AND OUTPUT MEASURES, 1960-89

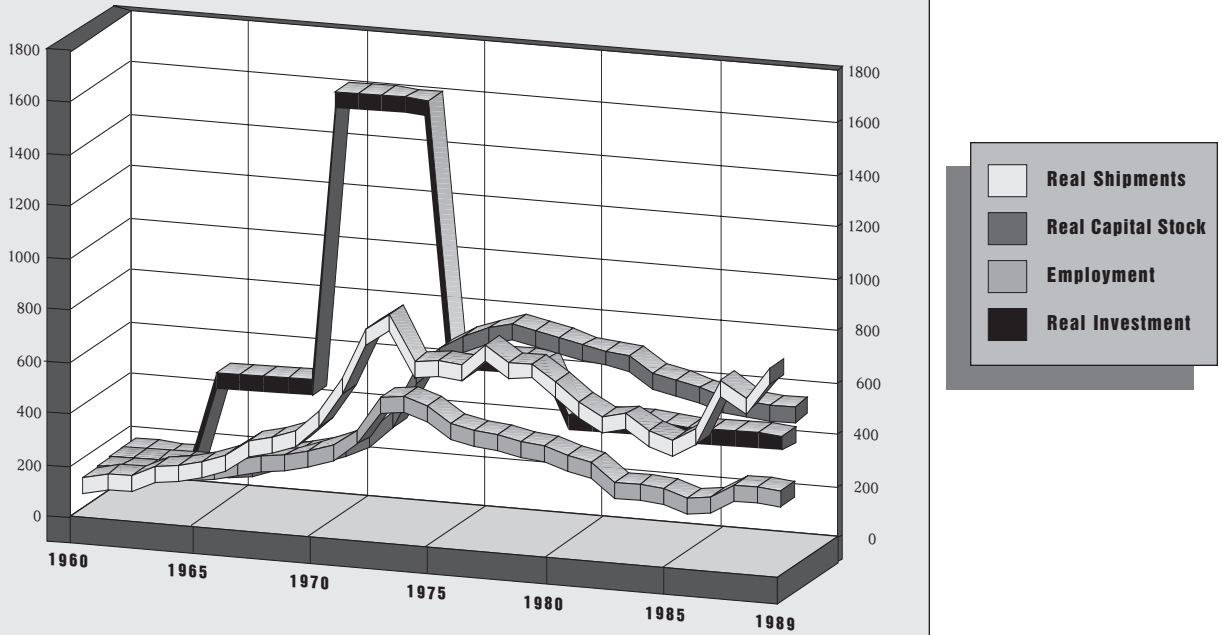
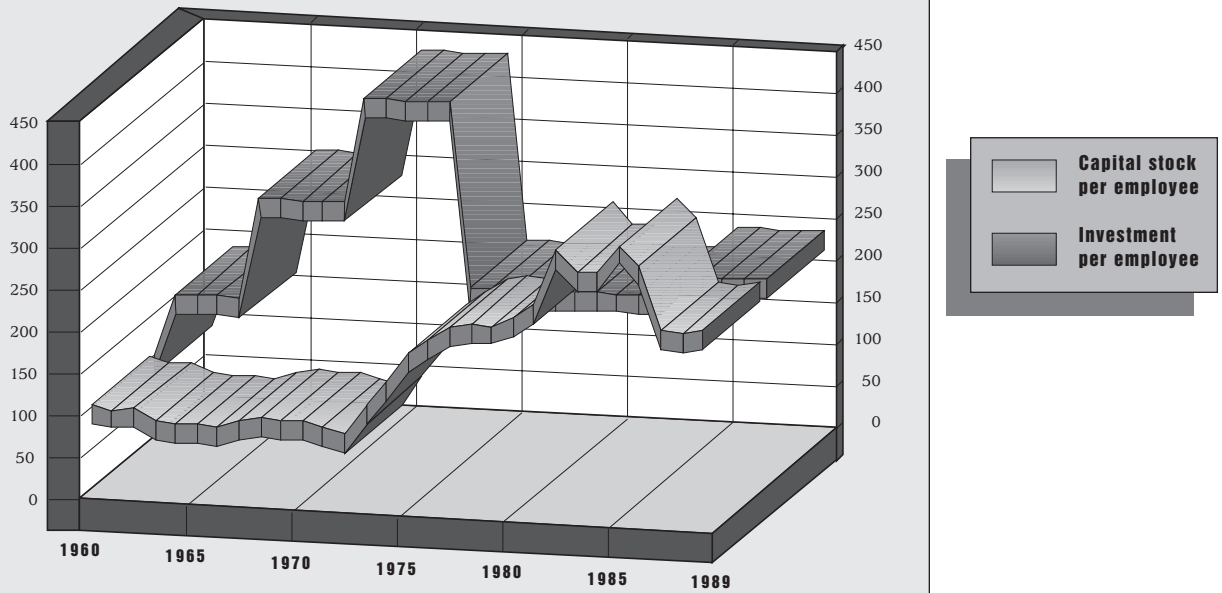


FIGURE A-16. U.S. KNIT APPAREL FABRIC SECTOR: CAPITAL STOCK AND REAL INVESTMENT PER EMPLOYEE, 1960-89



The industry grew spectacularly in the early to mid-1970s as knit apparel, such as the leisure suit, became very popular. In fact, from 1967 to 1977, capital stock nearly quintupled.

As the industry has contracted, it has consolidated around a few large firms. From 1972 to 1987, the number of companies and establishments in the sector fell by more than half. And from 1977 to 1987, both four- and eight-firm concentration ratios rose rapidly. Eight firms now control almost half of the industry's shipments. (See *Figure A-14*.)

As the appeal of knit fashions subsequently waned, so did capital stock and employment. (See *Figures A-15 and A-16*.) But today's preference for knit active-wear, and an increase in exports following the dollar's devaluation in the mid-1980s, has sparked a sharp rise in real shipments in the last few years.

Imports of knit fabrics have remained very low over the years. In 1989, imports were just 1 percent of domestic consumption, and the knit fabric sector as a whole enjoyed a modest trade surplus.

Continuing contraction in the domestic knit clothing industry seems a much greater threat to the knit fabric industry. Many knitwear products have very high rates of import penetration, and those rates probably will increase with trade liberalization. Without a major growth in exports, domestic producers seem likely to face shrinking demand for their output.

The Clothing Sector

The clothing sector is a subset of SICs 22 and 23. It produces finished clothing articles by sewing together pieces of cut broadwoven or knit fabric, or by forming knit garments directly from yarn with little or no additional sewing (for example, women's hosiery.)

SEWN-CLOTHING SECTOR

In 1987, the sewn-clothing sector included about 16,000 companies and 17,000 establishments, the latter with an average size of about 50 employees. (See *Figure A-17*.) In most product areas, the percentage of 1987 shipments accounted for by the top four firms was below 20 percent.

Across all shipments from SIC 23 firms (no separate concentration ratio is available for clothing only), the top 50 firms accounted for less than one-third of total

BRANCHES OF THE SEWN-CLOTHING SECTOR (KNIT AND WOVEN)

- SIC 2253 Knit outerwear mills
- SIC 2311 Men's, youths' and boys' suits, coats and overcoats
- SIC 2321 Men's, youths' and boys' shirts (except work shirts), collars and nightwear
- SIC 2322 Men's, youths' and boys' underwear
- SIC 2323 Men's, youths' and boys' neckwear
- SIC 2327 Men's, youths' and boys' separate trousers
- SIC 2328 Men's, youths' and boys' work clothing
- SIC 2329 Men's, youths' and boys' clothing, not elsewhere classified
- SIC 2331 Women's, misses' and juniors' blouses, waists and shirts
- SIC 2335 Women's, misses' and juniors' dresses
- SIC 2337 Women's, misses' and juniors' suits, skirts and coats (except for coats and raincoats)
- SIC 2339 Women's, misses' and juniors' outerwear, not elsewhere classified
- SIC 2341 Women's, misses', children's and infants' underwear and nightwear
- SIC 2342 Corsets and allied garments
- SIC 2361 Girls', children's and infants' dresses, blouses, waists and shirts
- SIC 2363 Girls', children's and infants' coats and suits
- SIC 2369 Girls', children's and infants' outerwear, not elsewhere classified
- SIC 2381 Dress and work gloves, except knit and all-leather
- SIC 2384 Robes and dressing gowns
- SIC 2385 Raincoats and other waterproof outer garments
- SIC 2386 Leather and sheep-lined clothing
- SIC 2387 Apparel belts
- SIC 2389 Apparel and accessories, not elsewhere classified
- SIC 2395 Pleating, decorative and novelty stitching, and tucking for the trade
- SIC 2397 Schiffii machine embroideries

shipments. These market share ratios do not include imports; thus, the percentage of total domestic consumption controlled by the top four or eight domestic firms is generally far less than these ratios would suggest.

In 1987, within SIC 23 as a whole, establishments with 100-500 employees comprised only 11 percent of establishments, but accounted for 49 percent of the employment. Establishments with more than 500 employees accounted for fewer than 1 percent of establishments, but made up 16 percent of employment.⁸⁶ Thus, the largest 12 percent of establishments (fewer than

3,000 establishments) accounted for about two-thirds of total sector employment. Moreover, six four-digit SIC industries, which accounted for about 15 percent of total clothing employment, had four-firm concentration ratios of 40 percent or more.

INDUSTRY STRUCTURE. An unknown share, but possibly a majority, of clothing firms act principally as contractors or subcontractors to one or two other large clothing companies. Among these larger clothing firms are several dozen multinational manufacturers with sales of more than \$100 million a year; these companies produce varied product lines, and generally have operations in other nations. As Schroer and Ziemke explain:

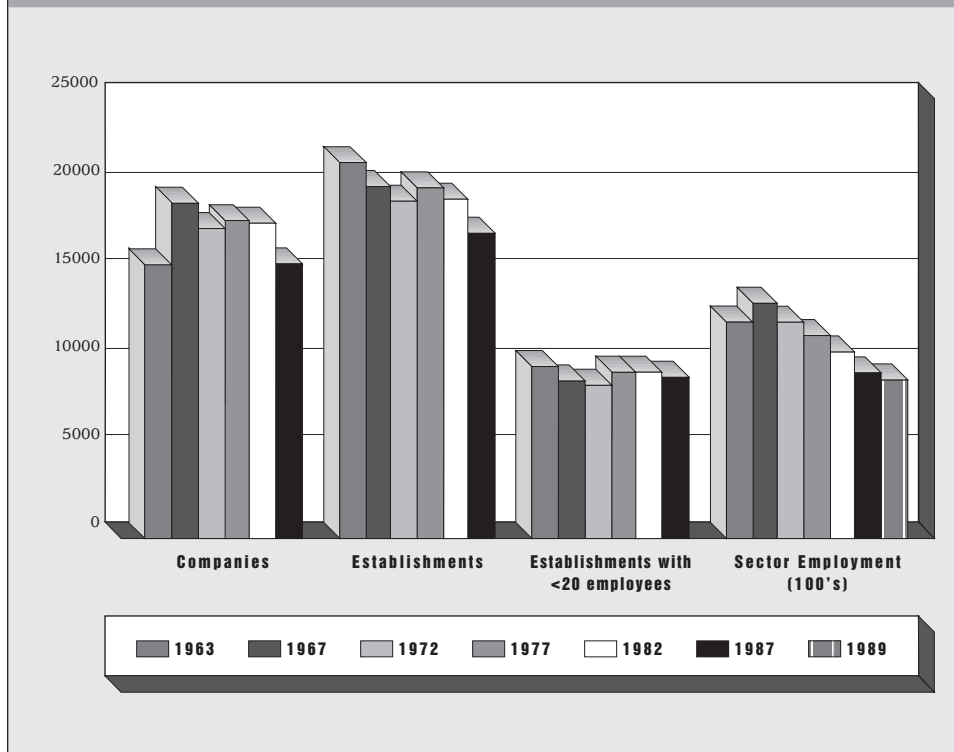
SOURCING CONFIGURATIONS: WHO PRODUCES THE CLOTHES?

Domestic clothing manufacturers use a number of different production strategies. Some produce goods in their own domestic or foreign plants. Others, lacking their own production facilities, hire domestic or foreign contractors and subcontractors to produce clothing according to design specifications. This strategy—used, for example, by the very successful Liz Claiborne Company—reduces fixed investment costs and increases flexibility; however, it's normally a higher-cost option.

Most clothing firms that own their own plants also contract out some work to smaller firms in order to increase their total production capacity, or to produce a garment that they don't produce themselves. When apparel firms subcontract, they normally supply at least product samples, specifications and deadlines to the subcontractor; they also may provide fabric, garment trim and/or cut pieces for assembly.

Outward processing is another sourcing variation. For this process, a foreign factory receives and assembles pieces of fabric cut in the home country, and returns the finished garment to that country. U.S. and European development programs have spurred the use of this option as a means of giving home producers access to much cheaper assembly labor. For example, under the U.S. Caribbean Basin Initiative's 807A program for apparel, producers of garments assembled in Caribbean countries from cut pieces of U.S. fabric pay U.S. tariff duties only on the value added in assembly—not on the full value of the garment. A similar "Special Regime" of trade regulations—now superseded by NAFTA—governed trade with Mexico under the Maquila program.

**FIGURE A-17. U.S. SEWN-CLOTHING SECTOR:
COMPANIES, ESTABLISHMENTS AND EMPLOYMENT, 1963-89**

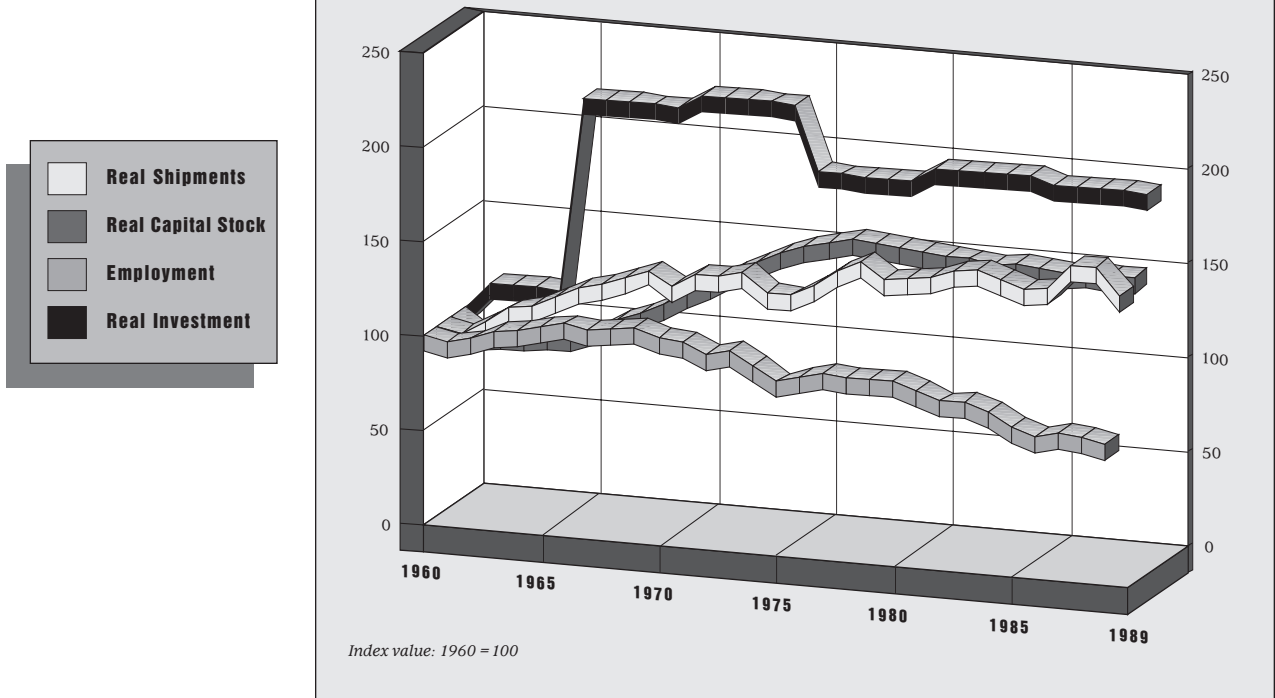


There is a significant distinction between the apparel producers called “manufacturers” and those called “contractors.” Manufacturers own their fabric and other production materials and usually sell their finished goods to wholesalers and retailers. However, contractors work for manufacturers or jobbers and usually do not own the materials that they use to make apparel. Subcontractors usually provide an apparel finishing operation such as dyeing or pressing. In general, contractors and subcontractors represent the majority of the smaller firms in the industry . . .”⁸⁷

