U.S. GLOBAL COMPETITIVENESS: THE U.S. TEXTILE MILL INDUSTRY

Report to the Committee On Finance, U.S. Senate, Investigation No. 332-229 Under Section 332(b) of the Tariff Act of 1930

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Preface

On July 9, 1986, at the request of the Committee on Finance of the U.S. Senate 1/ and in accordance with section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), the U.S. International Trade Commission approved the institution of investigation No. 332-229, U.S. Global Competitiveness: The Textile Mill Industry. The investigation, instituted on October 13, 1986, is one in a series of six studies requested by the Committee on Finance on the international competitiveness of selected U.S. industries. 2/

This report examines the U.S. textile mill industry and its major foreign competitors to determine the effects of global competition on the industry, and to assess how the industry is responding to these dynamic forces. In addition, it examines the extent to which the domestic industry is becoming dependent on foreign sourcing of machinery and equipment.

As requested by the Committee, this report provides information on and analyzes the global competitiveness of the U.S. industry; the competitive strengths of U.S. and major foreign competitors in these markets; the nature of the main competitive problems facing the U.S. industry; the sources of these problems and to what extent they are transitory or reversible situations as opposed to fundamental or structural problems; and the competitive strategies of U.S. and foreign industries.

Notice of the investigation was given by posting copies of the notice of investigation at the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register (51 F.R. 27265, July 30, 1986). 3/

The Commission held a public hearing on this investigation as well as the five others in this series at the U.S. International Trade Commission Building in Washington, DC, on February 24, 1987. Testimony was presented at the hearing from representatives of the American Textile Manufacturers Institute, Washington, DC; J.P. Stevens & Co., Inc., New York, NY; Burlington Industries, Inc., Greensboro, NC; and the American Textile Machinery Association and five of its member firms.

In the course of this investigation, the Commission collected data and information from questionnaires sent to U.S. producers and purchasers of textile mill products. 4/ Information was also obtained from fieldwork in Tokyo and Osaka, Japan; Seoul, the Republic of Korea; Taipei, Taiwan; Hong Kong; Beijing, Shanghai, and Guangzhou, the People's Republic of China; and Milan, Como, Biella, and Prato, Italy. In addition, information was gathered from various public and private sources, industry meetings, interviews with industry executives representing producers and purchasers of textile mill products, and public data gathered in other Commission studies.

1/ The request from the Committee on Finance is reproduced in app. A.
2/ The five other studies cover building-block petrochemicals (No. 332-230), steel sheet and strip (No. 332-231), automotive parts (No. 332-232), optical fibers (No. 332-233), and oilseeds (No. 332-240).
3/ A copy of the Commission's Notice of Investigation is reproduced in app. B.
4/ A discussion of the survey design and methodology appears in app. C.

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Executive

Summary

EXECUTIVE SUMMARY

As requested by the Committee on Finance of the U.S. Senate, this report examines competitiveness issues as they relate to the U.S. textile mill industry and its major foreign competitors. 1/ 2/ Specifically, the Committee requested information on:

1. the comparative strengths of U.S. and major foreign competitors in international markets;
2. the nature of the main competitive problems facing the U.S. industry; and
3. the competitive strategies of U.S. and foreign producers.

These and other issues influencing the global competitiveness of the U.S. textile mill industry and its major competitors are examined in detail throughout this report and are summarized below.

Major Findings of the Study

- o World textile consumption: Several factors have served to limit its growth and to shift the relative supplier shares of the world market towards the developing countries (ch. 2).

From 1979 to 1986, world consumption of textile fibers, measured by volume, increased at an average annual rate of 2.4 percent; per capita consumption volume rose by only 0.7 percent per year. A large part of the sluggish growth in per capita consumption reflected a decline in consumption in Western Europe, which along with the United States are the largest textile markets. Partly because of the prolonged recession in Western Europe, per capita consumption there declined by an average rate of 2.1 percent per year during 1979-85. By contrast, U.S. per capita consumption rose by 1.4 percent annually during 1979-86, although it too declined during the early 1980's.

Total textile consumption in the United States and Western Europe to the year 2000 is projected to grow at an average annual rate of 1 to 2 percent. Growth in textile consumption in developing countries is expected to remain higher than that in the developed countries, because of a higher rate of population growth and, in some cases, more rapid increases in living standards. Total textile consumption in the developing countries is forecasted to increase at an average annual rate of 3 to 5 percent to the year 2000.

- o The expansion of production in developing countries has intensified competition in the world textile market, leading to significant shifts in trade (ch. 2).

The total volume of world trade in textiles, after rising at an average rate of 10.2 percent during 1970-80, fell by 2.2 percent per year during

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1/ The letter from the Committee on Finance is reproduced in app. A.
2/ Chairman Liebeler and Vice Chairman Brunsdale voted to approve issuance of this report, with grave reservations. To obtain copies of their views, contact the Office of the Secretary and request memorandum CO 65-K-44 (December 23, 1987).

1980-85. The emergence of a growing number of low-labor-cost suppliers in the world market since the late 1960's has led to great shifts in world trade. From 1970 to 1980, the developing countries, not including centrally planned economies, increased the value of their textile exports (in nominal terms) more rapidly than the developed countries, albeit from a smaller base, averaging annual growth of 20 percent versus 15 percent for the developed countries. These divergent trends have continued during the 1980's, with the decline in exports from developed countries accounting for most of the slowdown in world textile trade; their share of the total value of exports decreased from 78 percent in 1970 to 66 percent in 1985. By contrast, the developing countries' share increased from 15 to 23 percent during the period. The remainder of the trade in 1985 came from the centrally planned economies, of which China accounted for 80 percent of these exports.

- o The quotas provided for under the Multifiber Arrangement (MFA) have had a significant influence on the world textile and apparel markets (ch. 3).

Restrictive quotas encourage foreign producers whose goods are covered by quotas to shift their product mix to higher value-added goods, thereby intensifying competition at this end of the market. Quotas also limit the ability of the strongest competitors to increase their sales share in protected markets. As a result, production has shifted to countries and to products not limited by quotas, tending to diffuse sources of production for export compared with an unregulated market environment. Thus, the MFA has extended the globalization of the textile and apparel industries, with production shifting from the leading Asian suppliers that were faced with increasingly tighter quotas in the major developed country export markets to other low-labor-cost nations free of quota restraints or with unfilled quotas.

- o The labor cost advantage of textile mill industries in developing countries has been an obvious and central competitive concern of developed-country producers (ch. 12).

Current data indicate that foreign labor costs range from 2 percent of U.S. labor costs in the spinning and weaving sectors for China, to a range of 19 to 23 percent for Korea, Hong Kong, and Taiwan. The recent depreciation of the dollar has tended to boost the comparative labor costs for major developed-country producers well above the U.S. level, with Italy's costs (including benefits) 37 percent higher and Japan's, 30 percent. However, substantial differences exist from country to country in labor productivity, which considerably reduce the labor-cost advantage for the developing countries and aggravate the disadvantages for Italy and Japan. The developed countries, as a result of efforts to improve their productivity and cost competitiveness, account for the largest share of advanced technology in use.

- o Measures of the current competitiveness of the U.S. textile mill industry show a slight decline in the industry's relative importance in domestic and foreign markets (chs. 2, 4, and 5).

The total value of U.S. producers' shipments (unadjusted for inflation), after rising significantly from 1982 to 1983, showed little growth during 1983-86, totaling $54 billion in 1986. Although the domestic industry experienced growing import competition in the U.S. textile market as a whole

during 1982-86, import penetration remained relatively low at roughly 9 percent in terms of value in 1986.

The U.S. textile mill industry also experienced a decline in its share of world textile exports, from 6.5 percent in 1980 to 4.5 percent in 1985. In contrast, the share of world textile imports accounted for by the United States rose from 4.4 to 8.3 percent.

During 1982-86, the U.S. textile mill industry became less competitive in global markets in terms of production costs, including labor, raw materials, and costs associated with environmental and other government regulations, which were not fully offset by increases in productivity. The "overvalued" dollar during the first half of the 1980's also contributed to the decline in the industry's global competitiveness. Nevertheless, recent gains by foreign suppliers in the U.S. textile market appear to have slowed, and the adjustments made by the domestic industry during the 1970's and early 1980's have improved its competitive situation significantly.

o Although the number of installed spindles and looms in the U.S. textile mill industry declined during 1982-86, the higher productivity of the new equipment enabled the industry to expand its production capacity and reduce the level of employment (ch. 5).

The total number of spindles in place in the U.S. textile mill industry declined by 17 percent during 1982-86 to 13.4 million and the number of looms in place declined by 34 percent to 141,259. However, the removal of the least efficient equipment and the greater speed of the new spinning and weaving equipment enabled the industry to increase its production capacity.

Total employment in the U.S. textile mill industry during 1982-86 declined by 1.4 percent annually to an average of 709,000 workers in 1986. The decline in employment slowed from the 1971-82 pace and, since 1982, employment levels have remained relatively stable in all sectors except weaving mills, where employment has continued to decline, partly because of improvements in productivity.

At the same time, the number of weekly hours worked in the textile mill industry rose at an average annual rate of 2.5 percent and labor productivity rose by 3.6 percent per year during 1982-85. As a result, notwithstanding an average annual increase in hourly wages of 4.6 percent during 1982-86, total labor costs as a percentage of value added in current dollars remained fairly stable in all sectors of the industry. For the textile industry as a whole, wages as a share of value added in 1985 averaged 36.8 percent, compared with 23.6 percent for all U.S. industry.

o The cost of materials as a percentage of total textile industry shipments remained relatively stable during 1982-85, averaging 60.5 percent annually. The ratio for all U.S. industry fell by 1.7 percentage points to 56.0 percent (ch. 5).

Cotton and manmade fibers account for almost all the fibers consumed by U.S. textile mills, and both are supplied in abundance by domestic sources.

Changes in the U.S. Department of Agriculture's cotton loan and price support program significantly lowered U.S. cotton prices in August-September 1986 but a decline in the world cotton supply at the same time caused prices to rise. The USDA program removed the disadvantage in cotton costs faced by U.S. mills when world cotton prices were below the domestic price, which was based on the U.S. loan rate. Now, when world prices are below the U.S. loan rate, U.S. mills are able to buy cotton at prices roughly comparable to the world price. The high ratio of material costs to value of shipments, 60 percent, compared with 14 percent for labor costs, demonstrates the significant influence of the cost of materials on competitiveness.

o The U.S. textile mill industry's capital expenditures, annually averaging $1.8 billion during 1984-86, totaled an estimated $1.7 billion in 1986 (ch. 5).

The U.S. textile mill industry increased its capital expenditures as a share of shipments from 3.3 percent during 1981-83 to 3.5 percent during 1984-86. However, this was considerably lower than that for all manufacturing (6.0 percent during 1981-83 and 6.4 percent during 1984-86). The largest part of the textile industry's capital expenditures during 1982-85 was accounted for by the cotton and manmade-fiber weaving mills, the sectors most affected by import competition in the textile industry and also among the sectors in which there have been significant technological advances over the years. The capital improvements helped the U.S. textile mill industry to increase its productivity by 6 percent during 1975-85, in constant dollar terms. Despite these efforts, the U.S. textile mill industry's rate of modernization in some respects remained below that of several of its major developed and developing country competitors.

o The U.S. textile mill industry improved its profitability during 1984-86 compared with 1981-83. Although its return on sales still remained lower than that for all manufacturing, its return on assets was higher (ch. 5).

The U.S. textile mill industry's average return on total assets rose from 8.3 percent in 1981-83 to 8.9 percent in 1984-86. This resulted mainly from an increase in its average return on net sales, from 4.5 percent to 5.3 percent. This is in marked contrast to the financial performance for all manufacturing, and suggests that the textile mill industry may be making better progress than many other industries in improving productivity.

o Not all segments of the U.S. textile mill industry are affected equally by import competition (chs. 4 and 12).

Several sectors of the domestic industry encounter relatively little competition from foreign suppliers. In 1986, import penetration of less than 5 percent was recorded in carpets and rugs, knit fabrics, nonwoven fabrics, and spun yarns (except wool). The sectors that encounter the greatest direct competition from foreign suppliers are the cotton and manmade-fiber weaving mills, which have experienced growing import competition in the domestic market for broadwoven fabrics since at least 1982. Import penetration in the

cotton and manmade-fiber weaving sectors averaged 29 percent and 8 percent, respectively, in 1986. These sectors, along with the spun yarn sector, are also affected by the large and growing share that imported apparel and other finished textile products hold in the U.S. market.

Reflecting these sectoral differences, a similar pattern is seen in the actions the U.S. textile mill industry took during 1986 in response to the challenges of foreign and domestic competition, and the strategies each sector considers most important in the future. Differences are seen particularly in the extent to which different sectors look for government intervention or legislation, with weaving mills most frequently expecting such action and carpet and rug mills least expecting it. Most of the producers in the carpet and rug, knit fabric, and nonwoven fabric sectors do not see imports as a problem and expect to be able to counter any efforts of foreign suppliers to gain a significantly larger share of the U.S. market. There do not seem to be any factors that would diminish the prospects for continued growth in the carpet and nonwoven fabric sectors of the U.S. industry. Nonwoven fabric mills expect the rising costs of foreign competitors to be a major source of relief from import competition, and both producers and purchasers of textile mill products (e.g., apparel producers) placed particular weight on exchange rates as having special promise for relieving competitive pressures.

- Responses of U.S. textile mills to import competition are wide-ranging, although 46 percent of producer respondents indicated no special response to such competition other than what they would do in the normal course of business (ch. 12).

With regard to actions taken in 1986 in response to foreign competition, the percentage of producer respondents indicating no special response other than what they do in the normal course of business ranged from a high of 67 percent for floor covering mills to a low of 14 percent for knitting mills. The most frequently mentioned actions consisted mainly of product quality improvements, marketing strategy changes, and labor-cost reductions.

- U.S. purchasers of textile mill products gave especially favorable indications about future prospects for the U.S. textile mill industry, signaling a willingness to pay significant premiums for certain domestic products (ch. 12).

At the same time, U.S. purchasers of textile mill products cited several areas in which the U.S. textile mill industry needs to be more responsive. They include reducing delivery time, producing smaller runs to accommodate small orders, offering more flexibility and variety of styles, and providing more consistency in fabric quality. Despite their indicated willingness to pay premiums for certain products, purchasers also emphasized the need for the textile mill industry to be price competitive in some sectors, even to the extent of cutting product features and service where necessary.

By comparison, strategies that the U.S. textile mill industry identified as most important for its competitive future were similar in some respects to those that the purchasers emphasized (e.g., investment in labor-saving equipment and improvements in quality) but did not reflect purchaser concern for more responsiveness.

o New technology, supplied largely by foreign machinery producers, is improving the U.S. textile mill industry's quality and productivity and reducing its labor costs (ch. 5).

The new technologies in production equipment has generally increased productivity, reduced labor costs, and improved quality for the textile mill industry. The availability of these technologies has permitted U.S. producers to reduce the importance of foreign wage-rate differentials, relative to other costs, as an international competitive factor for textile mill industries. Newer technologies may enable U.S. mills to improve further both efficiency and flexibility, characteristics which in the past were often in mutual opposition, and many mills are initiating "quick response" programs involving closer ties with apparel producers and retailers. However, much of the potential in these areas is still to be realized as indicated by the fact that only about one-third of the mills in a recent survey have already initiated programs for quick response and that many mills do not have state-of-the-art technology, especially in the area of computerized monitoring and control.

The new technologies were developed largely by machinery producers in Europe and Japan. The U.S. textile machinery industry lost its technological leadership in key areas during the 1960's and, as a result, imports now supply more than three-fourths of the machinery used in processes from fiber through fabric formation in U.S. mills. However, U.S. machinery producers still have a strong position in finishing machinery, supplying over 50 percent, and miscellaneous equipment, supplying about 80 percent.

Comparative Strengths of Major Foreign Competitors

o China: The potential exists for China to expand significantly its exports of textiles given its extremely low labor costs, planned improvements in manufacturing, upgrading of product quality, self-sufficiency in raw materials, and product and market diversification (ch. 6).

China's growth in textile exports during the 1980's has largely resulted from its low-cost labor, its large supply of all types of fibers, and its large production capacity. However, China is stressing changes to adapt to more limited quantitative export growth in the future, such as the encouragement of joint ventures with foreign firms as a means of importing modern equipment to improve product quality and produce higher value-added goods. China is also expanding its manmade-fiber industry that would make it the third largest producer of such fibers after the United States and Japan.

The textile industry, the second largest industry in China after machinery, has been designated an "important" industry to provide employment opportunities and generate foreign exchange for developmental projects. A high priority has been given to increasing textile production, particularly in response to growing demand in the home market. Although it is unknown how much of the added output will be exported or retained for home consumption, China is relying on the industry for much needed foreign exchange, suggesting that export growth in textiles will continue to be strongly pursued. In addition, China has been expanding the share of its textile production for export; in 1986, exports accounted for 13 percent of total production compared with 6 percent in 1982.

The steps undertaken by China to improve its product mix and productivity, coupled with its labor cost advantage, should enable China to remain among the major competitors in the future. However, MFA quotas could restrict China's rate of export growth, barring quota liberalization in the proposed multilateral trade negotiations, and encourage it to shift to higher value-added goods to increase its world market share.

o Japan: Future growth in its textile exports is expected to be limited, particularly as a result of the high value of the yen and of the increasingly tighter restrictions on its exports to the United States (ch. 7).

Japan's textile mill industry has responded to its declining price competitiveness by cutting production costs, diversifying into nontextile areas, concentrating on production of high quality and high value-added goods, and developing new product and country markets. It has increased its expenditures for research and development, which rose by 36 percent during 1982-85. However, partly in response to the rise in the value of the yen, the industry has since become more cautious. Its investment in new plants and equipment in 1986 declined by 18 percent from that in 1985.

MFA restraints also limit the potential of Japan to expand its exports of textile mill products. Quotas on Japan's exports to the United States are limited to an average annual growth of less than 1 percent through 1989. Japan's export potential is also affected by the tight quotas on Hong Kong's exports to the United States, because an important part of Japan's textile exports are sent to Hong Kong to be converted into apparel and other products or export to the United States and other markets.

o Taiwan: The potential exists for Taiwan to expand further its textile exports on the basis of efforts underway to trade up to higher value-added goods and to diversify its export markets to reduce reliance on developed countries for sales growth (ch. 8).

These efforts have already been undertaken in response to the recent rise in the value of the New Taiwan dollar, its increasing labor costs, and the tight quota restrictions in its major developed-country markets. The value of the New Taiwan dollar has, since 1985, increased by about 25 percent against the U.S. dollar, which has reduced the price competitiveness of its exports but also reduced the cost of its imports. This is particularly important since Taiwan imports all of its raw cotton and wool. Rising labor costs and tight quotas in major export markets have encouraged Taiwan to upgrade its export product mix to compete better with developing countries that have lower labor costs and to maximize export revenues within the quota framework.

o Hong Kong: Rising labor costs and minimal quota growth in major developed-country markets limit Hong Kong's potential for real growth in its exports of textiles and textile products (ch. 9).

The labor shortage in Hong Kong has been driving up labor costs and hindering the textile industry from operating at a higher level of capacity utilization. In response to its declining cost competitiveness, the industry

has been investing in labor-saving technology that has made it an efficient producer of heavyweight cotton yarn and fabric. As a result, the level of technology in the industry is much higher than that of the other Asian nations examined here. The industry has also been faced with rising property values, which, coupled with a shortage of land for industrial development, have limited its potential to expand in Hong Kong.

Hong Kong's potential to increase its textile exports in real terms is also limited to the extent that it relies on the major developed countries for export growth. About 25 percent of its textile exports and almost 90 percent of its apparel exports in 1986 went to the United States, the EC, and Canada, all of whom limit Hong Kong's export growth to roughly 1 percent annually.

Two major uncertainties exist for Hong Kong that could affect its future relative importance in the global textile market. There is reportedly growing pressure on Hong Kong to revalue its currency, which would have the effect of reducing its price competitiveness in world markets. In addition, the return of Hong Kong to China in 1997 may lead to uncertainties that may influence the level of investment in the textile industry during the early 1990's in ways not yet seen.

o Korea: The potential exists for Korea to achieve its goal of becoming the world's largest textile exporter by the end of the century (ch. 10).

The Government of Korea has recently introduced several programs to help attain this goal, including one calling for about $118 million to modernize production facilities and about $12 million to expedite the development of fashion and technology. The program also emphasizes the diversification of export markets and overseas investment, particularly in areas such as the Caribbean countries whose exports to the United States are subject to few quota restrictions. The Government also designated the weaving mill sector for rationalization, with the goal of reducing the number of mills by 5 percent and encouraging the replacement of obsolete shuttle looms with shuttleless looms.

These initiatives reflect the vital role that the textile industry plays in Korea as its largest source of foreign exchange and largest employer in the manufacturing sector. Although the industry's competitiveness is being affected by the rising value of the Korean won, increasing labor costs, and growing competition from other low-labor-cost countries, the potential exists for Korea to expand its textile exports given the measures already being undertaken. Whereas MFA quotas will most likely limit its export growth in the major developed-country markets, Korea is targeting other markets, particularly Japan and other Asian countries, for export growth.

o Italy: Its importance in the global textile market will largely depend on its ability to remain price competitive in quality and fashion goods. It faces growing competition from newly industrialized countries, such as Hong Kong, which have been trading up to higher value-added goods (ch. 11).

Almost two-thirds of Italy's exports of textiles and apparel go to other EC countries, where growth in consumption slowed during the first half of the

1980's and is not expected to increase significantly in the next few years. As a result, Italy's industry is stepping up its efforts to diversify its markets, particularly in large untapped markets such as the U.S.S.R. Also, Italy's exports to major developed-country markets are currently unrestricted by quotas, unlike the Asian countries examined in this study.

U.S. Competitive Strategies and Outlook

Under recent market conditions, U.S. industry efforts to improve its competitive position during the past decade or so have been relatively successful, as reflected in improved profitability and a slowdown in import penetration. In the absence of changes in the MFA and its administration, or even in the case of selective import liberalization, prospects appear favorable for the industry at least to hold its own and possibly even to gain U.S. market share. With the recent improvement in its profitability and cash flow and clear indications of ways to enhance its competitiveness, the U.S. textile mill industry appears to have the potential to maintain or even expand its share of the domestic market against direct imports.

Although efforts by the U.S. textile mill industry to improve its competitiveness appear to be effective in the U.S. market, it is not readily apparent that they will assure similar maintenance or expansion of world market share. To achieve that, the U.S. industry would have to retain its share in the markets that will grow fastest--mainly the newly industrialized countries (NIC's) and other industrializing countries such as China. In the Caribbean, the potential exists for the industry to expand its exports, given the recent implementation of the "special access program" under U.S. tariff provision 807.00, in which eligible Caribbean countries will be permitted greater access to the U.S. market for their products assembled with fabric that has been both made and cut in the United States. By contrast, opportunities in the NIC's and China appear limited because of the presence and upscale movement of the textile mill industries there.

A more reasonable question is whether the U.S. textile industry might hold its share of world exports. The potential exists for it to do so, at least in the near term, assuming three conditions are met: (1) it continues to expand resources for "807" production; (2) the dollar does not appreciate substantially above its present level against currencies in its main export markets; and (3) the industry continues to improve its responsiveness to opportunities and maintain or expand current levels of investment in research and development and new equipment. On the latter point, the keen interest of foreign investors in establishing textile mill production capabilities in the United States indicates a favorable evaluation by foreigners of the prospects of being able to expand production on competitive terms with U.S.-based textile mill facilities.

Introduction

Chapter 1. INTRODUCTION

Scope of the Report

Textiles are important articles of commerce in virtually all countries. Almost all countries produce a significant amount of the textiles that they consume, and the home industries producing such goods typically are relatively large in their respective national economies. Because of varying advantages in raw materials, labor costs, and technology, some countries are lower cost producers.

Relative national advantages and national policies have shifted over the years for a variety of reasons. As a result of the relative size of the textile industry to most economies and of differences in national competitiveness, most countries traditionally have regulated trade in textiles through tariffs and other restrictions. The various textile agreements in effect since 1961 between importing and exporting nations have regulated this trade.

As requested by the Committee on Finance of the U.S. Senate, this report examines competitiveness issues as they relate to the textile mill industry. The industry is indigenous to practically all countries and provides the thread, yarn, and fabric required for production of apparel and other goods. The textile industry, in turn, depends on the fiber-producing sector for the raw materials from which textiles are formed. Because demand for textiles is derived in large part from demand for apparel, and because the development of the textile mill industry is, in turn, influenced by the development of the fiber-producing sector, this report also briefly examines the apparel and fiber industries to the extent that they influence conditions of competition of the textile industry. The report also examines the state of the U.S. textile machinery industry (appendix D) and the extent to which the domestic textile mill industry is becoming dependent on foreign sourcing of machinery and equipment (discussed in chapter 5).

This report examines the factors affecting competitiveness in the global market for textile mill products. It begins with a discussion of recent trends in the world textile market (chapter 2) and government policies that affect textile trade (chapter 3). The report then describes the U.S. textile market and the economic factors influencing supply and demand in this market (chapter 4). The structure of the U.S. textile mill industry (chapter 5) is then contrasted with that of China, Japan, Taiwan, Hong Kong, the Republic of Korea, and Italy (chapters 6-11). The report addresses the actions that the domestic industry and its major competitors have taken to remain competitive in markets both at home and abroad.

Finally, the report presents the results of questionnaires sent to U.S. producers and purchasers of textile mill products (chapter 12). It summarizes how the U.S. industry views its competitive position in the changing world market and analyzes its plans for responding to the challenges of foreign competition. (The survey design and methodology are described in appendix C).

Concepts and Determinants of Competitiveness 1/

The deterioration of the U.S. trade balance has stimulated numerous discussions and articles on the competitiveness of U.S. industry and the nature of U.S. comparative advantage. Although these terms are discussed intuitively and are often interchanged, they are, in fact, terms that do not easily lend themselves to quantitative measures. Competitiveness, in particular, is an elusive concept. It has been said that competitiveness is an idea that everyone understands, but none can define. Thus, quantifying the concept presents many problems.

Traditionally, the pattern of a country's imports and exports is explained by the principal of comparative advantage. 1/ The principal theory of trade is the factor endowment (Heckscher-Olin) theory. This theory states that a country will export those products whose production intensively uses that country's relatively abundant resources and import those products whose production intensively uses the country's relatively scarce resources. Thus, capital-abundant countries are expected to export capital-intensive goods and labor-abundant countries are expected to export labor-intensive products. Whereas early theory used labor and capital as the explanatory variables, later studies included such factors as natural resources and distinguished between skilled versus unskilled labor.

In a major review, Stern 2/ classified the determinants of comparative advantage into the following factors: resource endowment, technological differences, scale economies, market impediments and imperfections, and demand factors. Studies of comparative advantage are broad multiindustry, multicountry studies analyzing the structure of trade. As such, these studies tend to overlook industry-specific institutional factors affecting world trade.

The principle of comparative advantage is helpful in understanding major changes occurring in the global textile industry in recent years. For example, the multifold increase in world exports of textile mill products (and apparel items made from these products) from low-cost countries in Asia has led developed countries, such as the United States, to accelerate their development of higher volume, less labor-intensive technology for use in basic manufacturing operations. However, these efforts did not overcome the overall cost advantage of the Asian suppliers (particularly on the labor-intensive apparel products). As a result, intricate systems of import quotas were developed to protect the textile and apparel industries in the developed countries. The quota system under the MFA (discussed in chapter 3) limits the applicability of comparative advantage to explain trade flows.

Other government policies are important factors that can influence competitiveness through taxes and social regulation. For example, the cost of environmental regulations throughout the U.S. textile mill industry has direct

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1/ See app. E for a review of literature on competitiveness.
2/ For a review of the theory of comparative advantage, see Caves & Jones, World Trade and Payments: An Introduction, (Boston: Little, Brown), 1981
3/ R.M. Stern, "Testing Trade Theories," International Trade and Finance: Frontiers of Research, P.B. Kennen, editor, New York: Cambridge University Press, 1976.

effects on the volume and cost of the production of textiles. For example, the removal of all air-borne cotton dust from cotton spinning and weaving areas will increase the production costs and, therefore, will increase the final product price. Although the United States already has significantly lowered air-borne cotton dust levels in the textile mills, many countries in the Far East are just beginning to establish environmental regulations and some have not yet begun, and thus are not subject to the associated costs.

Government involvement can also lower costs by subsidizing capital investment and research and development, and by setting or regulating raw material costs. Among the six foreign countries whose textile industries are examined later in this report, it was found that China subsidizes energy, raw material, and capital costs (chapter 6); that small- and medium-sized firms in Japan are eligible to receive low-interest-rate loans from national or government banks (chapter 7); and that Taiwan had designated the textile industry to be strategic to the development of its economy, which enabled the industry to receive preferential tax rates and interest rates on loans for capital improvements (chapter 8). These factors are examined in greater detail in this study.

World Textile

Market

Chapter 2. WORLD TEXTILE MARKET

Textile mill products consist of a wide variety of articles that can be broadly classified into the following groups: Yarn, thread, braids, cordage, and twine; woven fabrics; knitted fabrics; carpets and rugs; home furnishings such as bedding and towels; and other products such as nonwoven fabrics. The data presented in this chapter on world textile trade are in terms of the Standard International Trade Classification (SITC) system of the United Nations, which uses it to publish world trade data. Textile products are classified under SITC 65, which includes textile yarns, fabrics, made-up articles, not elsewhere specified, and related products. These products are made from natural fibers (e.g., cotton, wool, linen, and silk), manmade fibers (e.g., polyester, acrylic, and nylon), or blends of these fibers. The major markets for textile products are apparel, home furnishings, and industrial products. Apparel is the largest single market for the textile industry and, thus, is examined insofar as it affects the competitiveness of the textile industry.

World Textile Consumption

Although data are not available on world consumption of textile mill products, trends in consumption can be obtained from an examination of changes in the level of world consumption of textile fibers. World fiber consumption has shown little or no growth since the late 1970's (table 2-1). Per capita consumption declined to lower levels during the early 1980's, reflecting not only a slowdown in the growth of apparel expenditures, but also sluggishness in consumer demand for such products as carpets, autos, and furniture that contain textile materials. 1/

The decline in world consumption largely reflected trends in the major markets, the United States and Western Europe. Per capita consumption in the United States, after averaging 58.6 pounds in 1979, declined continuously through 1982 to 46.9 pounds, the lowest level since the mid-1960's. It subsequently rebounded, reaching 64.6 pounds in 1986. By contrast, per capita consumption in Western Europe as recently as 1985 still remained below that reached in 1979, partly because of the prolonged recession there. The world-wide recession also affected fiber consumption in the developing countries. Per capita fiber consumption in the developing countries peaked at 7.9 pounds and then decreased to 7.5 pounds in 1982 and to 7.3 pounds in 1983 and again in 1984. 2/

Two factors that play a major role in influencing world consumption of textiles besides the level of economic activity are changes in world population and income levels. The world population increased by an average annual rate of 1.9 percent during 1970-86 to approximately 4.9 billion persons. The demographic trend varies considerably in the different parts of the world. Between 1970 and 1986, the population of Asia increased at an

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1/ United Nations, Food and Agriculture Organization, World Apparel Fibre Consumption Survey 1985, Rome, p. IX.

2/ Compiled from unpublished data of the United Nations, Food and Agriculture Organization, which updates data contained in World Apparel Fibre Consumption Survey 1985, Rome.

Table 2-1
Textile fibers: Consumption, population, and per capita consumption, by countries or country groupings, 1979 and 1982-86

Item	1979	1982	1983	1984	1985	1986
World:						
Consumption 1/ (million pounds)..	65,443	65,052	68,117	70,983	74,823	77,201
Population (million persons).....	4,357	4,585	4,663	4,741	4,813	4,897
Per capita consumption (pounds)..	15.0	14.2	14.6	15.0	15.5	15.8
United States:						
Consumption 2/ (million pounds)..	13,177	10,891	13,311	13,628	14,357	15,642
Population (million persons).....	225	232	234	237	239	242
Per capita consumption (pounds)..	58.6	46.9	56.9	57.5	60.1	64.6
Western Europe: 3/						
Consumption 4/ (million pounds)..	13,277	11,324	11,269	12,019	12,474	5/
Population (million persons).....	374	380	382	384	385	5/
Per capita consumption (pounds)..	35.5	27.3	28.6	30.1	30.5	5/

1/ Represents world production of cotton, wool, manmade fibers (excluding textile glass fiber, olefin, and acetate cigarette tow), and silk.
2/ Represents U.S. average annual fiber available for consumption; based on mill consumption plus imports less exports of semimanufactured and manufactured products of cotton, other vegetable fibers, wool, manmade fibers (except nontextile glass fiber), and silk.
3/ Includes the 12 member countries of the European Community, Austria, Finland, Iceland, Malta, Norway, Sweden, Switzerland, and Yugoslavia.
4/ Based on mill consumption plus imports less exports of semimanufactured and manufactured products of cotton, wool, and manmade fibers.
5/ Not available.

Source: World consumption and U.S. data from Textile Economics Bureau, Inc., Textile Organon, Roseland, NJ, April and July 1987 issues; world population from United Nations, Monthly Bulletin of Statistics, January 1987; and Western Europe data from United Nations, Food and Agriculture Organization, World Apparel Fibre Consumption Survey 1985, Rome.

annual rate of 2.4 percent, twice as fast as the rest of the world's 1.2 percent. As a result, Asia's share of the world population rose from 56 percent in 1971 to 60 percent in 1986. The population of the European industrial countries stagnated or declined, whereas the U.S. population showed an increase. U.S. consumption has risen much faster than in Western Europe during the first half of the 1980's, in minor part as a result of demographic trends. In Western Europe, the population increased by only 0.17 percent in the first half of the 1980's, compared with 1.3 percent in North America.

Another variable for assessing the level of consumption for textiles is total personal income. A comparison of data from typical individual countries reveals that the income elasticity of textile and apparel spending is positive and less than 1. If income grows by 1 percent, then the expected increase in textile and apparel consumption should range from 0.5 to 0.7 percent. However, this will vary with the income level. Generally, the income elasticity of textile and apparel spending will diminish with rising real income.

World Textile Imports

The principal importers of textiles are the EC (excluding intra-EC trade), the United States, Hong Kong, and China (table 2-2). The EC and the United States, together, accounted for almost 28 percent of total world imports in 1986, as shown in the following tabulation (in percent):

Market	1982	1986
European Community..	14.9	16.1
United States.....	7.0	11.5
Hong Kong.....	7.3	10.7
China.....	3.2	1/ 6.5
Japan.....	3.9	4.3

1/ Data are for 1985.

An important distinction exists between the EC and the United States, on the one hand, and Hong Kong and China, on the other, in that the former are also the principal importers of apparel and the latter are among the leading exporters. A major portion of the textiles imported by Hong Kong and China are converted into finished products such as apparel and subsequently exported.