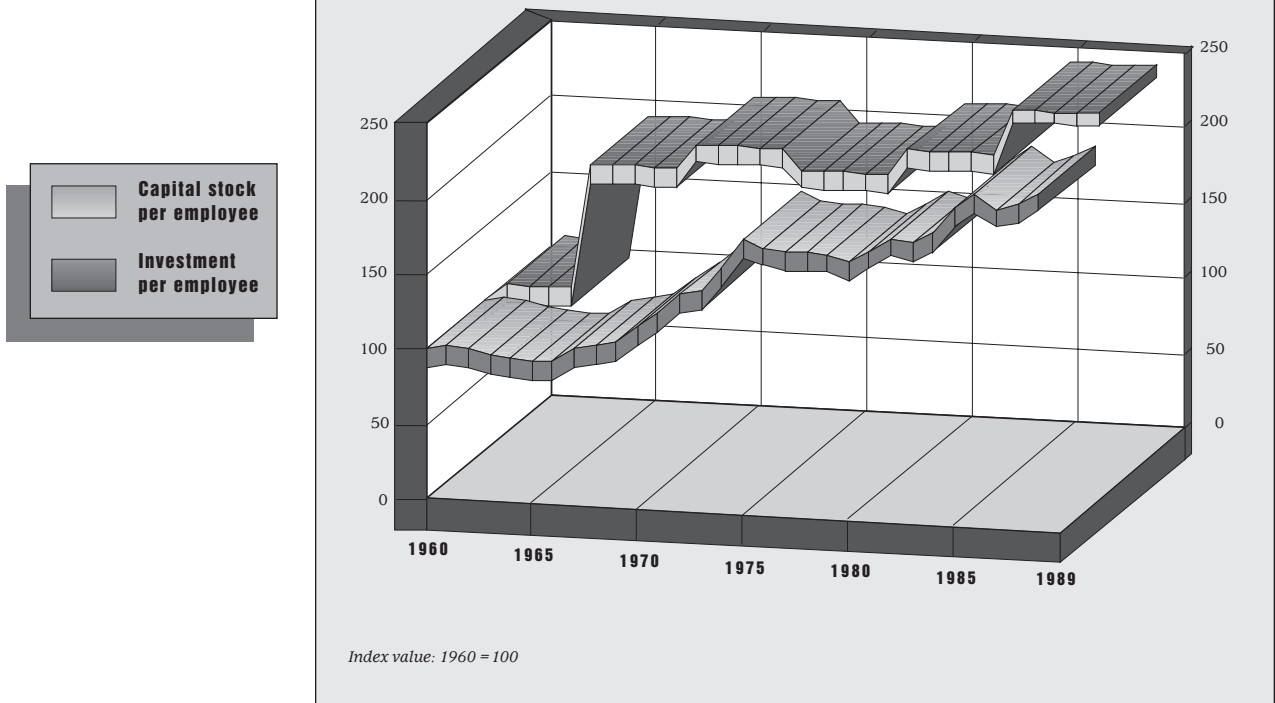
Consequently, the concentration of employment data understates the dependence on larger operations to the extent that smaller subcontractors rely on these big firms for their business. In addition, another group of smaller firms depends on other large customers, such as retail chains.

In sum, the industry clearly is more fragmented than most manufacturing sectors, but a core of 2,000 to 3,000 establishments account for the great majority of clothing employment. A much smaller group of very large multinational firms with major financial and technical resources own many of the establishments. Each also employs many thousands of workers, either directly or through their contractor/subcontractor networks.

**FIGURE A-18. U.S. SEWN-CLOTHING SECTOR:
SELECTED INPUT AND OUTPUT MEASURES, 1960-89**



**FIGURE A-19. U.S. SEWN-CLOTHING SECTOR: CAPITAL STOCK
AND REAL INVESTMENT PER EMPLOYEE, 1960-89**



This notwithstanding, most clothing operations are family-owned and family-managed. Indeed, the clothing industry has very low capital entry requirements. One analyst suggests that \$125,000 is enough to establish a plant with 20 employees—an operation larger than half of the industry’s establishments.⁸⁸

EMPLOYMENT. Three-quarters of all apparel workers are women and one-fifth are Hispanic; both shares are more than double the average for all manufacturing. Sixteen percent of apparel workers are black, which is about 60 percent higher than the average for all manufacturing.⁸⁹ Production workers (as opposed to white-collar employees) comprise about 86 percent of the clothing workforce, compared with 65 percent in all manufacturing.

Depending on the job, a new clothing industry worker requires from six weeks to six months to “learn the ropes.” Much learning happens on the job; few firms provide extensive formal training. The work demands repetitious attention to detail and manual dexterity.

The small average size, low profitability and poor industry image of clothing operations pose substantial obstacles to affording and/or attracting managers with college training in engineering, management, accounting and marketing.⁹⁰

PROFITABILITY AND PRODUCTIVITY. Most clothing companies produce one or only a few products, and, to reach capacity, work on three or more contracts at a time.⁹¹ This specialized product structure, small average contract size and the need to regularly renew or replace contracts creates an environment of vulnerability, with a high threat of failure.

Few clothing companies also produce their fabric or fiber; as a result, the availability, price and quality of apparel fabric affect their competitiveness. Few sell directly to the public, although mail order and factory outlet operations are notable exceptions. Therefore, manufacturers generally must rely on other distribution channels to reach the end consumer.

The number of clothing companies operating now is greater than in 1960, but fewer than in 1977. Total employment and the number of establishments also have fallen in the last decade. But real output, investment and capital stock remained remarkably stable during that decade. (See *Figure A-18*.) Investment and capital stock per employee both rose faster than the average for manufacturing. (See *Figure A-19*.)

Along with rising capital intensity—that is, the rising share of production costs consumed by capital items—the productivity of some of the larger clothing sectors rose at a relatively rapid rate in the 1980s. Of the 13 four-digit sewn-clothing sectors with 1989 employment of at least 30,000, eight had 1979-89 productivity growth rates above the median for all manufacturing sectors; six had growth

in the top third of all manufacturing sectors. While this relatively good performance is partly attributable to the introduction of microelectronic technology into sewing equipment (including the basic sewing machine), it is also the result of the weeding out of less efficient firms during the industry's contraction.

TECHNOLOGICAL DEVELOPMENTS. The clothing production process has three major steps:

- ❏ garment design
- ❏ cutting fabric—according to design specifications—into pieces for assembly
- ❏ garment assembly.

GARMENT DESIGN. Garment design and pattern specifications guide the cutting of fabric. New design software now enables producers to reduce dramatically the amount of time that elapses between concept and cutting. A task group of the AAMA Apparel Research Committee wrote recently:

“Computer Aided Design systems offer tremendous opportunities for drastic reductions in product development cycle times by enabling the retailer, manufacturer and fabric supplier to sit down together and work out numerous alternatives of style, fabric and color in a matter of hours, and have the decisions relayed via EDI [electronic data interchange]... to the mills for sampling. This technology can reduce the time to develop alternatives for a style from days or weeks to minutes or hours.”⁹²

FABRIC CUTTING. Highly automated fabric cutting equipment is also available off the shelf. These cutters increase cutting speed and precision. Using computerized information from the pattern-making software, they guide reciprocating knives or lasers through the cutting process. Most firms do not use these automated cutters. The great majority still employ manual cutting, in which a trained operator works with a hand-held reciprocating knife. High cost is one deterrent to using automated cutters, as is the fact that many firms don't produce in large enough volumes to justify investing in this technology.

TC2 is working to develop a faster, less expensive, automated cutter that will make this technology more affordable and fast enough to economically cut a single ply—that is, a single layer—of fabric. Currently, most automated operations cut many ply of fabric at once, producing multiple sets of pieces for the same garment. As a result, they lend themselves to longer runs of more standardized goods. TC2 hopes this new technology can be applied to made-to-measure production, which customizes a given clothing style to an individual's precise body measurements.

GARMENT ASSEMBLY. In garment assembly, a few basic systems predominate: the progressive bundle system, modular manufacturing and the unit production system.⁹³

Progressive Bundle System. This system is used by the vast majority of U.S. apparel plants. In this system, the “unit of production” is a bundle of cut parts to be assembled into a specific number of garments. The number of garments in each bundle depends on the number of fabric ply cut at one time in the cutting operation, or on the fabric’s weight.

The operator, seated at a sewing machine, unties the bundle, performs the needed task on each part, notes on a work ticket that the work is done, and reties it. The work ticket is used to determine operator pay; almost all bundle plants use a piece-rate payment system. Since a single plant often produces just one product, the production line often includes all sewers in the plant.

Under this system, workers can work at their own pace, and get the pay they can earn. It rewards high individual productivity. On the other hand, bundles constitute a great amount of in-process inventory by tying up both working capital and space. They also make it hard to accommodate rapid product or style changes; producers using bundles prefer long runs of the same product. Production of a new product must await completion of several weeks—even months—of work already in process. AAMA estimates that, typically, parts for a garment spend 15 to 20 days physically in-process, awaiting 20 minutes of total direct operator time to assemble.

In addition, any style change will affect many, if not all, operators. Reorienting or retraining workers, and rebalancing the production line, may require considerable time. Generally, given the rising number of styles and seasons tied to the apparel market’s fragmentation, AAMA now considers the bundle system “inadequate to meet changing market conditions.”⁹⁴

Modular Manufacturing. This system is an increasingly popular alternative to the progressive bundle system. Several variants on modular manufacturing exist. TC2 is currently demonstrating one modeled on similar Japanese systems at its Raleigh, North Carolina, facility.

TC2’s “module” comprises a horseshoe-shaped series of sewing stations, at which standing operators sew at specially designed workstations. Operators are cross-trained to perform multiple tasks, so they can move progressively from station to station.

Cut pieces for a single garment enter one end of the module. The operator who begins assembly completes work at the first station, then continues through

however many additional stations he or she can complete before meeting the second operator. At that point, the first operator hands off the garment pieces to the second operator, and walks back to the first station to begin the process again. Alternatively, the second operator may hand off to a third before being reached by the first. In this case, the second moves backward around the module to “bump” the first operator back to the start. Often, these hand-offs and bumps occur while the garment is moving through the machine’s sewing head. The single garment proceeds through all the workstations until exiting, complete, at the other end of the horseshoe.

Modular manufacturing systems can greatly cut in-process inventory and garment production times. Once a plant gets the module appropriately configured, labor utilization rates remain high because the modules are self-balanced through hand-offs and bumps. Given available technology, production time is reduced to a virtual minimum.

Using a modular system, worker morale generally improves because operators have a more varied set of activities, and get greater satisfaction from being part of a small team with full responsibility for a product. In fact, because modular production is so team-oriented, many feel that firms will have to develop alternatives to piece-rate pay. One large blue jeans manufacturer, for example, is now changing to a flat hourly wage—a truly major wage policy shift in the industry.

The team structure—often called flexible work groups—also lends itself to group training in total quality management principles and other worker empowerment strategies. At one firm, a source reports, worker empowerment has proceeded so far that management gave hiring and firing responsibility to the modular team itself. This practice is a rare, but logical, extension of modular concepts.

Modular manufacturing also sets the stage for enhanced quality controls. Operators in the bundle system get little monetary incentive to ensure quality, since they get their piece-rate pay regardless of whether the garment is defective. In a modular system, proper training can inculcate the idea that quality assurance is a team responsibility, and that each garment exiting a module should be defect-free. In effect, each operator in a team becomes a quality control inspector for the work of all the preceding operators. In some plants, modular teams receive team quality bonuses based on how low their module defect rates are. Also, plants with modular approaches have been able to cut the number of personnel devoted to quality checks.

Clemson University’s Apparel Research program recently compared the performance of progressive bundle and modular systems in plants that had moved from the former to the latter. (Clemson also examined changes from the bundle

to the unit production system, which we'll discuss later.) The results suggest that the move can bring striking improvements in productivity and quality.⁹⁵ (See Figure A-20.)

A plant also can reconfigure modules more easily to accommodate new products or style changes than it can reconfigure a progressive bundle line. Workers can roll equipment quickly in and out of the module, and adjust the number of stations and operators. Once reconfigured, the module automatically self-balances. Such a changeover typically is much less disruptive than in a bundle operation:

“In the Progressive Bundle system, the introduction of a new style can be traumatic, affecting a large number of operators and causing balance problems throughout the production line. With Flexible Manufacturing

FIGURE A-20. COMPARING APPAREL PRODUCTION SYSTEMS: SELECTED INPUT, OUTPUT AND EMPLOYEE MEASURES					
	PROGRESSIVE BUNDLE SYSTEM	FLEXIBLE WORK GROUP <i>modular manufacturing</i>	% IMPROVEMENT	UNIT PRODUCTION SYSTEM	% IMPROVEMENT
NET PRODUCTIVITY			13.4%		18.4%
DIRECT LABOR CONTENT			-0.3%		-9.7%
DIRECT LABOR EFFICIENCY			7.7%		4.6%
DIRECT LABOR EXCESSES	13.3%	5.7%	-57.1%	8.8%	-33.8%
QUALITY (% DEFECTIVE)	7.2%	2.5%	-65.3%	6.4%	-11.1%
THROUGH-PUT TIME (DAYS)	14.9	4.3	-71.1%	5.9	-60.4%
INDIRECT RATIO			-10.0%		-11.8%
ATTENDANCE	94.6%	97.2%	2.6%	95.6%	1.1%
TURNOVER	50.9%	30.7%	-39.7%	35.9%	-29.5%
SPACE UTILIZATION*	110 ft.	69.4ft.	-36.9%	78.4ft.	-28.7%
SITES VISITED	30	12		18	
NUMBER OF OPERATORS		2680		1069	
NUMBER OF WORKSTATIONS		3204		1299	
NUMBER OF UNITS		165		30	
OPERATORS PER UNIT		16.4		35.6	
<i>*square feet/operator</i>					

Units, a new style can be introduced with relative ease, affecting a small number of operators.

“In addition, operators in Flexible Work Groups are normally better cross-trained than operators in a Progressive Bundle system, and are likely to have been exposed to more operations.”⁹⁶

TC2 is currently developing simulation software to help plant engineers determine more easily the number and kind of sewing stations and the number of workers needed to adapt a module to a new product or style. Similar software also was developed as part of the Alabama Apparel Extension program.

Unit Production System. A unit production system (UPS) is a more capital-intensive alternative to a modular manufacturing system. UPS is a series of sewing stations among which all parts of a single garment are automatically transported by overhead conveyor and tracked/controlled throughout the process by computer. UPS produces many of the same benefits as modular manufacturing systems. In fact, UPS could well be considered a mechanization of the modular manufacturing concept.⁹⁷

A major disadvantage of UPS is that its capital costs are higher than for a bundle or modular system, and that its economic application requires a minimum of 50 operators in a given building.⁹⁸ In addition, according to the Clemson study, adoption of modular techniques typically:

“...includes some level of employee empowerment, allowing the production workers to make some or all of the decisions regarding the performance of the task. This is not typically true in the installation of Unit Production Systems and is considered to be the primary difference in management concepts employed in the two systems.”⁹⁹

The economic tradeoffs between unit production and modular manufacturing systems probably will vary from plant to plant. The Clemson study concludes that “instituting employee involvement/empowerment programs within the Unit Production System may offer the best of all worlds,” and that “two U.S. apparel companies have begun to implement such a combination and have realized significantly better results than any reported in this study.”¹⁰⁰

More generally, AAMA, in speaking of the greater flexibility of modular and UPS techniques, states flatly that:

“... it is difficult to find compelling, valid reasons for resisting a change to flexible manufacturing—other than the natural reluctance of human beings to change the beliefs and procedures under which they have oper-

ated for years. For many in the industry working at all levels, it will not be easy to accept and adapt to all of the changes that will take place in apparel over the next few years. But outside changes continue to come, and they will force inside changes.¹⁰⁵

HOSIERY AND KNIT UNDERWEAR SECTORS

The hosiery and knit underwear sectors (SICs 2251, 2252 and 2254) mostly produce long-run standardized products that require little or no additional sewing. Products include both heavily advertised brand names (for example, Hanes, L'eggs, Jockey and Fruit of the Loom) and generic products, such as off-brand men's socks sold at discount stores. In 1989, employment in these sectors totaled 78,000.

The women's hosiery and knit underwear sectors rapidly consolidated over the last 20 years, and are now very concentrated. In women's hosiery, the numbers of companies and establishments fell steadily, dropping from 350-400 in 1963 to 125-150 in 1987. In knit underwear, the numbers of companies and establishments fell from 100-120 to about 60. (See *Figure A-21*.)

Both the women's hosiery and knit underwear sectors now have four-firm concentration ratios greater than 60 percent, and eight-firm ratios greater than 80 percent. (See *Figure A-22*.) Undoubtedly, much of this concentration reflects the ability of major hosiery and underwear manufacturers to establish strong "branded" positions in these products areas. The "other hosiery" sector is much less concentrated, though 1987 witnessed noticeable upward movement relative to previous census years.

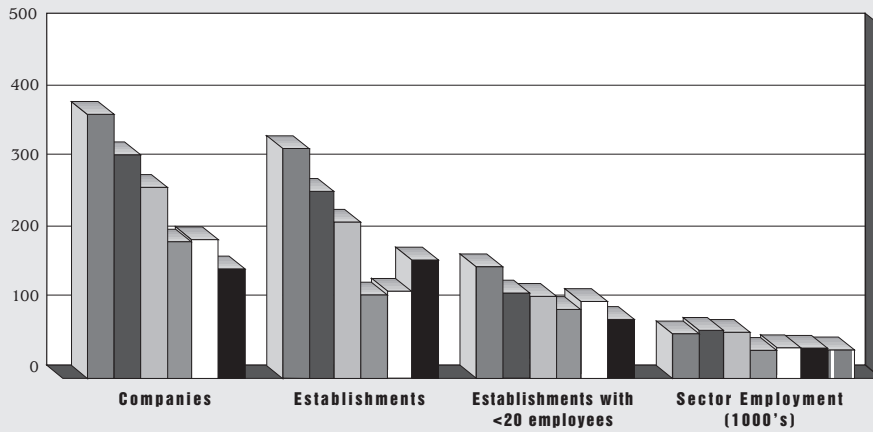
While capital stock in the women's hosiery and knit underwear sectors has fallen modestly since 1960, output has more than doubled—primarily because of exceptional productivity growth in the hosiery sector. (See *Figure A-23*.) Productivity growth in women's hosiery averaged 3.9 percent annually over the 1960-89 period, ranking fourth among the 450 manufacturing sectors. The "other hosiery" sector also performed well, ranking 52 with an annual growth rate of 1.8 percent. Productivity in knit underwear rose rapidly through the mid-1970s, but has been very sluggish since then.

The hosiery and underwear sectors appear particularly vulnerable to the effects of NAFTA for at least three reasons.

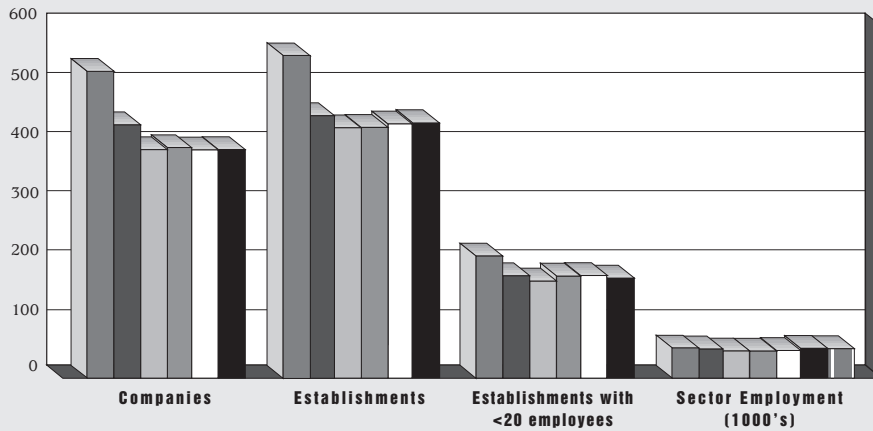
- ❖ Reductions of U.S. duties will be much greater for hosiery and underwear than for most other clothing sectors. Because the Maquila program grants preferential tariff treatment only to garments made from cut pieces of U.S.

**FIGURE A-21. U.S. HOSIERY & KNIT UNDERWEAR MILLS SECTORS:
COMPANIES, ESTABLISHMENTS AND EMPLOYMENT, 1963-89**

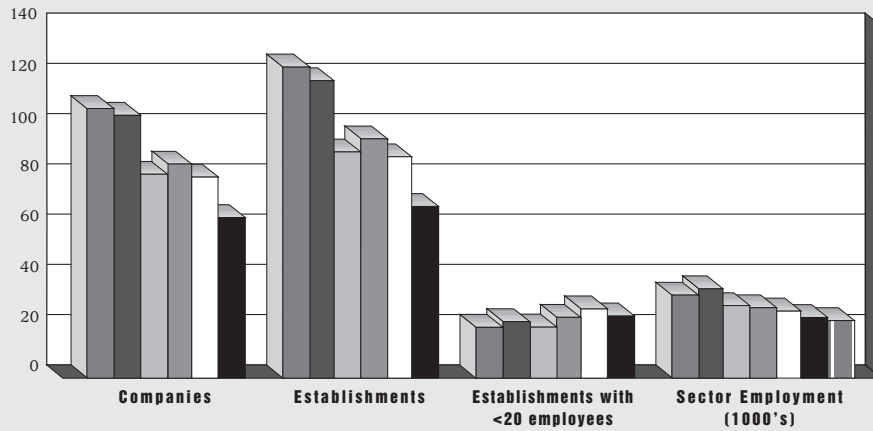
**Women's Hosiery
(except socks)**



**Hosiery not else-
where classified**

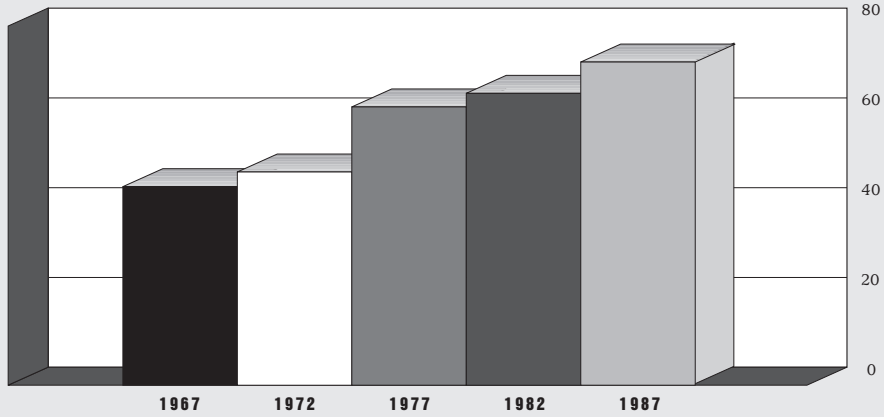


**Knit Underwear
Mills**

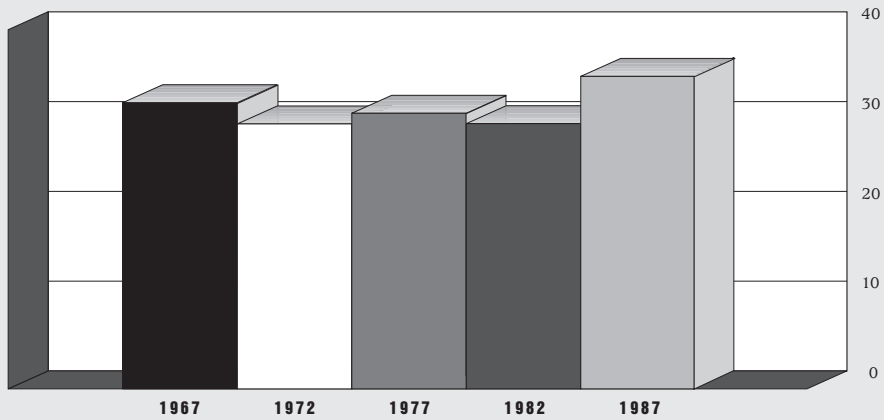


**FIGURE A-22. U.S. HOSIERY & KNIT UNDERWEAR MILLS SECTOR:
EIGHT-FIRM CONCENTRATION RATIOS, 1967-87**

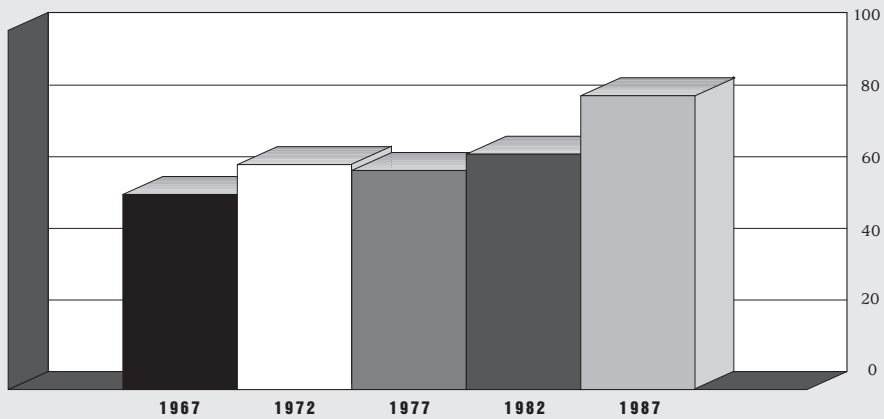
PERCENT OF INDUSTRY SHIPMENTS



**Women's Hosiery
(except socks)**

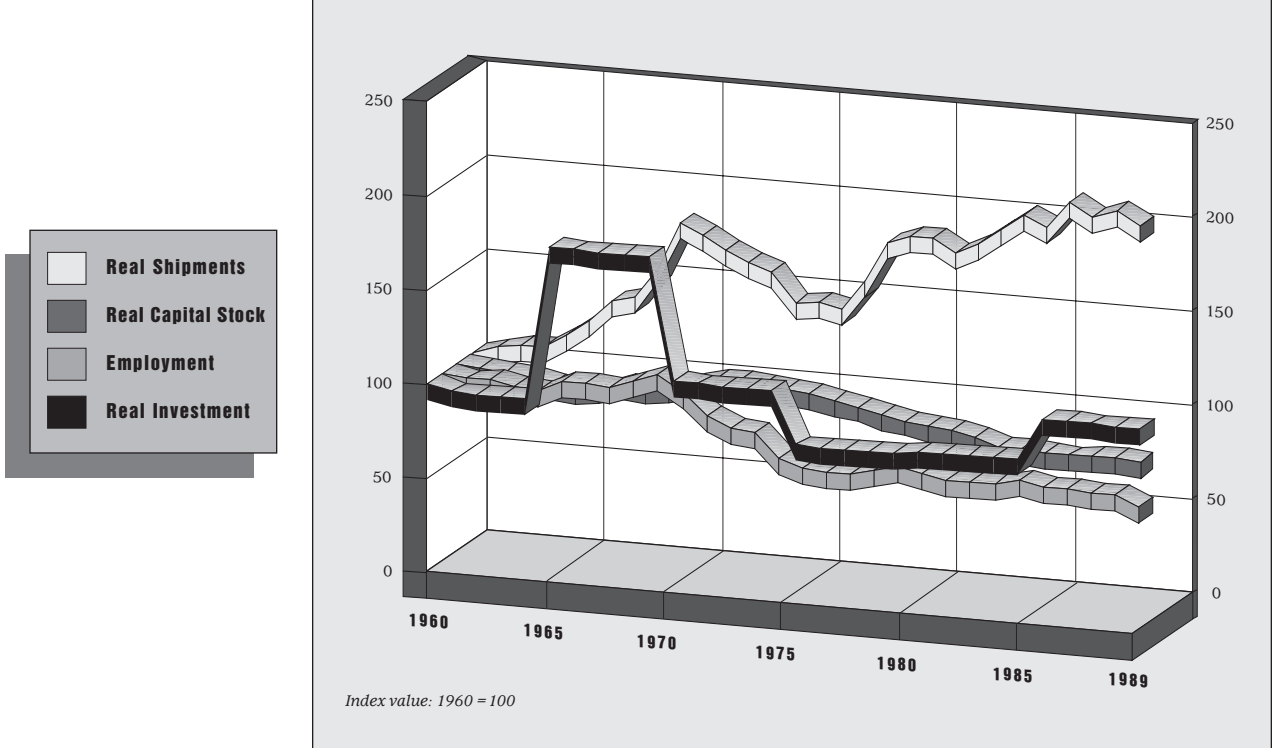


**Hosiery not else-
where classified**

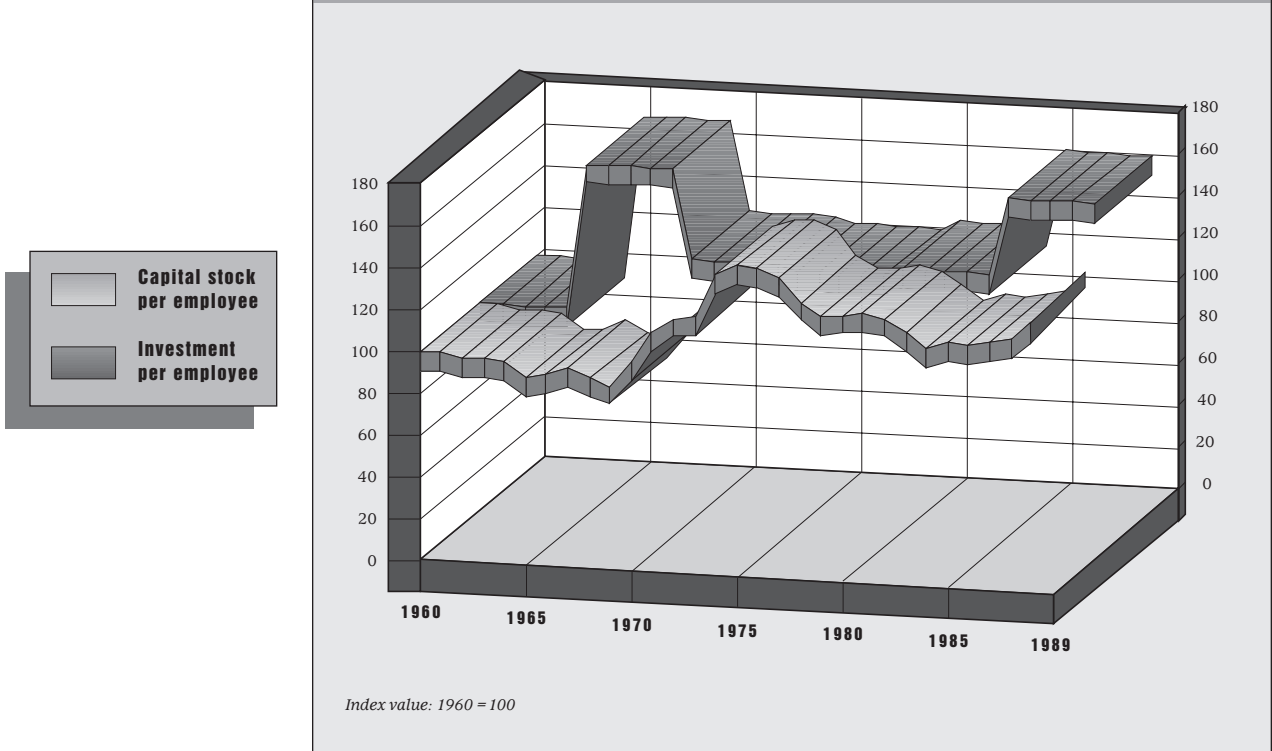


**Knit Underwear
Mills**

**FIGURE A-23. U.S. HOSIERY AND KNIT UNDERWEAR SECTORS:
SELECTED INPUT AND OUTPUT MEASURES, 1960-89**



**FIGURE A-24. U.S. HOSIERY AND KNIT UNDERWEAR SECTORS:
CAPITAL STOCK AND REAL INVESTMENT PER EMPLOYEE, 1960-89**



fabric, any hosiery and underwear knit directly from yarn do not qualify for duty reduction.

- ❖ The Mexican market offers huge new sales opportunities for such basic items as hosiery and underwear.
- ❖ Given the very concentrated industry structure in women's hosiery and underwear, the decision of only a few firms to expand or relocate in Mexico will influence much of U.S. output.

Retail Sector¹⁰²

Aside from factory outlets and mail order operations, consumers buy most apparel from some form of retail outlet not owned by clothing producers. About 30 percent of retail apparel sales occur in department stores (for example, Macy's, Dillard's, Dayton Hudson); 25 percent are made in specialty chain stores (for example, The Limited, The Gap); and 15 percent in discount stores (for example, Wal-Mart, Kmart).

A small number of retail companies possess tremendous buying power. Fourteen major groups—Dayton Hudson, May Department Stores, Robert Campeau Federated, Allied Stores, Macy's, Dillard's, Carter Hawley Hale, British-American Tobacco, Belk, Nordstrom, Mercantile, Neiman-Marcus, P.A. Bergner and Hooker—accounted for over \$56 billion in apparel sales in 1988. This is somewhere between one-third and one-half of total sales to the U.S. market, according to one estimate.