Although the EC remains the largest importer of textiles, its imports grew at a much lower rate than U.S. imports during 1982-86 (table 2-2), as shown in the following tabulation (growth in percent and imports in millions of dollars):

Market	Growth from 1982 to 1986	1986 imports
European Community...	34	8,169
United States.....	104	5,826
Hong Kong.....	82	5,405
China 1/.....	114	2,760
Japan.....	36	2,177

1/ Data are through 1985 only.

A shift in world textile imports has been occurring in recent years. A number of developing countries are becoming important importers of textiles as their export-oriented apparel industries develop further. The leading textile-importing developing countries recorded significant growth in their exports of apparel during 1982-86, as shown in the following tabulation (in percent):

Country	Growth in textile imports	Growth in apparel exports
Hong Kong...	82	41
China 1/....	114	55
Singapore...	16	49
Korea.....	85	45
Taiwan.....	80	47

1/ Data are through 1985 only.

able 2-2
extiles and apparel: World imports, by products and selected countries, 1982-86

(In millions of dollars)

Country	Textiles					Apparel					Textiles and apparel				
	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986
eveloped countries:															
European Community:															
West Germany	4,813	4,943	4,841	4,963	6,612	6,711	6,734	7,007	7,052	10,429	11,524	11,677	11,848	12,015	17,041
United Kingdom	3,335	3,474	3,578	3,862	4,591	2,615	2,417	2,691	2,684	3,488	5,949	5,891	6,269	6,546	8,080
France	3,430	3,162	3,180	3,434	4,617	2,597	2,453	2,457	2,742	4,163	6,027	5,614	5,636	6,177	8,779
Italy	2,115	1,971	2,274	2,509	3,332	681	631	656	788	1,164	2,795	2,602	2,930	3,297	4,496
Netherlands	1,613	1,576	1,636	1,789	2,381	2,132	1,966	1,919	2,051	2,972	3,745	3,542	3,555	3,840	5,353
Belgium and Luxembourg	1,750	1,718	1,696	1,706	2,196	1,442	1,371	1,288	1,343	1,948	3,192	3,089	2,985	3,050	4,144
Other	1,770	1,730	1,705	1,960	2,345	1,029	958	969	1,080	1,384	2,812	2,689	2,749	3,038	3,728
Total 1/	18,836	18,574	18,990	20,222	26,074	17,207	16,530	16,981	17,740	25,548	36,044	35,104	35,972	37,963	51,621
uropean Community minus intra-EC trade	6,083	5,955	6,065	6,417	8,169	8,307	7,921	8,303	8,357	12,122	14,390	13,876	14,368	14,774	20,291
nited States	2,850	3,274	4,612	4,970	5,826	8,793	10,421	14,604	16,209	18,704	11,643	13,695	19,215	21,179	24,529
apan	1,605	1,489	1,929	1,895	2,177	1,832	1,501	1,949	1,995	2,853	3,437	2,990	3,878	3,890	5,030
anada	1,132	1,400	1,561	1,611	1,782	840	1,026	1,297	1,286	1,534	1,972	2,426	2,858	2,896	3,315
ustria	938	902	887	900	1,228	776	833	874	885	1,289	1,713	1,735	1,761	1,785	2,516
witzerland	863	854	877	908	1,217	1,389	1,394	1,461	1,493	2,128	2,252	2,248	2,338	2,401	3,345
ustralia	1,108	976	1,205	1,095	1,148	423	338	422	402	415	1,531	1,314	1,627	1,496	1,563
weden	706	667	698	732	902	1,082	943	977	1,129	1,520	1,788	1,610	1,675	1,862	2,422
eveloping countries:															
Hong Kong	2,968	3,263	4,159	4,247	5,405	1,060	1,166	1,484	1,697	2,528	4,027	4,289	5,463	5,944	7,933
Singapore	882	962	941	846	1,023	266	298	317	300	364	1,148	1,260	1,258	1,146	1,387
South Korea	498	505	601	637	923	13	12	15	16	21	511	517	617	653	944
Taiwan 2/	324	364	448	394	582	5	6	7	9	11	329	370	455	503	593
Macau	3/	276	323	317	3/	3/	17	16	13	3/	3/	293	339	340	3/
Thailand	201	257	278	228	3/	5	8	12	4	3/	206	265	290	232	3/
onmarket economies:															
China 4/	1,290	1,160	1,850	2,760	3/	80	90	120	130	3/	1,370	1,250	1,970	2,880	3/
orld	40,757	39,361	43,216	42,312	50,584	37,358	36,914	42,382	44,834	58,875	78,115	76,275	85,598	87,146	109,459

1/ Includes intra-EC Trade.
2/ Data from Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries, 1986, Taipei.
3/ No available.
4/ Data from International Trade 1985-86, General Agreement on Tariffs and Trade.

ource: Compiled from United Nations data for SITC 65 (textiles) and SITC 84 (apparel), as reported by each country, except as noted.

World Textile Industry

The world textile industry has been undergoing significant changes during the past 2 decades or so. During that time, the shift in production and employment from the developed countries to the low-cost developing countries intensified. Because developing countries tend to have a relatively abundant supply of labor and because the manufacture of textiles is relatively labor intensive, the textile industry, along with the apparel industry, has typically been among the first manufacturing industries to be established in developing countries. This has also been encouraged by the relatively low investment requirements, widespread knowledge of technology, and easy access to raw materials and production equipment on world markets. Moreover, exporting has been facilitated by international marketing efforts by importers and retailers in the developed countries.

The shift in production to low-cost developing countries created new major suppliers of textiles, such as Hong Kong, Korea, and Taiwan. These producers have been moving towards the production of higher value-added textile products. They have also taken advantage of new technologies to reduce costs by making their processes more labor efficient, thereby increasing the overall capital intensity of their textile industries. China has also made considerable advancements in its textile industry. Unlike the other major Asian producers, China is still a "less developed" country, which benefits from very low labor and other production costs. However, even China has been developing the production of higher value-added and specialty-fiber textile products.

World Production

World production of textiles grew at a considerably faster rate during the 1970's than during the 1980's (table 2-3). From 1970 to 1979, world textile production rose by 28 percent; from 1980 to 1984, it rose by only 1 percent. In contrast, all manufacturing increased by 47 percent during 1970-79 and by 9 percent during 1980-84. Growth in textile production during the 1970's was greatest for the developing countries and centrally planned economies, reflecting the general shift in production from developed to developing countries. This shift is further evidenced by a decrease in the developed countries' production of textiles during the 1980's, as shown in the following tabulation (in percent): 1/

Area	1970-79	1980-84
Developed countries.....	11	-4
Developing countries.....	40	7
Centrally planned economies..	53	8

1/ The U.S.S.R. also is a large producer of textiles and textile products, but its exports are relatively small. West Germany and several other EC countries are important producers and exporters; however, the major part of their exports involve intra-EC trade.

Table 2-3
Indexes of industrial production for all manufacturing, textiles, and apparel, 1/ by world areas, specified years 1970-84

(1980=100)

Item	1970	1979	1981	1982	1983	1984
World:						
All manufacturing	68	100	101	99	102	109
Textiles	78	100	99	97	99	101
Apparel	80	101	100	99	99	102
Developed countries:						
All manufacturing	77	101	100	96	99	106
Textiles	92	102	97	93	95	96
Apparel	97	105	97	95	94	96
North America: 2/						
All manufacturing	73	106	102	92	99	110
Textiles	80	105	98	89	102	101
Apparel	87	105	96	86	91	96
Europe:						
All manufacturing	82	100	98	97	97	100
Textiles	95	102	96	93	91	94
Apparel	103	106	98	98	96	96
Developing countries:						
All manufacturing	56	96	102	103	107	116
Textiles	70	98	101	101	105	107
Apparel	66	96	105	105	108	116
Asia:						
All manufacturing	53	97	108	114	125	139
Textiles	67	96	105	104	114	115
Apparel	61	95	111	112	126	142
Centrally planned economies:						
All manufacturing	51	96	102	105	110	115
Textiles	64	98	101	100	102	103
Apparel	62	95	103	103	105	108

1/ Also includes leather apparel and footwear.
2/ Includes the United States and Canada.

Source: United Nations Conference on Trade and Development, Handbook of International Trade and Development Statistics: 1986 Supplement, New York, 1986, pp. 460-465.

Major World Textile Producers Covered in This Study

The United States and the six foreign countries whose textile industries are examined later in this report--China, Japan, Taiwan, Hong Kong, Korea, and Italy--rank among the world's largest producers and exporters of textiles and textile products. 1/ Of these countries, China ranks as the largest producer of spun yarn and woven fabric; followed by the United States and Japan.

China's production of spun yarn in 1986 totaled 4.0 million metric tons, which was considerably higher than the 2.8 million metric tons produced by the United States and the 1.1 million metric tons produced by Japan that year (table 2-4). Of the countries studied here, Taiwan showed the greatest growth in production of spun yarn, which rose by 40 percent during 1982-85, as Taiwan expanded its manmade fiber industry. This compares with growth of 18 percent for China, 16 percent for the United States, 18 percent for Korea, and 26 percent for Hong Kong. In contrast, spun yarn production in Japan and Italy declined during 1982-86, 22 percent and 3 percent, respectively.

Of the countries studied here, China is also the largest producer of woven fabrics (table 2-5). All the countries 1/ experienced increases in woven fabric production during 1982-86, except for Japan, whose production fell 4 percent. Korea recorded the greatest growth in production, of 40 percent, followed by Hong Kong, 28 percent, and Taiwan, 21 percent. U.S. production rose by 12 percent and China's grew by 7 percent.

1/ Comparable data are not available on Italy's woven fabric production.

Table 2-4
Production of spun yarn, by specified countries, 1982-86

(In thousands of metric tons)

Country	1982	1983	1984	1985	1986
China 1/	3,358	3,277	3,226	3,528	3,971
United States 2/	2,397	2,757	2,645	2,587	2,791
Japan 3/	1,326	1,185	1,241	1,234	1,145
Taiwan 4/	553	592	729	774	5/
Italy 6/	985	991	1,006	1,020	1,015
Korea 7/	587	617	638	643	8/ 690
Hong Kong 9/	155	168	157	158	195

1/ Data from the State Statistical Bureau of China published in Statistical Yearbook of China--1986, and from The Asian Textile Outlook--1988 (JTN), published by Osaka Senken Ltd., Osaka, Japan, August 1987, p. 91.
2/ Data from the U.S. Department of Commerce publication, "Summary of Spun Yarn Production, 1975-86."
3/ Data from the Japan Chemical Fibres Association publication, Man-Made Fibres of Japan 1986/87, except for 1986 figure, which was estimated using the trend reported in The Asian Textile Outlook--1988.
4/ Data from the Textile Statistics Bureau publication, Quarterly Statistical Review, No. 165, Summer 1987, Manchester, England; data on wool yarn compiled from the Taiwan Textile Federation publication, Statistics on Taiwan Textile and Apparel Industries, 1984 and 1985. Data for 1982-83 are understated because wool yarn is not included. Production of wool yarn totaled 18,000 metric tons in 1984 and 16,000 metric tons in 1985.
5/ Not available.
6/ Data from the U.S. Department of State CERP Reports 0521, "Textiles, Italy," Aug. 20, 1984, Oct. 27, 1986, and Sept. 4, 1987. Includes partially processed wool yarn.
7/ Data from the Japan Chemical Fibres Association publication, Man-Made Fibers of Japan 1986/87, p. 77.
8/ Estimated by the staff of the U.S. International Trade Commission.
9/ Data from the Hong Kong Annual and Monthly Digests of Statistics, 1986 and 1987 editions, and except for 1982, do not include production of wool yarn. Hong Kong is not a large producer of wool yarn; in 1982, wool yarn production totaled approximately 1,000 metric tons.

Table 2-5
Production of woven fabrics, by specified countries, 1982-86

(In millions of square meters)

Country	1982	1983	1984	1985	1986
United States 1/...	11,434.4	13,207.4	13,389.1	12,420.6	12,765.3
China 2/.....	14,987.9	14,650.1	13,768.1	14,061.5	16,005.5
Japan 3/.....	6,250.0	6,452.9	6,551.1	6,313.6	4/ 6,000.0
Korea 5/.....	2,141.5	2,259.1	2,386.4	2,289.2	2,988.1
Taiwan 6/.....	2,288.0	2,400.2	2,630.6	2,902.6	2,946.9
Hong Kong 7/.....	634.4	717.8	723.6	685.0	814.7
Italy.....	8/	8/	8/	8/	8/

1/ Data from the U.S. Department of Commerce publication, Current Industrial Report, Broadwoven Fabrics (Gray) Summary for 1986, June 1987.
2/ Data from the State Statistical Bureau of China published in Statistical Yearbook of China--1986, and The Asian Textile Outlook--1988 (JTN), published by Osaka Senken Ltd., Osaka, Japan, August 1987, p. 91.
3/ Data from the Japan Chemical Fibres Association publication, Man-Made Fibers of Japan 1986/87, pp. 20-23.
4/ Estimated by the staff of the U.S. International Trade Commission based on data in The Asian Textile Outlook--1988, p. 19.
5/ Data compiled from published statistics of the Korea Federation of Textile Industries.
6/ Data compiled from the Taiwan Textile Federation publications, Statistics on Taiwan Textile and Apparel Industries--1986, p. 21, and Taiwan Textile Industry Survey Report--Weaving, 1983, pp. 28-29.
7/ Data from the Hong Kong Annual Digests of Statistics, 1986 and Hong Kong Monthly Digest of Statistics, June 1987.
8/ Not available.

World Production of Cotton, Manmade-Fiber, and Wool Yarns

Since yarn is the basic input to the production of all textile products (except nonwovens), its production serves as a good indicator of trends in world textile production in general. Total world yarn production is estimated to have grown by 12.0 percent during 1982-85, or by an average annual rate of 3.8 percent. 1/

The top four producers of cotton yarn, which accounts for approximately 60 percent of total world yarn production, are China, the U.S.S.R., India, and the United States (table 2-6). These countries, the most populous nations in the world, are the world's largest producers of raw cotton. The secondary cotton yarn producers also include many of the major producers of raw cotton, including Brazil, Pakistan, Turkey, and Egypt. Other producers that rely more on imports of raw cotton, such as Japan, Taiwan, and Korea, tend to have textile industries that are more advanced than the secondary suppliers that rely more heavily on domestic cotton.

Production of cotton yarn by the top five world producers increased during 1982-86, reflecting in part a response to increased consumer preference for natural fibers. The largest increase in production among the smaller producers occurred in Hong Kong, whose output of cotton yarn rose by 46 percent during the period. This growth was largely attributable to the increased demand for such yarn for use in denim.

The United States is by far the world's leading producer of manmade-fiber filament yarn followed by Japan (table 2-7). U.S. production declined by 10 percent from 1982 to 1986. Japan's production in 1986 remained essentially unchanged from 1982, but was 5 percent below its peak level of 1985. There has been a steady shift in production of manmade fibers and manmade-fiber yarn from developed countries to developing countries, primarily Taiwan, Korea, and China. Their growth has occurred at the expense of Western Europe, Japan, and, to a lesser extent, the United States. Taiwan's production of manmade-fiber filament yarn increased by 114 percent from 1982 to 1986, making Taiwan the world's fifth largest producer in 1986. Production in Korea grew by 45 percent during the period and production in China rose by 75 percent.

The world's largest producer of wool yarn is Italy, followed by the United Kingdom and China (table 2-8). Italy's production of wool yarn fluctuated between 1982 and 1986, with the 1986 level 5 percent below that in 1982. In contrast, wool yarn production in the United Kingdom and China increased steadily, rising by a total of 17 percent for the United Kingdom from 1982 to 1985 and by 51 percent for China from 1982 to 1986.

1/ Estimated by the staff of the U.S. International Trade Commission based on data shown in tables 2-6, 2-7, and 2-8.
2/ "World Textile Trade and Production Trends," op. cit., p. 17.

Table 2-6
Cotton yarn: Leading world producers, 1/ 1982-86

Country	1982	1983	1984	1985	1986	Average annual change, 2/ 1982-86
	1,000 metric tons					Percent
China	3,360.0	3,285.6	3,225.6	3,307.2	3,615.6	1.9
U.S.S.R. 3/	1,634.4	1,658.4	1,688.0	1,742.0	4/	2.1
India	973.2	1,093.2	1,149.6	1,260.0	1,262.4	6.7
United States 5/	932.0	1,055.1	956.6	977.0	1,127.0	4.9
Brazil 6/	429.9	473.2	472.2	544.0	4/	8.2
Pakistan	424.8	448.8	420.0	453.6	4/	2.2
Japan	470.4	438.0	436.8	436.8	4/	-2.4
Turkey 6/	370.0	370.0	380.0	400.0	4/	2.6
Taiwan 6/	274.7	289.4	343.6	367.7	4/	10.2
Korea	272.4	271.2	274.8	267.6	4/	-.6
Egypt	237.6	229.2	243.6	250.8	4/	1.8
France	201.6	199.1	193.2	194.4	193.2	-1.1
West Germany	168.0	181.2	194.4	188.4	205.2	5.1
Poland	187.2	176.4	178.8	183.6	193.2	.8
Romania	187.2	171.6	4/	4/	4/	4/
Italy 7/	159.2	154.6	164.6	161.6	185.0	3.9
Hong Kong	123.6	140.4	136.8	142.8	180.0	9.9
Czechoslovakia	139.2	140.4	140.4	141.6	142.8	.6
World total 6/	12,924.7	13,187.7	13,306.1	14,044.2	4/	2.8

1/ The enumerated countries include most of the leading world producers of cotton yarn as published by the United Nations in Monthly Bulletin of Statistics, September 1987.
2/ Average annual change for countries for which 1986 data are not available is based on 1982 to 1985.
3/ Data for 1984 and 1985 are from Cotton World Statistics, International Cotton Advisory Committee, Washington, DC, October 1986.
4/ Not available.
5/ Data compiled from U.S. Department of Commerce, Current Industrial Reports, "Summary of Spun Yarn Production, 1975-86."
6/ Data from Cotton World Statistics, International Cotton Advisory Committee, Washington, DC, October 1986.
7/ Data from U.S. Department of State, CERP Reports 0521, "Textiles, Italy," Aug. 20, 1984, Oct. 27, 1986, and Sept. 4, 1987.

Source: United Nations, Monthly Bulletin of Statistics, vol. XLI, No. 9, September 1987, except as noted.

Table 2-7
Manmade-fiber filament yarn: 1/ Leading world producers, 2/ 1982-86

Country	1982	1983	1984	1985	1986	Average annual change, 1982-86
	1,000 metric tons					Percent
United States	1,225.0	1,413.2	1,368.2	1,379.3	1,357.7	2.6
Japan	714.3	714.1	744.8	750.0	714.9	3/
U.S.S.R.	617.2	645.0	679.8	700.8	708.8	3.5
Taiwan	284.1	326.4	420.4	512.0	608.4	21.0
Korea	311.3	349.4	382.4	422.5	450.0	9.6
West Germany	380.5	398.2	413.0	424.0	347.0	-2.3
China	141.0	151.0	190.1	239.9	247.0	15.0
India	110.6	133.4	148.0	174.4	187.8	14.2
Italy	180.3	171.8	184.6	200.2	173.0	-1.0
Mexico	131.2	137.1	159.0	164.4	165.5	6.0
Other	1,407.5	1,451.7	1,548.8	1,657.8	1,797.0	6.3
Total	5,503.1	5,891.4	6,239.2	6,609.0	6,757.0	5.3

1/ The data include both manmade-fiber filament yarn and monofilaments.
2/ These 10 leading producers accounted for 73 percent of world manmade-fiber filament yarn production in 1986.
3/ Less than 0.05 percent.

Source: Data compiled from Textile Economics Bureau, Inc., Textile Organon, Roseland, NJ, vol. 58, No. 7, July 1987. Data converted from millions of pounds to thousands of metric tons using the conversion factor of 1 pound equals 0.4536 kilogram.

Table 2-8
Wool yarn: Leading world producers, 1/ 1982-86

Country	1982	1983	1984	1985	1986	Average annual change, 1982-86
	1,000 metric tons					Percent
Italy 2/ 3/	488.0	495.4	475.9	487.1	462.6	-1.3
United Kingdom	114.4	121.2	126.1	134.0	4/	5/ 5.4
China	92.5	102.1	106.8	119.2	139.9	10.9
Taiwan 6/	4/	4/	97.3	96.4	106.6	7/ 4.6
Japan	120.4	110.0	121.0	123.5	103.1	-3.8
France	114.0	107.9	107.0	106.0	4/	5/ -2.4
Belgium	73.7	86.8	91.9	90.6	86.2	4.0
Poland	74.4	81.2	79.2	82.2	82.3	2.6
United States 8/	54.5	59.0	57.2	50.5	62.0	3.3
West Germany	45.4	46.4	48.0	55.7	55.2	5.0
Yugoslavia	50.2	49.6	52.4	48.0	51.7	.7
Korea	35.9	41.6	45.1	41.4	48.1	7.6

1/ The enumerated countries include most of the leading producers of wool yarn as published by the United Nations in Monthly Bulletin of Statistics. The U.S.S.R. is also a large producer of wool yarn but data are not available on its production.
2/ Data from the U.S. Department of State, CERP Reports 0521, "Textiles, Italy," Aug. 20, 1984, Oct. 27, 1986, and Sept. 4, 1987.
3/ Data are most likely overstated by 10 to 20 percent because data include some wool and other fiber-blended fabrics.
4/ Not available.
5/ Based on 1982 to 1985.
6/ Data compiled from the Taiwan Textile Federation publication, Statistics on Taiwan Textile and Apparel Industries, 1986, p. 21.
7/ Based on 1984 to 1986.
8/ Data from U.S. Department of Commerce, Current Industrial Reports, "Summary of Spun Yarn Production, 1975-86".

Source: United Nations, Monthly Bulletin of Statistics, vol. XLI, No. 9, September 1987, except as noted.

World Textile Capacity

Trends in world textile capacity can be obtained from an examination of data on spinning and weaving equipment in place, published by Zurich-based International Textile Manufacturers Federation (ITMF). This equipment is used to manufacture the most basic or primary textile products, namely spun yarn and woven fabric. However, spinning and weaving equipment has probably undergone more technological innovations than most other equipment used in the textile industry. Thus, a problem arises because the extent of modernization and technological progress varies considerably among countries. Nevertheless, changes in the level of spinning and weaving equipment in place can highlight shifts in world capacity.

World spinning and weaving capacity consists largely of equipment operating on the cotton system, originally used to process cotton fiber into yarn but, with the development of different types of manmade fibers over the years, also is now used to spin short manmade-staple fiber into yarn. 1/ Short staple fiber is mostly spun on either conventional ring spinning frames or open-end (or rotors) spinning equipment, which was developed in Czechoslovakia during the 1960's. Open-end spinning, commonly referred to in the industry as O-E spinning, is purportedly three to five times more productive than ring spinning. However, its use is limited to manufacturing coarse yarn (e.g., yarn for denim fabric). 2/

World capacity in spinning and weaving equipment operating on the cotton system, based on ITMF data, is shown in the following tabulation for 1985:

Item	Quantity	Share of total Percent
Spinning: 1/		
Cotton-system ring spinning.....	149.7	82.5
Wool system.....	15.3	8.4
O-E system 2/.....	16.5	9.1
Total.....	181.5	100.0
Weaving: 3/		
Cotton-system looms.....	2,718	71.8
Filament looms 4/.....	888	23.5
Wool looms.....	178	4.7
Total.....	3,784	100.0

1/ Spinning is in millions of ring spindle equivalents.
2/ O-E spinning capacity, published by ITMF in terms of the number of rotors, was converted into spindle equivalents at the rate of 2.5 spindles per rotor.
3/ Weaving is in thousands of looms.
4/ Looms for weaving manmade-fiber filament yarn and silk filament yarn.

1/ Short staple fibers processed on the cotton system primarily include cotton and manmade fibers in lengths usually from 1 to 4 inches.
2/ J. Hasegawa, "From Automation to Robotics in the Textile Industry," one of several papers presented at the Annual World Conference in London in May 1985 and published by the Textile Institute in World Textiles: Investment, Innovation, Invention, Manchester, England, 1985.

However, ring spinning capacity has shown little or no growth during the past decade, as shown in the following tabulation (in thousands of ring spindle equivalents):

Year	Ring spinning	O-E spinning
1975	148,590	1/
1980	158,251	8,998
1981	155,901	10,038
1982	149,738	1/
1983	151,735	13,410
1984	151,085	16,238
1985	149,729	16,455
Percentage change from--		
1975 to 1985	0.8	1/
1975 to 1980	6.5	1/
1980 to 1985	-5.4	82.9

1/ Not available.

Ring spinning capacity, after expanding during the second half of the 1970's, began to contract in 1981. The decline accelerated in 1982 as the worldwide recession intensified, and capacity declined to its lowest level since the mid-1970's. Capacity rebounded in 1983 as the economic recovery was getting under way; however, it proved only temporary, as capacity resumed its downward trend in 1984 and continued in 1985 when installed capacity decreased to just under the 1982 low. O-E spinning capacity, on the other hand, grew rapidly during the first half of the 1980's. It equaled 10 percent of ring spinning capacity in 1985, up from slightly less than 6 percent in 1980. The likelihood that O-E spinning capacity will continue to expand rapidly in the near future largely rests on technological progress into finer yarns. 1/

The decline in ring spinning capacity during the 1980's occurred in the developed countries and the centrally planned economies. By contrast, the developing countries expanded their ring spinning capacity, according to data published by ITMF, as shown in the following tabulation (in thousands of ring spindle equivalents):

1/ Herwig M. Strolz, "World Textile Machinery Investments in the Seventies," International Textile Manufacturers Federation, Zurich.

Year	Developed countries	Developing countries	Centrally planned economies
1975.....	55,104	51,217	42,254
1980.....	50,229	58,729	49,293
1985.....	40,834	65,753	43,142

The loss of ring spinning capacity in the developed countries was largely accounted for by the United States and the EC, which together accounted for about 60 percent of ring spinning capacity in the developed countries in 1985. Japan, on the other hand, was the most noticeable exception to the decline, having posted an increase of nearly 11 percent in its ring spinning capacity to almost 9.4 million spindles by 1985, or 23 percent of total capacity.

The increase in ring spinning capacity in the developing countries can be traced to the expansion of the textile industries in Asia, especially those in India, Pakistan, Taiwan, and Korea. India, a major producer of raw cotton, has the largest number of spindles in the world, but a major part of them are nonautomatic and located primarily in the cottage industry sector.

As the developing countries were expanding their ring spinning capacity over the years, the developed countries expanded their O-E spinning capacity. According to ITMF data, O-E spinning capacity increased significantly in developed countries, as well as in the other major country groups, as shown in the following tabulation (in thousands of ring spindle equivalents):

Year	Developed countries	Developing countries	Centrally planned economies
1975.....	1,783	1/	1/
1980.....	2,403	993	5,603
1985.....	3,075	1,590	11,790

1/ Not available.

The concentration of O-E spinning capacity in the centrally planned economies is largely accounted for by the U.S.S.R. This is attributable to the availability of O-E spinning equipment in the Eastern bloc, since such equipment was developed in Czechoslovakia; the need to improve productivity in the U.S.S.R.; the greater use of heavyweight fabric there for which O-E yarn is well-suited; and investment decisions that are influenced more by government planning than market conditions. 1/

1/ Herwig M. Strolz, op. cit.

The divergent trends in ring spinning and O-E spinning capacities are somewhat replicated in the weaving sector. Total cotton-system loom capacity registered little or no growth during the first half of the 1980's, whereas the number of shuttleless looms operating on the cotton system increased significantly, based on ITMF data, as shown in the following tabulation:

Year	Total	Shuttleless	Share 1/
	----1,000 looms----		Percent
1975.....	1,913	2/	2/
1980.....	1,977	232	11.7
1981.....	2,874	260	9.0
1982.....	2,887	273	9.5
1983.....	2,876	307	10.7
1984.....	2,808	345	12.3
1985.....	2,718	386	14.2

1/ Ratio of shuttleless looms to total looms.
2/ Not available.

The relative importance of shuttleless looms, which are much more productive than the conventional shuttle looms, will most likely continue to increase in the near future, as evidenced by shipments of such looms to the textile industry worldwide, which were double those of the shuttle looms during 1984-86. This is particularly so for the developed countries, since shuttleless looms, through high-speed production and product standardization, enable producers to increase their productivity and cost competitiveness. The developed countries still account for the largest share of shuttleless looms, as shown in the following tabulation (in thousands of looms):

Year	Developed countries		Developing countries		Centrally planned economies	
	Total	Shuttleless	Total	Shuttleless	Total	Shuttleless
1975..	754.0	1/	586.7	1/	572.5	1/
1980..	621.8	98.3	705.6	42.9	649.3	91.1
1985..	657.7	171.6	1068.0	83.6	992.6	130.6

1/ Not available.

Employment in the World Textile Industry

The growth of employment in the world textile industry since 1970 has occurred almost entirely in the developing countries. During 1970-83, employment in the developing countries rose by 38 percent (table 2-9). In contrast, employment in the developed countries decreased by 35 percent during 1970-84. The decline in the developed countries largely resulted from the introduction of labor-saving equipment; relatively low growth in demand, particularly in their home markets; and the shift in production from developed to developing countries.

Table 2-9
Textiles: Indexes of industrial employment, by country groupings, specified years 1970-84

(1980=100)

Area	1970	1979	1981	1982	1983	1984
World	93	101	95	95	95	-
Developed countries	135	105	92	86	88	87
Developing countries	71	100	96	98	98	-
Centrally planned economies	94	100	100	98	97	96

Source: United Nations Conference on Trade and Development, Handbook of International Trade and Development Statistics: 1986 Supplement, New York, 1986, pp. 466-471.

The ongoing shift in world production of textiles from developed to developing countries partly reflects the large labor content in the manufacture of these products and the considerably lower labor costs in the developing countries (table 2-10). For instance, China and Indonesia have hourly compensation costs that averaged only 2 to 3 percent of costs in the United States in 1986. Thailand's hourly rates were only slightly higher at about 7 percent of U.S. costs. Similarly, despite the major increases in hourly compensation costs in 1986 for Hong Kong, Korea, and Taiwan, they still registered hourly rates that were on average only 20 percent of those in the United States. In contrast, labor costs have almost doubled in the last 10 years in the United States and have more than doubled in Italy and Japan.

Developed countries have maintained their production of textiles, in part through significantly improving labor productivity (table 2-11). Labor productivity in developed countries increased by 57 percent from 1970 to 1984, largely because of the modernization of equipment and production techniques. Labor productivity in the developing countries rose by 20 percent from 1970 to 1983.

Table 2-10
Textiles: Hourly compensation costs for production workers, by selected countries, specified years 1976-86

(Per hour)

Country	1976	1980	1982	1983	1984	1985	1986
West Germany	$5.37	$9.60	$7.95	$7.89	$7.33	$7.32	$10.30
Italy	3.74	6.96	6.57	6.98	6.57	6.77	9.19
United States	4.48	6.31	7.37	7.82	8.21	8.52	8.81
Japan	2.40	4.22	4.15	4.52	4.68	4.71	6.77
Hong Kong	.88	1.53	1.63	1.48	1.59	1.74	1.87
Korea	.39	.81	.90	.93	1.01	1.01	1.09
Taiwan	.38	.85	1.11	1.16	1.41	1.39	1.62
Brazil	.83	1.16	1.40	.96	.86	.92	1/
India	.27	.47	.43	1/	1/	1/	1/
Thailand 2/	1/	1/	.53	1/	.56	.53	.58
China 2/	1/	1/	1/	1/	.26	.20	.23
Indonesia 2/	1/	1/	1/	1/	.22	.23	.20

1/ Not available.
2/ Werner International Management Consultants, Inc., "Spinning and Weaving Labour Cost Comparisons," Brussels and New York, Autumn 1982, Spring 1984, Winter 1985/86, Spring 1987.

Note.--Hourly compensation is defined as (1) all payments made directly to the worker, before payroll deductions of any kind, and (2) employer contributions to legally required insurance programs and contractual and private benefit plans. In addition, for some countries, compensation is adjusted for other taxes on payrolls or employment (or reduced to reflect subsidies), even if they are not for the direct benefit of workers. Hourly compensation does not include all items of labor costs, such as the costs of recruitment, employee training, and plant facilities and services.

Source: U.S. Bureau of Labor Statistics, Office of Productivity and Technology, unpublished data, September 1987, unless otherwise specified.

Table 2-11
Textiles: Indexes of labor productivity, by country groupings, specified years 1970-84

(1980=100)

Area	1970	1976	1981	1982	1983	1984
World	83	94	107	106	111	-
Developed countries	70	88	107	109	107	110
Developing countries	96	98	109	106	115	-
Centrally planned economies	68	90	101	102	105	107

Source: United Nations Conference on Trade and Development, Handbook of International Trade and Development Statistics: 1986 Supplement, New York, 1986, pp. 472-477.

World Textile Exports

Concern over textile trade has intensified during the past decade or so, as the developing countries significantly expanded their production capacity against a backdrop of sluggish growth in textile consumption in the developed countries, which are the major markets. Unlike the developed countries, which have depended primarily on their home markets to absorb production, many of the developing countries have relied on exports to generate growth in output and economies of scale.

The total value of world exports of textiles expanded considerably during the 1970's and then declined during the first half of the 1980's in both real and nominal terms. From 1970 to 1980, world exports rose by an average annual rate of 16.3 percent; from 1980 to 1985, they declined by an average of 0.7 percent annually. Exports were adversely affected by the recession of the early 1980's and the sluggish growth in 1985 (table 2-12). As a result, world textile exports in 1985, in real terms, reached their lowest level since 1977.

Table 2-12
World exports of textiles and apparel, 1980-85

(In millions of 1980 dollars)

Year	Textile exports	Annual percentage change	Apparel exports	Annual percentage change
1980	56,149	4	39,930	8
1981	49,779	-11	38,198	-4
1982	46,412	-7	35,490	-9
1983	45,468	-2	35,252	-1
1984	47,272	4	40,081	14
1985	45,001	-5	43,099	7

Source: Compiled from United Nations data.

The expansion of production capacity in the developing countries has intensified competition in the world textile market, leading to significant shifts in trade. From 1970 to 1980, the developing countries increased their exports (in nominal terms) more rapidly than the developed countries, albeit from a smaller base, averaging annual growth of 20 percent versus 15 percent for the developed countries. These divergent trends have continued during the 1980's, when the decline in exports from developed countries accounted for most of the slowdown in world textile trade (table 2-13). As a result, although the developed countries remained the major exporters, their share of the trade decreased from 78 percent in 1970 to 66 percent in 1985. By contrast, the developing countries' share increased during the period, from 15 percent to 23 percent. The remainder of the trade in 1985 came from the centrally planned economies, with 80 percent of their exports originating in China.

In fact, the importance of the developing countries has been increasing in both textiles and apparel. Unlike the developed countries, whose exports have been concentrated in textiles, mostly to other developed countries, the developing countries have focused primarily on apparel exports to the developed countries (table 2-13). Their exports have grown more quickly than world trade in both textiles and apparel, with their share amounting to 50 percent for apparel and 23 percent for textiles in 1985, in value. About one-half of their exports of textiles went to developed countries and the other half to other developing countries and to centrally planned economies. The developed countries, despite having experienced a decline in their share of the trade over the years, still dominate world trade in textiles, generating about two-thirds of the exports. Their greatest loss in market share has come in apparel, for which they supplied only 39 percent of the world exports in 1985 versus 63 percent in 1970.