These groups control not only the great majority of the big department stores, but also stores selling into discount and specialty markets as well. For example, in 1988, both the Dayton Hudson group and the May group controlled large discount retail operations, and Macy's controlled some 20 specialty outlets.¹⁰¹ If we add a handful of other large discounters (Wal-Mart, Kmart, Zayre), national chains (JCPenney, Sears, Montgomery Ward) and specialty chains (The Limited, The Gap), it is evident that just a few extremely large organizations account for the great majority of apparel sales.

Retailers buy garments either directly from manufacturers or through various commercial intermediaries. Several major retailers, such as JCPenney, May Department Stores and Macy's, all have extensive buying offices in the United States and abroad, as do many of the major European retailers. Retailers also work through intermediaries such as membership associations, independent buying companies and importers. The major membership associations are AMC and Frederick Atkins: AMC Members include Sears, Federated Department

Stores, Allied Stores, Batus and Bonwit Teller. Frederick Atkins clients include Dillard's, Marshall Field and Hesse.¹⁰⁴ Major independent U.S. buying companies include Henry Donegar Associates, which buys for Wal-Mart and Target discount chains, Buren/Carr and Atlas.

Many major retailers also contract out production of their own "private-label" product concepts. Kurt Salmon and Associates estimate that private-label products now comprise about 25 percent of all clothing sales.

Most retailers do not now have the in-house expertise to handle all sourcing arrangements for private-label garments, and have to rely on the expertise of either individual manufacturers or intermediary organizations. AMC and Frederick Atkins are particularly active in this area. Each intermediary works with its member retailers to develop precise design specifications, then takes responsibility for all sourcing functions. Both AMC and Atkins work primarily through partnerships with Far Eastern producers; they do little sourcing in the United States.

This ability to manage all functions related to garment production—which is called total packaging capability—applies to a single type of garment or to a full line of clothing. Total packaging is much easier to find in East Asia than domestically; its limited domestic availability is clearly a structural deficiency of the U.S. apparel complex.

Many large apparel manufacturers unwittingly have encouraged retailers' private-label and other offshore sourcing activity, according to some observers. These larger firms, they argue, typically design garments with little input from retailers, and then push large volumes of them through the distribution system. In the 1990s, this practice will become increasingly risky for manufacturers as markets continue to fragment, retailers continue to build private-label capabilities and trade liberalization spurs intensified foreign competition.

Turnaround time between a retailer's decision to offer an item and its arrival at the retail outlet depends on the source. Normal turnaround times for goods from overseas range from six months to one year. Traditionally, domestic turnaround hasn't been much shorter, despite the lack of a two-to-three month sea voyage.

In the 1980s, the top 100 department stores (the great majority of which are controlled by the 14 large retail groups), factory and other off-price outlets, and mail order operations each gained two or more percentage points of market share—at the expense of independent department stores, national chains and specialty chains. The Kurt Salmon and Associates analysis predicts that:

- These share-gaining segments also will perform strongly during the 1990's.

- ❖ The mass discount industry will consolidate to three or four large firms (for example, Wal-Mart, Kmart, Target).
- ❖ Specialty stores that know their customers (like The Gap, The Limited, Kids 'R Us) will keep growing.

To summarize, a small number of huge operations that source worldwide and develop their own products control much of the clothing market. These groups may well increase their power during the next decade. Thus, their sourcing decisions are critically important to the future of U.S. producers, particularly small and medium-size enterprises that usually lack direct channels to domestic or foreign clothing markets.

APPENDIX B. THE GEOGRAPHY OF TEXTILE AND APPAREL EMPLOYMENT

In this section, we look at the location of U.S. textile and apparel employment and its importance to total local employment. We also examine how this distribution changed over the period from 1969 to 1988. Much of our analysis focuses on employment in the ten southeastern states that contain more than 80 percent of total U.S. nonmetro textile and apparel employment.

Geographic Distribution of Textile and Apparel Employment

TEXTILE EMPLOYMENT

In 1987—the latest year for which county-level data were available when we did this study—textile employment in nonmetropolitan counties constituted 48 percent of national textile employment. (See *Figures B-1-2*.) Of this nonmetro textile employment, 83 percent is in five states: Alabama, Georgia, South Carolina, North Carolina and Virginia. Moreover, the same states are home to all but a handful of the nonmetro counties that have at least 1,000 textile employees. We refer to these states as the “Core Group” for textile and apparel employment.

DEFINING TEXTILE AND APPAREL EMPLOYMENT

In this appendix, textile employment refers to all employment within SIC 22 (textile mill products), instead of employment in only those textile sectors within the apparel cluster—the definition used elsewhere in this guide. However, about 85 percent of SIC 22 employment in 1989 was in yarnmaking, in broadwoven or circular knit fabric, or in knit apparel; thus, most falls within the confines of the apparel cluster anyway.

Similarly, the definition of apparel employment used in this appendix differs from that used elsewhere in this guide. Here, apparel employment refers to all employment in SIC 23 (apparel and other textile products). However, 83 percent of SIC 23 employment in 1989 was in sewn nonknit apparel; thus, the great majority of SIC 23 employment falls within the apparel cluster. Note, however, that SIC 23 does not include knit apparel, which falls within SIC 22 (SIC 2251-54).

**FIGURE B-1. U.S. TEXTILE MILL PRODUCTS SECTOR (SIC22)
EMPLOYMENT: NONMETRO COUNTIES, 1987**



Employment



0



0 to 250



250 to 500



500 to 1000



1000 and
over

**FIGURE B-2. U.S. TEXTILE MILL PRODUCTS SECTOR (SIC22)
EMPLOYMENT: METRO COUNTIES, 1987**



FIGURE B-3. U.S. APPAREL AND OTHER TEXTILE PRODUCTS SECTOR (SIC23) EMPLOYMENT: NONMETRO COUNTIES, 1987

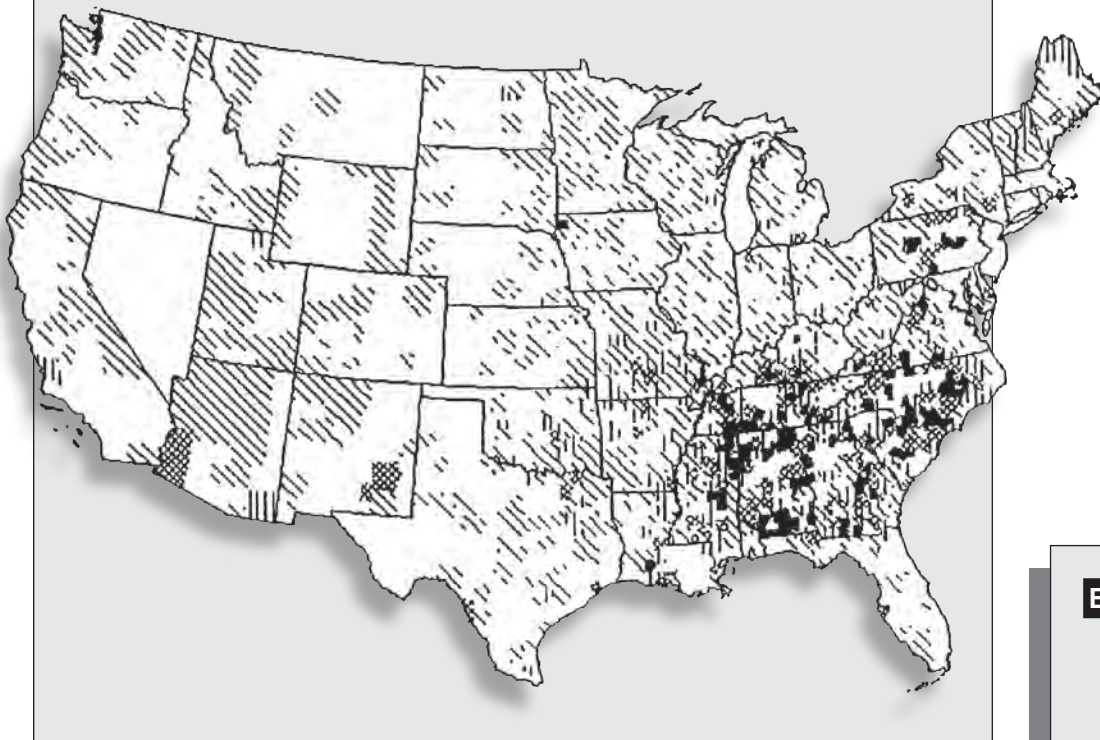
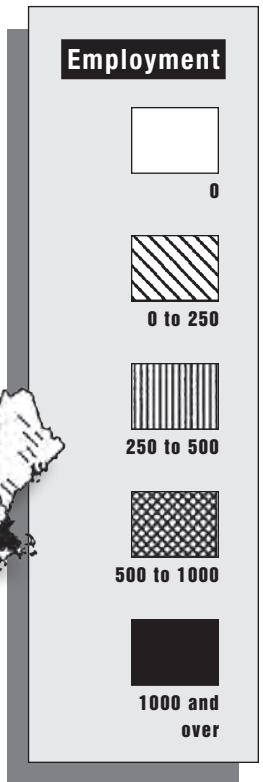


FIGURE B-4. U.S. APPAREL AND OTHER TEXTILE PRODUCTS SECTOR (SIC23) EMPLOYMENT: METRO COUNTIES, 1987



Overall, Core Group textile employment (metro and nonmetro) accounted for 69 percent of total 1987 U.S. textile employment; most of this employment is in Core nonmetro counties. The Core Group also claimed 56 percent of textile employment in metropolitan counties, most of which is in North Carolina.

APPAREL EMPLOYMENT

In 1987, about 36 percent of total U.S. apparel employment was in nonmetropolitan areas. (See *Figure B-3*.) Seventy-nine percent of this nonmetro total was in ten southeastern states; 48 percent was in the five Core Group states and another 31 percent was in a bloc of five neighboring states, which we call the Border Group. The Border Group includes Arkansas, Kentucky, Mississippi, Missouri and Tennessee.

Twelve percent of all U.S. apparel employment was in the metro areas of the ten Core and Border states. Other sizable concentrations were in the Northeast, Florida, Texas and California. (See *Figure B-4*.)

Together, apparel employment (metro and nonmetro) in the ten-state southeastern area made up 40 percent of total U.S. apparel employment in 1987. Well over two-thirds of this percentage was located in nonmetropolitan counties.

TEXTILE AND APPAREL EMPLOYMENT

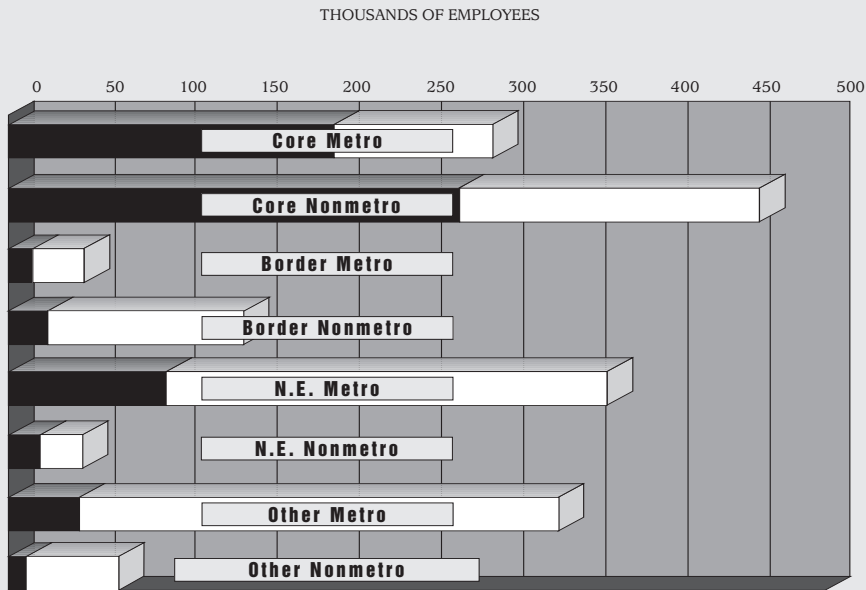
Taking the textile and apparel sectors together, the ten southeastern states, particularly the Core Group, clearly dominate nonmetro employment. (See *Figure B-5*.) About two-thirds of nonmetropolitan employment is in the Core area; another one-fifth is in Border Group states. When metro employment is included, these ten states account for 54 percent of total U.S. textile and apparel employment.

How "Rural" Is Rural Textile and Apparel Employment?

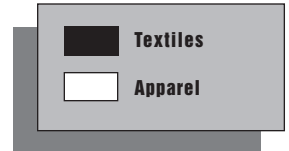
Nonmetro textile and apparel operations are popularly associated with small southeastern mill communities isolated from metropolitan areas and dominated by a single or, at most, a few establishments. How typical is this mill town setting of today's employment, given the Southeast's rapid urbanization over the last 20 to 30 years?

To find out, we looked at the ten-state group to see how textile and apparel employment is divided between:

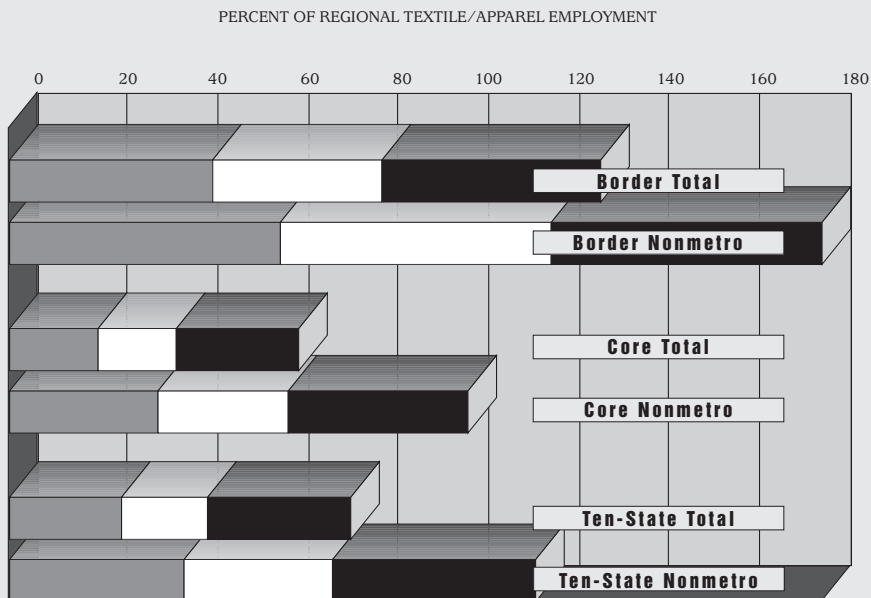
**FIGURE B-5. U.S. TEXTILE AND APPAREL EMPLOYMENT:
SELECTED REGIONS, 1987**



Data Source: Enhanced County Business Patterns

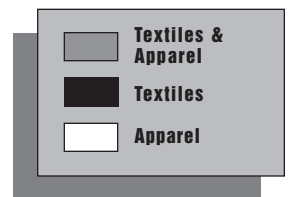


**FIGURE B-6. TEXTILE AND APPAREL EMPLOYMENT IN NONMETRO,
NONADJACENT* COUNTIES: SELECTED U.S. REGIONS, 1987**



Nonadjacent = Counties that are not next to metropolitan areas and have fewer than 20,000 urban dwellers

Data Source: Enhanced County Business Patterns

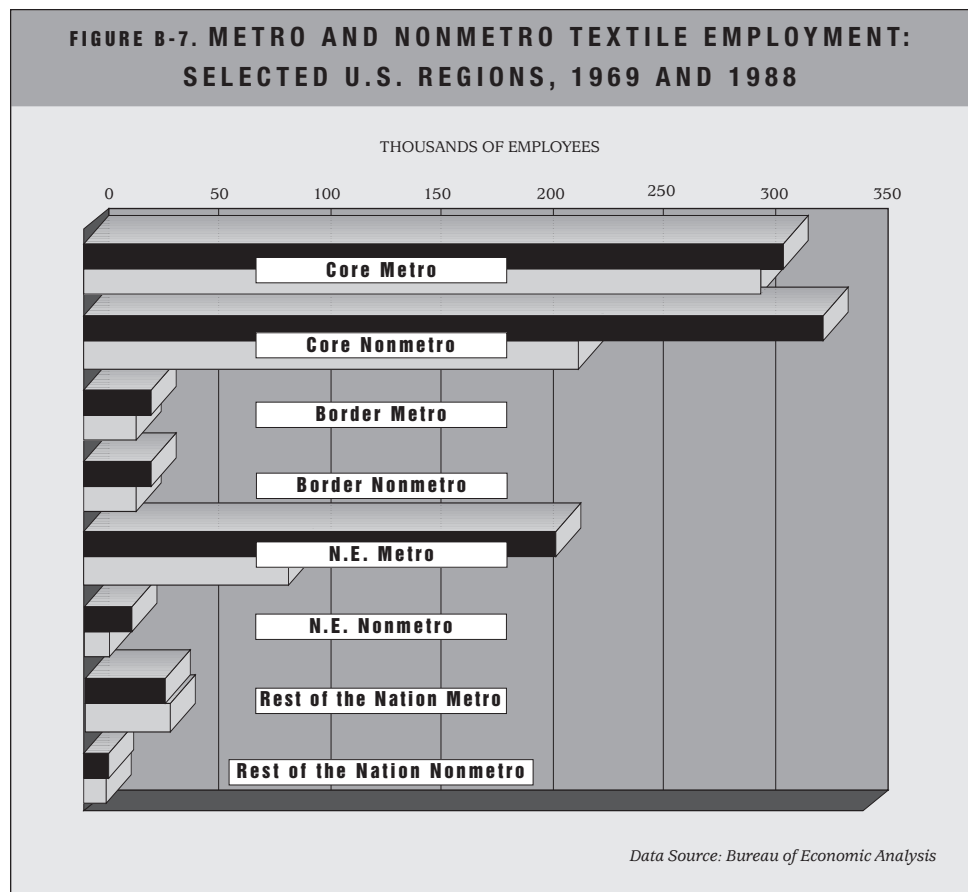


- ❖ Counties that either are adjacent to metropolitan areas or have within their borders an urbanized population of 20,000 or more, and
- ❖ Counties that are not next to metropolitan areas and have fewer than 20,000 urban dwellers. This group approximates—as closely as available data allow—a setting that might physically host the small, isolated mill town.