The principal world exporter of textiles remained the EC (table 2-14). Almost two-thirds of the EC's trade during the 1980's was accounted for by trade among its member countries, which, along with its external trade, had declined during the early 1980's. The EC's share of the total value of world textile exports remained stable at 38 percent from 1982 to 1985.

Table 2-13
Textiles and apparel: World exports, by sources and by markets, specified years 1970-85

(In millions of dollars)

Source (Market)	World	Developed countries			Developing countries	Centrally planned economies
		Total	United States	EC		
	Textiles					
World:						
1970 1/	12,418	8,402	1,183	4,405	3,035	971
1980	56,149	36,152	2,479	23,026	15,357	4,395
1982	50,512	30,666	2,724	18,622	15,215	4,230
1983	51,017	30,864	3,339	18,382	15,421	4,274
1984	54,099	33,191	4,284	18,882	15,626	4,785
1985	52,471	33,709	4,369	20,129	13,962	4,470
Developed countries:						
1970 1/	9,638	7,225	826	3,974	1,982	427
1980	39,203	28,465	1,234	19,455	8,336	2,370
1982	33,646	23,825	1,424	15,762	7,749	2,030
1983	33,056	23,740	1,718	15,544	7,391	1,884
1984	33,903	24,741	2,226	15,792	7,298	1,822
1985	34,723	25,623	2,391	16,758	7,302	1,752
Developing countries:						
1970 1/	1,917	931	350	324	747	237
1980	12,421	5,939	1,057	2,834	5,246	1,032
1982	11,989	5,287	1,108	2,237	5,225	1,257
1983	13,062	5,512	1,393	2,231	5,840	1,366
1984	14,692	6,585	1,725	2,453	6,041	1,854
1985	12,275	6,176	1,631	2,632	4,532	1,394
Centrally planned economies:						
1970 1/	862	246	8	107	305	307
1980	4,525	1,748	188	737	1,775	993
1982	4,877	1,554	192	624	2,240	943
1983	4,899	1,611	227	607	2,190	1,025
1984	5,504	1,865	333	637	2,287	1,108
1985	5,474	1,911	347	740	2,129	1,323
	Apparel					
World:						
1970 1/	6,440	4,790	1,249	2,411	607	1,011
1980	39,930	31,479	5,891	18,268	5,165	3,217
1982	40,023	30,927	7,701	15,864	5,709	3,122
1983	40,374	31,949	9,449	15,538	5,238	3,029
1984	45,869	37,282	13,124	16,078	5,313	3,086
1985	49,417	41,693	14,990	17,922	4,047	3,483
Developed countries:						
1970 1/	4,085	3,503	647	2,024	381	172
1980	20,436	17,612	767	12,308	2,116	688
1982	18,092	15,149	919	10,173	2,057	844
1983	17,790	15,140	1,205	9,992	1,862	720
1984	18,700	16,016	1,889	10,020	1,849	794
1985	19,489	17,206	2,218	10,516	1,794	487
Developing countries:						
1970 1/	1,362	1,132	599	297	170	58
1980	14,598	11,985	4,777	4,989	2,301	280
1982	16,851	13,845	6,244	4,837	2,523	286
1983	17,388	14,723	7,601	4,627	2,292	310
1984	21,900	19,039	10,499	5,228	2,428	370
1985	24,919	22,156	12,079	6,494	1,784	813
Centrally planned economies:						
1970 1/	993	155	3	90	56	781
1980	4,896	1,881	347	972	748	2,249
1982	5,080	1,933	538	853	1,128	1,991
1983	5,196	2,086	643	919	1,084	1,998
1984	5,269	2,227	736	830	1,036	1,922
1985	5,009	2,330	693	912	469	2,184

1/ Data from United Nations, Monthly Bulletin of Statistics, May 1984.

Source: United Nations, Monthly Bulletin of Statistics, May 1986, except as noted.

Table 2-14
Textiles and apparel: World exports, by products and by selected countries, 1982-86

(In millions of dollars)

Country	Textiles					Apparel					Textiles and apparel				
	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986
Developed countries:															
United States	2,772	2,359	2,376	2,354	2,559	987	883	846	723	879	3,759	3,242	3,222	3,077	3,438
Canada	288	263	312	324	396	207	188	237	252	296	495	452	549	576	691
Japan	5,085	5,325	5,338	4,921	5,464	547	658	776	728	734	5,632	5,983	6,114	5,649	6,198
European Community:															
Italy	4,013	4,193	4,365	4,687	5,920	4,408	4,530	4,828	5,359	7,572	8,421	8,723	9,193	10,046	13,492
West Germany	5,482	5,381	5,554	6,003	8,076	2,518	2,556	2,626	2,883	4,199	7,999	7,936	8,180	8,887	12,274
France	2,675	2,589	2,673	2,845	3,566	1,815	1,743	1,760	1,970	2,556	4,491	4,332	4,433	4,816	6,122
Belgium and Luxembourg	2,723	2,795	2,842	2,960	3,850	746	745	730	740	1,046	3,469	3,540	3,572	3,700	4,896
United Kingdom	2,025	1,882	1,914	2,128	2,428	1,466	1,310	1,338	1,517	1,798	3,491	3,191	3,253	3,645	4,225
Netherlands	1,782	1,697	1,726	1,863	2,475	693	670	665	753	1,109	2,475	2,368	2,392	2,616	3,584
Other	2,284	2,322	2,516	2,431	2,132	1,964	2,095	2,400	2,692	3,501	4,247	4,417	4,916	5,123	5,634
Total	20,981	20,859	21,590	22,917	28,447	13,610	13,649	14,347	15,914	21,781	34,593	34,507	35,939	38,834	50,227
Turkey 1/	767	853	1,006	1,050	1,200	398	648	1,267	1,470	2,300	1,166	1,500	2,273	2,520	3,500
Yugoslavia	481	402	365	378	357	614	511	595	560	542	1,094	913	959	939	899
Developing countries:															
Hong Kong	831	967	1,103	998	1,402	4,728	4,681	5,961	5,728	6,670	5,558	5,648	7,064	6,726	8,072
Taiwan 2/	1,768	1,828	2,193	2,519	3,098	2,891	2,983	3,761	3,513	4,259	4,659	4,811	5,954	6,032	7,357
South Korea	2,238	2,414	2,601	2,523	3,202	3,777	3,701	4,501	4,453	5,478	6,014	6,115	7,102	6,976	8,681
Pakistan	927	1,312	998	970	1,263	144	227	246	256	463	1,071	1,539	1,243	1,225	1,726
India 3/	741	713	814	828	785	735	667	785	846	1,023	1,476	1,380	1,599	1,673	1,808
Singapore	343	382	366	353	425	459	477	553	536	675	803	859	920	889	1,100
Thailand	345	312	402	416	3/ 398	371	409	552	573	3/ 620	715	721	954	988	3/ 1,018
Philippines 3/	66	54	66	51	54	528	535	644	659	726	594	588	710	710	780
Malaysia	135	156	164	3/ 177	3/ 182	174	216	293	3/ 453	3/ 581	309	371	457	3/ 630	3/ 763
Indonesia	44	120	200	3/ 146	3/ 181	117	157	296	3/ 300	3/ 411	160	278	496	3/ 446	3/ 593
Macau	110	119	137	107	3/ 99	434	437	500	512	3/ 688	544	556	637	620	3/ 787
Bangladesh 4/	285	305	339	301	280	11	27	90	147	281	296	332	429	448	561
Sri Lanka	5	6	10	3/ 16	3/ 20	166	201	293	3/ 321	3/ 415	170	207	303	3/ 336	3/ 435
Mexico 3/	88	114	145	124	223	183	195	264	297	328	271	309	409	420	552
Brazil	523	653	3/ 773	3/ 633	3/ 488	98	106	3/ 160	3/ 162	3/ 163	620	760	3/ 932	3/ 795	3/ 652
Nonmarket economies:															
China 5/	2,849	3,156	4,077	4,380	5,700	2,420	2,738	3,375	3,763	5,300	5,269	5,894	7,452	8,143	11,000

1/ Data for 1985 and 1986 partially estimated by the staff of the U.S. International Trade Commission.
2/ Data from Taiwan Textile Federation, Statistics of Taiwan Textile and Apparel Industries, 1986, Taipei.
3/ Data represent world imports from the specified countries.
4/ Data from Monthly Statistical Bulletin of Bangladesh, March 1987; 1986 figures for Bangladesh partially estimated by the staff of the U.S. International Trade Commission.
5/ Data from Central Intelligence Agency, China: International Trade, quarterly reports; 1986 figures for China estimated by the staff of the U.S. International Trade Commission.

Source: Compiled from United Nations data for SITC 65 (textiles) and SITC 84 (apparel) as reported by each country, except as noted.

China has emerged as the world's third largest single supplier after Italy and West Germany. Unlike Hong Kong, Taiwan, and Korea (the "Big Three"), whose exports consisted mostly of apparel, slightly more than one-half of China's exports consisted of textiles. Since 1982, the ratio of textiles to apparel remained fairly stable in all four countries, with textiles accounting for 54 percent of China's textile and apparel exports; 40 percent for Taiwan; 37 percent for Korea; and 16 percent for Hong Kong.

Another important trend has been the emergence of a number of developing countries as exporters of textiles, thereby greatly increasing their collective importance as suppliers in the world market (table 2-14). A number of new and smaller suppliers, such as Bangladesh, Indonesia, Malaysia, Pakistan, and Thailand, have expanded their share of world trade to become more important sources. This partly reflects the long-term shift of textile production, as well as apparel production, to regions of low labor cost. It also reflects the ongoing search by importers for alternatives to the major suppliers, such as the Big Three, for low-cost production with fewer quota restrictions.

The relative importance of textiles, along with apparel, in the export product mix of the major textile exporting countries has declined in recent years, partly because of the relatively small growth in world trade in these products and increased competition from new and smaller suppliers. This is true even for some countries that have experienced significant increases in their textile and apparel exports during the past 5 years. Of the largest suppliers, only Italy and China recorded an increase in textile and apparel exports' share of total exports (table 2-15).

Table 2-15
Textiles and apparel: Exports as a share of total merchandise exports, by specified countries, 1982-86

(In percent)

Country	1982	1983	1984	1985	1986
Italy	11	12	13	13	14
China	23	25	27	26	1/ 30
Korea	28	25	24	23	25
Hong Kong	41	40	40	40	41
Taiwan	21	19	20	20	19
Japan	4	4	4	3	3

1/ Estimated by the staff of the U.S. International Trade Commission.

Source: Calculated from United Nations data, except as noted.

Extent of Industry Restructuring 1/

The textile mill industries in the countries examined in this study are undergoing a period of restructuring. Except for China, the adjustment involves modernization and specialization primarily to lower costs. Government involvement in achieving this modernization process varied from country to country, but a general trend towards less government assistance and more free-market principles is evident.

Of the countries whose textile mill industries are examined in this report, Italy has achieved the highest rate of modernization in both the spinning and weaving sectors, whereas China has attained the lowest rate of modernization in the weaving and short staple ring spinning sectors (tables 2-16 and 2-17). Overall, the modernization rate appears to have been greatest in the area of open-end spinning.

Table 2-16
Rate of modernization and level of technology in weaving, by selected countries

(In percent)

Country	Rate of modernization 1/	Level of technology 2/
United States	17.7	39.4
Hong Kong	19.0	26.7
Taiwan	22.7	24.9
Korea	19.8	8.4
China	.9	1.0
Japan	11.3	11.8
Italy	25.1	47.7

1/ Ratio of deliveries of new looms during 1980-85 to installed capacity at the end of 1985.
2/ Ratio of installed capacity of shuttleless looms to total installed loom capacity operating on the cotton system at the end of 1985.

Source: Compiled by the staff of the U.S. International Trade Commission based on data published by the International Textile Manufacturers Federation in International Textile Machinery Shipment Statistics, 1981 and 1986.

1/ The information presented in this section on the six foreign countries whose textile industries are examined in this report is discussed in more detail in chapters 6-11 of this report, except where noted. Similar information on the U.S. textile mill industry is found in chapters 5 and 12.

Table 2-17
Rate of modernization and level of technology in spinning, by selected countries

(In percent)

Country	Rate of modernization 1/			Level of technology 2/ in short-staple sector
	Short staple sector	Long staple sector	Open-end spinning rotors	
United States	2.7	10.4	77.7	6.1
Hong Kong	14.4	3.6	86.5	30.8
Taiwan	19.7	3/	49.0	5.9
Korea	9.2	10.6	41.3	2.4
China	.7	6.3	46.0	1.4
Japan	6.8	2.5	14.0	5.3
Italy	21.3	14.8	98.4	7.6

1/ Ratio of deliveries of new equipment during 1980-85 to installed capacity at the end of 1985.
2/ Ratio of stocks of open-end spinning rotors to total installed spindle capacity as of Dec. 31, 1985 (1 open-end spinning rotor = 2.5 spindles).
3/ Not available.

Source: Compiled by the staff of the U.S. International Trade Commission based on data published by the International Textile Manufacturers Federation in International Textile Machinery Shipment Statistics, 1981 and 1986.

Italy's textile industry has been in a continual process of modernization aimed at reducing production costs and improving adaptability to changing styles. Its major effort involved the restructuring of its chemical fiber industry during the late 1970's and early 1980's as a consequence of an EC agreement to limit EC chemical fiber production. Reportedly, this modernization was financed by the chemical fiber industry without Government subsidization. Government involvement in restructuring included the nationalization of some of the large, inefficient mills.

The Japanese textile industry has also been in an ongoing process of restructuring that includes modernization and the scrapping of surplus equipment to overcome significant overcapacity that has existed since the early 1960's. The Government assisted in this process by offering fiscal incentives such as preferential financing and tax incentives, most of which are scheduled to expire in 1989. The Government also provides small- and medium-sized firms in the textile industry with low-interest-rate loans through its Temporary Law on Business Conversion and Adjustment Measures for Small and Medium Sized Enterprises.

The expansion of the Korean textile industry was encouraged by Government incentives such as preferential tax and depreciation treatment and through the provision of liberal credit facilities. These incentives were relaxed during the 1970's, as other industries began to take preeminence over the textile industry. However, in the 1980's, the Government renewed its emphasis on the textile industry, this time in an effort to modernize it. The Government encouraged research and development (R&D) through tax exemptions and through Government contributions to textile R&D organizations. Nevertheless, with the exception of the weaving sector, the textile industry is being encouraged by the Government to respond to changing market conditions without Government intervention. The Korea Federation of Textile Industries, a nonprofit organization, has served as the principal authority to carry out the modernization and development of Korea's textile industry.

Similar to Korea, the textile industry in Taiwan was targeted as a strategic industry during the 1970's and was the beneficiary of a variety of tax and other fiscal incentives. However, the industry is no longer considered to be strategic and, thus, Government incentives and influence are relatively limited.

The textile mill industry in Hong Kong has been undergoing a gradual restructuring process to make the industry more labor efficient and cost effective. It has not had any Government assistance in the restructuring process.

The trends in China's textile industry differ significantly from those of the countries discussed above. As a centrally planned economy, the Government is involved in almost all aspects of production. Despite China's apparent success in developing its textile industry, the industry is still at a level of overall development that is lower than that of the other countries discussed in this report. The Chinese Government has targeted the textile industry as a major potential source of foreign exchange to finance imports of sophisticated machinery and equipment needed for its industrial development. Thus, it is restructuring the Chinese textile industry, not only to improve the quality and variety of production, but also to increase capacity.

Government

Policies

CHAPTER 3. GOVERNMENT POLICIES

The Multifiber Arrangement

Although many countries have internal regulations affecting their imports of textiles, the principal mechanism regulating world trade in textiles is the Multifiber Arrangement (MFA). Officially known as the Arrangement Regarding International Trade in Textiles, the MFA is an international agreement negotiated under the auspices of the General Agreement on Tariffs and Trade (GATT). The MFA has been in effect since January 1, 1974, and covers trade in textiles and apparel of cotton, wool, manmade fibers, and, since August 1, 1986, other vegetable fibers, such as linen and ramie, and silk blends. The MFA was extended at that time, for a third time, for 5 more years through July 1991.

Origin of the MFA 1/

World trade in textiles, including apparel, has been subject to some form of Government control since the 1950's, when the growth in U.S. imports of cotton products, especially from Japan, generated pressure in the United States for import restraints. Under the then newly enacted Agricultural Act of 1956, the President was authorized, under section 204, 2/ to negotiate agreements with foreign governments to limit their exports of agricultural or textile products to the United States. Pursuant to this authority, the United States negotiated a 5-year voluntary restraint agreement (VRA) with Japan on its exports of cotton textiles to the U.S. market for the period 1957-61.

During the period that the VRA was in effect with Japan, imports of cotton textiles from other countries increased rapidly, 3/ prompting the United States to seek a more comprehensive approach to regulating such imports. In July 1961, the Arrangement Regarding International Trade in Cotton Textiles was established under the auspices of the GATT and it set forth circumstances and rules for restricting trade in cotton textiles during October 1, 1961-September 30, 1962. This so-called short-term arrangement, accepted by 16 countries 4/ that accounted for over 90 percent of the free world's trade in cotton textiles, also called for "a long-term solution to the problems in the field of cotton textiles . . . ."

A long-term Arrangement Regarding International Trade in Cotton Textiles was concluded in February 1962, and set out the framework within which participating countries could regulate trade in cotton textiles. This agreement was initially in force for 5 years, but was extended twice--in 1967 and 1970--and by 1973 had 82 signatories.

1/ A more detailed history of the MFA and the arrangements on cotton products that preceded it may be found in The Multifiber Arrangement, 1980-84, USITC Publication 1693, May 1985.
2/ Public Law 84-540, approved May 28, 1956, 70 Stat. 200, as amended by Public Law 87-488, approved June 19, 1962, 76 Stat. 104, 7 U.S.C. 1854.
3/ U.S. cotton textile imports increased from 492 million square yards in 1958 to 1.1 billion in 1960.
4/ These countries were Australia, Austria, Canada, India, Japan, Pakistan, Portugal, Spain, Sweden, the United Kingdom (also representing Hong Kong), the United States, and five members of the EC--Belgium, France, West Germany, Italy, and the Netherlands.

During the 1960's, the use of manmade fibers in textiles increased rapidly, and importing countries felt the need to regulate imports of these textiles as well. The GATT Council, in June 1972, set up a working party on textiles; a progress report submitted in June 1973 to the Council served as the basis for the drafting of what is now the MFA.

The MFA initially covered trade in most textile products of cotton, wool, and manmade fibers. Article 1 provides the basic objectives of the MFA, which are as follows:

> to achieve the expansion of trade, the reduction of barriers to such trade and the progressive liberalization of world trade in textile products, while at the same time ensuring the orderly and equitable development of this trade and avoidance of disruptive effects in individual markets and on individual lines of production on both importing and exporting countries.

In addition, a principal aim of the MFA is "to further the economic and social development of developing countries and secure a substantial increase in their export earnings from textile products and to provide scope for a greater share for them in world trade in these products."

The MFA, an Exception to the GATT

The MFA is an exception to the most-favored-nation (MFN) principle of the GATT in that it permits import restrictions on other than an MFN basis. The MFA allows importing countries to limit imports without having to compensate directly any trading partners whose exports are limited by the restraints. Restraints on imports may be established through negotiation of bilateral agreements under article 4, or through "calls" or requests for consultations to set limits in cases of market disruption, 1/ whether or not a bilateral agreement exists, under article 3. If agreement is not reached following article 3 consultations, a unilateral limit can be set without compensation.

Structure of the MFA

The MFA established the terms under which countries can establish controls on international trade in textiles and apparel, primarily through the negotiation of bilateral agreements between importing and exporting countries. Annex B of the MFA provides criteria for year-to-year quota growth as well as percentage standards for flexibility (i.e., shifting quota from one year to another) and for increasing the quota for individual categories within a group

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1/ The factors to be reviewed in a determination of market disruption are "the existence of serious damage to domestic producers or actual threat thereof . . . demonstrably . . . caused by . . . a sharp and substantial increase or imminent increase of imports of particular products from particular sources . . . at prices which are substantially below those prevailing for similar goods of comparable quality in the market of the importing country.

of several categories provided that the aggregate limit for the group is not exceeded. When the MFA was renewed in 1977 and 1981, it granted the authority to depart from the provisions of annex B. The developed countries subsequently entered into some bilateral agreements, particularly with major suppliers, that provided for reduced growth and/or flexibility for certain products and in certain instances precluded all use of flexibility for import-sensitive categories.

July 31, 1986 Extension of the MFA

On July 23, 1985, talks concerning renewal of the MFA formally began in Geneva. These negotiations continued for slightly more than a year and culminated on July 31, 1986, with the signing of a Protocol of Extension, continuing the MFA for an additional 5 years, or through July 1991. An integral part of the protocol was the Conclusions of the Textiles Committee, which establishes guidelines for certain procedures and policies to be followed by participants in regulating their trade in textiles and apparel. The provisions of these conclusions form the basis of MFA IV and distinguish it from the initial MFA and the two previous protocols of extension.

The participants stressed the importance of liberalizing trade in textiles and apparel and the ultimate objective of applying GATT rules to textile and apparel trade. 1/ However, this issue was not addressed more specifically, no timeframe for a phase-out was mentioned, nor was an extension of the MFA beyond July 1991 precluded.

The Committee confirmed that participants could agree to any mutually acceptable solution to the growth and flexibility provisions of the MFA, but that in no case should such growth and flexibility be negative. They reaffirmed their commitment to article 6 of the MFA concerning restraints on exports of new entrants and small suppliers and established guidelines in this regard permitting restrictions on imports from least developing countries to be "significantly more favorable" than restraints on imports from other sources. They also agreed to give special regard to the needs of those wool-producing developing countries whose economy and textile and apparel trade are highly dependent on the wool sector.

The participants agreed that adjustments under article 8 in charges to quotas as a result of circumvention involving false country of origin declarations would be decided through consultations between the countries concerned, that the exporting countries must cooperate and exchange available information and documentation, and that the inability to reach a mutually satisfactory solution would be referred to the Textile Surveillance Body (TSB). 2/ The TSB was given other expanded powers, including broader authority to interpret the MFA.

Largely at the insistence of the United States and Canada, MFA IV expands coverage to include textiles of previously uncontrolled vegetable fibers, particularly linen and ramie, and silk blends. 1/ Before products of these

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1/ Textile Asia, August 1985, p. 22.
2/ The TSB is composed of 9 members and supervises the functioning of the MFA and all actions taken and agreements concluded thereunder.

fibers can be subject to restraints, the importing country must demonstrate that such imports are directly competitive with domestic products of cotton, wool, or manmade fibers and are causing, or threatening to cause, market disruption. The conclusions stipulate that restraints will not be applied to historically traded products of jute, coir, sisal, abaca, maguey, and henequen.

MFA IV permits importing countries that have set quotas under article 3 to continue such quotas for a second 12-month period and sets forth the criteria for setting the quota amount for this period. As a result of this provision, the quota amount for the second year could be established at a lower amount than it might have been previously.

The nine current developed-country participants in the MFA are the United States, Canada, Japan, the EC, 1/ Austria, Finland, Norway, Sweden, and Switzerland. Of these, Japan and Switzerland do not currently apply MFA limits on imports. However, Pakistan and Korea have voluntary restraints on their exports to Japan.

Effect on U.S. Trade

Effect on U.S. imports

Although quotas have been imposed on a large number of MFA categories for a substantial number of suppliers, these quotas are not always binding. That is, the level of imports allowed by the quota on a particular category for a particular country may exceed the level of imports dictated by supply and demand conditions in the market. It is only when the quota for a category effectively limits imports to a level below that which would occur in its absence that the quota is binding.

An analysis of restraints for cotton, wool, and manmade-fiber fabrics, which are major textile mill products, illustrates the effect of MFA quotas. Tables 3-1 and 3-2 provide an indication of the extent of imports covered. At least three-fourths of such imports were covered by restraints from 1983 to 1986. The share of imports of cotton fabric covered by restraints during the period was 85 to 95 percent; wool fabric, 35 to 40 percent; and manmade-fiber fabric, 55 to 70 percent (table 3-1). Furthermore, for roughly 65 to 80 percent of all imports of cotton and manmade-fiber fabrics, the restraints were binding, whereas approximately 30 percent of the imports of wool fabrics were subject to binding restraints (table 3-2).

Table 3-3 provides an indication of the extent to which quotas were binding for cotton, wool, and manmade-fiber fabrics in 1986. This table shows total imports by MFA category and from countries for which the quotas were at least 85 percent filled. Quotas that are at least 85 percent filled can be considered binding because, at this point, customs officials are especially careful about permitting additional imports and importers are uncertain if particular shipments will be allowed entry. Tables 3-4 through 3-6 show the leading suppliers in each MFA category and the percent filled of the quantitative limits, where such countries have restraints in the category.

1/ The 12 members of the EC participate in the MFA as an entity rather than as individual countries.

Table 3-1
Cotton, wool, and manmade-fiber fabrics: U.S. imports covered by and free of restraints, 1983-86

Type and year	Covered by restraints		Free of restraints		Share of total imports covered by restraints
	Total	Annual change	Total	Annual change	
	Million SYE's	Percent	Million SYE's	Percent	Percent
Cotton:					
1983.....	999	-	67	-	93.7
1984.....	1,348	34.9	108	61.2	88.2
1985.....	1,206	10.5	176	63.0	87.3
1986.....	1,496	24.0	190	8.0	88.7
Wool:					
1983.....	13	-	20	-	39.8
1984.....	20	53.8	29	45.0	41.2
1985.....	18	-10.0	30	3.4	37.0
1986.....	16	-11.1	24	-20.0	39.6
Manmade fiber:					
1983.....	541	-	229	-	70.3
1984.....	566	4.6	413	80.3	57.8
1985.....	683	20.7	389	-5.8	63.7
1986.....	927	35.7	445	14.4	67.6
Total:					
1983.....	1,553	-	316	-	83.1
1984.....	1,934	24.5	622	74.1	75.7
1985.....	1,907	-1.4	595	-8.2	76.2
1986.....	2,439	27.9	659	10.8	78.7

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 3-2
Cotton, wool, and manmade-fiber fabrics: U.S. imports, total and subject to binding quotas, 1/ 1986

Type	Total imports	Imports subject to binding quotas 1/	Share of total
	Million SYE's		Percent
Cotton.....	1,686	1,368	81.1
Wool.....	40	12	30.8
Manmade fiber.....	1,371	919	67.0
Total.....	3,097	2,299	74.2

1/ Total imports for which quotas were 85 percent or more filled. Includes all MFA categories in groups for which the quota on the group was 85 percent or more filled.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 3-3
Cotton, wool, and manmade-fiber fabrics: U.S. imports, by MFA categories, in descending order of magnitude, and from countries with binding restraints, 1/ 1986

MFA category 2/	All sources	From countries with binding quotas 1/		All sources	From countries with binding quotas 1/	
	----1,000 SYE's-----		Percent	--1,000 dollars---		Percent
313.....	501,892	400,389	87.99	229,646	173,944	83.92
315.....	423,463	384,364	90.77	168,061	151,916	90.39
320.....	278,579	220,530	79.16	223,601	129,465	57.90
317.....	220,133	165,031	74.97	155,712	121,093	77.77
314.....	99,546	79,089	79.45	68,910	58,037	84.22
319.....	90,081	64,671	71.79	60,284	42,377	70.30
318.....	37,429	29,459	78.71	44,782	35,024	78.21
310.....	19,969	14,051	70.36	19,520	13,406	68.68
316.....	7,017	5,304	75.58	8,162	6,570	80.50
312.....	6,316	3,565	56.43	8,605	5,660	65.77
311.....	1,437	1,346	93.70	3,711	3,528	95.06
Total.....	1,685,863	1,367,800	83.53	990,992	741,020	76.67
410.....	33,615	12,183	36.24	149,224	52,364	35.09
411.....	4,677	56	1.19	37,801	392	1.04
425.....	1,131	171	15.08	5,544	620	11.18
429.....	815	3	.40	7,537	3	.04
Total....	40,239	12,412	30.85	200,106	53,379	26.68
612.....	395,953	338,492	85.49	449,995	399,611	88.80
627.....	330,107	145,515	44.08	201,026	88,223	43.89
613.....	284,418	256,124	90.05	125,348	97,295	77.62
614.....	214,818	78,682	36.63	276,096	95,826	34.71
611.....	71,849	56,281	78.33	87,184	56,518	64.83
625.....	52,151	27,964	53.62	32,302	12,304	38.09
610.....	17,396	13,599	78.18	24,649	15,384	62.41
626.....	4,420	1,853	41.93	13,399	3,546	26.46
Total.....	1,371,111	18,511	66.99	1,209,99	9,768,707	63.53

1/ Restraints were considered binding if the percent filled of an MFA category or group of categories from a particular country was 85 percent or greater.
2/ For category descriptions, see app. F.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 3-4
U.S. imports of cotton fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986

MFA category and country	Imports		Percent filled 1/
	Quantity	Value	
	1,000 SYE's	1,000 dollars	
Category 310:			
Japan	7,271	8,396	111.75
China	3,205	2,040	2/
Korea, South	2,884	2,034	95.35
Taiwan	2,849	2,003	88.02
India	1,454	1,203	51.37
Hong Kong	813	608	100.80
Guatemala	268	254	17.72
Peru	265	182	2/
Portugal	226	362	100.00
France	172	766	2/
Category 311:			
Japan	1,235	3,277	111.75
China	67	103	2/
Taiwan	57	164	88.02
Hong Kong	54	84	100.80
Canada	17	39	2/
Germany, West	6	41	2/
Category 312:			
Japan	1,837	3,592	111.75
Canada	1,355	1,284	2/
Hong Kong	1,218	1,395	100.80
China	1,199	1,020	2/
Korea, South	497	664	95.35
Italy	132	494	2/
France	38	94	2/
India	12	9	90.07
Haiti	9	23	2/
Colombia	8	7	0.03
Category 313:			
China	83,745	33,164	100.00
Hong Kong	60,587	27,607	100.80
Korea, South	52,191	25,016	95.35
Pakistan	50,272	15,105	100.00
Taiwan	48,776	23,804	94.74
Brazil	41,210	18,781	100.00
Egypt	23,485	8,171	100.00
Turkey	21,600	9,895	100.00
Thailand	15,920	6,701	98.39
India	14,230	5,691	105.36

See footnotes at end of table.

Table 3-4
U.S. imports of cotton fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986--Continued

Country	1986 imports		Percent filled 1/
	Quantity 1,000 SYE's	Value 1,000 dollars	
Category 314:			
Japan	25,680	33,533	111.75
China	17,389	6,518	100.00
Indonesia	15,038	5,205	2/
Hong Kong	13,584	8,988	113.05
Thailand	11,181	3,779	94.71
Malaysia	3,942	1,716	98.26
Taiwan	3,047	1,140	95.03
Korea, South	2,313	1,229	95.35
Brazil	2,273	2,191	63.38
Colombia	1,798	1,015	86.51
Category 315:			
China	241,823	90,594	99.88
Taiwan	30,508	12,933	96.67
Korea, South	24,056	11,630	95.35
Thailand	22,590	8,036	104.86
Pakistan	21,782	5,812	100.00
Indonesia	14,880	4,490	2/
Malaysia	13,401	4,407	98.26
Brazil	9,972	4,309	69.59
Japan	9,264	10,001	111.75
Hong Kong	7,324	4,179	100.80
Category 316:			
Japan	3,508	5,353	111.75
China	1,438	1,054	2/
Taiwan	1,094	583	88.02
Hong Kong	402	308	100.80
India	297	324	90.07
Brazil	82	59	63.38
Germany, West	73	215	2/
Czechoslovakia	36	40	2/
Austria	25	86	2/
Switzerland	23	17	2/
Category 317:			
Hong Kong	48,972	43,848	100.80
Taiwan	20,866	11,566	98.83
China	19,757	8,749	100.00
Korea, South	17,325	9,990	95.35
Japan	16,352	24,823	111.75
Colombia	15,108	8,850	92.58
Indonesia	14,060	5,220	2/
Peru	12,182	6,612	59.74
Brazil	9,104	4,843	82.87
Egypt	8,917	3,681	100.00

See footnotes at end of table.

Table 3-4
U.S. imports of cotton fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986--Continued

Country	1986 imports		Percent filled 1/
	Quantity	Value	
	1,000 SYE's	1,000 dollars	
Category 318:			
Japan	12,820	19,553	111.75
Portugal	9,766	9,348	100.00
Taiwan	3,773	3,167	88.02
China	2,454	1,691	2/
India	1,973	1,557	51.37
Hong Kong	1,509	1,477	100.80
Korea, South	1,441	1,382	95.35
Brazil	1,100	1,010	63.38
Guatemala	566	447	17.72
Germany, West	270	600	2/
Category 319:			
Hong Kong	24,263	16,233	100.80
Taiwan	15,653	8,365	97.82
Turkey	7,688	4,104	2/
Korea, South	7,554	3,231	95.35
India	6,619	5,779	90.07
Thailand	6,236	5,508	96.66
Brazil	5,577	3,699	63.38
Peru	4,382	2,477	11.79
Indonesia	4,227	2,736	2/
Pakistan	3,168	1,773	100.00
Category 320:			
Taiwan	85,392	40,550	88.02
Japan	31,389	45,252	111.75
China	31,215	12,932	100.00
Korea, South	24,631	10,704	95.35
Hong Kong	14,451	7,305	113.05
Malaysia	13,027	4,581	98.26
Thailand	12,033	4,010	91.18
Indonesia	11,846	3,764	2/
Canada	8,721	5,473	2/
Italy	7,190	19,198	2/

1/ The time period for a quantitative limit does not necessarily coincide with a calendar year. Where groups of MFA categories are subject to restraints, the percent filled of the group limit is reported.
2/ Not applicable.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 3-5
U.S. imports of wool fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986

Country	Imports		Percent filled 1/
	Quantity	Value	
	1,000 SYE's	1,000 dollars	
Category 410:			
Italy	9,171	41,117	2/
Japan	6,062	33,175	111.75
United Kingdom	5,126	28,868	2/
Korea, South	3,840	13,569	95.35
China	1,718	4,915	96.32
Uruguay	1,531	4,691	69.23
Poland	847	1,880	12.66
Germany, West	690	4,422	2/
Argentina	595	2,055	2/
Brazil	584	1,673	63.38
Category 411:			
United Kingdom	1,873	15,612	2/
Germany, West	529	5,877	2/
Italy	480	1,871	2/
Canada	255	2,053	2/
Switzerland	206	2,515	2/
Netherlands	194	1,643	2/
New Zealand	193	1,288	2/
Peru	145	98	2/
Brazil	145	696	63.38
Ireland	139	1,303	2/
Category 425:			
Germany, West	546	2,690	2/
Italy	177	1,100	2/
Uruguay	104	269	2/
Japan	79	402	111.75
Taiwan	51	51	88.02
France	46	403	2/
United Kingdom	41	175	2/
Austria	38	218	2/
Hong Kong	37	159	100.80
Switzerland	3	39	2/

See footnotes at end of table.

Table 3-5
U.S. imports of wool fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986--Continued

Country	Imports		Percent filled 1/
	Quantity	Value	
	1,000 SYE's	1,000 dollars	
Category 429:			
United Kingdom	279	2,202	2/
Germany, West	256	2,208	2/
Netherlands	131	1,784	2/
Australia	48	374	2/
Italy	40	175	2/
Niger	18	136	2/
France	13	198	2/
Switzerland	9	250	2/
Ireland	7	79	2/
Belgium and Luxembourg	6	81	2/

1/ The time period for a quantitative limit does not necessarily coincide with a calendar year. Where groups of MFA categories are subject to restraints, the percent filled of the group limit is reported.
2/ Not applicable.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 3-6
U.S. imports of manmade-fiber fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986

Country	Imports		Percent filled 1/
	Quantity 1,000 SYE's	Value 1,000 dollars	
Category 610:			
Japan	11,559	12,809	111.75
Korea, South	1,642	2,310	95.35
Italy	880	2,301	2/
Germany, West	788	3,106	2/
Belgium and Luxembourg	764	933	2/
Hong Kong	370	224	100.80
Switzerland	235	733	2/
Spain	212	565	2/
Romania	169	271	8.63
India	159	206	2/
Category 611:			
Japan	35,945	44,690	178.94
China	11,521	3,579	100.00
Germany, West	7,797	14,675	2/
Thailand	4,918	3,452	100.00
Italy	3,704	9,129	2/
Korea, South	2,299	2,889	95.35
Taiwan	880	888	88.02
France	808	3,610	2/
Germany, East	787	30	2/
Indonesia	755	540	2/
Category 612:			
Japan	209,687	239,870	115.25
Korea, South	117,301	149,917	95.35
Canada	20,656	5,990	2/
France	14,020	11,505	2/
Taiwan	10,749	9,362	92.45
Italy	8,100	10,908	2/
Germany, West	3,497	7,877	2/
Belgium and Luxembourg	3,390	4,030	2/
Switzerland	1,611	2,353	2/
Netherlands	1,394	1,090	2/
Category 613:			
Pakistan	91,777	18,298	100.00
China	67,316	22,153	99.52
Taiwan	29,753	15,949	93.54
Korea, South	17,819	11,007	95.35
Thailand	17,340	5,917	100.00
Indonesia	17,109	6,014	2/
Japan	15,902	17,259	111.75
Malaysia	15,388	6,281	92.65
Italy	4,242	9,808	2/
Germany, West	1,447	3,752	2/

See footnotes at end of table.

Table 3-6
U.S. imports of manmade-fiber fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986--Continued

Country	Imports		Percent filled 1/
	Quantity	Value	
	1,000 SYE's	1,000 dollars	
Category 614:			
Italy	80,749	114,336	2/
Taiwan	30,858	19,673	88.02
Japan	29,599	49,336	111.75
Korea, South	18,115	26,570	95.35
Indonesia	14,809	4,565	2/
Germany, West	12,932	23,505	2/
France	7,732	11,322	2/
Canada	7,618	5,183	2/
Brazil	2,656	6,801	63.38
Thailand	2,290	765	2/
Category 625:			
Korea, South	10,670	3,140	95.35
Japan	9,560	5,976	111.75
Italy	7,034	8,203	2/
Taiwan	6,312	2,528	88.02
Canada	5,555	2,108	2/
Germany, West	4,101	4,249	2/
France	4,080	3,155	2/
United Kingdom	1,107	811	2/
Hong Kong	1,079	500	100.80
Spain	613	467	2/
Category 626:			
Korea, South	1,445	2,525	95.35
Belgium and Luxembourg	1,023	2,411	2/
Germany, West	580	1,659	2/
Taiwan	305	548	88.02
France	282	3,767	2/
Italy	212	532	2/
Ireland	76	560	2/
Netherlands	76	54	2/
Japan	73	419	111.75
Austria	68	384	2/

See footnotes at end of table.

Table 3-6
U.S. imports of manmade-fiber fabrics, by MFA categories, by leading suppliers, and by percent filled of quantitative limits, 1986--Continued

Country	Imports		Percent filled 1/
	Quantity 1,000 SYE's	Value 1,000 dollars	
Category 627:			
Canada	69,025	16,982	2/
Japan	55,971	54,380	111.75
Korea, South	48,098	10,667	95.35
Germany, West	24,035	16,123	2/
Mexico	21,206	12,690	100.00
Taiwan	19,513	10,064	88.02
United Kingdom	17,312	11,800	2/
Italy	16,036	14,959	2/
France	15,171	12,423	2/
Spain	10,942	4,372	2/

1/ The time period for a quantitative limit does not necessarily coincide with a calendar year. Where groups of MFA categories are subject to restraints, the percent filled of the group limit is reported.
2/ Not applicable.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Many of the large suppliers have restraints on a group of MFA categories, which are often accompanied by quotas on individual MFA categories. In general, the total quantity permitted by a quota on a group of categories is less than the sum of the quantities allowed under individual MFA categories. Therefore, even though a country may fill only a portion of its quota in an MFA category, if it fills its quota on a group of categories, it is restricted from exporting any additional textiles in that MFA category. Thus, the percent filled of the group is reported in tables 3-4 through 3-6 if this percentage exceeds the percent filled of an individual category.

Of the three types of fabrics--cotton, manmade fiber, and wool--imports of cotton fabric have the most comprehensive and binding restraints, followed by manmade-fiber fabrics and wool fabrics. More than 80 percent of the quantity and roughly three-fourths of the value of imports of cotton fabric were subject to binding restraints; roughly two-thirds of the quantity and value of imports of manmade-fiber fabrics were subject to binding quotas; and only about 30 percent of the quantity and 25 percent of the value of imports of wool fabrics were subject to binding restraints.

With the exception of MFA category 312, 70 percent or more of all imports of broadwoven cotton fabric by MFA categories were subject to binding quotas. The MFA categories of cotton fabrics for which the quantity of imports were the largest included sheeting (313), printcloth (315), other woven fabric (320), and twills and sateens (317), accounting for roughly 85 percent of the total quantity of cotton fabric imports. Generally, imports by leading

suppliers of these categories were subject to restraints that were 85 percent or more filled. The exceptions were imports from Canada, Indonesia, and Italy, for which there were no quantitative limits for the category, and Brazil, for which there was a group restraint that was 63.4 percent filled.

The shares of imports by MFA categories of manmade-fiber fabrics subject to binding restraints were somewhat lower than those of cotton fabrics, ranging from roughly 40 to 90 percent of the total quantity of imports. This is because Canada and many West European countries, whose exports to the United States were not subject to restraints, were leading suppliers in nearly all of these categories. For countries for which restraints were imposed, the quotas were nearly always 85 percent or more filled.

The shares of wool-fabric imports by MFA categories that were subject to binding restraints were the lowest of the three types of fabrics, ranging from less than 0.5 percent to 36.2 percent. This is because major suppliers of wool fabric were primarily West European and other developed countries, whose exports to the United States were not subject to restraints. Other leading suppliers in a few categories included Japan, Korea, Taiwan, Hong Kong, and Brazil. Imports from these suppliers were subject to group quotas that included wool fabrics. China, Uruguay, and Poland were among the leading suppliers in MFA category 410; imports from these countries were subject to restraints that were 96.3, 69.2, and 12.7 percent filled, respectively.

Effect on U.S. exports

Because U.S. exports are not controlled by an identifiable trade barrier such as the MFA but by general trade policies of individual nations or blocks of nations (e.g., the EC), the effects of these barriers cannot be readily quantified. The U.S. textile industry is among the world's largest. Despite this, its share of world textile exports declined from 6 percent in 1979 to 4 percent in 1985. During this period, the share of exports of textiles from the five major Asian sources 1/ increased from 22 percent to 30 percent. The U.S. loss of competitiveness largely is attributed to the appreciation of the dollar rather than to internal trade barriers in its export markets. 2/

Effect on World Trade

Several studies conducted on the effects of the MFA on global trade generally do so in terms of textiles and apparel as a whole, rather than for textile mill products alone. 3/ The World Bank studied the effects of

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1/ China, Hong Kong, Japan, Korea, and Taiwan.
2/ GATT, International Trade, 1985/86, Geneva, 1986, p. 57.
3/ Several studies have been conducted on the effects of the MFA on global trade including: William R. Cline, The Future of World Trade in Textiles and Apparel; Martin Wolf et. al., Costs of Protecting Jobs in Textiles and Clothing; and Vinod K. Aggarwal, Liberal Protectionism, The International Politics of Organized Textile Trade.

nontariff barriers (NTB's) on imports in 1983 of 16 industrial nations. 1/ This study revealed that, for these countries, textiles was the most highly protected product area in terms of NTB's. Coverage and frequency ratios for certain products are shown in the following tabulation: 2/

Item	Coverage ratio		Frequency ratio
	Own imports	World trade	
All products.....	27.1	21.8	12.8
All products, less fuels..	18.6	18.5	12.7
Fuels.....	43.0	31.0	23.9
Agricultural.....	36.1	40.4	29.5
All manufactures.....	16.1	14.9	10.8
Textiles.....	44.8	37.8	38.1

The "own imports" coverage ratio measures the sum of the value of a country's import groups affected by NTB's over the total value of its imports of that group. The "world trade" coverage ratio for each of the commodities imported by a country measures the sum of the value of world trade of an import group affected by that country's NTB's over the total value of world trade in that commodity group. The frequency ratio registers the relative frequency with which countries impose NTB's on their commodity imports; it counts the number of a country's import entries covered by NTB's and divides this sum by the total number of import entries for that country. 3/

These data reveal that, for the countries studied, textile imports, including apparel and other made-up textile products, are subject to NTB's twice as often as the average for imports of all products and nearly three times as frequently as all manufactured products. The product coverage for textile imports of the countries studied was 17.7 percentage points greater than that for all products. In the coverage ratio for world trade, textiles exceeded the ratio for all products by 16 percentage points and was only exceeded by the ratio for agricultural products by 2.6 percentage points.

The GATT evaluated world trade in textiles, based on data for SITC 65, which includes yarns, fabrics, made-up textiles, and housefurnishings but excludes apparel and accessories, relative to the MFA in 1984. World textile exports that year totaled $54 billion. 4/ Textile exports from signatories to the MFA were $49 billion, or 91 percent of the total. Excluding intra-EC trade, which is not subject to the MFA, textile trade between signatories of

1/ The EC-10, Australia, Austria, Finland, Japan, Norway, Switzerland, and the United States.
2/ Nogues, Olechowski, and Winters, "The Extent of Nontariff Barriers to Industrial Countries' Imports," The World Bank Economic Review, Washington, DC, vol. 1, no. 1, September 1986, p. 189.
3/ Ibid., p. 186.
4/ GATT, International Trade, 1985/86, p. 58.

the MFA amounted to approximately $23 billion, or nearly one-half of the total. Trade subject to restraints under the MFA 1/ amounted to $7 billion. This equaled 13 percent of total world textile trade and 30 percent of the trade between MFA signatories, excluding intra-EC trade, or 14 percent of MFA signatories textile trade, including intra-EC trade. It appears that MFA-controlled trade is not particularly important in relation to total world textile trade but is significant in relation to trade between MFA signatories when intra-EC trade is excluded.

Through analysis of trade data during 1979 and 1983-85, implicit conclusions can be reached regarding the effects of trade barriers, particularly the MFA, on world textile trade. These data indicate that 1984 was fairly representative of trade during these years. The share of Western Europe's exports involved in intra-EC trade varied little, ranging from 73 to 78 percent of its total textile exports. Likewise the share of textile exports from the major Asian suppliers--China, Hong Kong, Japan, Korea, and Taiwan--going to North America and Western Europe was either 20 or 21 percent of the region's total textile exports in each of the years. Trade between North America and Western Europe, which faces virtually no direct trade barriers and is not subject to the MFA, appears to have been influenced by other factors, most notably by changes in relative exchange rates, as discussed earlier. Textile exports from North America to Western Europe declined from 36 percent of the regions total textile exports in 1979 to 21 percent in 1984 and 1985. In absolute terms, this amounted to a decline from $1.2 billion in 1979 to $0.6 billion in 1985. As expected, the data reveal that textile exports from Western Europe to North America increased from a 3-percent share in 1979 to a 7-percent share in 1985, or from $0.8 billion to $1.9 billion.

U.S. Tariffs

A major factor affecting the ability of foreign countries to compete in the U.S. market is the extent of import protection in terms of tariffs and quotas. The greater the tariffs and/or the more comprehensive 2/ and binding the quotas, the less foreign producers are able to penetrate the U.S. market.

Rates of duty applicable to U.S. imports of textile mill products in recent years are those resulting from concessions granted in the "Tokyo Round" of Multilateral Trade Negotiations (MTN), conducted under the General Agreement on Tariffs and Trade. Most of the reductions were implemented in 1-year intervals staged over a period of 6 years, with the initial reductions effective January 1, 1982. Rates in effect from January 1972 to 1982 represented the final staged rate reductions resulting from the "Kennedy Round" of trade negotiations concluded on June 30, 1967. Those reductions were implemented in 5 annual stages beginning on January 1, 1968. Prior to January 1, 1968, rates were unchanged from August 31, 1963 (the effective date of the Tariff Schedules of the United States) through 1967.

1/ The exports of developing-country signatories to developed-country signatories with whom they have bilateral agreements and the exports of Japan to the United States.

2/ In extent of both country and product coverage.

In the Kennedy Round, duty reductions on broadwoven cotton and manmade-fiber fabrics were equal to about 24 percent in the case of cotton fabrics (approximately from an ad valorem equivalent (AVE) of 17 percent to 13 percent) and about 15 percent in the case of manmade-fiber fabrics (roughly from 33 percent AVE to 28 percent AVE). In 1986, the calculated duty on U.S. imports of cotton broadwoven fabrics was equal to 9.9 percent AVE and that on manmade-fiber fabrics was equal to 17.9 percent AVE.

According to data compiled by the GATT following the Tokyo Round, the United States and the EC granted reductions of more than 20 percent in duties on overall textile and apparel trade; reductions by Japan were estimated at 17 percent and those by Canada at 11 percent (table 3-7). This still left Canada and the United States in that order, with the highest duties and the EC and Japan with significantly lower duties. However, the overall result for the United States is substantially affected by the relatively high proportion of its imports in high-rate apparel items. The trade weighted duties on fabrics alone are much more similar, amounting to about 10.5 percent for the United States and the EC and about 9.5 percent for Japan. 1/

Table 3-7
Tokyo Round tariff concessions for textiles and apparel: Estimated average rates and percent reductions, by selected industrial countries

Country	Base rate	Concession rate	Reduction
United States.....	22.2	17.5	21
European Community..	10.8	8.3	23
Canada.....	23.4	20.7	11
Japan.....	6.7	5.5	17

Source: GATT.

Table 3-8 shows the AVE's for major textile product groups for 1981, the year before the Tokyo Round duty reductions for textiles and apparel began to be staged, and 1986. The average duty on total imports of non-apparel textiles in 1986 was about 11 percent, compared with 21.3 percent for apparel imports.

The United States has followed a course of gradually reducing the tariffs or rates of duty on imports of textiles and apparel while, at the same time, increasing the scope of quotas on these products under the MFA. Increased quota restrictions have taken the form of applying quotas to a wider range of products and to more countries and reducing the growth rates and flexibility allowed. At the present level of tariffs, it seems likely that a substantially higher degree of protection is provided by current quotas than is provided by current tariffs.

1/ Textile and Clothing Industries: Structural Problems and Policies in OECD Countries, OECD, Paris, 1983.

Table 3-8
U.S. imports for consumption, calculated duty, and ad valorem equivalent of the duty for textile fibers and textile products classified in TSUS schedule 3, 1981 and 1986

Part and Subpart	Description	1981 Value	1981 Calculated duty	1981 Ad valorem equivalent	1986 Value	1986 Calculated duty	1986 Ad valorem equivalent
			1,000 dollars	Percent		1,000 dollars	Percent
	Schedule 3.--Textile Fibers and Textile Products, total	9,779,948	2,142,919	21.9	21,142,306	3,931,037	18.3
Part 1	Textile fibers and wastes; yarns and thread:						
A	Cotton (300.10-303.20)	49,763	3,602	7.3	143,775	11,776	8.2
B	Vegetable fibers, except cotton (304.02-305.50)	44,402	539	1.2	28,195	311	1.1
C	Wool and related animal hair (306.00-307.80)	222,138	14,158	6.4	237,884	12,429	5.2
D	Silk (308.02-308.90)	12,483	131	1.0	15,500	388	2.5
E	Manmade fibers (309.02-310.95)	218,640	26,697	12.2	604,384	59,786	9.9
F	Miscellaneous textile materials (312.10-312.50)	1,404	115	8.2	1,515	64	4.2
	Total	548,829	45,242	8.2	1,031,252	84,754	8.2
Part 2	Cordage (315.05-316.70)	103,597	2,449	2.4	65,613	2,165	3.3
Part 3	Woven fabrics:						
A	Woven fabrics of cotton (319.01-332.50)	590,143	67,119	11.4	950,775	94,125	9.9
B	Woven fabrics, of vegetable fibers (except cotton) (335.40-335.95)	160,893	2,059	1.3	141,396	6,022	4.3
C	Woven fabrics, of wool (336.10-336.64)	88,037	32,362	36.8	132,276	47,863	36.2
D	Woven fabrics, of silk (337.10-337.90)	117,032	8,231	7.0	198,418	9,908	5.0
E	Woven fabrics, of manmade fibers (338.10-338.59)	553,006	126,028	22.8	914,026	163,868	17.9
F	Woven fabrics, of other textile materials (339.05-339.10)	631	30	4.8	2,624	202	7.7
	Total	1,509,741	235,828	15.6	2,339,516	321,987	13.8
Part 4	Fabrics of special construction or for special purposes; articles of wadding or felt; fish nets; machine clothing:						
A	Knit; pile, tufted, and narrow fabrics; braids, and elastic fabrics (345.10-349.30)	66,729	12,512	18.8	152,891	20,824	13.6
B	Lace, netting, and ornamented fabrics (350.00-353.50)	16,910	4,369	25.8	38,229	6,254	16.4
C	Wadding, felts, articles thereof; fish netting and nets; artists' canvas; coated or filed fabrics; hose; machine clothing; other special fabrics (355.02-359.60)	226,913	28,362	12.5	509,672	41,352	8.1
	Total	310,552	45,242	14.6	700.792	68,430	9.8
Part 5	Textile furnishings:						
A	Textile floor coverings (360.04-361.90)	307,308	25,979	8.5	604,154	40,700	11.7
B	Bedding (363.01-363-90)	37,108	6,042	16.3	192,814	21,117	11.0
C	Tapestries, linens, and other furnishings (364.05-367.65)	181,384	26,819	14.8	452,092	50,796	11.2
	Total	525,799	58,840	11.2	1,249,060	112,614	9.0

Table 3-8
U.S. imports for consumption, calculated duty, and ad valorem equivalent of the duty for textile fibers and textile products classified in TSUS schedule 3, 1981 and 1986--Continued

Part and Subpart	Description	1981 Value	1981 Calculated duty	1981 Ad valorem equivalent	1986 Value	1986 Calculated duty	1986 Ad valorem equivalent
		-------1,000 dollars-------		Percent	-------1,000 dollars-------		Percent
	Schedule 3.--Textile Fibers and Textile Products--Continued						
Part 6	Wearing apparel and accessories:						
A	Handkerchiefs (370.04-370.92)	15,104	2,371	15.7	16,775	2,001	11.9
B	Mufflers, scarves, shawls, and veils; men's and boys' neckties (372.04-373.30)	54,877	11,040	20.1	178,831	21,119	11.8
C	Hosiery (374.05-374.65)	7,653	1,781	23.3	47,853	9,435	19.7
D	Garters and suspenders; body-supporting garments; rainwear (376.04-376.56)	197,503	49,545	25.1	340,516	70,426	20.7
E	Underwear (378.05-378.70)	50,349	15,143	30.1	175,858	30,370	17.3
F	Other wearing apparel (381.00-384.99)	6,187,297	1,646,928	26.6	14,650,642	3,151,074	21.5
	Total	6,512,782	1,726,808	26.5	15,410,476	3,284,425	21.3
Part 7	Miscellaneous textile products; rags and scrap cordage:						
A	Miscellaneous textile products (385.10-385.95)	10,056	1,452	14.4	27,810	2,541	9.1
B	Textile articles not specially provided for (386.04-389.80)	249,420	26,813	10.8	609,340	54,014	8.9
C	Rags and scrap cordage (390.10-390.60)	9,171	244	2.7	8,448	107	1.3
	Total	268,647	28,509	10.6	645,597	56,663	8.8

There are significant differences in the effects of limiting imports by tariffs and limiting imports by quotas.

1) Tariffs are usually ad valorem whereas quotas are quantitative so it is more difficult to estimate the effect of quotas on price. If the quotas are enforced by the exporters (export restraints), the revenue which would have been obtained by the government if a tariff had been imposed, now goes to the foreign license or quota holder. Under these conditions, any tariff reduction leads mainly to a transfer of revenue from the importing-country government to the foreign entity that controls the quota. 1/

2) U.S. tariffs on textiles and apparel apply, for the most part, equally to all MFN countries, whereas quotas are imposed on the basis of bilateral agreements with individual countries and vary widely from country to country. This causes certain distortions in trade and trade practices which would not otherwise occur. One effect of quotas has been to bring about a diversion of production and trade from restricted to unrestricted countries and products. This process began as early as the 1960's and has continued even as more countries come under restraint. Evidence that the process is continuing in recent years may be found by examining trade from countries which were not under restraint as recently as mid-1984. As shown in table 3-9, imports from 11 such countries were 10 times as large in 1986 as in 1983, increasing from 27 million SYE's in 1983 to 279 million in 1986. Much of the increase was accounted for by four countries--Bangladesh, El Salvador, Jamaica, and Mauritius.

There may also be a diversion of exports to those major markets whose restraints are the least restrictive. The United States and the EC are by far the largest markets for textile exporting countries and both have an extensive system of import quotas. In the late 1950's, the EC's textile barriers led to a diversion of trade to the U.S. market and thus "U.S. policymakers sought to develop a regime to control European behavior. This process was reversed in the early 1970's when U.S. controls on Far Eastern producers led to flooding of the European market." 2/ Following this period, the EC negotiated agreements with much stricter limits on growth rates, especially for a group of sensitive product categories. EC bilaterals covering the period 1983-86 limited annual growth from most major suppliers to 0.5 percent or less for product categories in the sensitive group.

3) As ad valorem measures, tariffs affect the quality and value added of imports only to the extent that different rates apply to different products. Quotas, on the other hand, are quantitative limits and as such provide an incentive to exporters to ship higher value-added products to maximize revenue.

1/ Martin Wolf et. al., Costs of Protecting Jobs in Textiles and Clothing, Trade Policy Research Centre, London, 1984.
2/ Vinod K. Aggarwal, Liberal Protectionism, The International Politics of Organized Textile Trade, Berkeley, CA, 1985.

Table 3-9
U.S. general imports of textiles and apparel, by selected countries, 1/ 1983 and 1986

(In thousands of equivalent square yards)

Country	1983				1986			
	Cotton	Wool	Manmade fibers	Total	Cotton	Wool	Manmade fibers	Total
Bangladesh.....	4,301	0	630	4,931	57,458	225	51,438	109,121
Bulgaria.....	6	219	1	226	373	665	816	1,854
Czechoslovakia..	3,422	654	8	4,084	1,579	1,540	54	3,173
East Germany....	476	13	230	719	859	29	1,191	2,079
El Salvador.....	12,756	2	1,381	14,139	38,759	6	2,821	41,586
Guatemala.....	2,375	9	1,397	3,781	11,919	13	1,645	13,577
Jamaica.....	2,733	0	2,793	5,526	29,706	683	17,126	47,515
Maldives.....	0	0	0	0	4,114	24	1,135	5,463
Mauritius.....	832	1,827	198	2,857	26,791	1,706	12,187	40,684
Nepal.....	41	15	1	57	13,518	28	726	14,272
Trinidad and Tobago.....	0	0	0	0	3	0	84	87
Total.....	26,942	2,739	6,639	36,320	185,079	4,919	89,413	279,411

1/ Countries with bilateral textile agreements or quotas in effect during the period Jan. 1, 1986-May 1, 1987 but which were not under restraint as of mid-1984. Peru, which has a bilateral effective May 1, 1984, is not included and Bangladesh, which had negligible restraints in 1984, is included.

Recent Legislative Initiatives

The Textile and Apparel Trade Enforcement Act of 1985 was introduced in Congress in May 1985. This bill, which initially had 290 cosponsors in the House and 52 in the Senate, called for strict limits on trade and would have resulted in rollbacks in imports from the major suppliers. The President vetoed the bill in December 1985; however, he stated that he was directing the United States Trade Representative to "most aggressively renegotiate the MFA on terms no less favorable than present." The threat of an override of the President's veto by Congress helped strengthen the U.S. position in the MFA negotiations. 1/ The EC was concerned its enactment could result in diversion of shipments from the affected exporting countries to its market. 2/ The developing countries, particularly major suppliers to the U.S. market, did not want stricter limits or cutbacks affecting their shipments to the United States. It was believed by many countries that enactment of the bill could cause a total breakdown of the MFA as it was currently functioning.

A vote to override the Presidential veto in 1986 was unsuccessful. In February 1987, a new bill, The Textile and Apparel Trade Act of 1987, was introduced in the House of Representatives and Senate. In September 1987, the House passed the bill by a vote of 263 to 156. As of December 22, 1987, the Senate had not voted on the bill.

1/ Textile Asia, August 1985, p. 26.
2/ Ibid.

Barriers in Major Markets

Of the 10 major world textile importers in 1985, 1/ all but Hong Kong and China are developed country participants in the MFA. Hong Kong has no restrictions affecting its imports of textiles. China's trade is controlled by the Government. Imports of textiles are only permitted to meet deficiencies in domestic production, or if needed as raw materials. China's imports of textiles consist mainly yarn and thread.

Trade agreements between the EC and European Free Trade Association (EFTA) members provide preferential tariffs to textiles produced within the member countries. These indirectly impose restraints on imports into the EC and EFTA countries from outside sources. 2/ Imports of fabrics are most affected by these agreements as they require that products pass through two provisions of the tariff nomenclature to be of EC or EFTA origin.

Most developing countries require import licenses for textiles. Such licenses are often used as a means to permit imports of only those products that are not available domestically, or allow imports of textiles used to produce articles for export. Although Taiwan and Korea are not among the leading importers of textiles, they are major suppliers of textiles and apparel. Both have undertaken steps to liberalize their policies regarding imports of textiles. By July 1988, Korea will have removed almost all textile products from its list of products that can be imported only under exceptional circumstances. Taiwan has greatly reduced its tariffs on textile products to as little as 10 percent ad valorem. Its tariff structure had been such that these tariff rates could be over 100 percent ad valorem. These measures are further discussed in this report in chapter 8 (Taiwan) and chapter 10 (Korea).

U.S. Government Programs

U.S. Tariff Item 807.00

The potential exists for the U.S. textile mill industry to increase its exports of fabric through the use of tariff item 807.00, which provides for assessment of duty on imported articles that have been assembled wholly or partly with U.S.-fabricated components. The duty on such products is assessed on the total value of the articles less the value of the U.S.-fabricated components (i.e., the duty is essentially assessed on the value added abroad).

In February 1986, the President announced a new "special access program" to liberalize quota treatment on imports of apparel and made-up articles from eligible countries that are designated as beneficiaries under the Caribbean Basin Economic Recovery Act, commonly known as the Caribbean Basin Initiative

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1/ Based on GATT trade data, these are the United States, West Germany, Hong Kong, the United Kingdom, France, China, Italy, Japan, the Netherlands, and Belgium-Luxembourg.

2/ U.S. Department of Commerce, Office of Textiles and Apparel, Foreign Regulations Affecting U.S. Textile/Apparel Exports, April 1986, p. 60.

(CBI). The special access program was designed to provide eligible CBI countries with greater access to the U.S. market for their products entered under item 807.00 that have been assembled with fabric that has been both produced and cut in the United States. This program differs from the requirements for imports under item 807.00, in that products imported under item 807.00 do not necessarily have to be manufactured with U.S.-produced fabric. CBI countries have been invited to enter bilateral agreements with the United States under which guaranteed access levels (GAL's) will be permitted for their exports of qualifying textiles and apparel products. These GAL's are separate from the quotas applicable to apparel and textile products not assembled solely from U.S.-made and -cut fabric, and thus encourage the participating countries to use more U.S. fabric so as to obtain greater access to the U.S. market. Thus far, agreements have been concluded with Jamaica, the Dominican Republic, Haiti, Trinidad and Tobago, and Costa Rica.

Domestic Cotton-Pricing System

In August 1986, provisions of the Food Security Act of 1985 that were designed to bring domestic cotton prices in closer alignment with world prices went into effect. Before this Act became effective, the price of U.S. cotton was higher than it would have been if subject to normal market forces when world prices of cotton were lower than the U.S. loan rate, because of the U.S. Department of Agriculture's (USDA) loan and price support programs. This was because cotton producers put their cotton in Government facilities and received payment for this cotton at the prevailing loan rate. For the cotton to be sold from Government stocks, the loan had to be repaid and accrued storage costs paid. Because quotas limit imports to 125,360 bales, or less than 2 percent of 1986 U.S. consumption, cotton must be purchased by U.S. textile mills from the Government stocks at the loan-supported price, and thus put U.S. mills at a disadvantage compared with those that purchase in the open world market.

The Food Security Act reimburses cotton producers for the difference between the U.S. loan rate and an indexed world price which U.S. mills pat to purchase cotton. In July 1986, U.S. cotton was priced at about 80 cents per pound and the global index price of cotton was about 40 cents. When the new pricing system went into effect in August, cotton prices paid by U.S. mills fell by 50 percent. This did not have the strong impact on prices of textile products that might have been expected because there was a coincident decline in the global supply of cotton. As a result, the world price of cotton began a gradual rise to about 70 cents per pound at the beginning of 1987. U.S. cotton prices rose in tandem with the global price, and, once world prices rose above the loan rate (in November and December 1986), the effects of the pricing system were moot. Because of the decline in the global supply of cotton, the new cotton pricing system had little effect on prices of textile products in late 1986 and early 1987.

An issue related to the pricing of cotton as related to the loan program has, to some extent, limited the availability of certain grades of cotton in high demand by the U.S. textile mill industry. Open-end spinning can produce this yarn using cotton fibers that are finer than those required by the conventional ring spinning system. The current cotton-pricing system under the loan program considers those cotton fibers to be an inferior product.

Consequently, producers of this cotton receive less for this cotton when they put it in the loan program. As a result, producers do not purposely grow this cotton. During 1986-87, fashion trends led to strong demand for particular types of apparel made from fabrics most effectively produced from yarn of this particular quality of cotton. Because cotton quotas and established marketing practices have led U.S. mills to rely primarily on domestic cotton, they have experienced difficulty obtaining sufficient supplies of certain qualities of cotton. As a result of this, the American Textile Manufacturers Institute and other textile- and cotton-affiliated organizations are urging the USDA to reevaluate its cotton classification and loan discount system to reflect changes in cotton processing technology and the resulting market demand.

U.S. Government Health, Safety, and Environmental Regulations

There are numerous U.S. Government regulations in the areas of environment, health, and safety which affect the cost of doing business for the U.S. textile mill industry. Many of these regulations are not found in many of the major textile-exporting countries, particularly those in Asia. The health and safety regulatory areas which the industry has indicated as having the greatest impact on its operations are the cotton dust standard (1980), the noise standard (1983), hazard communication standard (1985), and apparel flammability regulations. Major environmental regulations identified by the industry are hazardous waste rules (1980), effluent guidelines (1979), various air pollution regulations, and superfund (1986). In addition to the existing regulations, several new ones are expected to require additional capital and operating costs, such as the revised formaldehyde workplace exposure standard (December 1987) and the new source performance standards for industrial boilers (December 1987).

Capital expenditures of the U.S. textile mill industry on pollution abatement equipment ranged from $19 million to $48 million annually during 1981-85. Annual operating costs related to pollution abatement in 1985 was the highest of the period, reaching $149 million, representing an increase of 46 percent above the average for the preceding 4 years. The textile mill industry's expenditures and operating costs for pollution abatement, based on data published by the U.S. Bureau of the Census in Current Industrial Reports--MA-200, are shown in the following tabulation (in millions of dollars):

Year	Capital expenditures	Annual operating costs
1981.....	48.0	108.5
1982.....	22.0	74.7
1983.....	18.7	101.1
1984.....	20.9	122.2
1985.....	24.7	148.9

MTN Considerations

Issues related to textile trade will almost certainly be an important topic in the upcoming Uruguay Round of multilateral trade negotiations (MTN). The Uruguay Round was launched at a meeting of GATT trade ministers held in Punta del Este, Uruguay, in September 1986. Since the schedule of negotiations covers a period of 4 years, it seems likely that negotiations will not be finalized before consideration is being given to a further extension of the MFA, which expires July 31, 1991. A similar situation arose in the Tokyo Round of trade negotiations, which lasted from 1973 to 1979, with duty reductions taking effect beginning January 1, 1982; the MFA then in effect (MFA II) expired on December 31, 1981. Recognizing this situation, a "snapback" provision applicable to Tokyo Round reductions was provided in an additional U.S. note in Schedule XX. This provision provided, in essence, that if the MFA or some other arrangement, "determined by the President to be suitable," were not in effect, then duty rates on textiles subject to the MFA would revert to those in effect on January 1, 1975. The MFA was extended and the duty reductions negotiated for textile and apparel items went into effect as scheduled.

Several statements in the Ministerial Declaration on the Uruguay Round bear on the context in which discussions and negotiations related to textile trade will take place. Among the stated objectives of the negotiations is one which says that the negotiations shall aim to:

> "bring about further liberalization and expansion of world trade to the benefit of all countries, especially less-developed contracting parties, including the improvement of access to markets by the reduction and elimination of tariffs, quantitative restrictions and other non-tariff measures and obstacles."

Under the section on general principles governing negotiations, there is a statement indicating that the NIC's, which are major textile exporters, may make reciprocal concessions to a greater extent than in earlier negotiations when they were in a lesser state of development. Item (vi) in this section states:

> Less-developed contracting parties expect that their capacity to make contributions or negotiated concessions or take other mutually agreed action under the provisions and procedures of the General Agreement would improve with the progressive development of their economies and improvement in their trade situation and they would accordingly expect to participate more fully in the framework of rights and obligations under the General Agreement.

In the section on subjects for negotiations, "textiles and clothing" is one of six specific subjects identified for negotiation. The aim of the negotiations in this area is described as follows:

> Negotiations in the area of textiles and clothing shall aim to formulate modalities that would permit the eventual integration of this sector into GATT on the basis of strengthened GATT rules and disciplines, thereby also contributing to the objective of further liberalization of trade.