Across our ten-state region, less than two-fifths of total nonmetro textile and apparel employment is in the second group. This “mill town” share falls to about 25 percent if we include metro employment in the total. (See Figure B-6.)

The “ruralness” of nonmetro employment is considerably lower in Core than in Border states. In Core states, only one-third of nonmetro—and less than one-fifth of total Core textile and apparel employment—is in “mill town” counties. By contrast, 60 percent of Border nonmetro textile and apparel employment—and 45 percent of total Border textile and apparel employment—is located in these settings.

Generally, the wave of urbanization that has engulfed the Core states for several decades has also produced a relatively urbanized textile/apparel environ-

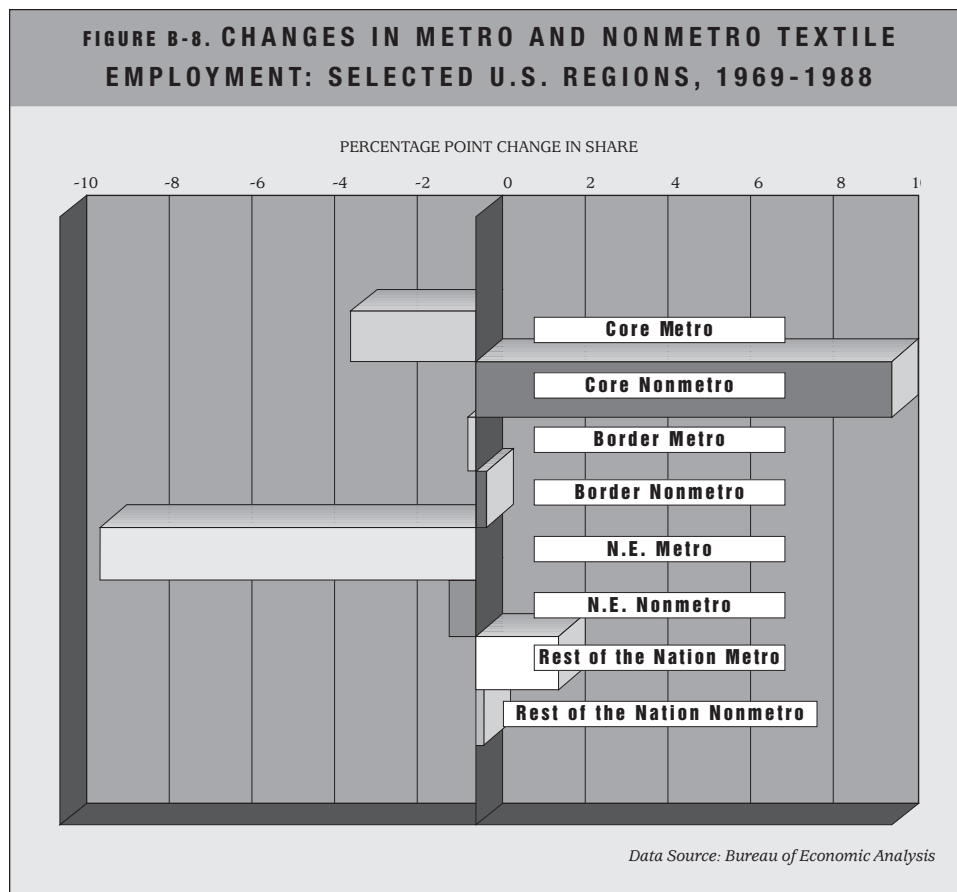


ment. A recent example of this premise is that several nonmetro areas in the Carolinas were designated as metropolitan areas on the basis of 1990 census data. This change not only added several new metro counties, it also converted several nonadjacent nonmetro counties to adjacent ones. Together, these changes will make Core textile employment appear even more highly urbanized than do the 1987 data.

Nonetheless, a sizable amount of employment remains in remote rural areas, particularly in the noncoastal southeastern states that might more closely fit the “mill town” stereotype. Further, in such rural areas, the textile and apparel industry and its employment often are critical to the economic viability of individual small communities.

Changes in Geographic Distribution of Employment, 1969-88

We examined trends in the distribution of textile and apparel employment over the 1969-88 period. Generally, the data indicate that textile and apparel employment has gravitated to the rural Southeast.



TEXTILE EMPLOYMENT

From 1969 to 1988, the United States experienced a drop in absolute textile employment. Most of this loss occurred in the Northeast and Core metro areas. (See Figure B-7.)

The 1969-1988 drop in employment was not felt equally by all regions. In fact, nonmetro areas in the Core Group states actually increased their share of total employment by a substantial 10 percentage points. The major regional change was a shift of employment from the metro and nonmetro Northeast to the nonmetro Core area, particularly nonmetropolitan North Carolina and Georgia. (See Figure B-8.) Despite this shift, absolute 1988 nonmetro employment—that is, the actual numbers of employed workers—in the Core states was below its 1969 level.

Within the nonmetro Core, the “mill town” counties experienced much better employment performance in the 1970s (12 percent average growth) and somewhat better performance in the 1980s (-2 percent average growth) than did other nonmetro counties (2 percent and -8 percent for those time periods, respectively). But because their initial employment base was much smaller, the

**FIGURE B-9. METRO AND NONMETRO APPAREL EMPLOYMENT:
SELECTED U.S. REGIONS, 1969 AND 1988**

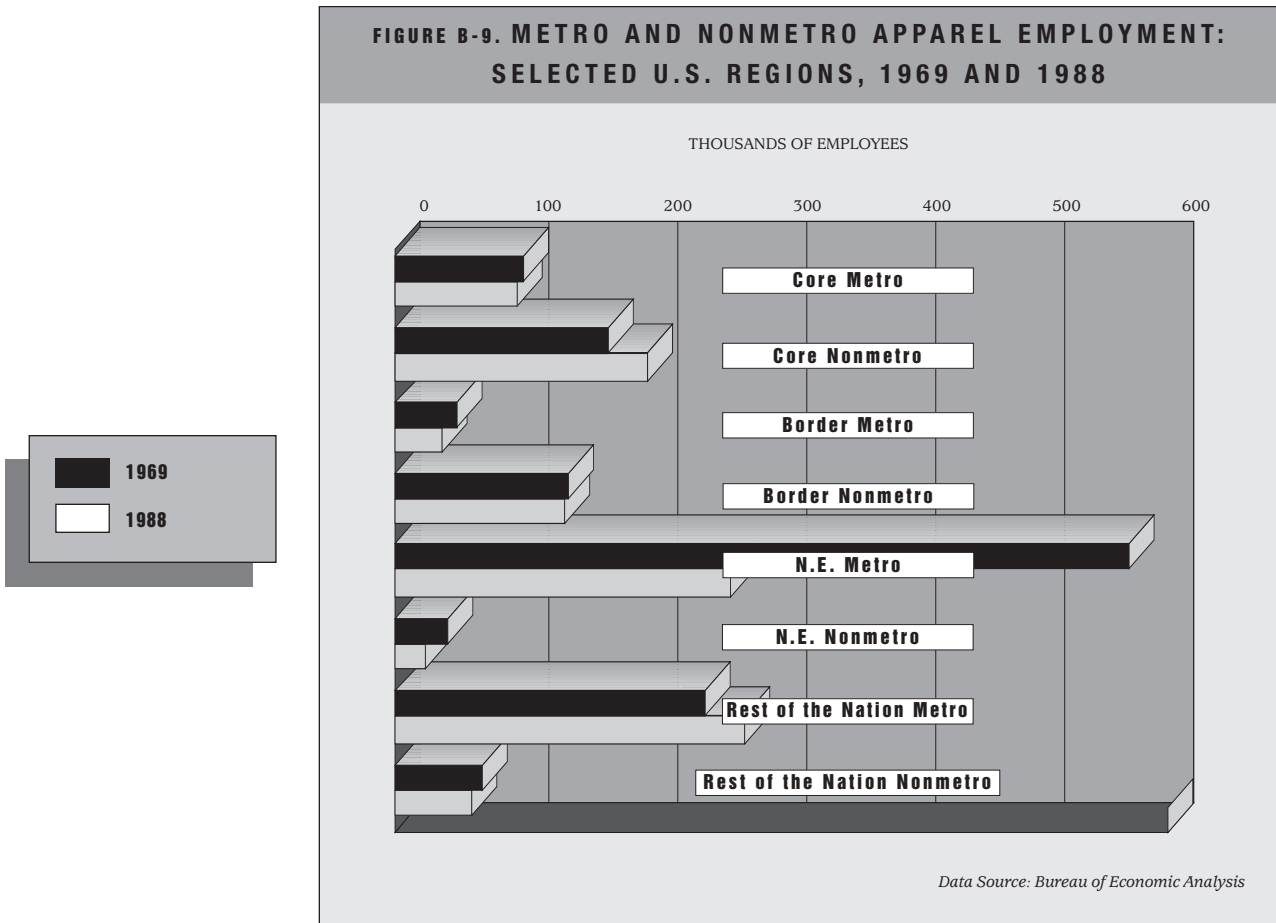
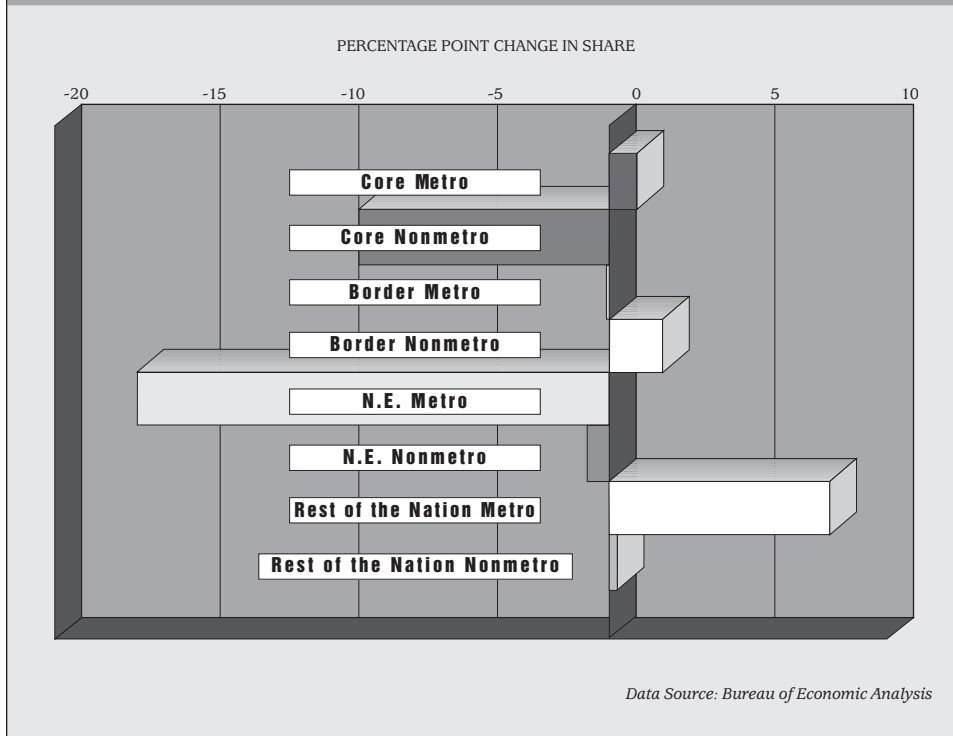


FIGURE B-10. CHANGES IN METRO AND NONMETRO APPAREL EMPLOYMENT: SELECTED U.S. REGIONS, 1969-1988



group’s share of total U.S. textile employment increased only slightly faster than it did for all other nonmetro counties: 4 percent for “mill town” counties versus 5 percent for all other nonmetro counties. In other words, the “ruralness” of nonmetro employment remained about the same over the period.

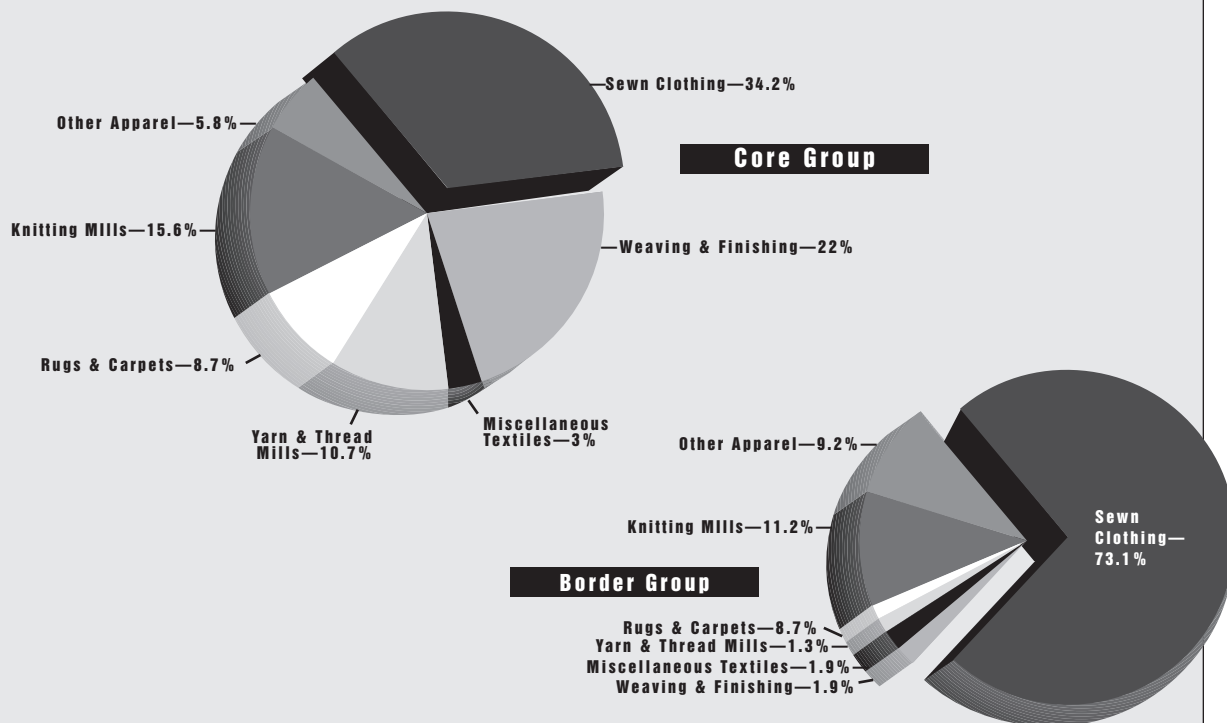
Interestingly, the “rest-of-the-nation” metro region—that is, all counties other than those in the Core, Border or Northeast states—had a higher rate of employment growth than even the Core nonmetro region, and was the only region with more textile jobs in 1988 than in 1969. Despite this growth, the region’s absolute share of U.S. total textile employment changed little.

APPAREL EMPLOYMENT

Absolute U.S. apparel employment in both metro and nonmetro areas fell over this period. Most of the loss occurred in the Northeast metro region, but all regions lost employment during the 1980s.

Nonetheless, the nonmetro share of U.S. apparel employment rose 8 percentage points between 1969 and 1988. Employment moved from the Northeast into the ten-state southeastern region and the rest-of-the-nation metro region. (See Figures B-9 and B-10.)

FIGURE B-11. SUBSECTOR DISTRIBUTION OF NONMETRO TEXTILE AND APPAREL EMPLOYMENT: CORE AND BORDER GROUPS, 1987



Data Source: Enhanced County Business Patterns

Unlike employment in the textile industry, southeastern “mill town” counties in both Core and Border areas experienced much poorer employment performance in the 1970s than did other nonmetro counties in that ten-state region. Growth for the two regions was 2 and 17 percent, respectively. Despite better relative performance in the 1980s, the “mill town” share of nonmetro apparel employment fell for the 1969-88 period as a whole, dropping 1 percent.

In the 1970s, growth in rest-of-the-nation metro employment was particularly strong in California, Florida and Texas. In the 1980s, however, only metropolitan California added substantial net new employment.

Sectoral Distribution of Nonmetro Employment in the Southeast

In 1987, Core state nonmetro employment was distributed across a variety of SIC 22 and SIC 23 industries, although sewn clothing and weaving/finishing accounted for more than half of this employment. In contrast, Border Group nonmetro employment was overwhelmingly concentrated in sewn-clothing production. (See Figures B-11 and B-12.)

Total U.S. nonmetro employment in each textile industry clustered in the Core region. Several industries clustered in one or two states. Sewn—but not knit—clothing employment clustered less. The Core Group accounted for only 43 percent of the U.S. nonmetro total, while the Border Group accounted for 33 percent. Together, more than 80 percent of U.S. nonmetro sewn-clothing employment was in this ten-state area.

Over two-thirds of U.S. nonmetro employment in other apparel—chiefly home furnishings and industrial textile products—was within our ten-state region as well. The Core Group’s share of the national total, however, was twice the Border Group’s.

Nonmetro counties with at least 1,000 employees in a given textile industry fall within a very limited geographic area. All but three such counties in the knitting mill sector—which includes knit clothing—fall within two areas:

- ❖ North Carolina/Northeast South Carolina, or

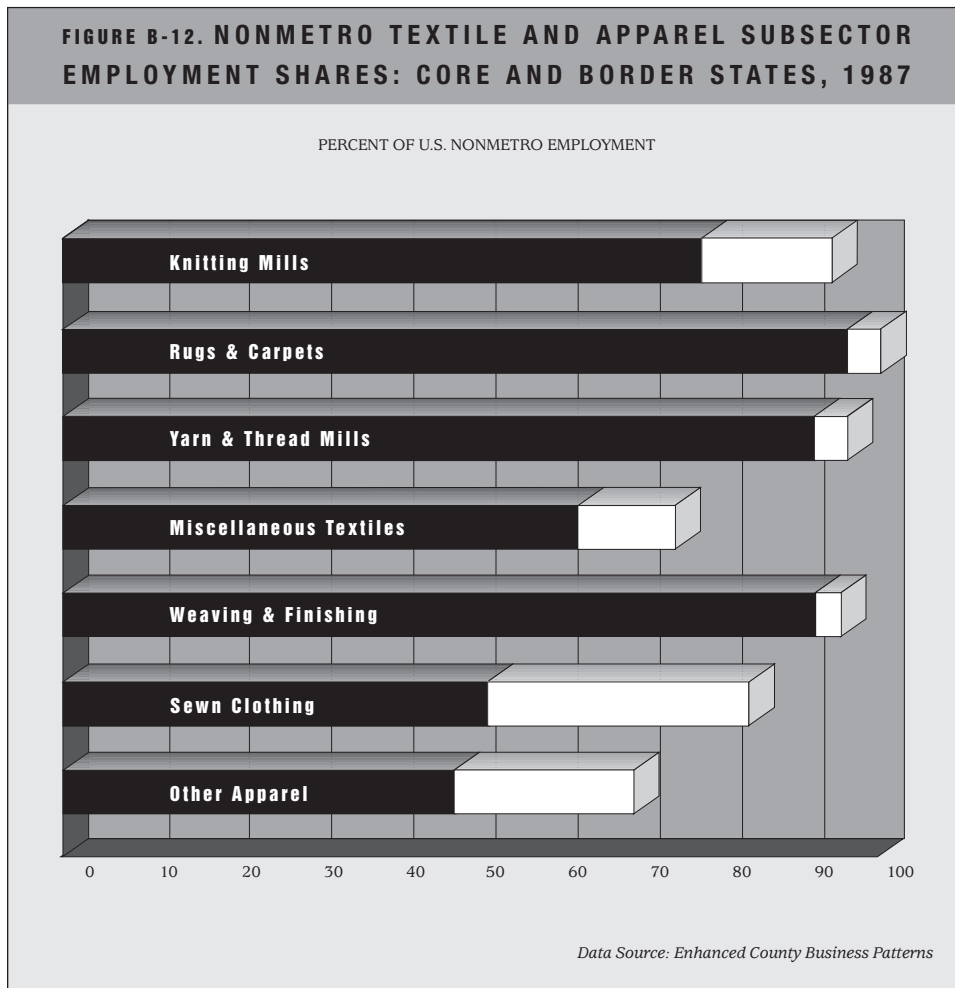
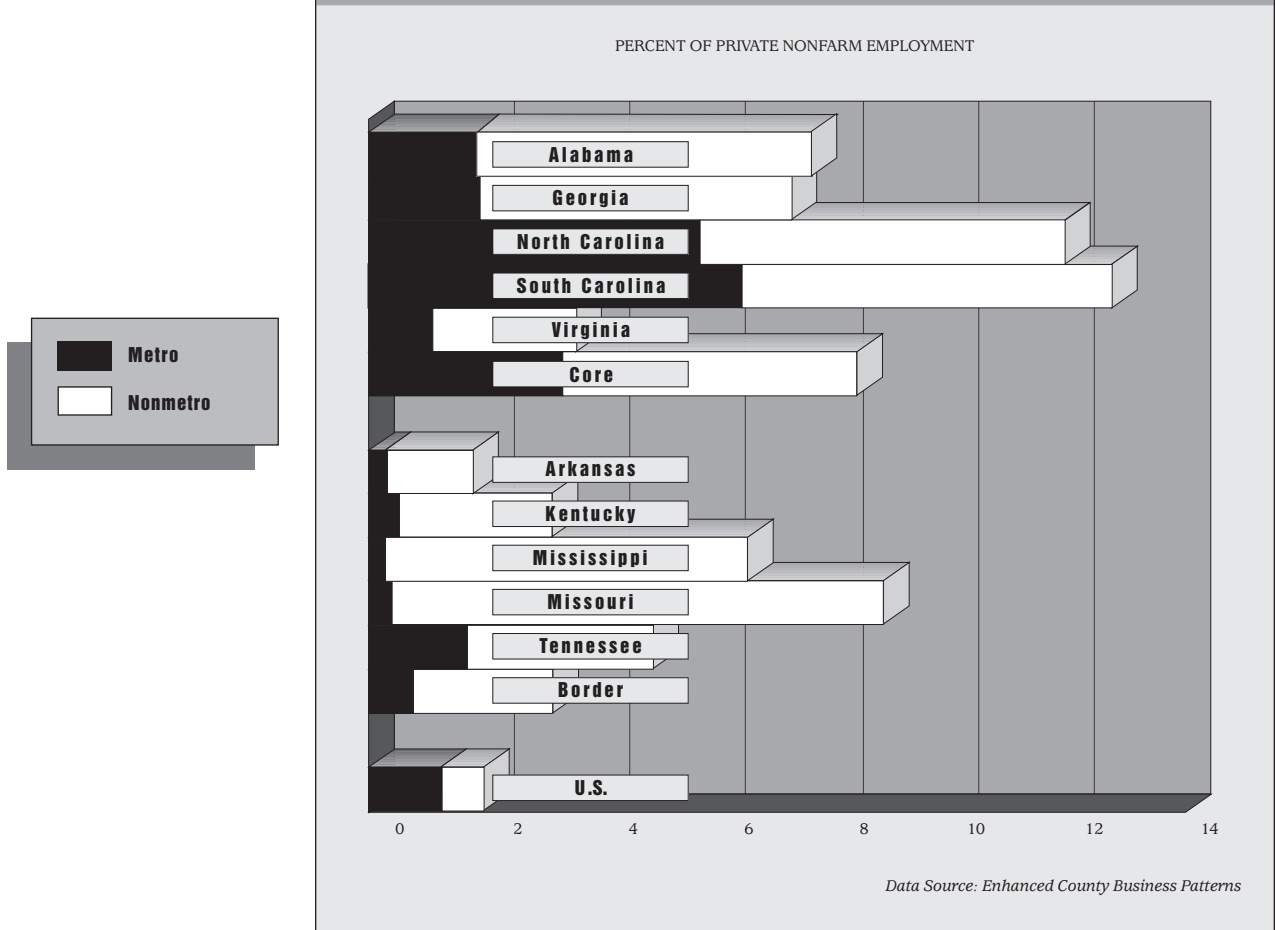


FIGURE B-13. TEXTILE/APPAREL EMPLOYMENT SHARES OF PRIVATE NONFARM EMPLOYMENT: SELECTED STATES AND REGIONS, 1987



❖ Along the northern half of the Georgia-Alabama state line.

Moreover, metro clusters of such counties tend to mirror nonmetro county clusters.

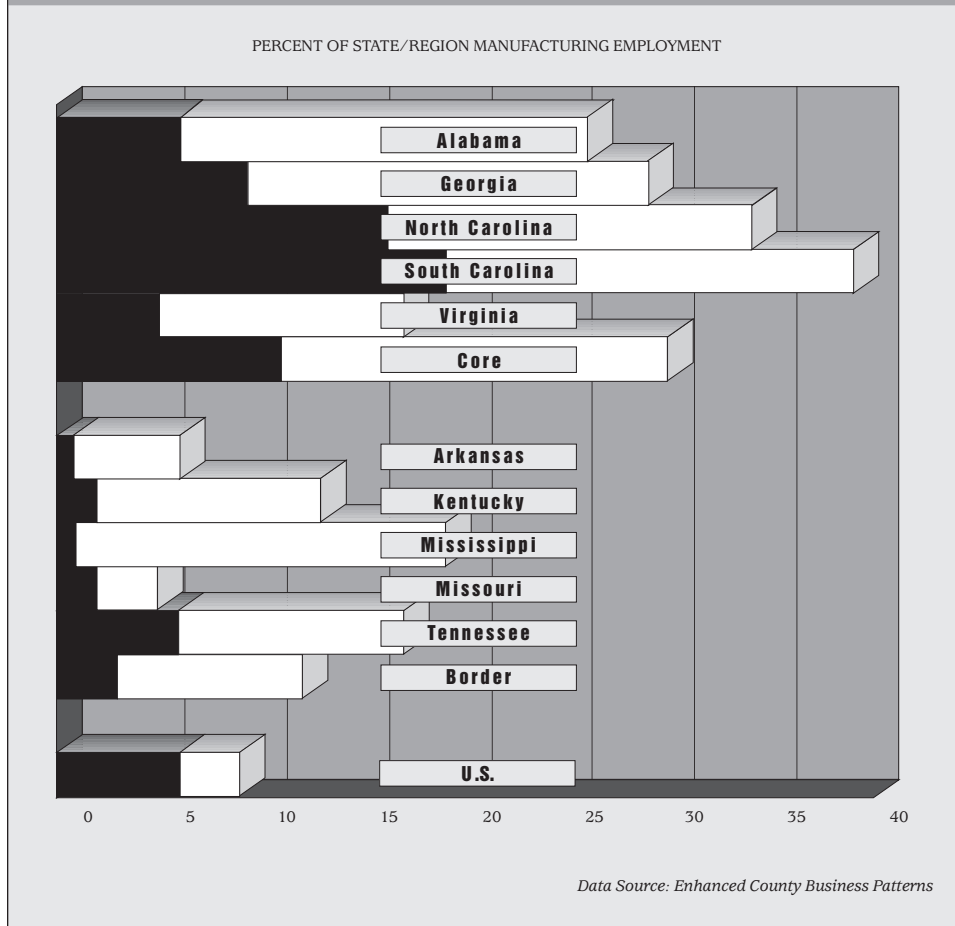
In sewn clothing, clustering is not so tight. Concentrations of metro and non-metro sewn clothing span several states and regions.

State and Local Dependence on Textile and Apparel Employment

We studied our ten southeastern states' dependence on the textile and apparel industries from two perspectives:

❖ The percentage of state private nonfarm employment in textiles and apparel,¹⁰⁵ and

FIGURE B-14. TEXTILE/APPEL EMPLOYMENT SHARES OF MANUFACTURING EMPLOYMENT: SELECTED STATES AND REGIONS, 1987



❖ The percentage of individual counties heavily dependent on textiles and apparel.

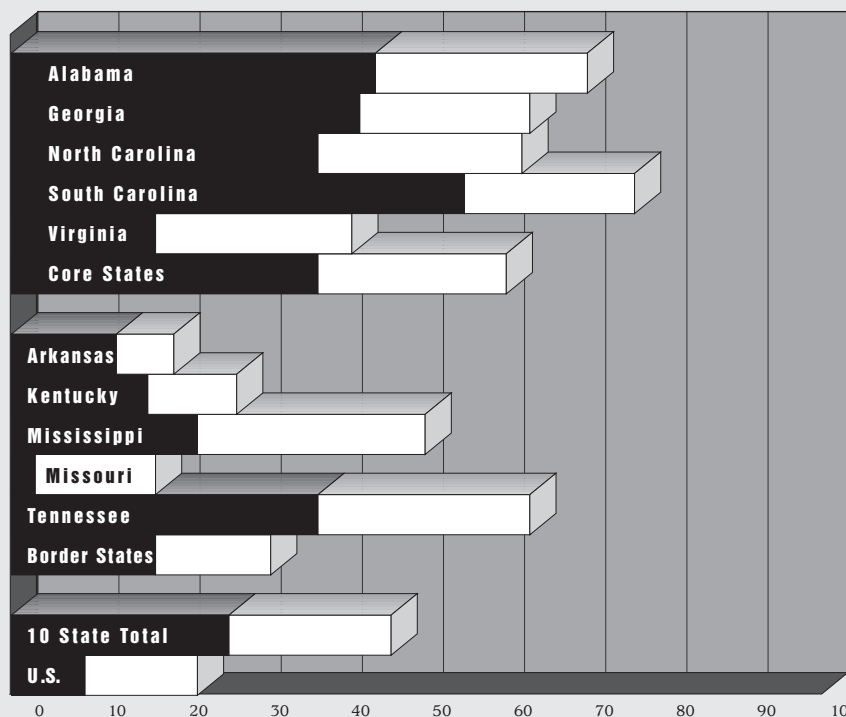
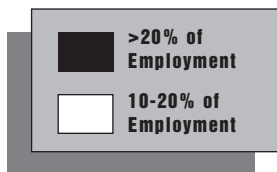
These data depict a truly striking dependence, and help explain why congressional action on textile and apparel trade protection has been so bitterly contested.

TEXTILE AND APPAREL EMPLOYMENT IN THE STATE EMPLOYMENT BASE

In the Core states, textiles and apparel accounted for 8 percent of private nonfarm employment (metro plus nonmetro) and 30 percent of manufacturing employment. (See Figures B-13 and B-14.) South and North Carolina were particularly dependent, with more than 12 percent of private nonfarm employment and more than one-third of manufacturing employment in textiles and apparel. Textile/apparel employment in Core nonmetro areas alone constituted about 5 percent of total Core private nonfarm employment and more than 18 percent of manufacturing employment.

FIGURE B-15. NONMETRO COUNTY RELIANCE ON TEXTILES/ APPAREL: SELECTED STATES AND REGIONS, 1987

PERCENT OF NONMETRO COUNTIES



Data Source: Enhanced County Business Patterns

Comparable percentages for the Border region were considerably lower, although still significant. About 3 percent of private nonfarm employment and 12 percent of manufacturing employment were in textiles and apparel. Among Border states, Tennessee and Mississippi were most dependent, with more than 15 percent of manufacturing and 5 percent of private nonfarm employment in these two industries. Textile/apparel employment in Border nonmetro areas constituted about 2 percent of Border private nonfarm employment and 9 percent of total manufacturing employment.