This statement indicates that textile trade, including the MFA, will receive special attention in the Uruguay Round and that consideration could be given to altering the basic structure of the MFA, which is an exception to the GATT, or the GATT rules themselves, in such a way that, over time, textile trade could conform to the GATT. Permanent provisions in the GATT governing trade in textiles and apparel would obviate the need to extend periodically an arrangement such as the MFA and provide a framework to handle trade disputes under GATT rules and disciplines.

United States

Textile Market

Chapter 4. UNITED STATES TEXTILE MARKET

U.S. Consumption

Total apparent consumption of textile products in the United States increased very little over the period from 1979 to 1986, although it was far above that in most of the rest of the world on a per capita basis and the United States constitutes one of the world's largest markets. In 1986, an estimated 15.6 billion pounds of fiber was required to produce the textiles and apparel consumed in the U.S. market.

Estimates of the growth in U.S. consumption of textile products during a particular period may differ considerably depending on whether they are based on estimates of fiber consumption, the equivalent yardage of fabrics used, or dollar sales of end products.

Estimates of U.S. apparent consumption derived from data on U.S. mill consumption of fiber plus imports less exports fluctuate widely from year to year, partly as a result of changes in inventories and orders along the distribution chain. Therefore, they may not accurately reflect the actual quantity of end products consumed, particularly in any one year. Also, changes in pounds of fiber consumed may be partly caused by fashion change (i.e., bulky or sheer fabrics or the substitution of lighter, stronger manmade fibers for cotton or other fibers in certain end uses). Another measure, often used by the U.S. Department of Commerce (Commerce), is the estimated square yard equivalent of materials consumed in all apparel, household and industrial products. However, Commerce cautions that the data cannot be regarded as precise because of the many conversions involved and gaps in available data. The table below shows estimated U.S. consumption in terms of both fiber consumption and square yard equivalents for the period 1979-86.

Table 4-1
Total U.S. textile consumption, measured in terms of fiber consumption (pounds) and in terms of square yard equivalents, 1979-86 1/

(In millions)

Year	Fiber consumption 1/	Square yard equivalents 2/
1979	13,007	28,376
1980	12,012	26,881
1981	12,046	26,984
1982	10,891	26,560
1983	13,311	28,493
1984	13,628	29,811
1985	14,357	30,552
1986	15,642	32,782
Percentage change 1979-86	20.3	15.5

1/ Represents U.S. average annual fiber availability for consumption, excluding non-textile glass fiber; based on mill consumption plus imports less exports of semimanufactured and manufactured goods.
2/ Prepared by the U.S. Department of Commerce, Office of Textiles and Apparel, at the request of the Subcommittee on Trade of the Committee on Ways and Means.

Source: Fiber consumption data compiled from Textile Organon, Textile Economics Bureau, Inc., Roseland, NJ.

Both these measures show a decline in consumption from 1979 to 1982 and a subsequent increase each year through 1986, with an overall increase of 16 percent during 1979-86 measured in terms of square yard equivalents and an increase of 20 percent measured in terms of fiber consumption. Estimates compiled by the National Cotton Council for material consumed in the domestic manufacture of end products indicate that, in terms of average consumption during 1980-86, apparel uses accounted for 37 percent, home furnishings 45 percent, and industrial uses 18 percent.

The estimated dollar value of U.S. producers' shipments of major textile end products (apparel, household products, and materials for industrial uses) increased from $67.5 billion in 1981 to $78.7 billion in 1985 and to an estimated $82.0 billion in 1986, a 22-percent increase from 1981 to 1986; the increase in constant 1981 dollars was 20 percent.

Table 4-2
U.S. shipments of major textile end products and industrial materials, 1981-85

(In millions of dollars)

Item	1981	1982	1983	1984	1985
Apparel and other textile products (SIC 23)	49,823.0	53,387.8	55,374.9	57,578.3	56,993.1
Other apparel, knit in knitting mills (SIC 2251 - 2254)	6,247.9	6,867.0	7,417.7	7,876.5	7,859.7
Floor covering mills (SIC 227)	5,909.2	5,807.8	6,967.9	7,963.0	8,060.6
Sheets, pillowcases, and towels [2211 (pt.), 2221 (pt.), 2392 (pt.)]	2,076.0	1,920.0	2,164.0	2,157.0	2,044.0
Industrial textiles (SIC 2295, 2296, and 2297)	3,416.6	3,375.2	3,532.3	4,018.8	3,719.3
Total	67,472	71,357	75,456	79,594	78,677

Source: U.S. Bureau of the Census, Annual Survey of Manufactures.

Distribution Channels

Distribution channels for textile mill products differ considerably depending on the particular products produced and the structure of the company providing the product. For example, some textile companies may operate yarn spinning mills, weaving mills, and finishing plants as an integrated operation in which they purchase raw fibers which they process into finished fabrics and sell direct to apparel manufacturers or other users; others may perform only one of those functions, i.e., spinning, weaving, or finishing. Many of the larger textile mill companies making broadwoven cotton and manmade-fiber fabrics are integrated operations and often have their own marketing divisions for selling converted (finished) fabrics directly to apparel manufacturers. Textile mill companies making certain kinds of products may even produce the finished article and sell directly to retailers, especially to the large department or chain stores.

Products often sold direct by mills include knit outerwear, underwear, and hosiery; textile floor coverings; and other home furnishings such as sheets and towels. A recent survey indicates that retailers purchased nearly 80 percent of their broadloom carpet directly from mills, an increase from earlier years, and that carpet specialty stores have increased their share of total carpet sales to 67 percent, with department and chain stores now accounting for only about 13 percent. 1/

Some broadwoven fabric weaving mills process fabrics beyond the greige stage in the same establishment. According to the 1982 Census of Manufactures, about 36 percent of the total quantity of finished cotton broadwoven fabrics produced was finished in weaving mills; the comparable percentage for finished manmade-fiber and silk fabrics was 34 percent. Greige fabrics not finished in weaving mills are generally finished in separate finishing mills of the same company or by independent finishing mills. Of the total value added by cotton and manmade-fiber finishing mills in 1982, slightly more than one-half was for commission finishing and the remainder for finishing their own fabrics.

Marketing Practices

To provide the ultimate consumer with a finished textile product involves a long and often complex process beginning with the agricultural or chemical production of the raw fiber and ending at the retailer who provides the final consumer product. Each stage of the process is affected by the marketing practices at the preceding and following stages. Textile mills occupy a position in the middle of this production and distribution chain and range in scope of activity from mills that only spin certain counts of yarn for sale, to mills that start with raw fiber and end with a final product, such as towels, sold directly to retailers or institutional users.

Integrated weaving mills often use the bulk of the yarn they produce for their own weaving operations but may, in order to balance their operations, buy additional yarn to satisfy special needs or sell surplus yarn not presently required for weaving. Knitting mills, which are often smaller than weaving mills and use a greater variety of yarns, usually find that they can buy all or a substantial part of their yarn requirements cheaper than they can produce it. This results from the fact that an efficient spinning mill would usually have a larger output than the requirements of a single knitter. In 1984, of total spun yarn production, about 3.9 million pounds or two-thirds of the total was produced for the mill's own use while 2.0 million pounds or one-third was for sale. Of the 2.0 million pounds produced for sale, about 20 percent was weaving yarn, 47 percent was machine knitting yarn, 22 percent was carpet and rug yarn, and 8 percent was for other markets such as hand knitting or thread yarns. Sales yarn producers use a variety of marketing methods including 1) direct sales of yarn through the spinners' own sales staff and offices, with or without the use of brokers, 2) sales to merchants or dealers who resell to consumers, 3) exclusive sales through agents who maintain offices in actual marketing centers and 4) through a combination of direct sales and use of agents. Direct sales and sales through agents or brokers probably account for the bulk of total sales.

1/ 1987 Carpet Flow Sheet, Allied Fibers, New York, NY.

Fabrics produced by weaving mills are, in large part, sold as greige goods to finishers, converters, and industrial users. However, many weaving mills also process fabrics beyond the greige state either in the same establishment or in separate finishing plants owned by the company and several firms also produce substantial quantities of finished products such as sheets, towels, blankets, and bedspreads. In 1986, it is estimated that approximately 40 percent of the value of shipments of cotton weaving mills was accounted for by finished fabrics and final products such as sheets and towels; that about 30 percent of the shipments of manmade-fiber weaving mills were finished fabrics or final products; and that nearly 80 percent of the shipments of wool weaving mills were finished fabrics or final products. A substantial quantity of greige fabrics are processed by commission finishers who finish these fabrics on a commission basis mainly for weaving mills, converters, and apparel manufacturers. About 28 percent of the cotton fabric finished in 1985 and about 42 percent of the manmade-fiber fabric finished in 1985 was done on a commission basis. The proportion of total finished fabrics done by commission finishers has declined over the past decade.

The role of independent "converters", who buy greige fabric from the mills and have the fabric printed, dyed, or otherwise finished before resale to users, is especially important in the market for fabrics used in apparel where style is important and frequent fashion changes make flexibility and knowledge of current style trends very important. Converters typically use independent commission finishers but finishing plants owned by weaving mills may also do a certain amount of commission finishing for converters. Over the past 10 years or so, an increasing proportion of the broadwoven fabrics produced have been sold directly by the mills, many of which have their own converting department which styles fabrics for the apparel market.

Most imported cotton broadwoven fabrics sold in the U.S. market are entered as greige goods and then dyed and finished in U.S. finishing plants. In 1986, 79 percent of the yardage of imported cotton fabrics, and 59 percent of the value, was greige goods. The percentage of greige goods in imports of manmade-fiber fabrics was probably smaller; for example, in the case of polyester filament fabrics, less than 3 percent of imports were unbleached or bleached and 97 percent was dyed or printed.

Greige goods markets for knit goods are relatively unimportant as most of the knit goods are finished by mills before they are sold.

Supply Factors

In general, the U.S. textile industry has had a moderate amount of excess capacity in recent years, that is, an ability to supply more textile mill products than the average annual U.S. consumption of domestically produced products plus exports. The industry has also had available an adequate supply of its major raw materials -- cotton and manmade fiber. The industry produces a wide range of products suitable for most end-use markets. Despite this supply capability, however, industry output has not kept pace with the U.S. consumption of textile end-products partly because the potential domestic market has been reduced by substantial increases in imports of apparel. In addition to this loss of market, the industry has also encountered direct

competition from imported textile mill products, especially in certain segments of the market and from certain countries. Textile mill products imported in the greatest volume include manmade-fiber fabrics, cotton fabrics, floor coverings, yarn, and wool fabrics. Although not true in all cases, in general the most severe competition has been in the low-priced, lower quality products or in the high-priced, high-fashion products with the domestic industry supplying most of the broad middle segment of the market. Foreign countries also tend to supply products not generally made in the United States (hand-made carpets, products of certain vegetable fibers, hand-loomed or cottage industry products, etc.), products produced with unusual combinations of textile fibers, products with special design or quality characteristics, and products where the requirement is for small lots. U.S. manufacturers supply the bulk of the domestic market for tufted floor coverings, both household and automotive, for knit fabrics, and for nonwoven fabrics; they also supply most of the domestic requirement for sheets and towels (excluding shop towels).

In many cases, the same countries are major suppliers of both apparel and textile mill products to the U.S. market. For example, Taiwan, China, and Korea are all among the top four suppliers both for apparel and for textile mill products. Hong Kong is the leading supplier of apparel but is less important as a supplier of textile mill products; Japan is the fourth largest supplier of non-apparel products but is less important as an apparel supplier. Countries which are major sources of apparel imports but which are relatively unimportant as suppliers of textile mill products include the Philippines, Singapore, Dominican Republic, Sri Lanka, and Bangladesh; Indonesia supplies significant quantities of both apparel and non-apparel textiles. India supplies both apparel and non-apparel products but its non-apparel products largely comprised floor coverings of a type not produced in the United States.

The leading foreign suppliers of textile mill products to the U.S. market in 1986, in decreasing order by value, were Japan ($721 million), Italy ($399 million), Korea ($325 million), China ($314 million), and Taiwan ($239 million). The next most important suppliers among the nine leading suppliers, were the United Kingdom, India, West Germany, and Hong Kong, each of which supplied less than $200 million. The nine leading suppliers accounted for 65 percent of the value of U.S. imports of textile mill products in 1986 with a large number of other countries supplying the remaining 35 percent. Although Japan is by far the leading supplier in terms of value, U.S. imports from Japan since 1982 have increased at a slower rate than total imports from all countries--an increase of 58 percent from 1982 to 1986, compared with an increase of 88 percent from all countries. Imports from Italy have increased at about the same rate as total imports during this period. Imports from Korea, Taiwan, and China have increased at a greater rate than total imports--111 percent, 104 percent, and 178 percent, respectively. The remaining countries among the nine leading suppliers all increased at a lower rate than total imports since 1981 with the exception of West Germany, whose exports to the United States more than tripled. Imports from West Germany increased in a wide range of textile mill products with the largest increase being in broadwoven fabrics of manmade fiber. In January-June 1987, imports from Japan and Taiwan decreased slightly compared with the comparable period of 1986 and imports from Italy, Korea, and China were higher than in 1986.

Most of the competing Asian countries initially gained shares of the U.S. market by supplying low-priced textiles for use in the high-volume, lower quality segment of the U.S. apparel and household products market. For example, many initially supplied cotton fabrics in standard constructions, such as printcloth and sheeting of low to medium quality, often unfinished, i.e., in the "greige" state. However, countries such as Japan and Hong Kong, who were leading suppliers more than 10 years ago, have long since moved upscale so that they supply a variety of fabrics of cotton, manmade fibers, and various blends, both greige and finished, and of high quality. Other major suppliers, such as Taiwan, Korea, and China are following suit with increased output of manmade-fiber and blend products and improved finishing processes. Some suppliers, in order to increase value-added in export products, would prefer to place less emphasis on textile mill products as a whole and more on finished products such as apparel. However, this may not be a viable alternative for countries with high labor costs because of the high labor content in apparel. To export apparel, such countries must usually concentrate on certain unique or high-fashion items, or have part of the manufacturing process done in a low-wage country.

With respect to product quality, an article in a recent issue of a U.S. trade publication 1/ described perceptions in the U.S. market of the quality of fabrics from various suppliers. The following is an extract of material from that article:

> Indian and Pakistani fabric is generally of a lesser quality than U.S. fabric. It is frequently a sheeting or print cloth and will usually be an all cotton or possibly a polyester/cotton blend. The fabric sells for less than similar fabric from the United States or some other countries. Chinese goods will vary quite a bit in quality from mill to mill. Taiwan fabric is more consistently a better quality and Philippine fabric is at the lower end of the range. Fabric from Hong Kong will vary in quality but is usually good. Japanese fabric for export to the U.S. has nearly always been up to or exceeded American standards. Colombia, Peru, and Equador (sic) produce fabric that is usually lower than American standards. Egyptian fabric can be quite good as is fabric from Israel. European fabric differs quite a bit in type from the fabrics exported by the Orient. Its quality is generally good and will usually meet American standards. There are no Common Market or individual country standards for quality in Europe. Fabric from Prado, Italy (sic) should always be suspect for fiber content and quality. It has frequently been made of reprocessed fiber, which has been incorrectly labeled as to quantity and generic type. If the standard point count for a satisfactory fabric type was 40 or less penalty points per 100 yds. in the U.S., then it might be reasonable to expect a "first" quality fabric from the

1/ Bobbin Magazine, March 1987.

following countries to have less than the listed penalty points: India/Pakistan, 60-70; China/Taiwan/Korea, 40-60; Colombia/Peru/Equador, 40-55; Hong Kong, 40-50; and, Europe/Japan, 40.

Demand Factors

Consumption and Consumer Preferences

Most measures of total consumption of textile products in the United States show considerable annual variation in consumption. There are also longer periods of 5 to 10 years of little or no growth in consumption and other periods of substantial increases in consumption. There may also be differences in the results obtained in trying to measure consumption in terms of quantity as compared with measures in terms of value. Over a period of the past 20 years, it is possible to select periods of 4 or 5 years when consumption declined at an average annual rate of 2 percent or other periods when consumption increased at an annual rate of 6 percent. Since 1976, measures of consumption during 1976-80 in terms of quantity indicate an annual rate of change in the range of -0.2 percent to +0.7 percent but a real value measure indicates an average annual increase of about 2.0 percent. During 1980-86, most measures indicate significant growth in consumption. On a quantity basis, growth in the range of 1.2 percent to 3.8 percent is indicated; on a real value basis, growth is estimated at 3.2 to 4.6 percent.

Some of the most important determinants of consumption over a given period of time seem to be: 1) demographics; 2) disposable per capita income; 3) economic activity (industrial production and housing); 4) fashion trends and style innovations; 5) relative prices of textile products; 6) competition from competing non-textiles; 7) development of new uses for textile products; and 8) technological and cultural changes. The largest market for apparel is in the younger, style conscious age group. Consumption of industrial fabrics and household textiles are directly affected by such economic activity as industrial production and home building, as well as some of the other factors listed. Fashion trends and fads may have an immediate effect on consumption by increasing demand for new products and making existing wardrobes obsolete in terms of fashion. Longer term effects may result from the combination of fashion and life-style changes, such as the trend toward more casual dress, the popularity of jogging or similar activities and the associated demand for related types of apparel, and the recent shift in demand toward natural fibers. The ability of the producers of textile end-products to hold down prices relative to other consumer goods as a result of increases in productivity and lower raw material prices is believed to have benefited textile consumption during certain periods. Imports may have also had a limiting effect on prices at times. In a number of end-use markets, consumption of textiles has declined because of competitive gains by non-textile materials such as paper and plastic in items formerly made of textiles. Historic examples include auto headlinings, bags, tarpaulins, rainwear, etc.

Positive influences on consumption have resulted from new applications for textile products such as textiles for erosion control and related applications, inflatable buildings, bullet-proof vests, laminated textiles, etc. Developments

in textile products themselves, such as specialized glass fibers, optical fibers, and carbon fibers, have contributed to finding new uses. Technological and cultural changes may affect consumption either positively or negatively. Better heated houses and offices may have reduced the demand for certain kinds of textiles but greater use of wall-to-wall carpeting greatly increased consumption of tufted floor coverings. Increased emphasis on exercise and leisure activities has greatly increased consumption of apparel suitable for these activities. Changing work activities and environments have caused a shift from heavy work clothing to lighter weight uniforms and casual wear.

The competitive success of a company or industry depends on how well they satisfy the needs and preferences of the consumer. When manmade fibers were introduced, they offered a range of new qualities related to durability, ease of care, and appearance, and led to a period of growth in textile consumption. Ease of care, especially, has been a major reason for the continued growth in the use of manmade fibers in apparel. As these fabric functional needs have been met through wider use of manmade fibers, blends, and new finishes for natural fibers, the orientation of U.S. consumers in recent years has shifted more toward demand for products which enhance their self image. This leads to specialized demand by different market segments and to even more rapid changes in fashion and style characteristics. All of this increases the importance of market awareness on the part of U.S. textile mills and a need to be in close touch with changes in consumer needs and preferences.

Prices and Exchange Rates

Prices of textiles are determined by underlying supply and demand conditions in the market. The demand for textiles derives in part from the demand for apparel and other finished textile products, which in turn depend primarily on income and tastes. In developed countries, the demand for textiles and apparel is believed to be fairly insensitive to changes in income. 1/ Houthakker and Taylor estimate the long-run income elasticity to be around 0.5. 2/ This means that a one-percent increase in income would increase demand for textiles by only one-half of one percent. The demand for clothing and textiles is also thought to be fairly insensitive to price. Furthermore, the demand for textiles is likely to be less sensitive to price than the demand for apparel. Cline cites price elasticity estimates of 0.9 for clothing and 0.4 for textiles. 3/

These estimates provide an indication of the sensitivity of quantity demanded in the market to changes in prices and income. However, for a particular supplying country holding a very small share of the market, the availability of close substitutes from other suppliers is probably the most important factor determining the demand for its product. This means that the

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1/ Henryk Kierzkowski and Gary Sampson, "The Multifiber Arrangement: The approach and setting to the forthcoming negotiations," Aussenwirtschaft, Vol. 36, No. 1.
2/ Houthakker and Taylor, Consumer Demand in the United States, (Cambridge, Mass: Harvard University Press) 1970.
3/ William R. Cline, The Future of World Trade in Textiles and Apparel (Washington, D.C.: Institute for International Economics) 1987.

country faces a demand that is highly price sensitive, or that it must take price as determined by the market. Such a country can expand output at prevailing market prices without appreciably affecting price. However, if a large number of countries expand output or if a country accounting for a large share of the market expands output, total supply will increase substantially, putting downward pressure on prices.

The ability of countries to expand output depends on underlying supply conditions, such as the costs of productive factors and capacity. Changes in these factors will cause changes in a country's ability to supply textiles at any given price level. For example, if a country increases its capacity or experiences a decline in labor costs, it will be willing to supply more of the product at any given price. In terms of the relative competitive position of a country, changes in local conditions such as labor costs will affect that country's ability to supply textiles vis-a-vis its competitors. For example, the appreciation of the dollar during the first half of the 1980's effectively reduced the local value added in supplying countries compared with the United States, thus increasing supply from these countries.

Another factor that affects prices in a given market is the degree and nature of import protection. Developed countries have had a long history of import protection of textiles in the form of tariffs and quotas. The imposition of such import restrictions drives a wedge between prices in the protected market and world market prices. Whereas tariffs limit the level of imports and cause prices in the protected market to be higher than world prices, foreign competitors are still able to increase market shares as their supply increases. Quotas, however, limit the level of imports, effectively isolating conditions in the protected market from conditions in the rest of the world. 1/ Countries facing quotas will export the given quantity at prices determined by the net demand for imports and a fixed foreign supply. Finally, countries facing a combination of quotas for some textile products and tariffs in other categories will respond to an increase in import demand by increasing exports of products not subject to quantitative limits while realizing increased quota rents in products subject to limits.

U.S. Market

Tables 4-3 to 4-6 show total value of U.S. consumption, imports, the ratio of imports to consumption, and U.S. producer and import price indexes, for textiles and selected textile products for the period 1982-86. Table 4-3 also includes an inflation adjusted index for the value of the dollar relative to a basket of foreign currencies. The ratio of imports to consumption increased fairly steadily from 1982 to 1985 in all product categories. This increase in the import penetration ratio occurred despite the fact that a relatively large share of imports of some of the products were covered by quantitative restraints, as discussed in chapter 3.

1/ Quotas in this context refer to effective quotas, or quantitative limits that effectively restrain the quantity of imports allowed to enter the market. Clearly, if quotas are not effective, they will not affect the level of imports or price.

The increase in imports during 1982-85 was accompanied by very low growth in the value of domestic shipments. However, imports account for a very small share of the market. At the same time, the inflation adjusted domestic producer and import price indexes declined slightly for all textiles and, with the exception of domestic prices for cotton fabric, remained fairly constant for product categories shown in tables 4-4 through 4-6.

In contrast, the real value of foreign currencies relative to the real value of the dollar declined significantly during the same period. This decline in the real exchange rate reduced the local value added in these countries relative to the United States, causing an increase in the import supply from these countries. This is consistent with Cline's finding that the rising value of the dollar during the period was a major cause of the increase in the import penetration ratio during this period. 1/

Table 4-3 provides an indication of the effect of the appreciation of the dollar on the competitive position of all foreign suppliers vis-a-vis U.S. producers. Table 4-7 shows total imports from 5 of the countries covered in this study, their share of U.S. imports among each other and from the world, and the nominal and inflation adjusted indexes of exchange rates. These data are provided to give some indication of the effects of changes in relative exchange rates vis-a-vis the dollar on the competitive position of these suppliers. Imports from these countries generally increased over the period. However, the share of total U.S. imports from Japan declined steadily during the period whereas the share from Hong Kong, Korea, and Taiwan remained fairly stable. The share of imports from Italy increased from 1983 to 1984, then declined somewhat during 1985 and 1986. The decline in Japan's share of total U.S. imports was accompanied by a moderate decline in the value of the Japanese yen vis-a-vis the dollar compared with a sharp decline in the value of the other currencies. Otherwise, there does not appear to be a strong correlation between the relative rates of decline in the values of the currencies, and trends in import shares.

1/ William R. Cline, The Future of World Trade in Textiles and Apparel (Washington, D.C.: Institute for International Economics) 1987.

Table 4-3
Textile mill products: Domestic shipments, imports, consumption, prices and exchange rate index, in nominal and constant 1982 dollars, 1982-86

Year	Domestic shipments	Imports	Apparent consumption	Import penetration ratio	U.S. producer price index	Import price index	Exchange rate index 1/
			Nominal dollars				
1982...	45,749	2,201	47,950	4.6	100.0	100.0	100.0
1983...	51,798	2,524	54,322	4.6	98.8	98.8	94.5
1984...	53,948	3,469	57,417	6.0	101.7	101.5	87.6
1985...	51,815	3,616	55,431	6.5	101.4	98.7	83.6
1986...	NA	4,136	NA	NA	101.4	103.2	102.8
			Constant 1982 dollars				
1982...	45,749	2,201	47,950	4.6	100.0	100.0	100.0
1983...	52,427	2,555	54,982	4.6	97.5	97.5	96.5
1984...	53,046	3,418	56,464	6.1	98.1	97.9	92.3
1985...	51,100	3,656	54,756	6.7	98.3	95.8	90.8
1986...	NA	4,008	NA	NA	101.2	103.0	103.7

1/ Nominal exchange rate index calculated between the dollar and other major currencies. Real exchange rate index calculated between the dollar and currencies of major U.S.-importers of textiles.

Source: Domestic shipments calculated as the value of total shipments provided by the Office of Business Analysis data base, U.S. Department of Commerce, less exports. Imports compiled from official statistics of the U.S. Department of Commerce. Price indexes provided by the Bureau of Labor Statistics. Nominal exchange rate index provided by the International Monetary Fund. Real exchange rate index provided from William R. Cline, The Future of World Trade in Textiles and Apparel, (Washington D.C.: Institute for International Economics) 1987.

Table 4-4
Cotton woven fabrics: Domestic shipments, imports, consumption, and prices, in nominal and constant 1982 dollars, 1982-86

Year	Domestic shipments 1/	Imports	Apparent consumption	Import penetration ratio	U.S. producer price index	Import price index
	Nominal dollars					
1982	3,987	475	4,462	10.6	100.0	100.0
1983	4,509	599	5,108	11.7	98.4	97.6
1984	4,478	843	5,321	15.8	101.4	104.2
1985	4,083	824	4,907	16.8	95.0	99.5
1986	NA	974	NA	NA	93.9	102.1
	Constant 1982 dollars					
1982	3,987	475	4,462	10.6	100.0	100.0
1983	4,620	613	5,233	11.7	97.1	96.3
1984	4,416	809	5,225	15.5	97.8	100.5
1985	4,298	828	5,126	16.2	92.1	96.4
1986	NA	954	NA	NA	93.7	101.9

1/ Domestic shipments calculated as the sum of total shipments of SIC 221 and value added in SIC 2261 less exports.

Source: Domestic shipments provided by Office of Business Analysis data base, U.S. Department of Commerce. Imports compiled from official statistics of the U.S. Department of Commerce. Price indexes provided by the Bureau of Labor Statistics.

Table 4-5
Manmade fiber and silk woven fabrics: Domestic shipments, imports, consumption, and prices, in nominal and constant 1982 dollars, 1982-86

Year	Domestic shipments 1/	Imports	Apparent consumption	Import penetration ratio	U.S. producer price index	Import price index
	Nominal dollars					
1982.....	10,890	655	11,545	5.7	100.0	100.0
1983.....	12,489	733	13,222	5.5	99.2	104.4
1984.....	12,712	899	13,611	7.1	101.4	105.6
1985.....	11,794	977	12,771	7.7	103.5	105.4
1986.....	NA	1,168	NA	NA	105.0	119.2
	Constant 1982 dollars					
1982.....	10,890	655	11,545	5.7	100.0	100.0
1983.....	12,590	702	13,292	5.6	97.9	103.1
1984.....	12,536	851	13,387	6.4	97.8	101.8
1985.....	11,395	927	12,322	7.5	100.3	102.1
1986.....	NA	980	NA	NA	104.8	119.0

1/ Domestic shipments calculated as the sum of total shipments of SIC 222 and value added in SIC 2262 less exports.

Source: Domestic shipments provided by Office of Business Analysis data base, U.S. Department of Commerce. Imports compiled from official statistics of the U.S. Department of Commerce. Price indexes provided by the Bureau of Labor Statistics.

Table 4-6
Wool woven fabrics: Domestic shipments, imports, consumption, and prices, in nominal and constant 1982 dollars, 1982-86

Year	Domestic shipments 1/	Imports	Apparent consumption	Import penetration ratio	U.S. producer price index	Import price index
			Nominal dollars			
1982	757	115	872	13.2	100.0	100.0
1983	874	123	997	12.3	99.6	102.3
1984	1,010	184	1,194	15.4	104.5	114.6
1985	925	179	1,104	16.1	107.7	111.3
1986	NA	182	NA	NA	107.6	104.0
			Constant 1982 dollars			
1982	757	115	872	13.2	100.0	100.0
1983	878	120	879	13.7	98.3	101.0
1984	967	161	1,128	14.3	100.8	110.5
1985	859	161	1,020	15.8	104.4	107.8
1986	NA	176	NA	NA	107.4	103.8

Source: Domestic shipments provided by Office of Business Analysis data base, U.S. Department of Commerce. Imports compiled from official statistics of the U.S. Department of Commerce. Price indexes provided by the Bureau of Labor Statistics.

Table 4-7
Total imports of cotton, wool and manmade-fiber yarns and fabrics, and indexes of exchange rates for selected countries, 1982-86

Country and year	Total imports	Share of U.S. imports		Nominal exchange rate 1/	Real exchange rate 2/
		From world	From the five countries shown		
	Million SYE's	Percent		1982=100	
Hong Kong					
1982	3/	3/	3/	100.0	4/
1983	156	5.7	11.4	83.5	4/
1984	164	4.2	10.2	77.7	4/
1985	150	3.9	9.4	78.0	4/
1986	180	3.7	9.9	77.8	4/
Italy					
1982	3/	3/	3/	100.0	100.0
1983	147	5.4	10.6	89.0	96.5
1984	276	7.2	17.1	77.0	89.9
1985	254	6.6	15.9	70.8	89.2
1986	274	5.9	15.1	90.7	116.7
Japan					
1982	3/	3/	3/	100.0	100.0
1983	533	19.5	38.8	104.9	101.3
1984	555	14.5	34.3	104.9	98.7
1985	534	14.0	33.4	104.4	97.5
1986	627	13.6	34.5	147.8	129.0
Korea					
1982	3/	3/	3/	100.0	100.0
1983	293	10.7	21.3	94.2	93.3
1984	332	8.7	20.5	90.7	88.3
1985	347	9.1	21.7	84.0	82.9
1986	405	8.8	22.3	82.9	82.5
Taiwan					
1982	3/	3/	3/	100.0	100.0
1983	242	8.8	17.7	97.7	95.1
1984	289	7.5	17.9	98.8	94.7
1985	312	8.2	19.5	98.2	92.0
1986	332	7.2	18.3	103.4	96.5

1/ The indexes are based on exchange rates which are expressed in U.S. dollars per unit of foreign currency.
2/ The indexes are based on the real exchange rate which represents the nominal exchange rate adjusted for the relative economic movement of each currency as measured by producer price indicators in the United States and the respective foreign country. Producer price indicators--intended to measure final product prices--are based on average quarterly indexes presented in line 63 of the International Financial Statistics.
3/ Not available.
4/ Reliable producer price data for Hong Kong are not available. Therefore, accurate measures of the real value of its currency cannot be calculated.

Sources: Central Bank of China, Financial Statistics, May 1987; International Monetary Fund, International Financial Statistics, August 1987. Data for Hong Kong--obtained from the Hong Kong Statistical Reporting Service, Hong Kong Digest of Statistics--were furnished by the staff at the International Monetary Fund. Official statistics of the U.S. Department of Commerce.

One factor that undoubtedly affected the relative position of these suppliers is the extent of quantitative restraints on their exports. Of the five countries shown in table 4-7, only imports from Italy were free of restraints in 1986. Imports of cotton, manmade-fiber, and wool fabrics from the other four countries were subject to quantitative restraints. Such restraints covered broad groups of MFA categories and were at least 85 percent filled in 1986. 1/ These restraints likely limited the ability of these countries to gain an increasing share of the U.S. market, despite a relatively sharp decline in the value of their currencies vis-a-vis the dollar.

Domestic Market Conditions

The domestic market is of primary importance to the U.S. textile mill industry. As noted elsewhere, the export market for U.S. textile mill products has not grown during the past 5 years and in 1986 export sales accounted for only 3 percent of total shipments by the industry (SIC 22). With the domestic market accounting for 97 percent of its business, the domestic industry has devoted most of its efforts to preserve this market, both through political action to maintain or extend quotas under the MFA, and efforts to improve their competitive position relative to imports through cost reduction, industry restructuring and marketing efforts. Capital investment by the textile industry aimed at reducing costs and improving quality increased rather steadily from 1975 through 1984, rising from $1 billion in 1975 to $1.9 billion in 1986. Despite these capital investments, accompanied by substantial increases in productivity (and better quality in many cases), and the expansion of bilateral agreements under the MFA, competitive imports continued to increase in the 1980's. Moreover, there was a reduction in the size of the domestic market during this period because of increased imports of finished apparel. This led to a growing realization that much of the domestic market for textile mill products could not be held on the basis of reductions in manufacturing costs alone but that more attention must be given to other important competitive factors including reducing distribution costs, being more responsive to the needs of the market and concentrating on market segments where U.S. producers have the greatest advantages. It was also recognized that an important objective was not only to make their own product more competitive with the comparable import, but also to help their customers, the U.S. apparel manufacturer, become more competitive with imported apparel and to better meet the needs of U.S. retailers.

Retailers play an important role in the distribution chain. They are, of course, the closest to the consumer in the chain of distribution and often the first to see evidence of consumer preferences. Important changes have occurred at the retail level which affect both apparel manufacturers and textile mills: 1/

> Retailers are developing their own brands, reducing their dependence on manufacturers' brands and designer labels.

1/ Based on discussions with trade sources, quotas that are 85 percent or more filled are considered binding since there is uncertainty as to whether additional shipments will be permitted entry.

Retailers are sourcing more directly off-shore, bypassing domestic sources.

Retail volume is shifting in two directions--a) toward lower markup channels such as regional discounters (e.g., Walmart) and b) toward specialty chains catering to defined market segments (e.g., The Limited).

The three changes cited above are somewhat interrelated, with each having some effect on the other. It may be easier for retailers to develop store brands using imports, which are otherwise unbranded, and in fact, the use of a store brand may be very useful in merchandising imports. A recent survey by Kurt Salmon Associates, Inc. (KSA) indicated that department stores which purchased 87 percent of all apparel from U.S. vendors (regardless of origin), purchased less than 20 percent of private label apparel from U.S. vendors. Recently, the most rapid growth in retail sales has occurred in retail outlets which often emphasize imports, i.e., discount stores and specialty chains.