COUNTY-LEVEL DEPENDENCE

Aggregate employment data do not convey the very high dependence of many individual counties on textile and/or apparel employment. Here, we look first at nonmetro county dependence.

Of the 771 nonmetro counties in the ten-state region, 209 (27.1 percent) had 20 percent or more of their private nonfarm employment in textile and

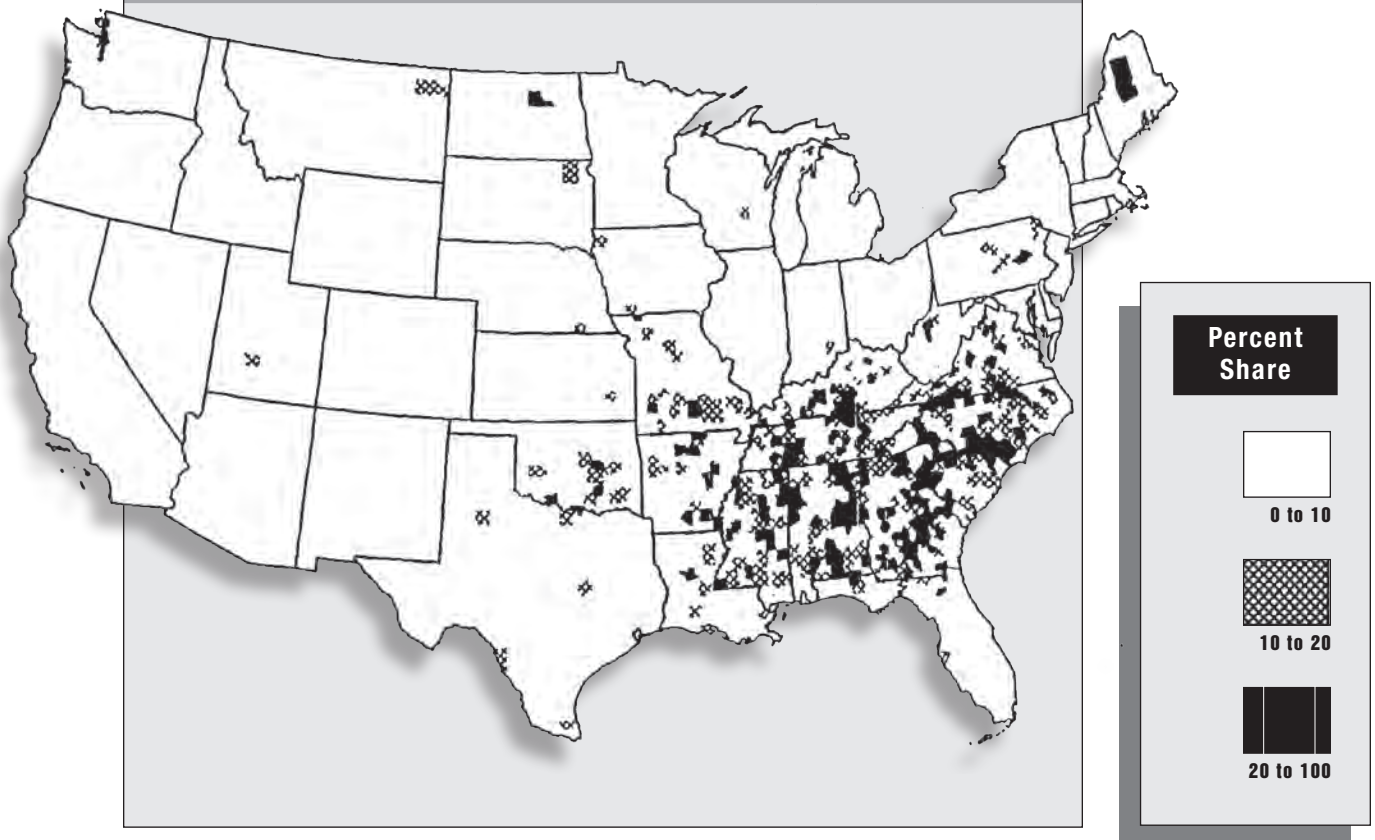
apparel. Remarkably, 47 percent had 10 percent or more. (See Figures B-15 and B-16.)

In individual states, nonmetro rates were much higher. For example, 56 percent of South Carolina's nonmetro counties, 46 percent of Alabama's, 43 percent of Georgia's and 39 percent of North Carolina's had more than 20 percent of private nonfarm employment in textiles and apparel. In seven of the ten states, more than half of the nonmetro counties had at least 10 percent of their private nonfarm employment in textiles or apparel.

Generally, Core state counties were more dependent on textile/apparel employment than were Border state counties. Almost 40 percent of Core nonmetro counties had at least 20 percent of private nonfarm employment in textile or apparel, and 61 percent had at least 10 percent. Comparable Border percentages were 17 and 32 percent, respectively.

The number of nonmetro counties that depended heavily on apparel was about twice the number that depended heavily on textiles. Only in North Carolina, South Carolina and Virginia was the number of nonmetro counties that

FIGURE B-16. TEXTILE AND APPAREL SHARES OF NONMETRO COUNTY PRIVATE NONFARM EMPLOYMENT: 1987



depended heavily on textiles at least comparable to the number heavily dependent on apparel.

As would be expected, given their larger size and more diverse economies, metropolitan counties depended less on textile and apparel employment than did nonmetro counties. In the ten-state area, the share of metro counties with at least 20 percent of their private nonfarm employment in textiles and apparel was 11 percent—much less than half the nonmetro rate. Twenty-one percent of metro counties had at least 10 percent of such employment in textiles and apparel—again well below half the nonmetro rate.

Surprisingly, “mill town” counties did not depend more on combined textile and apparel employment than did adjacent or more highly urbanized nonmetro counties. The share of counties with at least 20 percent of their employment in textiles and apparel was 27.9 percent for nonadjacent nonmetro counties with an urbanized population of less than 20,000, compared to 26.2 percent for all other nonmetro counties. While counties with more than 20 percent of their private nonfarm employment in apparel tended to be more rural, counties where textile or combined textile/apparel employment was more than 20 percent of such employment tended to be more urban.

The importance of textile and apparel employment to individual nonmetro counties extends well beyond percentages. Most (if not all) textile and apparel products sell outside the county. Exports bring new income into the county in the form of wages, salaries and—often—profits. The new income, in turn, circulates locally as expenditures at local businesses establishments. Such added local spending, called the multiplier effect, expands total local income well beyond the initial “export-related” increase.

Summary

From a rural development perspective, we focused on ten southeastern states for at least two reasons:

- ❖ These states contain more than 80 percent of total U.S. nonmetro textile and apparel employment.
- ❖ The nonmetropolitan Southeast now has a significantly greater share of U.S. textile and apparel employment than in 1969, suggesting a rising comparative advantage for this region versus others.

Nonmetro apparel and (particularly) textile employment is more highly urbanized in the Core than Border region. Even in the Border states, though, non-

adjacent counties with an urbanized population under 20,000 have less than half of total textile and apparel employment.

Across the ten-state region, and particularly in the Core states, textile and/or apparel employment accounts for substantial shares of total employment and total manufacturing employment. A strikingly large share of nonmetro counties depends highly on these sectors, as do many metro counties.

The distribution of textile/apparel employment across industries shows that Border Group nonmetro counties depend heavily on sewn clothing. The Core Group profile exhibits greater balance among the various apparel-related activities.

GLOSSARY

AAMA. American Apparel Manufacturers Association.

APPAREL INDUSTRY. As used here, an industry including most of the sectors that undergird the production and sale of clothing, that is, yarn, fabric and fabric finishing sectors supplying raw material to the clothing manufacturing sector; knit and nonknit-clothing manufacturing sectors; apparel distribution network, most importantly the retail sector; and textile and clothing machinery sectors.

ATMI. American Textile Manufacturers Institute.

BORDER GROUP. Five southeastern U.S. states—Arkansas, Kentucky, Mississippi, Missouri and Tennessee—that border the Core Group states, and account for a smaller but significant portion of nonmetro apparel sector employment (1987).

BUNDLE ASSEMBLY. Under the bundle assembly system, a worker seated at a sewing machine performs the same task on batches of garments. The garments arrive at each station in tied bundles that the operator unties, sews, reties and passes on to the next operator.

CLOTHING SECTOR. As used here, refers only to those activities that cut whole fabric into pieces, assemble these pieces into a final garment, or form yarn directly into a completed garment without first cutting pieces from fabric (for example, hosiery).

CORE GROUP. The five states that account for 69 percent of total U.S. textile employment including the vast majority (83 percent) of nonmetro textile employment (1987): Alabama, Georgia, South Carolina, North Carolina and Virginia.

GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT). An international agreement, first signed after World War II, to formalize worldwide economic relations. GATT tries to ensure fair trade policies among nations and to eliminate and reduce trade barriers, tariffs, and quotas.

IMPORT FEES. See tariffs.

IMPORT PENETRATION. For the U.S., the value of U.S. imports divided by the sum of its imports and U.S. manufacturers' shipments. The value of imports, in turn, is the price actually paid or payable for merchandise when it is sold for export to the United States—excluding the cost of bringing the goods to the United States.

LABOR CONTENT. Refers to how much of the cost of producing a good is accounted for by human labor—technically, the total payroll of a firm, divided by value added plus cost of materials, in dollars.

MADE-TO-MEASURE. An apparel industry innovation that uses advanced computer-based production, telecommunications and shipment options to produce custom-tailored clothing at off-the-rack prices with turnaround times of 24 to 48 hours between initial body measurement and delivery to a customer's home.

MAQUILAS. Assembly plants in Mexico, most located along the U.S.-Mexican border, to which U.S.-made materials and parts are shipped and from which the finished product is returned to the original U.S. market.

MAQUILA PROGRAM. A program that authorized tariff preferences to assembly plants in Mexico. If a garment was assembled in Mexico from cut pieces of U.S.-made fabric, U.S. tariff duties applied only to the value added during assembly, rather than to the full cost of the product, which normally also would include the cost of fabric, fabric cutting and transportation to Mexico.

MODULAR MANUFACTURING SYSTEM. An increasingly popular alternative to the bundle system of producing apparel, in which single garments pass progressively through assembly by a team of operators, who are cross-trained to perform multiple tasks. This system dramatically reduces the amount of in-process inventory (by eliminating bundles of material waiting for assembly) and helps ensure better quality while maintaining high levels of labor utilization.

MULTIFACTOR PRODUCTIVITY. A measure of how much an industry's or a firm's real output has increased after accounting for increases in labor, capital and materials. Many economists consider multifactor productivity to be the best single measure of overall productive efficiency that can be calculated from publicly available data.

MULTIFIBER AGREEMENT (MFA). A comprehensive system of quotas covering apparel imports from less industrialized countries to the United States and other industrialized nations.

NORTH AMERICAN FREE TRADE AGREEMENT (NAFTA). Agreement signed in late 1993 that incorporates Mexico into a free trade zone with the United States and Canada, and sets the stage for expanding the zone to other nations.

PRIVATE LABEL. Refers to a garment or line of garments designed and directly commissioned by retailers for sale through their retail outlets. This approach differs from the traditional method of buying garments designed and produced by apparel manufacturers.

PROGRESSIVE BUNDLE SYSTEM. The apparel manufacturing system used by the vast majority of U.S. plants in which the “unit of production” is a bundle of cut parts to be assembled into a specific number of garments. Operators complete a particular sewing or assembly task on a full bundle of identically cut pieces before passing the bundle on to another operator to perform the next task.

QUICK RESPONSE. A system of just-in-time production based on partnerships among retailers, clothing manufacturers and fabric, yarn and raw fiber producers.

QUOTA. A numerical limit on the quantity of a specified good that a foreign producer legally may export to the country setting that limit.

QUOTA ALLOCATION. The specific quota assigned to a foreign country by the country setting the quota limit.

QUOTA FILL. Refers to the percentage of a country’s quota allocation under the Multifiber Agreement that is actually used during the period of the agreement. These data are compiled by the International Trade Administration of the U.S. Department of Commerce.

QUOTA RENTS. The amount paid by one party for the right to use some or all of another party’s quota allocation.

RELATIVE TRADE ADVANTAGE INDEX. A quantitative measure of the strength of a country’s trade performance in a given product sector relative to the performance of competitor nations.

SHORT RUN. A small-quantity order for a specific manufactured good, such as a specialty print fabric or a particular type of garment style.

SIGNATORIES. Countries that formally agree to abide by the provisions of an international agreement such as GATT or NAFTA.

SMALL AND MEDIUM-SIZE ENTERPRISES (SMES). Firms with fewer than 500 employees.

SOURCING. To obtain materials or finished garments from another business, either domestic or foreign.

TARIFF. A fee paid on imported merchandise by the importer to the government of the country into which the good is imported. Tariffs are typically a fixed percentage of the value of the imported good.

TARIFF EQUIVALENTS. The estimated increase in import costs in excess of the tariff rate attributable to the existence of a quota. Frequently, tariff equivalents for a particular good are estimated from data on the actual price of quotas being traded on the open market.

TC2. An organization located in Raleigh, North Carolina, which performs applied research, demonstrates new technologies and techniques, and provides technical assistance and training to apparel firms. TC2 is funded by substantial contributions from both the private and public sectors.

TEXTILE SECTOR. As used here, refers to both yarn and fabric production and fabric finishing.

TOTAL PACKAGING CAPABILITY. The ability to manage or perform all or most functions related to developing and producing a single type of garment or a full line of clothing—including, for example, design assistance, fabric acquisition, sample making, cutting and assembly, packaging and shipping. Total packaging is much more prevalent in East Asia than in the United States.

UNIT PRODUCTION SYSTEM. A more capital-intensive alternative to a modular manufacturing system. UPS is a series of sewing stations among which all parts of a single garment are automatically transported by overhead conveyor and tracked/controlled throughout the process by computer.

UNIT VALUE. The dollar value of products that are imported or exported, divided by the quantity of those products.

USITC. United States International Trade Commission.

USTR. United States Trade Representative.

VALUE ADDED. The difference between the value of the produced goods a plant ships out and the cost of materials purchased by the plant to produce those finished goods.

NOTES

FULL CITATIONS FOR ALL ENDNOTES CAN BE FOUND IN THE REFERENCES BEGINNING ON PAGE 147.

INTRODUCTION AND USER'S GUIDE

¹ See Redman and Sears, *Helping Rural Manufacturers* for a discussion of 11 key policy questions any state must answer in designing an apparel industry strategy.

² National Cotton Council of America, 1.

³ Warfield, Barry, and Cavender.

⁴ Several guides can help you learn how to employ scenarios in a decisionmaking process. See, for example, Peter Schwartz.

CHAPTER 1

⁵ Data for 1979-87 are from the International Trade Administration, U.S. Department of Commerce. Data for 1988-91 are estimated by the department's Office of Textiles and Apparel, and published in various issues of *U.S. Industrial Outlook*. The definition of clothing employment used here generally follows that in Office of Technology Assessment, *U.S. Textile and Apparel Industry*, 64.

⁶ Includes SICs 221, 222, 223, 224, 2257, 226 and 228.

⁷ Estimates by Werner International. See *Bobbin*, September 1992, 116-20.

⁸ Cline estimates that freight and insurance costs average about eight percent. See Cline, 49. Data from the American Textile Manufacturers Institute (personal communication) indicate that these costs totaled 5.8 percent in 1991.

⁹ Japan, which is a world fashion leader and high-quality producer, is not considered in this discussion because its apparel wages are currently much higher than those in the United States.

¹⁰ See World Bank, 90 (Annex A, Table 4).

¹¹ See *Consumer Reports*.

¹² See Office of Technology Assessment, *U.S.-Mexico Trade*, 191-92.

¹³ See U.S. International Trade Commission, *U.S. Global Competitiveness*, 12-30, Table 12-21.

¹⁴ See Schroer and Ziemke, 11.

¹⁵ See Hill, Appendix Table 1.

¹⁶ American Apparel Manufacturers Association, *Apparel Manufacturing Strategies*, 50.

¹⁷ See American Apparel Manufacturers Association, *Flexible Apparel Manufacturing*; Schroer and Ziemke; Georgia Tech Research Institute; and Bailey, "Organizational Innovation."

¹⁸ See Schroer and Ziemke, 10.

¹⁹ American Apparel Manufacturers Association, *Flexible Apparel Manufacturing*, 17.

²⁰ Schroer and Ziemke, 14.

²¹ National Science Foundation.

²² Statement included in *Bobbin*, May 1992.

²³ See U.S. International Trade Commission, *U.S. Global Competitiveness*, 12-30, Table 12-21. For further discussion of this issue, see International Trade Administration, *The Mexico Textile and Fabric Market*, 22; Bailey, *Education and the Transformation of Markets*; Dickerson; and MIT Commission on Industrial Productivity.