However, there is considerable variation in the degree to which major retail organizations sell imported products and engage in direct importing. Trade sources indicate that in 1986 large retailers such as May Company, R.H. Macy Co., and Allied Stores Corp. directly imported 12 to 17 percent of their total inventories and that buying offices such as AMC (over 10 percent) and Atkins (under 10 percent) also are substantial overseas buyers. 1/ An official of The Limited has stated that of its estimated $3.7 billion in sales in 1987, about one-half would be imports. 2/ On the other hand, the Belk Organization, a family-owned retailer operating 350 Belk and Leggett stores, many in textile producing areas, estimates that not more than 1 percent of its merchandise is imported directly, not including imports purchased from national brand manufacturers. 3/

Some observers have indicated that retailers benefit from imports, perhaps unduly, by taking larger markups on imported goods than on domestic goods. 4/ Retailers deny this, saying they are often forced to buy imports to meet certain accepted price lines and that when all costs are considered, usually including a greater percentage of markdowns on imports, the markups for imports are similar to those for domestic products. Data published by the

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1/ Stig A. Kry, Kurt Salmon Associates, Inc., "Apparel - An Industry in Transition," one of several papers presented at the annual conference of the International Textile Manufacturers Federation (ITMF) in Helsinki in September 1986 and published by ITMF in International Textile Manufacturing, vol. 9/1986, Zurich, p. 33.

2/ Women's Wear Daily, Sept. 21, 1987.

3/ Speech by Thomas A. Nipper, Belk Organization, North Carolina State University, 1986.

4/ Library of Congress Study on Imports and Consumer Prices, Washington, DC, 1977.

National Retail Merchants Association (NRMA), indicate that both markon 1/ and percent markdown have increased over the past 10 years but that the percent markdown has increased more than the markon (table 4-8).

Markdowns are especially significant in the case of apparel, generally falling in a range of 20 to 24 percent, compared with an overall percentage for all products of 16 to 18 percent. The following tabulation shows 1985 data for men's, women's, and children's apparel.

Table 4-8
Department and specialty stores: cumulative markon and percent markdowns, 1976-86

(In percent)

	Department stores		Specialty stores	
Year	Cumulative markon	Markdowns	Cumulative markon	Markdowns
1976	45.99	10.15	50.72	12.28
1977	46.97	9.92	50.11	14.72
1978	47.01	10.13	50.31	14.80
1979	47.48	10.43	51.09	15.46
1980	47.61	11.06	50.03	15.52
1981	47.60	11.94	51.13	18.40
1982	47.78	13.05	54.07	17.22
1983	47.86	13.80	51.60	16.06
1984	50.54	16.10	50.41	18.02
1985	48.79	16.54	51.88	18.60

Source: Financial and Operating Results of Department and Specialty Stores in 1985, National Retail Merchants Association, New York, NY.

5/ "Markon", the term used by NRMA, and the more common term "markup" are sometimes used interchangeably. Markon is defined as the difference between the retailers' delivered cost and the original selling price.

Department Merchandising and Operating Results for Department and Specialty Stores, by Selected Departments, 1985

(In percent)

Department	Department stores 1/		Specialty stores 2/	
	Median cumulative markon 3/	Median markdowns 4/	Median cumulative markon 3/	Median markdowns 4/
Women's apparel	52.2	24.3	50.5	24.0
Men's and boys' apparel and accessories	51.2	20.1	52.2	19.9
Infants' and children's clothing and accessories	50.8	22.2	49.6	23.1

1/ All department stores with sales over $1 million.
2/ All specialty stores with sales over $1 million.
3/ The difference between the retailers' delivered cost and original selling price expressed as a percent of the selling price.
4/ Ratio of the dollar reductions from original selling price to net sales.

Source: National Retail Merchants Association, Merchandising and Operating Results of Department and Specialty Stores in 1985, New York, NY.

Analysis of Typical Retail Profitability
Ladies' Seasonal Fashion Top

	Direct import	$/Unit U.S. average	U.S. quick response
Original retail price	$15.00	$15.00	$15.00
Percent initial markup	62	41	45
Costs			
Wholesale price	5.70	8.85	8.25
Other (incl. inventory carrying costs and markdowns)	7.05	5.50	4.35
	12.75	14.35	12.60
Operating profit (before interest and taxes)	2.25	.65	2.40
Assets			
Fixed	3.00	3.00	2.75
Inventory	2.10	2.55	1.60
	5.10	5.55	4.35
Percent return on assets	44	12	55

Source: Kurt Salmon Associates, Inc., "A Second Look at the U.S. Sourcing Option," (speech), April 1986; original source, CWP: U.S. and Far East Economics, July 1985.

There is considerable evidence that U.S. retailers are shifting their emphasis back toward domestic sources, which may be due, in part, to an interest in reducing markdowns and inventory costs. A number of major retailers have recently held "vendor conferences" attended by large numbers of domestic suppliers in an effort to increase U.S. sourcing. Recent developments encouraging increased interest by retailers in domestic sources are the depreciation of the dollar against many currencies, which has reduced cost differences; growing diversity of foreign sources which increases the complexity and uncertainty of foreign purchasing; and the recent efforts of mill and apparel manufacturers to be more responsive to the retailers' needs (and to consumer preferences). Officials in the Taiwan office of K-Mart report that it is increasingly difficult to meet U.S. prices given by buyers arriving from the United States, who note that they must consider the final "store cost" including all the expenses of putting the merchandise on the sales counter. They also report that the manufacture of some basic apparel items, such as pull-on pants and basic knit shirts, are moving back to the United States because of price and that the U.S. is gaining some sweater business because of an ability to produce jacquard patterns. 1/ Among the added costs, over and above purchase price, of putting imported products on the retail shelf, in comparison with domestic products, sometimes cited by retailers are the cost of buying trips, communication expenses, costs of dealing with brokers and U.S. Customs, less favorable credit terms, higher warehousing costs, higher risks (no returns), uncertainties in areas such as currency fluctuations and Customs classification, higher distribution costs for such items as packaging, ticketing and advertising, and higher markdowns.

There is also evidence of increasing interaction and cooperation among textile mills, end-product manufacturers and retailers, with emphasis on better communication through all links in the distribution chain, to achieve "quick response" in meeting customer demand. Techniques being used to achieve quick response include electronic data interchange, bar coding of merchandise, and just-in-time deliveries. A K-Mart official has stated that the company plans to spend more than $1 billion on electronic data exchange equipment over the next five years. 2/ A textile mill reports that a major customer, a manufacturer of jeans, has been able to cut the production cycle on jeans from 4 weeks to 3 days using electronic data exchange. It has also enabled a reduction in inventories of denim fabrics for both the mill and the customer, as reflected in a comment by the mill official, "Our delivery truck is his warehouse." Key elements of quick response are speed and flexibility, including producer ability to shift quickly to different variations of a product and to run small lots. Indicative of change is a report by one mill that its average dye lot in 1980 was 120,000 yards and in 1987 it was 12,000 yards.

Although there is widespread interest in quick response, as indicated by a survey showing that 80 percent of the textile mills intend to work on such programs in the next 12 months; only about one-third of the mills already have significant programs with customers in order to provide shorter lead times or

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1/ Interview with selected officials of K-Mart, Taipei, September 1987.
2/ Speech by K-Mart official at DuPont forum, Sept. 20, 1987.

just-in-time deliveries and smaller minimum-order quantities. 1/ The survey also showed that each of the major segments of the distribution chain--mills, apparel manufacturers, and retailers--tend to feel that a lack of action in the other two segments holds up progress in these programs. Retailers indicate that a frequent complaint of apparel manufacturers is that they "can't get the piece goods" in time for a quick delivery.

Import Penetration in Major Product Categories

Since the beginning of the MFA in 1974, import penetration in the total U.S. market for all textile products increased from 8.3 percent in 1973 to 16.4 percent in 1982 and to 25.0 percent in 1986, in terms of the quantity of fibers consumed (table 4-11). Import penetration has generally been much lower in textile mill products than in apparel. Although apparel imports are larger than imports of textile mill products, the imports of the latter increased at a more rapid rate during the period, in quantity terms. Apparel imports increased by 72 percent during 1982-86 from 3.4 billion SYE to 5.8 billion SYE; fabric imports increased by 107 percent to 3.1 billion SYE; yarn imports increased by 260 percent to 1.8 billion SYE; and imports of miscellaneous textile products increased by 243 percent to 2.0 billion SYE (table 4-12). On a value basis, adjusted for insurance and freight and import duties, import penetration in 1986 was 9.5 percent for textiles and 31.1 percent for apparel, and the combined percentage was 22.0 percent. 2/ The domestic textile mill industry, which is concerned about the effect of imports of both fabrics and end-products, has attempted to measure the total impact of both kinds of imports. This was done by calculating the combined total of imports of fabric of a type used in a apparel and the estimated fabric equivalent of imports of finished apparel, and dividing that amount by the estimated fabric equivalent of domestic consumption of apparel. The resulting ratio was an estimated 52.4 percent in 1986. A similar ratio for the industrial and home furnishings market was 16.6 percent, and combined total was 35.6 percent. 3/

The overall share held by imports 4/ of sales yarn relative to total supply on a quantity basis was less than 5 percent in 1986, although the import share has more than doubled since 1982. Imports of broadwoven fabrics accounted for about 15 percent of the total supply in 1986, with imports supplying 29 percent of cotton fabrics, 21 percent of wool fabrics, and 8 percent of manmade-fiber fabrics. The import share for knit fabrics in 1986 was less than 1 percent. In cotton terry and pile towels, sheets and pillowcases, and carpets and rugs--products usually produced in finished condition by textile mills--the respective import shares were 20 percent, 7 percent, and 4 percent 5/ (figures 1 and 2).

1/ Study by Kurt Salmon Associates, Inc., for DuPont.
2/ William R. Cline, The Future of World Trade in Textiles and Apparel. Institute for International Economics, Washington, DC, 1987.
3/ Statistics presented by the American Textile Manufacturers Institute (ATMI) at Ways and Means Committee hearings on H.R. 1154.
4/ Based on data in Import/Production Ratios, U.S. Department of Commerce. The percentage shares for imports and production are calculated as shares of total supply; exports are not considered.
5/ U.S. Bureau of the Census, Current Industrial Reports, MQ23X.

Table 4-11
Cotton, wool, and manmade fibers consumed in textiles: U.S. mill consumption, exports, imports, and apparent consumption, 1976-86

Year	Mill consumption				Exports				Imports				Apparent consumption				Ratio of imports to consumption (total)
	Cotton	Wool	Manmade fiber 1/	Total	Cotton	Wool	Manmade fiber	Total	Cotton	Wool	Manmade fiber	Total	Cotton	Wool	Manmade fiber	Total	
	Million pounds																Percent
1976.....	3,414	122	8,052	11,588	413	15	352	780	709	99	479	1,287	3,710	206	8,179	12,095	10.6
1977.....	3,170	108	8,889	12,167	369	13	368	750	669	117	531	1,317	3,470	212	9,052	12,734	10.3
1978.....	3,041	115	9,235	12,391	356	13	442	811	845	129	643	1,617	3,530	231	9,436	13,197	12.3
1979.....	3,077	111	9,585	12,773	478	15	597	1,090	746	110	525	1,381	3,345	206	9,513	13,064	10.6
1980.....	3,033	123	8,734	11,890	523	24	772	1,319	811	103	541	1,455	3,321	202	8,503	12,026	12.1
1981.....	2,716	138	8,694	11,548	367	12	638	1,017	962	114	639	1,715	3,311	240	8,695	12,246	14.0
1982.....	2,488	116	1/ 6,775	9,379	253	12	439	704	897	112	698	1,707	3,132	216	7,034	10,382	16.4
1983.....	2,808	138	1/ 8,173	11,119	220	21	460	701	1,121	150	889	2,160	3,709	267	8,602	12,578	17.1
1984.....	2,716	142	1/ 7,966	10,824	206	12	488	706	1,447	210	1,115	2,772	3,957	340	8,593	12,890	21.5
1985.....	2,813	117	1/ 8,201	11,131	213	18	449	680	1,604	265	1,334	3,203	4,204	364	9,086	13,654	23.4
1986 2/.....	3,256	145	1/ 8,699	12,070	248	22	509	779	1,919	276	1,566	3,761	4,927	399	9,726	15,052	25.0

1/ Beginning in 1982, consumption of non-textile glass fiber (such as that used in insulation and other building materials) is not included. The quantity of such fiber has been sharply increasing in recent years, amounting to about 1.0 billion pounds per year.
2/ Export and import dat for 1986 were estimated by the U.S. Department of Agriculture.

Source: Compiled from official statistics of the U.S. Department of Agriculture, except as noted.

Note.--Because of rounding, figures may not add to the totals shown.

Table 4-12
Cotton, wool, and manmade-fiber textiles: U.S. imports, by types and by fibers, 1976-86

(In millions of equivalent square yards)

Year	Yarns				Fabrics				Apparel	
	Cotton	Wool	Manmade fiber	Total	Cotton	Wool	Manmade fiber	Total	Cotton	Wool
1976	104	8	709	821	945	19	423	1,387	678	71
1977	53	10	995	1,058	643	24	457	1,124	761	98
1978	122	10	841	973	921	26	514	1,464	942	98
1979	49	6	384	439	696	21	399	1,116	935	84
1980	75	7	298	380	714	18	485	1,217	1,004	94
1981	95	9	340	444	1,079	24	603	1,706	1,121	92
1982	110	15	370	495	831	27	620	1,478	1,189	94
1983	165	16	686	867	1,066	33	770	1,869	1,392	122
1984	218	32	1,029	1,279	1,529	50	979	2,558	1,733	158
1985	222	26	1,073	1,321	1,381	48	1,072	2,501	1,921	167
1986	426	25	1,352	1,803	1,686	40	1,371	3,097	2,202	179

Year	Apparel--Con.		Made-up and miscellaneous textiles				Total			
	Manmade fiber	Total	Cotton	Wool		Manmade fiber	Total	Cotton	Wool	Manmade fiber	Total
1976	1,679	2,428	181	12		136	329	1,908	110	2,947	4,965
1977	1,608	2,467	181	11		135	327	1,638	143	3,195	4,976
1978	1,866	2,906	229	11		158	398	2,214	144	3,379	5,738
1979	1,653	2,672	214	11		188	413	1,894	122	2,624	4,640
1980	1,787	2,885	216	10		177	403	2,009	129	2,747	4,885
1981	1,924	3,137	280	12		186	478	2,575	137	3,053	5,765
1982	2,099	3,382	317	10		252	579	2,447	146	3,342	5,934
1983	2,362	3,876	376	13		703	1,092	3,000	184	4,522	7,706
1984	2,826	4,717	580	19	1/	1,011	1,610	4,060	259	5,846	10,164
1985	3,029	5,117	727	21	1/	1,148	1,896	4,251	262	6,321	10,835
1986	3,414	5,795	828	20	1/	1,145	1,993	5,142	264	7,282	12,689

1/ Includes flat goods, handbags, and luggage of manmade fibers.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note.--Because of rounding, figures may not add to the totals shown.

Figure 1. Textile Mill Products:
Import Penetration, 1982

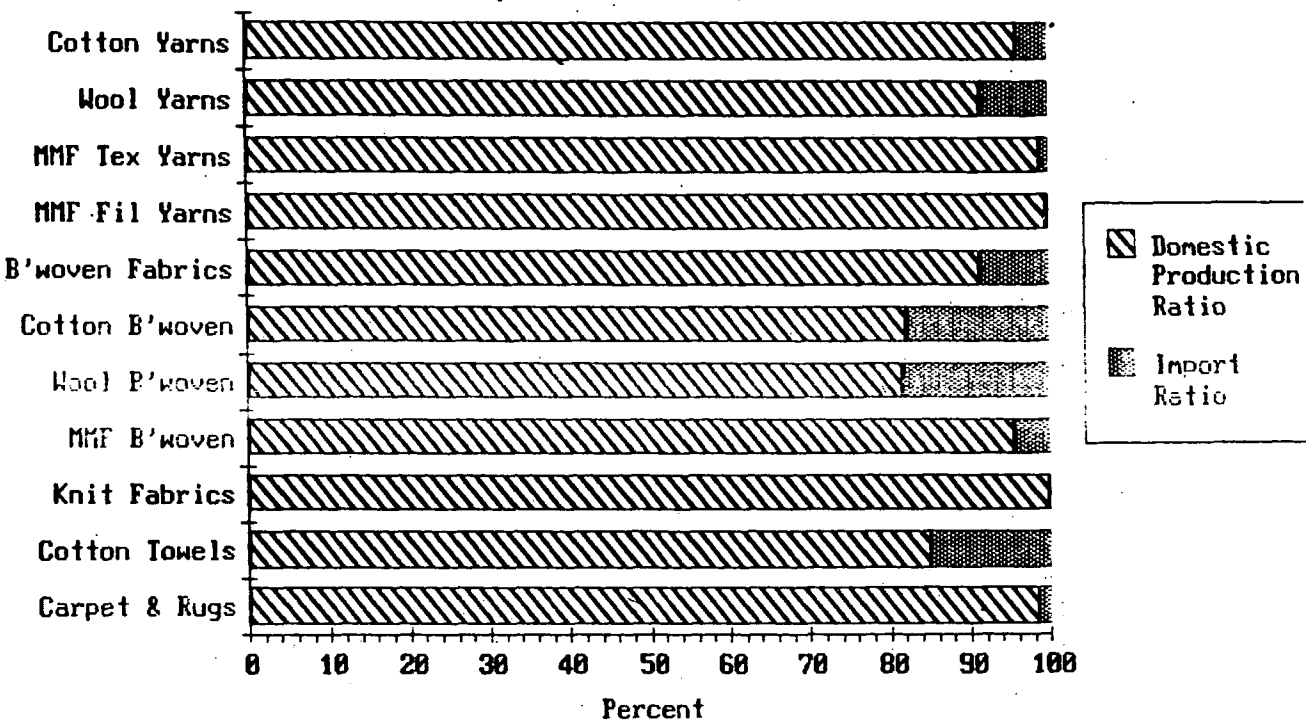
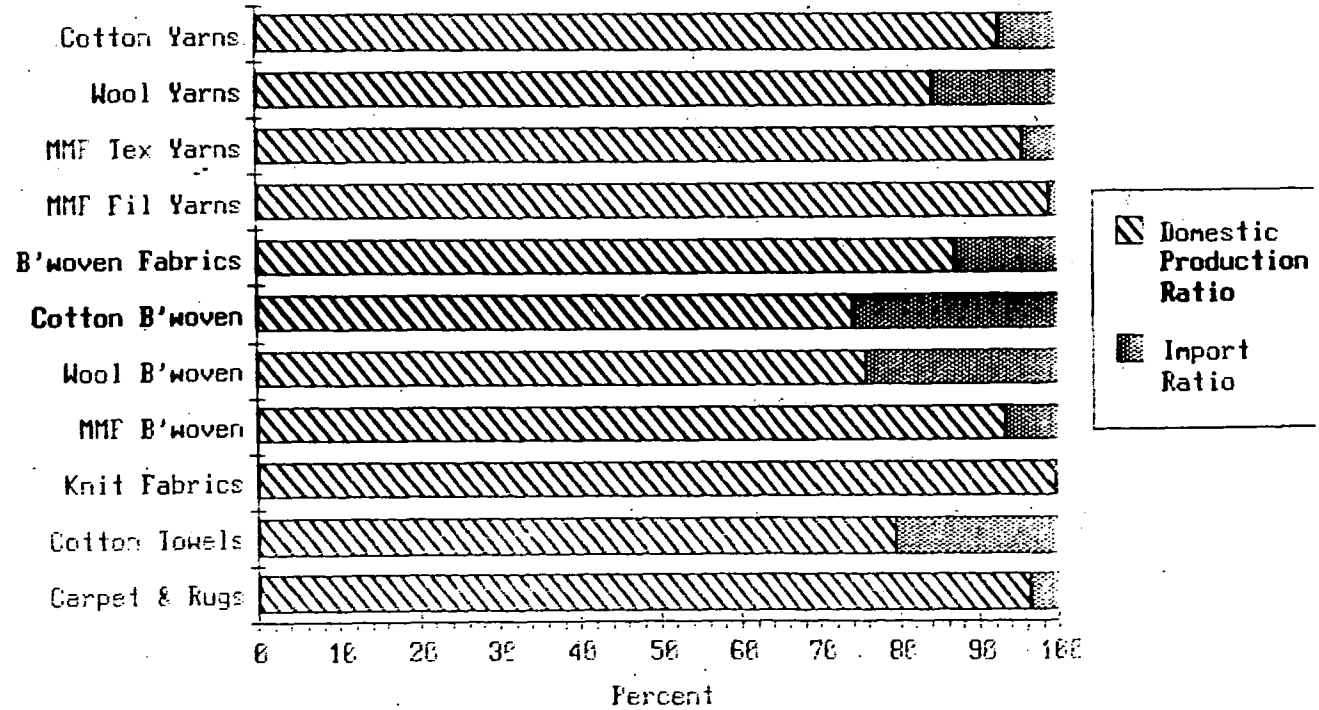


Figure 2. Textile Mill Products:
Import Penetration, 1985



The import share for key apparel categories in 1986 ranged from under 20 percent for dresses to over 60 percent for sweaters and for men's and boys' woven shirts. Other, apparel items where imports supplied more than 40 percent were: women's, girls' and infants' (WG&I) knit shirts, WG&I blouses, WG&I slacks and shorts, and all coats. In many apparel items, imports captured an additional 8 to 12 percent of the total supply during 1982-86 (figures 3 and 4).

Data are not yet available to calculate import penetration in 1987. However, there is substantial evidence that the share of total supply held by imports declined in 1987 for textile mill products and increased at a much slower rate for most apparel items. Production of textile yarn and broadwoven fabrics in the first 3 quarters of 1987 exceeded that in the comparable period of 1986 but imports of all nonapparel textiles during January-July 1987 were down 1 percent from the comparable period of 1986 (compared with an increase of 20 percent in calendar 1986 over 1985). 1/ Considering only cotton, wool, and manmade fibers, yarn imports in January-July 1987 were down 2 percent and fabric imports were down 5 percent.

Apparel imports in the first 7 months of 1987 were up over 9 percent compared with the first 7 months of 1986, considerably less than the previous calendar-year increase of 15 percent. Imports of a few apparel items, such as men's and boys' knit shirts and women's blouses, decreased in January-July 1987 compared with the 1986 period.

1/ U.S. Department of Commerce, Major Shippers Report, September 1987.

Figure 3. Apparel:
Import Penetration, 1982

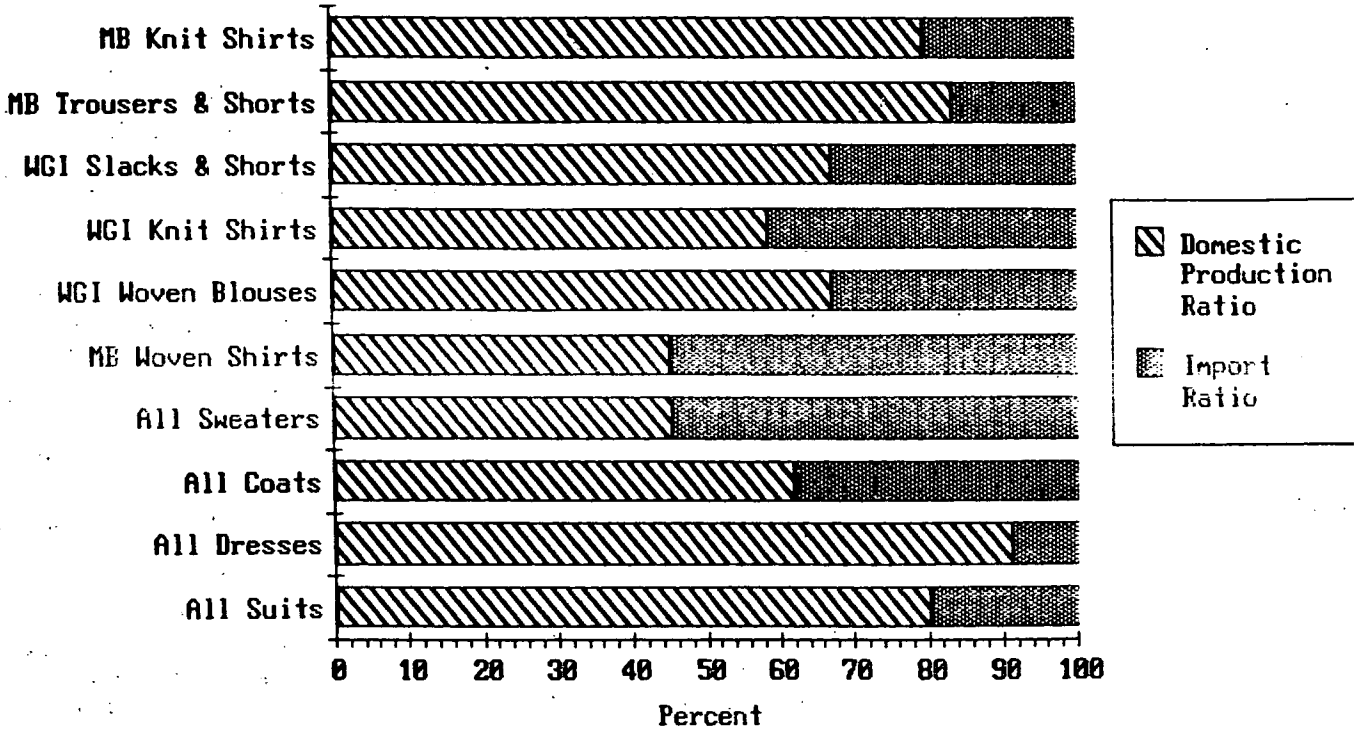
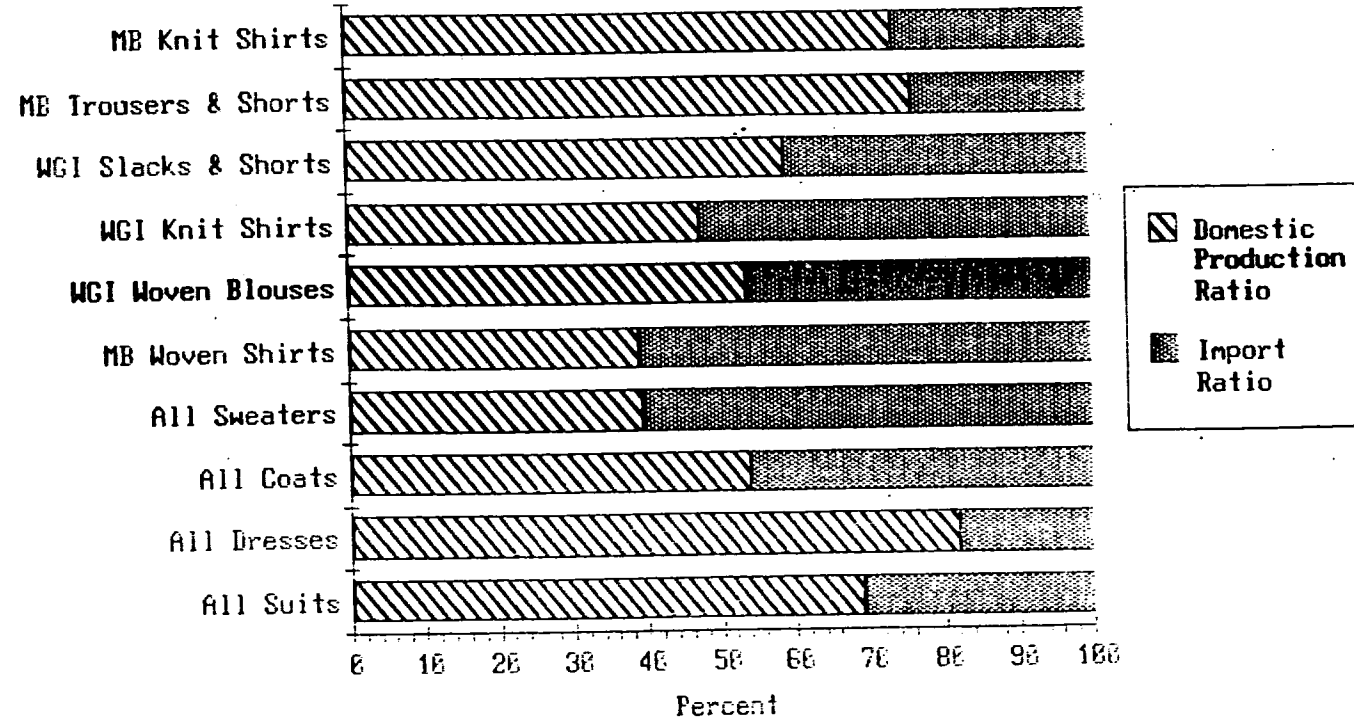


Figure 4. Apparel:
Import Penetration, 1985



United States

Textile Industry

Chapter 5. U.S. TEXTILE INDUSTRY

Highlight of Current U.S. Industry Development

During 1982-86, the U.S. textile mill industry increased shipments by a modest 5 percent but experienced a contraction in employment by 5 percent. Although employment declined during the period as a whole, the employees remaining at the end of the period were working more hours and earning 20 percent higher nominal wages than at the beginning of the period. During the previous 5-year period, 1977-81, the industry experienced a 24-percent increase in shipments and recorded a decline in employment of 10 percent. During 1982-86, while capital expenditures led to increased efficiency and productivity there was contraction of industry capacity that resulted in a 14-percent increase in the capacity utilization ratio for the industry to a 79-percent rate in 1986. During this period, the industry faced a nearly fivefold increase in its trade deficit, as declining exports met increasing imports.

Shipments

Shipments by the U.S. textile mill industry and by selected sectors within the industry are shown in table 5-1. The sectors chosen for analysis produce the basic materials of the textile mill industry. Together they accounted for approximately one-half of the employment and 60 percent of the value of shipments for the sector in 1986. 1/ The share of total 1986 shipments accounted for by the selected sectors is shown in the following tabulation (in percent):

Sector	Share of total 1986 shipments
All textile mill products	100.0
Weaving mills, cotton	7.5
Weaving mills, manmade fibers	15.7
Tufted carpets and rugs	15.5
Spun yarn mills, except wool	9.8
Circular knit fabrics	3.9
Warp knit fabrics	2.9
Nonwoven fabrics	2.8

Although only the circular knit fabrics sector had both annual and overall declines in its shipments, the other sectors varied in their performance. The strongest sector was the tufted carpet sector, having substantial growth

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1/ Throughout this report, when data relating to SIC 22 as a whole is discussed, it must be noted that these data include that related to certain hosiery and apparel produced in knitting establishments, but marketed as apparel. In 1985, production of these products accounted for 20 percent of the employees in SIC 22, 24 percent of the establishments, and 14 percent of the value of shipments. As a result, the coverage of the basic textile products in relation to the industry as a whole is understated.

Table 5-1
Textile mill products: Shipments 1/ and number of establishments, 2/ by selected sectors, 1982-86

Sector and item	1982	1983	1984	1985	1986 3/	Average annual percentage change 4/
All textile mill products:						
Shipments	47,515	53,358	55,489	53,277	54,471	3.5
Establishments	6,520	6,388	6,307	6,380	6,355	-.6
Weaving mills, cotton:						
Shipments	3,972	4,392	4,347	4,025	4,099	.8
Establishments	435	423	413	423	5/	-.9
Weaving mills, man-made fiber:						
Shipments	8,191	9,285	9,274	8,402	8,572	1.2
Establishments	447	439	455	467	5/	1.1
Tufted carpets and rugs:						
Shipments	5,440	6,675	7,520	7,505	8,432	11.6
Establishments	386	368	364	356	5/	-2.7
Spun yarn mills, except wool:						
Shipments	4,328	5,013	5,247	4,853	5,346	5.4
Establishments	379	388	378	360	5/	-1.7
Circular knit fabrics:						
Shipments	2,539	2,571	2,319	2,174	2,113	-4.5
Establishments	383	366	342	330	5/	-4.8
Warp knit fabrics:						
Shipments	1,466	1,762	1,643	1,625	1,580	1.9
Establishments	192	176	170	176	5/	-2.8
Nonwoven fabrics:						
Shipments	1,279	1,339	1,490	1,427	1,527	4.5
Establishments	55	62	63	61	5/	3.5

1/ Shipment data include that of certain hosiery and apparel produced in knitting mills. During 1982-85, shipments of these products annually accounted for 14 percent of total shipments of SIC 22--Textile Mill Products.
2/ Shipments in millions of dollars; establishments in number.
3/ Estimated by the staff of the U.S. International Trade Commission.
4/ Change during 1982-86 for shipments and during 1982-85 for establishments.
5/ Not available.

Source: U.S. Department of Commerce, except as noted.

annually except for a small decline in 1985 and overall increasing the value of shipments by 55 percent. This is one sector in which the United States is one of the world's largest producers and it has not experienced import competition as great as the overall industry. Imports are equal to

approximately 1 percent of U.S. shipments. Shipments of yarn mills were bolstered particularly by continued strong demand for knit sportswear, both for athletic wear and leisure wear. The nonwoven-fabric sector is relatively new and is experiencing steady growth as new products and end uses are developed. 1/ This is also a sector in which the United States is one of the world's largest producers, and it has a relatively low import level, equal to about 5 percent of U.S. shipments. The weaving sectors and the circular-knit fabric sector not only have been faced with competition from imports but also have seen the size of the domestic market for these intermediate products eroded by increased imports of apparel articles that incorporate foreign-produced woven and knit fabrics.

Exports

U.S. exports of textile mill products account for a small share of total shipments. In 1982, exports amounted to $1.7 billion or 3.6 percent of shipments (table 5-2). Exports declined during 1983-85, averaging $1.5 billion and accounting for a 2.7-percent share of the industry's shipments. In 1986, exports recovered substantially to $1.6 billion and accounted for 3.0 percent of shipments. The decline and subsequent rise in U.S. exports of textile mill products during this period is primarily attributed to fluctuations in the value of the dollar relative to the currencies in most of the major U.S. markets for these products.

Canada has consistently been the largest market for U.S. exports of textile mill products. However, its importance declined after 1983 as shipments to Canada declined from $400 million in that year to $307 million in 1986 and its share of export shipments declined from 26 percent to 19 percent. In 1985 and 1986, Mexico became the second largest export market for U.S. textile mill products as exports to Mexico increased by 131 percent during 1982-86 to $162 million in 1986.

EC countries, particularly Italy, the United Kingdom, Belgium, and West Germany, are also important export markets for U.S. textile mill products. Shipments to these markets all declined after 1982 and recovered to various degrees by 1986. As with overall exports, this trend was most directly affected by a change in the relative exchange rates.

1/ Nonwoven fabrics are formed directly from fibers without the intermediary steps of yarn production. The fibers are held together through thermal or chemical bonding, mechanical entanglement, or a combination of these. Nonwoven fabrics are used to produce a great variety of consumer and industrial products including disposable apparel and gowns for industry and medical uses, disposable diapers, substrates for roads or for erosion control, protective envelopes for floppy disks, and durable envelopes for shipping or storing documents.