²⁴ Kurt Salmon Associates, *Keeping New York in Fashion*, 24.

²⁵ Cited in Rothstein, *Keeping Jobs in Fashion*, 12.

²⁶ See Hill, 8, 11.

²⁷ See Schroer and Ziemke, 11.

²⁸ See *Bobbin*, December 1991, 59.

²⁹ See U.S. Bureau of the Census, *1989 Annual Survey of Manufactures*, Table 3.

³⁰ See Lehigh Valley Apparel and Textile Industry Labor-Management Innovation Network, 1-2, Appendix 4.

³¹ Based on analysis of U.S. Department of Labor's Displaced Worker Survey data published in Podgorsky.

³² See Podgorsky. These associations are found not only in the Department of Labor's Displaced Worker Survey but also in performance data from the Job Training Partnership Act's Title II-A program for the economically disadvantaged. For an overview of the JTPA Title II-A program and performance data on nonmetro programs see Redman.

³³ See Office of Technology Assessment, *Making Things Better*, 18, 162. See MIT, 59-61 for a description of textile-specific public support.

³⁴ Friedman.

³⁵ Reuben Schwartz.

CHAPTER 2

³⁶ See Congressional Budget Office; Cline; and Rothstein.

³⁷ See U.S. International Trade Commission, *Economic Effects*, 4-21, Table 4-9.

³⁸ Congressional Budget Office.

³⁹ Congressional Budget Office.

⁴⁰ See U.S. International Trade Commission, *Economic Effects*, 43.

⁴¹ Rothstein, 48.

⁴² Office of Textiles and Apparel, U.S. Commerce Department. Unpublished data. March 1994.

⁴³ We found no published data on best-practice labor content.

⁴⁴ See *Textile World*, 71.

⁴⁵ See Office of Technology Assessment, *U.S.-Mexico Trade*, 176-77. OTA's estimate defines highly standardized product markets as underwear and nightwear (SICs 2322, 2341 and 2369); foundation garments (2342); and girls', children's and infants' dresses, blouses and shirts (SIC 2361). It excludes all knit apparel goods. OTA estimates the share of employment in standardized garment production at 18 percent. This figure would rise to about 25 percent if knit underwear and hosiery (SICs 2251-52 and 2254) were included.

⁴⁶ Dickerson, 258.

⁴⁷ Haggar.

⁴⁸ Pugh.

⁴⁹ Kurt Salmon Associates.

⁵⁰ See Rothstein, 69.

⁵¹ Warfield, Barry, and Cavender.

⁵² *Bobbin*, July 1991, 14.

⁵³ This made-to-measure scenario derives principally from separate discussions with Joseph Off and Judd Early, general manager and director of R&D, respectively, of TC2.

⁵⁴ World Bank, 71.

⁵⁵ Mody and Wheeler. For another presentation of this perspective, see Hoffman, 371-92.

⁵⁶ Rippy.

⁵⁷ Hill.

CHAPTER 3

⁵⁸ U.S. Department of Commerce, *U.S. Industrial Outlook*, 1993, 32-1, 32-7.

⁵⁹ Priestland.

⁶⁰ Arguments for this position are made by Bailey and Eischer; Hanson; and Reuben Schwartz.

⁶¹ See *Bobbin*, November 1992. During our research, we also spoke with several former managers of Maquila operations who quickly dismissed the idea that Mexican operators could not be as efficient as U.S. operators.

⁶² See Office of Technology Assessment, *U.S.-Mexico Trade*, 121-22.

⁶³ See U.S. International Trade Commission, *Potential Effects*, 72, Table 72.

⁶⁴ Mathew and Stallings, 6.

⁶⁵ International Trade Administration, *The Mexico Apparel Market*, 38, Table 2.

⁶⁶ Compared to Mexico's \$1.17/hour average wage rate, Werner International estimates wages to be \$2.75 in South Korea, \$3.39 in Hong Kong and \$3.74 in Taiwan. See *Bobbin*, November 1992.

⁶⁷ See *Bobbin*, June 1992, 4. For a discussion of how NAFTA might affect firms' decisions about relocating to Mexico from other Caribbean nations if these nations do not become NAFTA cosignatories, see U.S. International Trade Commission, *CBERA Countries*.

⁶⁸ See *Bobbin*, June 1992, 4.

CHAPTER 4

⁶⁹ Ziemke.

⁷⁰ Dickerson, 97.

A FEW MORE KEY QUESTIONS

⁷¹ Burton.

APPENDIX A

⁷² Data on the percentage of total clothing-related shipments of yarn and fabric that the top 50 firms control are not available from published census data. Data are available, however, on concentration within specific apparel-related sectors; these are presented below.

⁷³ See USITC, *U.S. Global Competitiveness*, 5-8.

⁷⁴ U.S. Commerce Department, *U.S. Industrial Outlook*, 1992, 9-4.

⁷⁵ See U.S. Census Bureau, *1987 Census of Manufactures* and *1977 Census of Manufactures*.

⁷⁶ This and other multifactor productivity growth rates cited in this section are compound rates for the period.

⁷⁷ Office of Technology Assessment, *U.S. Textile and Apparel Industry*.

⁷⁸ Porter.

⁷⁹ U.S. International Trade Commission, *U.S. Global Competitiveness*, Appendix D.

⁸⁰ See, for example, Dickerson and MIT Commission on Industrial Productivity.

⁸¹ Anson, 14.

⁸² American Textile Manufacturers Institute, *Textile Hi-Lights*.

⁸³ See Bailey, *Education and the Transformation of Markets*, 20.

⁸⁴ See Bureau of the Census, *1987 Census of Manufactures*.

⁸⁵ Office of Technology Assessment, *U.S. Textile and Apparel Industry*, 60.

⁸⁶ U.S. Bureau of the Census, *1987 County Business Patterns*, Table 1b.

⁸⁷ See Schroer and Ziemke, 6. For more information on the various production strategies used by domestic clothing manufacturers, see American Apparel Manufacturers Association, *Apparel Manufacturing Strategies*, and World Bank.

⁸⁸ *Ibid.*, 32.

⁸⁹ Rothstein, 13, Table 1.

⁹⁰ Schroer and Ziemke, 9.

⁹¹ *Ibid.*, 10.

⁹² American Apparel Manufacturers Association, “Fast Fashion.”

⁹³ This discussion draws upon detailed descriptions of these methods (and selected variants) in American Apparel Manufacturers Association, *Flexible Apparel Manufacturing*; interviews with TC2 personnel; and tours of several southeastern clothing plants.

⁹⁴ American Apparel Manufacturers Association, *Flexible Apparel Manufacturing*, 13.

⁹⁵ Hill, Appendix, Table 1.

⁹⁶ *Ibid.*, 11.

⁹⁷ *Ibid.*, 2.

⁹⁸ Schroer and Ziemke, 9.

⁹⁹ Hill, 2.

¹⁰⁰ Hill.

¹⁰¹ American Apparel Manufacturers Association, *Flexible Apparel Manufacturing*, 36.

¹⁰² Much of the discussion in this section is taken from Kurt Salmon Associates, *Keeping New York in Fashion*.

¹⁰³ Warfield et al., 51-53.

¹⁰⁴ See World Bank, 45.

APPENDIX B

¹⁰⁵ We focus here on private nonfarm employment because of disclosure limitations on both Census Bureau and Bureau of Economic Analysis state-level employment data. The Enhanced County Business Patterns data has no disclosure limitations but covers only private nonfarm employment. Generally, the southeastern region’s farm and government employment accounts for about 20 percent of total employment. Thus, state and regional dependence levels would be somewhat lower if total employment was the basis for these calculations.

REFERENCES

- American Apparel Manufacturers Association. *Apparel Manufacturing Strategies*. Washington, D.C. 1984.
- _____. "Fast Fashion—Quick Response Product Line Development: 1990 Task Group Report of the Apparel Research Committee." Arlington, VA. n.d.
- _____. *Flexible Apparel Manufacturing: 1988 Report of the Technical Advisory Committee*. Arlington, VA. 1988.
- American Textile Manufacturers Institute. *Textile Hi-Lights*. Washington, D.C. December 1991.
- Anson, Robin. "Machine Makers in a Spin." *Financial Times*. October 3, 1991.
- Bailey, Thomas. *Education and the Transformation of Markets and Technology in the Textile Industry*. Technical Paper No. 2. New York: National Center on Education and Employment, Columbia University Teachers' College. April 1988.
- _____. "Organizational Innovation in the Apparel Industry." *Journal of Economy and Society*. Winter 1993.
- Bailey, Thomas, and Theo Eischer. *The Effect of a North American Free Trade Agreement on Apparel Employment in the U.S.* Washington, D.C.: U.S. Department of Labor, Bureau of International Labor Affairs. October 1991.
- Bobbin. "Bridging the Gap." July 1991.
- _____. "9th Annual Caribbean and Latin American Comparative Analysis." November 1992.
- _____. "Time Is of the Essence at TC2." May 1992.
- _____. December 1991.
- _____. June 1992.
- Burton, Diana (Defense Logistics Agency, Defense Personnel Support Center). Interview with authors. July 28, 1992.
- Cline, William R. *The Future of World Trade in Textiles and Apparel*. Washington, D.C.: Institute for International Economics. 1990.
- Congressional Budget Office. *Has Trade Protection Revitalized Domestic Industry?* Washington, D.C. 1986.
- Consumer Reports*. "How to Judge a Suit." September, 1992.

- Dickerson, Kitty. *Textiles and Apparel in the International Economy*. New York: Macmillan Publishing Co. 1991.
- Friedman, Robert (Corporation for Enterprise Development, Washington, D.C.). Address to the State Rural Development Policy Academy of the Council of Governors' Policy Advisors, National Governors' Association, Snowbird, UT. May 12, 1992.
- Georgia Tech Research Institute. *Technology in Appalachian Region Industry: An Investigation of Capabilities, Needs and Opportunities*. Atlanta, GA. 1990.
- Haggar, J.M., Jr. (Chairman, Haggar Apparel Company). "The Realities of Competing in a Global Market." In *Proceedings of the 18th International Apparel Research Conference*. Washington, D.C.: American Apparel Manufacturers Association. November 1991.
- Hanson, Gordon H. *U.S.-Mexico Free Trade and the Mexican Garment Industry*. Washington, D.C.: U.S. Department of Labor, Bureau of International Labor Affairs. September 1991.
- Hill, Ed. "Flexible Manufacturing Systems." In *Benchmarks of the World-Class Apparel Company: Proceedings of the 18th International Apparel Research Conference*. Washington, D.C.: American Apparel Manufacturers Association. November 1991.
- Hoffman, Kurt. "Clothing, Chips and Comparative Advantage: The Impact of Microelectronics on Trade and Production in the Garment Industry." *World Development Review*. 1988 (Vol. 13, No. 3).
- International Trade Administration. *The Mexico Apparel Market*. Washington, D.C.: U.S. Commerce Department, April 1992.
- _____. *The Mexico Textile and Fabric Market*. April 1992.
- Kurt Salmon Associates. *Keeping New York in Fashion*. New York: Garment Industry Development Council. March 1992.
- Lehigh Valley (Pennsylvania) Apparel and Textile Industry Labor-Management Innovation Network. *Second Year Report*. Princeton, N.J.: Participative Systems, Inc. 1991.
- Mathew, Shane, and David Stallings. *The Mexican Economy in the 1990's: Markets Are In; State Control Is Out*. Agriculture Information Bulletin No. 635. Washington, D.C.: U.S. Department of Agriculture, Economic Research Service. October 1991.
- MIT Commission on Industrial Productivity. *Working Papers of the MIT Commission on Industrial Productivity*, Vol. 2. Cambridge, MA: The MIT Press. 1989.
- Mody, A., and D. Wheeler. "Towards a Vanishing Middle: Competition in the World Garment Industry." *World Development*. 1987.
- National Cotton Council of America. *Cotton Counts Its Customers*. Memphis, TN. 1990.
- National Science Foundation. *Research and Development in Industry: 1988*. Washington, D.C.: 1990.
- Office of Technology Assessment. *Making Things Better*. OTA-ITE-443. Washington, D.C.: Government Printing Office. February 1990.

- _____. *U.S.-Mexico Trade: Pulling Together or Pulling Apart?* ITE-545. Washington, D.C.: Government Printing Office. October 1992.
- _____. *The U.S. Textile and Apparel Industry: A Revolution in Progress*, OTA-TET-332. Washington, D.C.: Government Printing Office. April 1987.
- Podgorsky, Michael. *Changes in the Industrial Structure of Job Displacements: Evidence from the Displaced Worker Surveys*. Washington, D.C.: U.S. Department of Labor. August, 1991.
- Porter, Michael. *The Competitive Advantage of Nations*. New York: The Free Press. 1990.
- Pugh, Lawrence (Chairman of the Board and CEO, V.F. Corporation). "What Drives a Market Driven Company?" In *Proceedings of the 18th International Apparel Research Conference*. Washington, D.C.: American Apparel Manufacturers Association. November 1991.
- Redman, John M. "Metro/Nonmetro Program Performance Under The Job Training Partnership Act." *Economic Development Quarterly*. November 1991.
- Redman, John M., and Dave Sears. *Helping Rural Manufacturers Adjust to New Trade Rules: Developing State Strategies for the Rural Apparel Industry*. Rural Development Research Report Number 87. Economic Research Service. Washington, D.C.: U.S. Department of Agriculture. 1994.
- Redman, John M., and Dave Sears. *Preparing for Trade Liberalization*. Economic Research Service Report. Washington, D.C.: U.S. Department of Agriculture. 1994.
- Rippy, Douglas (Director, School of Textiles, Clemson University). Presentation given at Textile Roundtable, Washington, D.C. July 1992.
- Rothstein, Richard. *Keeping Jobs in Fashion*. Washington, D.C.: Economic Policy Institute. 1989.
- Schroer, Bernard, and Carl M. Ziemke. *Technology Transfer to the Apparel Manufacturing Industry*. Montgomery, AL: Alabama Department of Economic and Community Affairs. 1990.
- Schwartz, Peter. *The Art of the Long View*. New York: Doubleday. 1991.
- Schwartz, Reuben. "The Impact of the U.S./Mexico Free Trade Agreement on Textile and Apparel Trade and Employment in the United States." Paper presented at NAFTA conference, Acapulco, Mexico. October 1991.
- Textile World*. December 1991.
- U.S. Bureau of the Census. *1989 Annual Survey of Manufactures*. Washington, D.C.: Government Printing Office. 1989.
- _____. *1977 Census of Manufactures: Textile Machinery in Place, Subject Series*. Washington, D.C.: Government Printing Office. 1977.
- _____. *1987 Census of Manufactures: Textile Machinery in Place, Subject Series*. Washington, D.C.: Government Printing Office. 1987.

_____. *1987 County Business Patterns*. Washington, D.C.: Government Printing Office. 1987.

U.S. Department of Commerce. *U.S. Industrial Outlook*. Washington, D.C.: Government Printing Office. 1992, 1993.

U.S. International Trade Commission. *The Economic Effects of Significant U.S. Import Restraints, Phase 1: Manufacturing*. USITC Pub. 2222. Washington, D.C. October 1989.

_____. *Potential Effects of a North American Free Trade Agreement on Apparel Investment in CBERA Countries*. USITC Pub. No. 2541. Washington, D.C. July 1992.

_____. *U.S. Global Competitiveness: The U.S. Textile Mill Industry*. Washington, D.C. 1987.

Warfield, C., M. Barry, and D. Cavender. "Apparel Retailing in the USA." *Textile Outlook International*. September 1989.

World Bank. *Garments: Global Subsector Study*. Industry Series Paper No. 19. Washington, D.C. December 1989.

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Originally established at The Aspen Institute in 1985 as the Rural Economic Policy Program, and renamed Community Strategies Group in 2000, CSG strives to have a positive impact on communities by designing, facilitating and participating in ongoing peer-learning and networking opportunities that enhance the efforts of organizations and practitioners working to achieve more widely shared and lasting prosperity in communities, and that sustain the impact of funders' investment in them. CSG's core business focuses on the fields of community and economic development, civic capacity, family and regional livelihood, and community-based philanthropy. CSG also designs and convenes occasional one-time gatherings of foundation or community practitioners working on issues critical to the collective learning of a larger field. In addition, CSG analyzes and packages guiding lessons and strategies from its various learning initiatives.

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The Aspen Institute
Community Strategies Group

ONE DUPONT CIRCLE, NW, SUITE 700

WASHINGTON, DC 20036

202-736-5804

FAX: 202-467-0790