Table 5-2
Textile mill products: U. S. exports by principal markets, 1982-86 and January-August 1986-87

Time period / Partner	1982	1983	1984	1985	1986	January-August 1986	January-August 1987
World	1,717,296	1,516,826	1,511,172	1,433,863	1,618,254	1,051,908	1,212,811
Canada	351,135	400,049	379,109	344,485	307,231	201,709	236,240
Mexico	70,405	68,099	102,760	135,888	162,044	105,851	126,140
Italy	65,595	46,596	40,104	57,675	99,735	60,363	64,901
United Kingdom	117,005	94,567	77,129	75,581	93,723	58,855	87,494
Saudi Arabia	122,901	121,947	107,236	76,196	80,730	53,225	59,631
Belgium and Luxembourg	42,029	41,969	46,316	52,481	80,312	50,852	52,339
Japan	63,249	60,211	71,327	63,413	69,636	49,568	66,822
Germany, West	50,891	43,178	42,557	33,645	55,184	34,566	35,823
Venezuela	53,660	28,748	46,528	44,286	46,135	28,756	32,187
Dominican Republic	25,939	24,392	27,683	40,034	45,590	28,217	27,646
Australia	67,999	46,695	52,617	40,270	39,112	27,693	24,768
Hong Kong	35,511	33,291	33,781	34,698	38,923	27,403	27,963
France	46,069	28,194	21,323	17,884	35,883	26,310	17,613
Korea, South	15,861	15,149	16,725	17,294	27,169	17,510	27,547
Total other	589,045	463,739	445,977	400,030	436,833	281,014	325,700

Source: Compiled from official statistics of the U.S. Department of Commerce.

U.S. exports of textile mill products by major product categories for 1986 are shown in the following tabulation:

Item	Value	Share of total exports
	1,000 dollars	Percent
Broadwoven manmade-fiber fabrics	421,441	26.0
Broadwoven cotton fabrics	285,915	17.7
Nonwoven fabrics	180,161	11.1
Tufted carpets and rugs	122,887	7.6
Narrow woven fabrics	91,439	5.7
Tire cord and tire-cord fabric	90,513	5.6
Spun yarn of cotton, wool, and manmade fibers	71,756	4.4
Other woven fabrics, including coated fabrics	56,674	3.5
Other textile mill products, including knit fabrics	297,468	18.4
Total	1,618,254	100.0

Although these product categories are not directly comparable with shipments for the sectors in table 5-1, it can be seen that the relative importance of exports to total shipments varies by sector. Whereas the tufted carpet and rug sector and the spun yarn sector accounted for large shares of total shipments, the share of exports for these sectors was relatively small. In contrast, for the nonwoven fabrics sector, its ranking as an export sector is greater than that for overall shipments.

Size and Geographical Distribution

Overall, the textile mill industry contracted in terms of number of establishments as shown in table 5-1. Of the sectors chosen for analysis, only those producing woven manmade-fiber fabrics and nonwoven fabrics had a gain in number of establishments. The gain in establishments producing the manmade-fiber fabrics partly reflects the increasing number of small specialty firms producing fabrics for commercial and industrial uses. The increasing number of establishments producing nonwoven fabrics reflects the strength of this relatively new, expanding industry sector. The decline in establishments overall and in the other sectors reflects not only firms leaving the industry but plant closings resulting from consolidation of operations by individual firms and also the effects of the restructuring of the industry through mergers and acquisitions.

The U.S. textile mill industry is concentrated in the South Atlantic Seaboard States; however, the industry has establishments throughout the Nation. In terms of employment, weaving mills are primarily located in Alabama, Georgia, North Carolina, and South Carolina. Massachusetts and Pennsylvania account for smaller but significant shares of this sector. Knitting mills are concentrated in New Jersey, New York, the Carolinas, and

Tennessee. Tufted carpet mills are more widely dispersed throughout the country with California, Georgia, North Carolina, Tennessee, and Texas dominant. The greater distribution of this sector is largely a result of the expense of shipping bulky carpeting over long distances. North Carolina accounts for the largest number of employees in the spun yarn, except wool, sector. Alabama, Georgia, and South Carolina account for much of the remainder. Employment in the nonwoven-fabric sector is also concentrated in North Carolina, with Alabama, Kentucky, New Jersey, Pennsylvania, and South Carolina also being important.

Specialization, Concentration, and Integration

Concentration, specialization, and coverage for selected sectors of the U.S. textile mill industry, as reported in the Census of Manufactures, are shown in table 5-3. The most recent data are for 1982. However, they are believed to reasonably portray the current status of the industry's major sectors.

The primary product specialization ratio measures the share of product shipments of the establishments classified in that SIC industry that is represented by the primary products of those establishments. These data indicate that the textile mill industry in general is highly specialized and that the warp knit and tufted carpet sectors are extremely so. The coverage ratio is the share of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments. These data reflect differences among the sectors of the textile mill industry. The low ratios for weaving and yarn spinning establishments are a reflection of the extent to which integrated mills exist in the weaving sector. These mills generally both spin the yarn and weave fabric in the same establishment. The relatively low coverage ratio for the nonwoven-fabric sector largely reflects the extent to which nonwoven fabrics are produced in establishments that further process the fabric into other products.

The degree of concentration in the industry compared with other industries is relatively low. Of the sectors selected for analysis, the 4 largest firms in each sector account for from 22 to 41 percent of the sectors' shipments. Cotton and manmade-fiber weaving mills and nonwoven fabric mills had the highest concentration in the 4 largest firms. However, these are also the sectors with the lowest coverage ratios, indicating that a large share of production of these products is classified in other industries and lessening the impact on the industry of the largest firms.

Table 5-3
Textile mill products: Number of firms, shipments, share of shipments accounted for by 4, 8, 20, and 50 largest firms, and specialization, 1977 and 1982

Sector and year	Number of firms	Shipments	Share of shipments accounted for by--				Ratio of--	
			4 largest firms	8 largest firms	20 largest firms	50 largest firms	Primary product specialization	Coverage
		Million dollars	Percent					
Weaving mills, cotton:								
1982	209	3,972	41	65	85	97	84	54
1977	211	4,431	39	58	79	95	84	62
Weaving mills, manmade fibers:								
1982	342	8,191	40	53	69	85	89	62
1977	267	6,326	42	58	76	90	86	63
Tufted carpets and rugs:								
1982	323	5,440	25	40	65	84	97	99
1977	397	4,521	21	35	59	79	96	99
Spun yarn mills, except wool:								
1982	206	4,328	22	34	56	82	93	74
1977	274	3,865	19	31	51	75	92	72
Circular knit fabrics:								
1982	384	2,539	22	36	55	75	92	93
1977	462	3,169	20	31	51	73	90	88
Warp knit fabrics:								
1982	186	1,466	33	50	71	89	97	90
1977	213	1,427	26	40	64	86	93	83
Nonwoven fabrics:								
1982	114	1,279	40	56	77	94	90	68
1977	81	864	36	55	81	98	86	66

Source: Compiled from official statistics of the U.S. Bureau of the Census.

An indication of the degree of integration of several key sectors of the textile mill industry is shown by the distribution of yarn production as illustrated in table 5-4.

Table 5-4
Spun yarn: U.S. production, by end uses, 1986

Item	Total	For sale	Percent of total	For own use	Percent of total
	----1,000 pounds----			1,000 pounds	
Total.....	6,154	2,096	34	4,058	66
Weaving.....	3,397	327	10	3,070	90
Knitting.....	1,561	1,185	76	376	24
Carpet.....	961	414	43	547	57
Other.....	235	170	72	65	28

Source: U.S. Bureau of the Census.

The high degree of vertical integration of the weaving sector is clearly indicated, as 90 percent of weaving yarn is produced for a firm's own use. The much lower integration for the knitting sector exists in part because a substantial share of knitting yarn is used to produce knit apparel and accessories such as hosiery, hats, and gloves. The establishments producing these products usually are not involved in yarn manufacture. This however is not the case for all such firms, as several large producers of underwear and of athletic wear are fully integrated, purchasing raw fiber and producing finished articles. In general, mills that produce knit fabric also produce the yarn.

Mergers and Acquisitions

As part of a process of adjustment, the textile mill industry has undergone extensive restructuring through mergers and acquisitions. During 1980-85, the industry experienced a total of 18 such actions, ranging in frequency from none in 1981 to seven in 1982 (chart 5-1). In 1986, a total of 22 such actions occurred; some of these were small firms consolidating, but many involved some of the largest firms in the industry. In January 1986, Fieldcrest Mills, a leading producer of domestic textiles, purchased Cannon Mills, one of its leading competitors in this market. In the same month, WestPoint Pepperell, a leading fabric producer, purchased Cluett, Peabody & Co., a diversified apparel producer. J.P. Stevens, another large textile producer, began divesting itself of its apparel fabric production facilities in early 1986 and at the same time purchased the domestic textiles division of Burlington. Parkdale Mills, a leading yarn spinner, purchased three smaller yarn producers in 1986; and Guilford Mills, the largest producer of warp knit fabrics, purchased Gold Mills, reportedly second ranked in this sector. This restructuring continued into 1987, most notably when Burlington Industries was purchased by a group of private investors in the midst of attempts by Dominion Textiles, Canada's leading textile producer, to acquire it.

Capacity and Capacity Utilization

The number of spindles and looms in place, the number of these that are active, and the hours these are operating provide an indication of the capacity and the utilization rates for the spinning and weaving sectors of the U.S. textile industry. Data on these indicators are shown in tables 5-5 and 5-6. During 1982-86, the numbers of both spindles and looms in place and active all declined. The total hours operated also declined. These however are not absolute indicators of declines in capacity because the data do not reveal the extent to which some of the old, less productive machinery has been replaced by new, more productive equipment.

The extent to which this has occurred can be approximated using data published by the International Textile Manufacturers Federation (ITMF). These data are based on shipments reported by the machinery producers. The ratios of shipments of spinning equipment to the U.S. textile mills during 1980-86 to installed capacity at the end of 1985 by type of spinning system are shown in the following tabulation:

Type	Percent share
Short staple 1/	2.8
Long staple 2/	12.9
Open-end rotors	97.4

1/ Used to spin yarn for most cotton and manmade-fiber woven fabrics and lightweight knits.
2/ Used to spin wool and long manmade staple fibers, particularly acrylic and polyester, to produce yarn similar in appearance to wool yarn and used mainly to produce carpets, sweaters, and knit hats, gloves, and scarfs. Although it appears that modernization in the short-staple system is occurring at a slow pace, most open-end capacity replaces that of the short-staple system. At the end of 1985, the mostly new open-end rotors accounted for 9.4 percent of spinning capacity of the short-staple system.

Chart 5-1
Textile mill mergers and acquisitions

Date	Target	Acquirer
8/80	National Spinning Co.	NSC Merger Inc.
1/82	Cannon Mills	Pacific Holding Co.
1/82	Oneita Knitting Mills	Oneita Holdings
1/82	Mount Vernon Mills	R.B. Pamplin Co.
3/82	Standard-Coosa-Thatcher	SCT Acquisition Co.
4/82	Stevcoknit Inc.	J.P. Stevens & Co.
6/82	Washington Mills	Tultex Corp.
12/82	Dan River Inc.	Dan River Holding Co.
4/83	Graniteville Co.	Southeastern Public Service
10/83	Liberty Fabrics of N.Y.	Multiple acquirers
11/83	Cone Mills Corp.	Cone Mills Acquisition Co.
11/83	Ti-Caro	TCM
3/85	Mohasco	Columbia Enterprises
3/85	Dan River, Liberty Plant	Greenwood Mills
6/85	Riegel Textile Corp.	R.B. Pamplin Corp.
7/85	Sanderson Group, Reed Int'l.	WestPoint Pepperell
9/85	The Bibb Co.	National Textile Corp.
10/85	M. Lowenstein Corp.	Springs Industries Inc.
1/86	Cannon Mills	Fieldcrest Mills Inc.
1/86	Cluett, Peabody & Co.	WestPoint Pepperell
1/86	Burlington, Domestic Div.	J.P. Stevens & Co.
1/86	Linford Mills	Parkdale Mills
1/86	Perfection Spinning Co.	Parkdale Mills
2/86	Inman Mills	Private Investors
2/86	J.P. Stevens, Woolen & Worsted Fabrics Div.	Forstmann & Co.
4/86	Maro Hosiery	Adams Millis
4/86	J.P. Stevens, United Elastics Div.	United Elastics Corp.
5/86	China Grove Cotton Mills	Dixie Yarns
6/86	Avondale Mills	Walton Monroe Mills Inc.
7/86	WestPoint Pepperell, Lindale Plant	Greenwood Mills
7/86	J.P. Stevens, Stevcoknit & Delta Fabrics Divisions	Alchem Capital
7/86	WestPoint Pepperell, Equinox Plant	Glen Raven Mills
9/86	C.H. Masland & Sons	Burlington Industries
9/86	Rowen Cotton Mills	Parkdale Mills
10/86	Gold Mills	Guilford Mills
10/86	Springs, Conso Products Div.	Carolinas Capital
11/86	Stedman Industries	Merrill Lynch Capital
11/86	Stratton Industries	WestPoint Pepperell
12/86	Bigelow Sanford	Fieldcrest/Cannon
12/86	Clinton Mills	CMI Acquisitions

Source: Textile World, November 1986, and other trade publications.

Table 5-5
Cotton system spindle activity, 1982-86

Year	Number of spindles		Ratio of spindles active to in place	Total spindle hours operated	Hours operated per active spindle
	In place	Active			
	----Thousands-----		Percent	Millions	Units
1982	16,086	14,179	88	81,455	5,487
1983	15,640	14,243	91	89,433	6,278
1984	14,527	13,550	93	84,618	6,238
1985	13,706	12,672	92	75,468	5,927
1986	13,366	12,104	91	80,474	6,649
Percentage change, 1986 over 1982	-17	-15	3	-1	22

Source: U.S. Bureau of the Census.

Table 5-6
Weaving mills: Loom activity, 1982-86

Year	Number of looms		Ratio of looms active to in place	Loom hours operated	Hours operated per active loom
	In place	Active			
	-------Units-------		Percent	Thousand	Units
1982	214,693	1/ 199,789	93.1	1,190,711	5,960
1983	193,872	189,879	97.9	1,290,508	6,796
1984	183,328	167,473	91.4	1,196,914	7,147
1985	156,547	142,265	90.9	981,365	6,898
1986	141,259	132,742	94.0	940,519	7,085
Percentage change 1986 over 1982	-34	-34	1	-21	19

1/ Estimated by the staff of the U.S. International Trade Commission.

Source: U.S. Bureau of the Census, except as noted.

Data from the ITMF also indicated the degree of modernization of the weaving sectors. Shipments of looms to the U.S. textile mill industry during 1980-86 amounted to 20 percent of installed looms at the end of 1985. Of total looms installed at the end of 1985, 40 percent were shuttleless looms. In contrast, shuttleless looms accounted for 15 percent of total installed looms in 1980. This increasing share understates the increase in production capacity significantly as the productive capacity of a shuttleless loom can be as much as three times that of a traditional fly-shuttle loom.

Capacity utilization rates for the U.S. textile mill industry and selected sectors are shown in table 5-7.

Table 5-7
U.S. textile mill industry: Capacity utilization rate, by selected sectors, 1982-86

Sector	1982	1983	1984	1985	1986	Absolute change, 1986 over 1982
			Percent			
All textile mill products	69	79	74	76	79	10
Weaving mills, cotton	85	89	80	87	94	9
Weaving mills, manmade fibers	75	84	77	76	84	9
Tufted carpets and rugs	55	72	70	72	77	19
Spun yarn mills, except wool	68	82	73	83	89	23
Circular knit fabrics	82	80	1/	81	86	24
Warp knit fabrics	67	80	83	66	50	-17
Nonwoven fabrics	69	75	59	62	69	0

1/ Not available.

Source: U.S. Department of Commerce.

For the industry as a whole, as well as for most of the sectors shown, capacity utilization rates improved during 1982-86. This coupled with the replacement of old equipment with new, more productive equipment gives an indication of the efforts of the industry to maintain its competitiveness through acquisition of more productive equipment.

Cost Structure

Labor

Hourly wages for the textile mill industry increased steadily from $4.48 in 1976 to $8.81 in 1986. 1/ Despite this, labor costs for the textile mill industry as a whole were relatively stable during 1982-85. Table 5-8 shows the ratio of wages to value of shipments for the industry and selected sectors. The relative stability of labor costs for all industry sectors indicates that labor costs have not been a factor over the period affecting the relative costs for the industry. Labor costs relative to those of competing worldwide sources of textile mill products, however, are a factor affecting the competitiveness of the U.S. textile mill industry that is examined later in this report.

1/ U.S. Bureau of Labor Statistics.

Table 5-8
U.S. textile mill industry: Ratio of wages to value of shipments, by selected sectors, 1982-85

Sector	1982	1983	1984	1985	Absolute change, 1982 to 1985
	Percent				
All textile mill products	14.6	14.6	14.2	14.3	-0.3
Weaving mills, cotton	20.6	20.1	19.4	19.7	-.9
Weaving mills, manmade fibers	17.7	17.7	17.4	17.3	-.4
Tufted carpets and rugs	6.1	6.4	6.5	6.6	.5
Spun yarn mills, except wool	16.7	16.7	16.2	17.1	.4
Circular knit fabrics	12.2	12.3	13.2	13.8	1.6
Warp knit fabrics	12.8	13.3	12.0	11.9	-.9
Nonwoven fabrics	10.7	11.0	11.1	11.4	.7

Source: U.S. Department of Commerce.

Materials

The United States has available domestically an abundant supply of cotton and manmade fibers, the primary materials used by the textile mill industry. These fibers accounted for an annual average of 97.8 percent of total U.S. mill fiber consumption during 1982-85. Wool, which accounts for approximately 1 to 2 percent of annual mill consumption, is dependent on imports for 65 to 75 percent of annual mill use. Mill consumption by fiber, for 1982-86, is shown in the following tabulation:

Fiber	1982	1983	1984	1985	1986	Percentage change, 1982-86
	Million pounds					
Manmade fibers	6,653.5	7,994.5	7,789.5	8,035.5	8,454.0	27.1
Cotton	2,478.9	2,795.7	2,668.2	2,796.0	3,297.5	33.0
Wool	129.5	162.5	163.2	134.7	164.5	27.0
Other	130.9	96.6	84.8	91.4	42.2	-67.8
Total	9,392.8	11,049.3	10,705.7	11,057.6	11,958.2	27.3

The relatively similar percentage changes indicate little fluctuation in the fiber mix over the period, with cotton gaining a small share, largely at the expense of manmade fibers and wool. The extreme decline in consumption of "other" fibers, mainly silk and vegetable fibers other than cotton, affected only 0.4 percent of total 1986 consumption, and reflected fashion trends and increased imports of products of these fibers.

Costs of materials, of which fibers account for a large share, are shown in table 5-9. These data indicate very minor changes over the period for the industry as a whole, and only slight changes for any of the individual

sectors. The relative importance of prices of raw materials is fairly uniform across the entire textile mill industry, although somewhat higher for tufted carpets and rugs. These data suggest that prices for mill products are closely tied to costs of materials.

Table 5-9
U.S. textile mill industry: Ratio of cost of materials to value of shipments, by selected sectors, 1982-85

Sector	1982	1983	1984	1985	Absolute change, 1982 to 1985
	Percent				
Textile mill products	60.4	60.8	60.7	60.5	0.1
Weaving mills, cotton	57.7	57.8	58.3	54.1	-3.6
Weaving mills, manmade fibers	56.7	58.1	57.1	57.0	.3
Tufted carpets and rugs	70.9	71.1	72.6	72.5	1.6
Spun yarn mills, except wool	64.6	64.4	65.4	62.1	-2.5
Circular knit fabrics	65.7	66.7	66.2	65.8	.1
Warp knit fabrics	61.7	61.9	58.7	58.9	-2.8
Nonwoven fabrics	58.1	55.9	55.3	54.7	-3.4

Source: U.S. Department of Commerce.

Capital Costs

Capital expenditures by the U.S. textile mill industry are shown in table 5-10.

Table 5-10
U.S. textile mill industry: Capital expenditures, by selected sectors, 1982-85

Sector	1982	1983	1984	1985	Annual rate of change
	Million dollars				Percent
All textile mill products	1,579	1,580	1,732	1,863	5.7
Weaving mills, cotton	298	213	176	192	-13.6
Weaving mills, manmade fibers	385	380	472	484	8.0
Tufted carpets and rugs	77	82	161	146	23.5
Spun yarn mills, except wool	154	223	1/	253	18.0
Circular knit fabrics	69	53	69	67	-1.0
Warp knit fabrics	44	40	73	73	18.4
Nonwoven fabrics	79	111	148	107	10.6

1/ Not available.

Source: U.S. Department of Commerce.

For the industry as a whole, these expenditures were relatively steady. Expenditures by the separate sectors on an annual basis were more erratic as a result of the practice in the industry to replace large amounts of machinery at one time to achieve continuity in the production stream.

Capital expenditures as a percent of shipments are shown in the following tabulation:

Sector	1982	1983	1984	1985
All textile mill products	3.3	3.0	3.1	3.5
Weaving mills, cotton	7.5	4.8	4.0	4.8
Weaving mills, manmade fibers	4.7	4.1	5.1	5.8
Tufted carpets and rugs	1.4	1.2	2.1	1.9
Spun yarn mills, except wool	3.6	4.4	1/	5.2
Circular knit fabrics	2.7	2.1	3.0	3.1
Warp knit fabrics	3.0	2.3	4.4	4.5
Nonwoven fabrics	6.2	8.3	9.9	7.5

1/ Not available.

The tufted carpet and rug and circular knit fabric sectors showed the lowest rates of such expenditures. The productivity indices of these sectors, as shown in table 5-12, were the only two showing absolute declines during 1982-85. On the other hand, relatively high ratios for other sectors are not reflected in comparable increases in productivity.

Capital expenditures per production worker are shown in table 5-11.

Table 5-11
U.S. textile mill industry: Capital expenditures per production worker, by selected sectors, 1982-85

Sector	1982	1983	1984	1985	Change, 1982 to 1985
	1,000 dollars				Percent
All textile mill products	2.6	2.5	2.8	3.3	27
Weaving mills, cotton	4.3	3.4	2.8	3.4	-21
Weaving mills, manmade fibers	3.1	3.2	4.1	4.8	55
Tufted carpets and rugs	2.7	2.6	4.7	4.4	63
Spun yarn mills, except wool	2.3	3.3	1/	4.0	74
Circular knit fabrics	2.7	2.1	2.8	3.2	19
Warp knit fabrics	2.9	2.3	5.5	5.9	103
Nonwoven fabrics	8.3	11.9	14.3	10.9	31

1/ Not available.

Source: U.S. Department of Commerce.

This reflects a greater change in the level of expenditures than shown in table 5-10, as it illustrates the extent to which these expenditures have resulted in lowering labor input in the textile production process. The consistently high capital costs per worker for the nonwoven-fabric sector shows the high level of capitalization required by this unique sector of the industry.

Employment and Productivity

Employment in the textile mill industry declined by 5.3 percent during 1982-86 from 749,000 workers to 709,000 workers. One textile mill sector showed a significant increase in employment during the period, two were flat, and the other four experienced significant declines. Employment in 1986 and the percentage change in employment during 1982-86 are shown in the following tabulation for selected sectors of the textile mill industry.

Sector	Employment 1,000 employees	Change, 1986 over 1982 Percent
Weaving mills, cotton	59.7	-22.4
Weaving mills, manmade fibers	106.6	-24.3
Tufted carpets and rugs	43.8	21.3
Spun yarn mills, except wool	73.0	.6
Circular knit fabrics	27.7	-10.9
Warp knit fabrics	1/ 15.4	2/ -18.9
Nonwoven fabrics	1/ 12.5	2/ 1.6

1/ Data for 1985.
2/ Change, 1985 over 1982.

Tufted carpets and rugs showed a substantial 21-percent increase in employment despite a decline in the number of establishments. This sector benefited from the strength of the economy as homeowners purchased residential floor coverings and commercial construction created additional demand. The decline in establishments largely occurred as a result of mergers in the industry. Spun yarn mills, except wool, experienced a decline in employment in 1985 but reversed in 1986, and showed a small net increase in employment for the period, the result of strong demand for certain styles of apparel, particularly fleece sportswear, made from this yarn.

The sharpest declines were in the sectors with the largest employment--cotton and manmade-fiber weaving mills. Employment in these sectors declined by 40,600 employees, or by 19 percent. This decline is partly attributed to the increasing share of the U.S. textile market being supplied by imports and by declining demand for fabric by apparel producers as apparel imports also gained an increasing share of the U.S. market. Also contributing to the decline in employment were gains in productivity resulting from the industry's investment in modern, labor-saving equipment and the consequent need for fewer production workers.

During 1982-85, the U.S. textile mill industry experienced almost a 11-point increase in productivity, as shown in table 5-12. The two sectors showing absolute declines in productivity, circular knit fabrics and tufted carpets and rugs, had substantial increases in productivity early in the period. Three sectors--cotton and manmade-fiber weaving mills and warp knit fabrics--that showed substantial increases in productivity were also sectors showing significant declines in employment, indicating the effects of modernization of equipment and production management. The warp knit fabrics sector and the manmade-fiber weaving sector also had among the larger increases in capital expenditures as shown in table 5-11.

Table 5-12
U.S. textile mill industry: Productivity index, 1/ by selected sectors, 1982-85

(1981=100)

Sector	1982	1983	1984	1985	Absolute change, 1982 to 1985
All textile mill products	104.9	110.5	116.1	115.7	10.8
Weaving mills, cotton	96.4	104.6	115.1	116.0	19.6
Weaving mills, manmade fibers	105.0	107.9	113.7	115.0	10.0
Tufted carpets and rugs	117.8	126.2	116.4	112.3	-5.5
Spun yarn mills, except wool	100.5	106.9	107.8	112.9	12.4
Circular knit fabrics	109.1	113.6	104.9	106.8	-2.3
Warp knit fabrics	99.4	105.7	128.9	128.9	29.5
Nonwoven fabrics	94.6	97.6	99.6	101.4	6.8

1/ Output per dollar of wages.

Source: U.S. Department of Commerce.

Technology

The U.S. textile mill industry is highly dependent on technology to produce a quality product that can be competitive in both the domestic and world markets. Several organizations including Cotton Incorporated, Texas Tech University's Textile Research Center, and the USDA Research Center in New Orleans are also conducting research to develop new textile products and production processes. Manmade-fiber producers also conduct research to develop new fibers and fabrics to enhance and expand the market for their fibers.

The U.S. textile mill industry is also dependent on the textile machinery industry for development of machinery to increase productivity and quality and develop new processes and products. The domestic textile machinery industry was the leading supplier to the domestic mill industry until the early 1960's. Since then, the textile machinery industry has become global in its marketing, and, since 1984, approximately 50 percent of the U.S. textile machinery market has been supplied by imported machinery. The role of the textile machinery industry as related to the U.S. textile mill industry is detailed in appendix D.

Many innovations are being incorporated into the production processes of U.S. textile mills by acquisition of new equipment. Capital expenditures reached $1.9 billion in 1985, up from $1.5 billion in 1980. Capital expenditures per full-time equivalent employee by 1985 increased over 50 percent above 1980 levels, from $1,812 to $2,740, and over 250 percent above 1967 levels. According to The Annual Survey of Manufactures, 1985, the following tabulation shows the distribution of machinery and equipment purchases by industry segment in 1985 (in percent):

Industry segment	Total expenditures
Weaving mills (all)	1/ 40.4
Yarn and thread mills	18.1
Knitting mills	16.2
Floor covering mills	8.2
Finishing mills	6.5
Nonwoven fabric mills	6.0
Other	4.7

1/ This figure includes new capital expenditures for machinery and equipment for cotton weaving mills (10.2 percent of total expenditures), manmade-fiber weaving mills (27.1 percent), wool weaving and finishing mills (1.6 percent), and narrow fabric mills (1.5 percent).

The sectors that account for the greatest percentage of purchases are also those sectors that benefited most from the technological developments of the past 25 years, such as high-speed carding equipment, open-end spinning equipment, and shuttleless weaving equipment. The incorporation of these and other technologies, along with structural changes in the industry, has helped the textile mill industry to create a more efficient production process.

Although there are fewer persons employed in the textile mill industry today, these workers produce more. In fact, productivity, as measured by constant (1982) dollar value-added per full-time equivalent employee, in the textile mill industry has increased at twice the rate of increase for manufacturing as a whole between 1975 and 1985 (5.9 percent per year versus 2.95 percent per year). 1/ Also, production workers now account for a smaller portion of total industry employment than in 1967, down from 89 percent to 86 percent. As a result, production workers' wages have declined as a percentage of the value added, from 44 percent to 37 percent between 1967 and 1985, and

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1/ This figure represents a period of extraordinary productivity growth followed by a period of slow productivity growth. Between 1975 and 1980, textile mill productivity rose 8.8 percent per year versus 2.0 percent per year for all manufacturing. But between 1980 and 1985, textile mill productivity lagged behind that of total manufacturing, 3.1 percent per year versus 3.9 percent per year, respectively. A very similar trend occurs when measuring constant (1982) dollar value-added per production-worker man-hour. "National Income and Product Accounts," Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis, July 26, 1986.

as a percentage of the value of industry shipments, from 18 percent in 1967 to 14 percent in 1985. In addition, total payroll has declined as a percentage of the value added and of the value of industry shipments.

Quality improvements have also resulted from the new technologies. Cleaner, more uniform, and stronger yarns, combined with better fabric-formation equipment, have led to a higher percentage of first quality cloth, thus reducing wasted materials and man-hours.

Financial Performance

Profitability Improved

The profitability ratios that measure management's overall effectiveness as shown by the return on net sales and investment increased significantly for the textile mill industry during 1981-86. The average profitability ratios for the textile industry during 1984-86 were higher than those for the 1981-83 period (table 5-13). The profitability continues to remain strong during the January-June 1987 period. This reflects the combined effects of modernization of production equipment and techniques and the effects of contraction of the industry through mergers and consolidation.

Table 5-13
Textile mill industry: The ratios of profitability before taxes, 1981-87

(In percent)

Year	Return on net sales	Return on total assets	Return on net worth	Return on invested capital 1/
1981	4.1	8.1	16.2	11.3
1982	3.6	6.3	12.1	8.5
1983	5.7	10.5	20.8	14.4
Annual average 1981-83	4.5	8.4	16.4	11.4
1984	5.3	9.2	18.8	12.3
1985	4.1	6.9	14.8	9.2
1986	6.4	10.6	22.6	13.8
Annual average 1984-86	5.3	8.9	18.7	11.8
1987 2/	5.7	9.4	20.6	12.2

1/ Invested capital includes net fixed assets and net working capital.
2/ Estimate based on January-June 1987.

Source: U.S. Bureau of the Census, Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations, various issues.

By contrast, earnings of all manufacturing and nondurable goods declined as shown in table 5-14. The growth in 1986 and 1987 earnings in the textile industry was attributed largely to higher profit margin on sales rather than

Table 5-14
Profitability ratios (before taxes): Textile mill products, all manufacturing, and nondurable goods manufacturing, annual averages, 1981-83, and 1984-86

(In percent)

Item	1981-83 annual average			1984-86 annual average		
	Textiles	All manufacturing	Nondurables	Textiles	All manufacturing	Nondurables
Return on sales.....	4.5	6.3	7.3	5.3	6.3	6.9
Return on assets.....	8.4	8.4	10.1	8.9	7.7	8.2
Return on net worth..	16.4	17.3	20.0	18.7	16.6	17.9
Return on invested capital 1/.....	11.4	11.4	13.0	11.8	10.4	10.5

1/ Include net fixed assets and net working capital.

Source: U.S. Bureau of the Census, Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations, various issues.

improvement in capital turnover, as the industry benefited from a leaner, better focused and more efficient industry. 1/ The sales to asset ratio, which measures the efficiency of asset utilization to generate sales, generally declined during 1981-87, reflecting that the sales growth in this mature industry lagged behind earnings performance. The faster growth in assets relative to sales was the result of consolidation and restructuring in the industry in response to import competition. The competitive strategies of the industry included closing outmoded and inefficient plants and investing in advanced technology and automation to boost productivity, and focusing on import-resistant niches that are less labor intensive and more service oriented. 2/ The emphasis over the next year or two will be on expanding margins, and the research is directed toward the development of new, specialized products, and new areas of market growth. 3/ The return on net worth grew more rapidly as a result of growing financial leverage brought about by the low-cost debt financing in the industry.

Utilization of Assets Was Less Efficient Because of Stagnant Sales

Activity ratios that measure industry's efficiency in utilizing its working capital and assets to generate sales dropped during 1981-86 (table 5-15), reflecting stagnant sales in this mature industry faced with intense import competition from low-cost suppliers. The significant declines, especially since 1985 in the sales to fixed asset ratios, came about in part because the industry has increased dramatically the volume of fixed assets during 1985-87 that included investment in cost-efficient technology to cut down costs and improve profit margins.

1/ Standard & Poor's Industry Surveys, Textiles, Apparel, & Home Furnishings, Aug. 27, 1987 (Sec. 2), p. T75.
2/ Ibid.
3/ Ibid.

Table 5-15
Textile mill industry: Ratios of activity, 1/ 1981-87

Year	Sales/ assets	Sales/ fixed assets	Sales/net working capital	Inventory turnover 2/	Accounts payable 3/	Accounts receivable 4/
	Times			Days		
1981.....	1.98	5.24	5.75	52	25	48
1982.....	1.79	4.37	5.20	53	23	49
1983.....	1.86	4.81	5.23	52	22	49
Average:						
1981-83..	1.88	4.81	5.39	52	23	49
1984.....	1.73	4.25	5.04	56	23	49
1985.....	1.67	3.90	5.19	54	22	51
1986.....	1.65	3.81	4.96	55	21	52
Average:						
1984-86..	1.68	3.99	5.06	55	22	51
1987 5/....	1.64	3.72	5.02	55	21	51

1/ These ratios indicate how effectively the assets are used and controlled. This is crucial information for evaluating how the companies are managed. Studying these ratios is useful for credit, marketing, and investment purposes.
2/ Average length of time units are in inventory = 365/(sales/inventory).
3/ Average length of time trade debt is outstanding, which can be computed by dividing into 365 (the number of days in 1 year) the sales/payables ratio.
4/ The average time that receivables are outstanding = 365/(sales/receivable).
5/ Estimate based on January-June 1987 data.

Source: U.S. Bureau of the Census, Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations, various issues.

Table 5-16
Current and quick ratios: Textile mill products, all manufacturing, and nondurable goods, 1981-87

Year	Textile mill products		All manufacturing		Nondurable goods	
	Current ratio	Quick ratio	Current ratio	Quick ratio	Current ratio	Quick ratio
	Times					
1981.....	2.24	1.23	1.64	0.92	1.61	0.96
1982.....	2.38	1.33	1.60	.88	1.55	.92
1983.....	2.39	1.35	1.61	.94	1.53	.94
Average:						
1981-83.....	2.34	1.30	1.62	.91	1.56	.94
1984.....	2.37	1.31	1.57	.92	1.48	.90
1985.....	2.28	1.29	1.55	.91	1.46	.89
1986.....	2.41	1.37	1.55	.92	1.47	.92
Average:						
1984-86.....	2.36	1.32	1.56	.92	1.47	.90
1987 1/.....	2.41	1.34	1.55	.94	1.46	.93

1/ Estimate based on January-June 1987 data.

Source: U.S. Bureau of the Census, Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations, various issues.

The industry's financial performance with regard to payment to suppliers improved from 25 days in 1981 to 21 days in 1986 and 1987, indicating improved cash position and less dependency on suppliers to help finance industry's operations (table 5-16). The declining number is especially important to short-term creditors since increasing numbers could indicate potential problems in paying vendors. By contrast, the collection period of the industry increased gradually from 48 days in 1981 to 51 to 52 days in 1986-87, reflecting either the inadequacy of industry control over credit or collections, or the result of additional credit facilities offered to domestic buyers to fight off growing import competition. Inventory turnover, which measures the average length of time units are in inventory, increased from 52 days in 1981 to 54 to 55 days in 1986 and 1987 (table 5-15). This increase can be attributed in part to industry's "quick response programs" that emphasize the need for the production and materials-purchasing departments to be able to respond quickly and flexibly to customer needs. This effort in turn generates higher sales leading to overall growth in the rate of return on investment.

Short-Term Liquidity of the Industry Generally Improved

Liquidity ratios are significant in evaluating an industry's ability to meet short- and long-term obligations. These ratios are of prime interest to credit managers of commercial companies and financial institutions.

The current and quick ratios indicate the industry's ability to service its current obligations. Generally, the higher the current ratios, the greater the "cushion" between current obligations and a firm's ability to pay them. A stronger ratio reflects a numerical superiority of current assets over current liabilities. Although the current ratio measures adequacy of current assets to current liabilities, the quick ratio, which excludes inventories from current assets, is the most conservative measure of short-term liquidity. Between 1981 and 1987, these ratios for the textile mill industry improved (table 5-16). By contrast, current and quick ratios for all manufacturing and nondurable goods manufacturing were not only much lower than those for the textile mill industry, but they generally declined.

The ratio of current liabilities to net worth indicates funds the creditors temporarily are risking in relation to the funds permanently invested by the owners. The ratio of fixed assets to net worth indicates the extent to which owners' equity capital has been invested in plant and equipment. The lower ratios in both cases indicate greater financial security for the creditors. In the textile mill industry, the ratio of current liabilities to net worth showed no significant change during 1981-87, while net fixed assets to net worth increased rapidly as shown in table 5-17. The increasing share of net fixed assets in net worth especially since 1984 reflects overall restructuring of the industry and increased investment in cost efficient machinery and technology as the industry strives to improve its productivity and consequently competitiveness.

Table 5-17
Textile mill industry: Current liabilities and net fixed assets as a percent of net worth, 1981-87

Year	Current liability to net worth	Net fixed assets to net worth
1981	55.6	75.3
1982	47.4	77.8
1983	49.7	75.0
Average:		
1981-83	50.9	76.0
1984	51.2	83.1
1985	53.9	92.1
1986	50.6	92.5
Average:		
1984-86	51.9	89.2
1987 1/	50.9	97.1

1/ Estimate based on January-June 1987 data.

Source: U.S. Bureau of the Census, Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations, various issues.

Debt Financing Increased Rapidly

Highly leveraged firms (those with heavy debt in relation to net worth or assets) are more vulnerable to business downturn than those with lower debt. An optimum capital structure of a particular firm minimizes its overall cost of capital, sustains its cash-flow ability to service debt and other fixed charges, and maximizes the rate of return for stockholders. In the textile mill industry, long-term debt in its capital structure jumped to record levels during 1984-86 and continued into 1987, whereas notes payable declined, indicating a shift in the method of financing to take advantage of lower interest rates and to achieve greater leverage. The long-term debt to net worth ratio rose to 50 percent in 1986 and 54 percent in 1987, reflecting leveraged buyouts or mergers in the industry (table 5-18). Dividend payouts relative to after-tax earnings that averaged just over 31 percent during 1981-85 dropped to 22 percent in 1985-87. The lower dividend payouts and increasing retention of internally generated funds were perhaps motivated by the need to finance the fixed asset expansion and complement long-term borrowing. As a result, the debt ratio (debts to assets) in the capital structure of the industry rose from 50 percent in 1981 to 53 percent in 1986 and 55 percent in 1987, matching similar trends in all manufacturing and nondurable goods industries, each of which had debts accounting for about 56 to 57 percent of their respective assets. The retention of funds also indicated industry expectation of a higher margin on retained earnings in the coming years--one of the keys to raising additional external finance in the future.

Table 5-18
Textile mill industry: Long-term debt in the capital structure and dividend payout ratios, 1981-87

Year	Dividends	Long-term debt	Long-term debt/net worth	Long-term debt/assets	Debt/ assets	Dividend/ after-tax profit
	--Million dollars--		----------Percent----------			
1981.....	296	4,527	37.0	18.5	49.9	25.6
1982.....	345	4,488	36.5	19.1	47.5	40.5
1983.....	401	4,853	36.8	19.0	48.4	25.0
1984.....	430	6,201	42.4	20.8	51.1	26.3
1985.....	468	6,979	49.6	23.1	53.5	39.0
1986.....	360	6,594	50.3	23.5	53.3	21.1
1987.....	352	6,911	53.9	24.5	54.5	23.0

Source: U.S. Bureau of the Census, Quarterly Financial Report for Manufacturing, Mining, and Trade Corporations, various issues.

Debt-servicing Capacity

The earnings before interest and taxes (EBIT) divided by annual interest expenses (I) measure a firm's/industry's ability to meet interest payments. A high ratio indicates that a borrower would have little difficulty in meeting interest obligations of a loan. The increasing ratio also serves as an indicator of an industry's capacity to take additional debt with minimal risk.

The debt-servicing ability of the industry groups identified by SIC's 2211, cotton weaving mills; 2231, weaving and finishing mills, wool; 2251, women's hosiery; and 2272, tufted carpets and rugs--all increased significantly in recent years (table 5-19). By contrast, debt servicing ability of SICs 2241, narrow fabric mills; 2261, finishing plants, cotton; 2281, yarn mills, except wool; and 2282, throwing and winding mills declined.

Table 5-19
Textile mill industry: Debt servicing capacity (EBIT/I), 1/ by industry groups, 1981-86 2/

SIC industry groups	1981	1982	1983	1984	1985	1986
			Times			
2211, Weaving mills, cotton.....	2.1	1.6	3.2	3.6	3.0	3.6
2231, Weaving and finishing, wool.....	3.4	2.5	2.9	4.8	6.7	3.7
2241, Narrow fabric mills.....	5.2	3.5	5.1	4.2	2.6	3.0
2251, Women's hosiery.....	1.6	2.1	4.5	2.9	3.9	4.0
2261, Finishing plants, cotton..	3.1	2.6	2.8	3.4	2.2	2.9
2272, Tufted carpets and rugs...	2.6	1.8	3.5	2.5	2.7	3.7
2281, Yarn mills, except wool..	3/	3.3	2.8	2.7	2.4	3.8
2282, Throwing and winding mills.....	3.0	2.0	1.8	2.7	1.8	3.3

1/ Median ratios.
2/ Financial statement of companies whose fiscal dates fall between June 30 of the year involved and Mar. 31 of the subsequent year. For example, the 1981 EBIT/I ratio is for a sample of companies whose fiscal dates fall between June 30, 1981, and Mar. 31, 1982.
3/ Not available.

Source: Robert Morris Associates, Philadelphia, PA, Annual Statement Studies, various issues.

The trend in the debt-servicing capacity of the industry and its debt ratio in the capital structure will have major impact on return on stockholders' equity. For cotton weaving mills (SIC 2211), the growing EBIT/I ratio reflects the improvement in the business risk which is the inherent variability of expected pretax returns on the firm's portfolio of assets. However, the industry's financial risk, the additional risk to stockholders from the use of financial leverage, as indicated by the debt to equity ratio, increased, resulting in a higher rate of return on stockholders' equity (table 5-20). A falling EBIT/I ratio with a growing debt reflects the increasing business and financial risk. A rate of fall in the EBIT/I ratio exceeding the rate of growth in the debt to equity ratio indicates a diminishing return to stockholders. A steady growth in the EBIT/I ratio without a significant change in the debt to equity ratio indicates a growing return to stockholders equity with no change in financial risk levels. It also indicates the industry's conservative financial policy and its future ability to take additional debt to meet needed expansion and to further increase stockholders' earnings as shown for SIC 2231 in table 5-20.

Table 5-20
Textile mill products: Debt servicing capacity, debt ratio, and before-tax return on stockholders equity for three structurally different industry groups, 1981-86

Year	SIC 2211			SIC 2241			SIC 2231		
	EBIT/I	Debt/ equity	Return on equity	EBIT/I	Debt/ equity	Return on equity	EBIT/I	Debt/ equity	Return on equity
	----Times----		Percent	----Times----		Percent	----Times----		Percent
1981..	2.1	1.0	13.8	5.2	1.3	25.2	3.4	1.0	11.6
1982..	1.6	1.3	7.3	3.5	1.0	22.6	2.5	1.1	16.3
1983..	3.2	1.1	16.1	5.1	1.0	25.0	2.9	1.2	18.3
1984..	3.6	1.5	14.4	4.2	1.5	19.1	4.8	.8	19.8
1985..	3.0	1.1	15.8	2.6	1.8	13.4	6.7	.9	20.0
1986..	3.6	1.5	17.4	3.0	1.6	13.3	3.7	.8	12.8

Source: Robert Morris Associates, Philadelphia, PA, Annual Statement Studies, various issues.

Capital Expenditures Increased

The textile mill industry's new capital expenditures averaged $1.8 billion per year during 1984-86 compared with $1.6 billion during 1981-83, reflecting an increase of 14.8 percent (table 5-21). In comparison, capital expenditures rose 19.7 percent for all manufacturing and 12.5 percent for nondurable goods. The investment pattern took a sharp turnaround in 1987, increasing by an estimated 17.4 percent for textiles compared with a 2.2-percent increase for all manufacturing and a 3.8-percent drop for nondurables.

In 1987, capital expenditures in the textile industry represented 3.6 percent of the estimated value of industry shipments compared with 3.3 percent during 1981-83 and 3.5 percent during 1984-86. Although capital expenditures rose 18 percent from $1.66 billion in 1981 to $1.96 billion in 1987, the expenditure per employee rose more rapidly, increasing by 35 percent from $2,096 in 1981 to $2,835 in 1987 as shown in the following tabulation 1/:

1/ Estimated by the staff of the U.S. International Trade Commission using data from the U.S. Department of Commerce and U.S. Bureau of Labor Statistics.

Year	Capital expenditure share of industry shipments Percent	Capital expenditure per employee
1981	3.6	$2,096
1982	3.2	2,036
1983	3.0	2,132
Average:		
1981-83	3.3	2,088
1984	3.7	2,711
1985	3.5	2,648
1986	3.2	2,480
Average:		
1984-86	3.5	2,613
1987	3.6	2,835

The increasing expenditure per employee in this period is attributed to restructuring and elimination of less modern facilities that helped the industry's cost structure. However, overall industry capacity as measured by the Federal Reserve Board index continued to grow--up 2 percent from the early 1980's--reflecting the effect of installation of technologically sophisticated, less labor-intensive machinery. Expenditures on new machinery and equipment accounted for about 86 percent of total capital expenditures in 1985. This was up from 83 percent in 1981. In addition, expenditures of the textile mill industry on used plants and equipment averaged approximately $180 million per year.

Table 5-21
New capital expenditures: Textile mill industry, all manufacturing, and nondurable goods, 1981-87

Year	Textile mill industry	All manufacturing	Nondurable goods
	Million dollars		
1981	1,660	126,540	66,730
1982	1,460	120,680	65,330
1983	1,550	116,200	63,120
Average:			
1981-83	1,557	121,140	65,060
1984	1,920	138,820	72,580
1985	1,770	153,480	73,270
1986	1,670	142,730	73,650
Average:			
1984-86	1,787	145,010	73,167
1987	1,960	145,910	70,860
Percentage change:			
1984-86/1981-83	14.8	19.7	12.5
1987/86	17.4	2.2	-3.8

Source: U.S. Department of Commerce, Bureau of Economic Analysis, including estimate for 1987.

Foreign Competition

China

Chapter 6. CHINA

Introduction

The textile industry has played a major role in the economic development of China. Its share of China's total industrial output, after reaching 27.5 percent in 1952, decreased to 18 percent in 1958 and to 14 percent during the 1960's; it currently averages about 15 to 16 percent but is expected to decline further in the near future. 1/ Nevertheless, the textile industry should continue to influence the ongoing economic development as an "important industry" under the current 5-year economic plan by helping to create jobs and generate additional foreign exchange.

The textile industry, together with the apparel industry, now accounts for 12 percent of China's manufacturing enterprises, employs 15 percent of its industrial workforce, and generates 18 percent of its total industrial output, making the textile and apparel sector the second largest industry after machinery. 2/ In addition, following the decline in world oil prices, textiles and apparel supplanted petroleum and petroleum products as China's leading exports in 1986, accounting for approximately one-third of total exports.

China has the world's largest capacity to produce textiles, and currently ranks as the largest producer of cotton yarn and woven fabric and silk woven fabric. It is the largest producer of cotton and specialty fibers such as silk, ramie, angora, and cashmere. It is also the second largest producer of polyester staple fiber and the fourth largest producer of wool. 3/

Textile Industry

Structure

The textile industry is the largest light industry in China, accounting for 15.3 percent of total gross industrial output in 1985. 4/ It comprises approximately 22,000 enterprises whose total output in 1986 totaled $43 billion ($1=3.46 renminbi (RMB)). Two-thirds of the output was accounted for by state-owned enterprises, and the remainder by collectives formed mainly by peasants. 5/ The apparel industry consists of about 23,500 enterprises with an annual capacity of 1,170 million garments. 6/ Its gross output of $6.8 billion in 1985 accounted for 2.4 percent of gross industrial output.

1/ Interview with selected officials of China's Ministry of Textile Industries on Sept. 17, 1987, in Beijing.
2/ The Asian Textile Outlook--1988, (JTN) published by Osaka Senken Ltd., Osaka, Japan, August 1987, p. 89.
3/ Ibid., p. 91.
4/ State Statistical Bureau of China, Statistical Yearbook of China--1986, published by Economic Information Agency, Hong Kong, 1986, pp. 227-228.
5/ Interview with selected officials of MTI on Sept. 17, 1987, in Beijing.
6/ "Growth, Past and Planned," Textile Asia, April 1986, p. 86.

According to China's Ministry of Textile Industries (MTI), the textile and apparel industries, together, employed 6.5 million workers in 1987; the textile industry alone employed 4.37 million persons. 1/

China's textile industry is highly fragmented, with 97 percent of the enterprises considered by China to be small. The 8 largest mills accounted for only 5.3 percent of the industry's total output and the 165 largest mills accounted for only 27 percent in 1984 (table 6-1). By contrast, the 19,000 or so small enterprises, which averaged $1.3 million in output and employed an average of 112 workers each, accounted for roughly one-half of total output and employment. The apparel industry is even more fragmented; the 18 medium or large apparel enterprises accounted for 4 percent of the apparel industry's output and employed 3.7 percent of its workforce.

Table 6-1
Number of enterprises in China's textile industry, output, and employment, by ranges of output, for large and medium sized enterprises, 1984

Range of output	Firms	Output 1/	Employment	Share of textile industry's-- Output	Employment
		Million dollars	1,000	-------Percent-------	
$429 million or more.....	2	1,410	2/	3.1	2/
$129 million - $428 million..	6	995	3/ 173	2.2	3/ 4.1
$43 million to $128 million..	157	10,070	2/	21.7	2/
Less than $43 million.....	455	8,679	2/	18.7	2/
Total, large and medium enterprises.....	620	21,154	2,122	45.5	49.8
Small enterprises.....	19,061	25,323	2,138	54.5	50.2
Total, all.....	19,681	46,477	4,260	100.0	100.0

1/ Output in terms of 1980 prices.
2/ Not available.
3/ Represents share of total employment of the 11 largest enterprises.

Source: Estimated from data of the State Statistical Bureau of China published by the Economic Information and Agency in Statistical Yearbook of China--1986, Hong Kong, December 1986, pp. 276 and 278.

Capacity

China's textile industry has the largest production capacity in the world, having expanded significantly since 1950 or so, when there were 5 million cotton spindles, 127,000 looms, and 130,000 wool-spinning spindles. 2/ During the first half of the

1/ In addition to 4.37 million people employed by the state-owned enterprises, an estimated 600,000 people are employed by the collectives and privately owned firms.
2/ International Textile Manufacturers Federation, International Textile Manufacturing, vol. 5, 1982, pp. 49-57.

1980's, every major segment of the industry expanded its capacity (table 6-2). As of December 31, 1986, the number of spindles in place totaled 24 million, of which approximately 1 percent were open-end. 1/ The remainder consisted of conventional ring-spinning equipment. In addition, the number of looms in place totaled 700,000. About 95 percent of the spinning equipment and 90 percent of the weaving equipment were made in China.

Table 6-2
Production capacity of China's textile industry, by specified segments, 1982 and 1985

Segment	Production capacity		1985/82
	1982	1985	Percent increase
Cotton spindles (1,000)	21,090	23,238	10
Cotton looms (1,000)	595	667	12
Wool spindles (1,000)	889	1,270	43
Wool looms (1,000)	12	18	50
Ramie spindles (1,000)	63	250	297
Ramie looms (1,000)	2	5	136
Silk looms (1,000)	73	1/ 115	58
Manmade fibers (million pounds)	1,505	2,756	83
Synthetic fiber (million pounds)	1,172	2,315	98
Cotton printing and dyeing (million pounds)	1,944	2/ 2,140	10

1/ Estimated by the staff of the U.S. International Trade Commission using the rate of growth in output of silk textiles for 1985.
2/ Estimated by the Commission staff using the average annual rate of growth during 1982-84.

Source: The Asian Textile Outlook--1988, (JTN) published by Osaka Senken Ltd., Osaka, Japan, August 1987, pp. 91 and 93, and Textile Asia, April 1986, p. 86, and November 1986, p. 104, except as noted.

Production

China's textile industry expanded its output in real terms by 10 percent annually during 1981-85, a period marked by a worldwide economic recession and sluggish textile production in most of the major textile-producing countries. The greatest growth occurred in manmade fibers, wool yarn, silk, and wool fabrics (table 6-3). According to MTI, China's production of spun yarn increased by 60 percent and its output of fabric rose by 49 percent during 1979-86. Cotton goods, which had accounted for as much as 80 to 85 percent of total textile output during the 1950's, now account for approximately 57 percent of total textile output. 2/ The remainder consists of woolen textiles (8 percent), silk textiles (10 percent), and manmade-fiber products.

1/ Interview with selected officials of MTI on Sept. 19, 1987, in Beijing.
2/ State Statistical Bureau of China, op. cit., p. 231.

Table 6-3
China's textile production, by specified products, 1982-86

Item	1982	1983	1984	1985	1986
Yarn (million pounds)	7,387	7,210	7,098	7,762	8,737
Fabric (million yards)	16,787	16,273	14,982	15,092	17,287
Manmade fibers (million pounds)	1,140	1,192	1,620	2,084	2,241
Wool yarn (million pounds)	204	225	243	265	308
Woolen piece goods (million yards)	139	156	197	226	268
Raw silk (million pounds)	82	81	83	93	98
Silk textiles (million yards)	1,000	1,093	1,288	1,500	1,591

Source: The Asian Textile Outlook--1988, (JTN) published by Osaka Senken Ltd., Osaka, Japan, August 1987, p. 91, and State Statistical Bureau of China, Statistical Yearbook of China--1986, published by the Economic Information and Agency, Hong Kong, December 1986.

China's production of cotton yarn and woven fabric in 1986 was the highest of any country in the world. Its output of cotton yarn accounted for 24 percent of world output and equaled the combined total of the next three largest producers, the U.S.S.R., India, and the United States. 1/ China's production of cotton fabric accounted for one-fifth of world output. China also emerged as the largest producer of raw cotton in the world during the 1983/84 crop year, when its output totaled 21.3 million bales, 32 percent of world cotton production. Its cotton production rose significantly during the 1980's, especially during crop years 1982/83 and 1983/84, when output increased by 56 percent. At the same time, China's imports of cotton declined significantly, enabling China to become a net exporter of cotton in crop year 1983/84. Nevertheless, although China can be self-sufficient in cotton, it still needs to import several varieties that are not grown locally, such as long-staple cotton from Egypt. In the 1984/85 crop year, China's cotton production reached 13.8 billion pounds, 1.9 billion more than the combined total of the United States and the U.S.S.R. 2/ Although its output of cotton decreased in the 1985/86 crop year to 9.2 billion pounds, because of a reduction in cultivated area, China remained the world's largest producer, accounting for about one-fourth of world output, as shown in the following tabulation:

1/ The Asian Textile Outlook--1988, op. cit., p. 91, and "The Greatest," Textile Asia, May 1986, p. 97.
2/ Ibid.

Item	Global Share Percent	Ranking	Item	Global Share Percent	Ranking
Cotton	28	1	Angora	85	1
Chemical fibers	6	5	Cashmere	70	1
Polyester staple	13	2	Cotton yarn	24	1
Raw silk	49	1	Cotton wovens	20	1
Wool	6	4	Silk wovens	1/ 40	1

1/ Based on export volume.

The growth in China's cotton production during the 1980's is attributed to the agricultural policy implemented in 1979. It provided cotton growers with higher prices for their cotton and several other incentives based on productivity, which in terms of yield per acre has improved significantly in recent years. The increased output also resulted from adoption of improved cotton varieties and wider use of chemical fertilizers. As a result of the surge in cotton output, the MTI stated that the pricing policy has been changed because the policy encouraged peasant farmers to shift production from less profitable but essential crops such as foodstuffs. This largely explains the subsequent decline in cotton output during the crop year 1985/86, in which less cultivated area was devoted to its production.

The potential for increases in cotton output through greater land use is somewhat limited, according to MTI, so as to ensure that a sufficient amount of food is grown. Instead, scientific methods are being employed by the agricultural ministry to expand cotton yields. In addition, to further meet the growing need for fiber, MTI stated that it was essential that China's manmade-fiber capacity be enlarged. This industry, which began in 1957 with the construction of an experimental plant in Beijing with technical assistance from East Germany, started full-scale production sometime in the mid-1960's. Since 1978, construction of new facilities has grown rapidly, with the number of enterprises increasing from about 200 in 1980 to 300 in 1985. 1/ Consequently, most of the facilities are modern. MTI stated that China's capacity in 1987 totaled slightly more than 1 million tons of synthetic fiber and yarn per year. With the completion of several projects now under construction, MTI indicated that production capacity is expected to reach 1.4 million tons (3.1 billion pounds) per year. This would make China the fourth largest producer after the United States, Japan, and Taiwan, whose capacities are estimated at 7.5 billion, 3.8 billion, and 3.4 billion pounds, respectively. 2/ Domestic production is currently augmented by imports of manmade fibers, which have been trending downward in recent years.

1/ State Statistical Bureau of China, op. cit., p. 191.
2/ Textile Organon, July 1987, p. 169.

Domestic Consumption

China's demand for apparel and other consumer goods has increased significantly--albeit from a very small base--during the 1980's as household incomes have risen. During 1981-85, expenditures on apparel increased annually by 12.8 percent in urban areas and 11 percent in rural areas, 1/ the largest growth rate among major expenditure categories, at least in urban areas. Apparel accounted for approximately 19 percent of total consumer expenditures, estimated at $24.4 billion in 1985; however, this is down from 23 percent in 1981. 2/ Per capita consumption of apparel in 1985 averaged an estimated $23, though it amounted to $38 in urban areas and $11 in rural areas. Per capita consumption, in terms of quantity, is projected to increase from 2.6 garments in 1983 to 3.8 garments in 1990; ready-made apparel is expected to increase from 1 billion items to 2.8 billion items during the period. 3/

Consumer spending on fabric during 1981-85 increased by only 23 percent in terms of quantity and 16 percent in terms of value to approximately 14.6 billion yards of fabric, valued at $14 billion, or about 14 yards, valued at $13.40, per capita. 4/ The relatively low growth in fabric consumption is attributed to an increase in consumption of ready-made apparel. Consumption of fabric of cotton, manmade fibers, and blends of these fibers increased by 19 percent, from 11.2 billion yards in 1981 to 13.3 billion yards in 1985; cotton fabric alone accounted for 59 percent of consumption in 1985 compared with 69 percent in 1981. 5/ Consumption of woolen fabric rose by 80 percent during the period to 335 million yards, and silk and satins increased by 84 percent to 982 million yards.

Meeting the growing domestic demand for apparel is an important priority of China, according to officials of MTI, particularly since it helps promote social stability. Because expenditures on such a vital necessity are very small, MTI stated that it is essential that this need be met. Generally, a typical household will spend about 20 percent of its income on apparel, 50 percent on food, 10 percent on transportation, and 20 percent on savings and other miscellaneous expenses. Although MTI said the basic clothing problem had been solved, following 30 years of the Government issuing coupons to households to buy apparel (1953-83), per capita consumption of textiles in 1987 averages only 3 kilograms versus 7 kilograms for the world. China's goal is to increase per capita consumption to the current world average of 7 kilograms by the year 2000. Consequently, the textile industry will need to grow faster during the 1990's to reach this goal. However, an important part of the ongoing increase in demand for textiles is for fashion goods that the industry is not currently capable of producing in a very big way.

1/ State Statistical Bureau of China, op. cit., pp. 577 and 583.
2/ Ibid., p. 452.
3/ "The Greatest," Textile Asia, May 1986, p. 98.
4/ Estimated from data of the State Statistical Bureau of China, op. cit., pp. 453-455.
5/ State Statistical Bureau of China, op. cit., p. 453.

Industry Assessment

The textile industry in China, on the basis of numerous interviews with textile interests in Japan, Korea, Taiwan, and Hong Kong, is perceived to have the greatest potential of the major world textile producers to expand its exports and its share of world markets. As the largest low-cost producer in the world, China's textile industry benefits from extremely low labor costs and the world's largest production capacity. It also profits from a large and growing raw material base, though MTI and CHINATEX officials expressed concern over the adequacy of this bases given the growing demand for textiles in the home market. Nevertheless, China is either the largest or among the largest producers of many of the fibers used by the textile industry. In addition, since a large part of the industry is state owned, Government policy can and does influence the industry's role in markets both at home and abroad. With the largest population in the world and growing domestic demand for textiles, China's textile industry has the flexibility to channel its output to the home market or export markets.

In spite of its growing success in expanding exports to world markets during the 1980's, China's textile industry is faced with a number of problems that undermine to some extent its competitiveness. The pace of its development has been slower than that of other industries. During the past 9 years, textile production has risen by 60 percent in terms of final products, whereas total national product and national income have doubled. Much of the equipment used by the industry is essentially technologically obsolete and a relatively large part of its workforce is unskilled, thereby hindering its productivity vis-a-vis other major textile-producing countries and partly explaining its lack of product variety. For example, because its dyeing and finishing operations lag far behind world standards, the textile industry exports mostly low-valued greige goods (as opposed to higher value-added finished fabrics) for further processing and to import finished fabric from mostly Japan for conversion into apparel for export.

Other major problems confronting the industry include market perceptions of relatively low product quality, long lead times to fill and deliver export orders, rising raw material costs resulting from heavy domestic demand for textiles, and rising labor costs, though they remain among the lowest in the world. China's exports are facing increasingly tighter restrictions in their major markets. In addition, although having been designated as an "important industry" under the current 5-year economic plan, MTI noted that the industry lacks sufficient capital to modernize its facilities since a relatively significant amount of planned Government investment has been earmarked for further development of the energy, transportation, and raw materials sectors.

Technology

A significant portion of the spinning and weaving equipment currently in place, all but a small part of which was manufactured locally, is at least 10 to 15 years old. According to a press report, over 10 million cotton spindles, 400,000 looms, and 500,000 woolen and worsted spindles are outdated. According to the MTI, at least one-third of the spindles, some of which had been made in the 1940's and 1950's or even earlier, and more than one-half of the looms are outdated. In a mill visited by the staff of the U.S. International Trade

Commission in Shanghai (Mill No. 4), some of the spinning frames were made in 1894 and 1922, though the spindles had since been updated. In addition, although the new looms in place at the mill were manufactured in 1986, in Shanghai, they were relatively narrow-width, shuttle looms that are largely being displaced in developed countries by shuttleless looms. Almost all spindles currently in place in China's textile industry are the conventional ring-spinning type; approximately 1 percent are the advanced, open-end equipment. Similarly, less than 1 percent of the looms are shuttleless (as opposed to the conventional fly shuttle looms). MTI indicated that China is working with Czechoslovakia, a leading manufacturer of textile machinery, to produce such equipment.

China's limited use of shuttleless looms is partly attributed to the limitations of its dyeing and finishing operations. The great bulk of these operations are geared to handle only fabric widths of 46 inches or less. However, the common widths of the shuttleless looms approach 60 inches. According to MTI, one-third of the equipment is outdated. Less than 5 percent of China's fabric output is resin treated with easy-care properties and only one-third of the fabric, or 2.5 billion meters, are dyed or printed. 1/ Consequently, China exports fabric that is mostly in the greige state.

China has been modernizing its textile industry through the installation of new equipment. However, the rate of modernization has been low in relation to other major textile producing countries (table 6-4). Approximately $7.9 billion of the investment in 1981-85 was spent on 38 large and medium-sized textile projects, including 4 petrochemical fiber complexes, which accounted for slightly more than one-half of the investment. About $4.6 billion, or 58 percent of the total investment, was used for technological renovation which included importing production equipment from Japan, the United States, Britain, Switzerland, and other European countries. The remaining $3.3 billion was spent on new projects, three-fourths of which were for fixed assets. 2/ China also signed 20 contracts in this period with foreign countries for joint ventures, coproduction, and compensation trade.

1/ Interview with selected officials of MTI on Sept. 17, 1987, in Beijing.
2/ Calculated from data of the State Statistical Bureau of China, op. cit., pp. 202-203.

Table 6-4
Rate of modernization 1/ in spinning and weaving by selected countries, 1980-85

Country	Spinning mills			Weaving mills
	Short staple	Long staple	Open-rotors	
China	0.7	6.3	46.0	0.9
United States	2.7	10.4	77.7	17.7
Hong Kong	14.4	3.6	86.5	19.0
Taiwan	19.7	2/	49.0	22.7
Korea	9.2	10.6	41.3	19.8
Japan	6.8	2.5	14.0	11.3

1/ Ratio between new supplies in the period 1980-85 and installed capacity at the end of 1985.
2/ Not available.

Source: Computed by the staff of the U.S. International Trade Commission from data published by International Textile Manufacturers Federation in International Textile Machinery Shipment Statistics.

The investment per employee in China's textile industry during 1981-85 was relatively small, estimated at only 15 percent of that spent for employee in the United States during the same period as shown in the following tabulation:

Country	Total Million dollars	Investment per employee 1/
China	2/ 7,900	$ 1,868
United States	8,360	12,697

1/ Total investment divided by number of employees in 1985.
2/ $1 = 2.94RMB.

The relative importance of investment in the textile industry has been declining in recent years because of China's policy of concentrating on replacing old equipment rather than constructing new mills. 1/ Investment in the textile industry in 1985 accounted for 9.7 percent of total investment on technological innovation in the industrial sector, down from 12.2 percent in 1981. 2/ The textile industry's share of capital construction declined more rapidly, from 9.2 percent in 1981 to 4.7 percent in 1985. 3/ Nevertheless, the

1/ Interview with selected officials of MTI on Sept. 17, 1987, in Beijing.
2/ Calculated from data of the State Statistical Bureau of China in Statistical Yearbook of China--1986, op. cit., pp. 213.
3/ Ibid., pp. 202-204.

textile industry share of total investment during 1981-85 was significantly higher than at any time period since 1958. 1/ Investment in the apparel industry has been small, averaging about $20 million per year during 1981-85 and representing less than 0.1 percent of total investment in the industrial sector. This relatively low level of investment is attributed to the Government's reluctance to invest large sums in its apparel industry because the industry is domestic-market oriented and most consumers patronize individual tailors.

Productivity

China's textile industry employs a relatively large amount of labor for a given level of output. In 1984, gross output per worker averaged $10,910, compared with $80,918 in the U.S. industry. Output per worker was higher in the small enterprises ($11,848) than in the medium and large enterprises ($9,969).

Labor productivity measured in terms of net output per worker-hour in China's textile industry is considerably lower than that in many other textile-producing countries. China employs about 30 workers to operate 100 looms versus less than 15 in many other countries. 2/ As a result, net output or value added per worker-hour in China's textile industry during 1985 averaged $0.80, or approximately 4 percent of that in the United States at $18.79. 3/ However, hourly labor costs accounted for only 25 percent of China's value added compared with 46 percent for the United States, reflecting the former's substantially lower average labor cost of $0.20 per hour, or 2 percent of the average U.S. labor cost of $8.56 per hour. 4/ Similarly, value added per worker in China's apparel industry during 1985 was estimated at $0.66 per hour, or 4 percent of that of the U.S. apparel industry of $17.54. The share of value added accounted for by labor costs is estimated at 26 percent for China and 41 percent for the U.S. industry. In a shirt factory in China that the Commission staff visited in September 1987, labor costs accounted for approximately 18 percent of the value added for shirts. 5/

1/ Capital construction share averaged 5.9 percent during 1976-80 and less than 4 percent throughout 1958-75 compared with 6.3 percent during 1981-85, according to Statistical Bureau of China. Technical renovation share which averaged 10.4 percent during 1981-85 was believed to be significantly greater than earlier years.

2/ Interview with MTI.

3/ Value added data for the U.S. textile industry calculated from data published in the 1985 Annual Survey of Manufactures and for China, calculated from data published in the 1986 Statistical Yearbook of China, pp. 90 and 230, and from Werner International Management Consultants, Inc.

4/ Werner International Management Consultants, Inc., Spinning and Weaving Labor Cost Comparisons, Winter 1985/86, New York and Brussels, and the U.S. Department of Labor, Bureau of Labor Statistics.

5/ Interview with selected officials of CHINATEX in September 1987 in Guangzhou. The factory receives a processing fee of 30RMB per dozen for men's chambray shirts from CHINATEX, which supplies the factory with fabrics and accessories to produce shirts for exports. The workers are paid 180RMB per month as wages and bonuses. The average output per worker is 16 shirts per 8-hour shift. The average number of hours worked per worker in a month is estimated at 204.

Labor productivity in China's state-owned textile enterprises showed little improvement during the 1980's, whereas productivity in the U.S. textile industry averaged 4.6-percent growth per year, as shown in the following tabulation (1981=100):

Year	United States	China
1982	107.0	89.4
1983	115.2	94.0
1984	120.2	96.5
1985	122.1	102.3

Production costs

The major cost elements of textile products are material, labor, capital, and other overhead. In the United States, the cost elements in yarn and fabric production are broken down as shown in the following tabulation (in percent): 1/

Item	Share of total	
	Yarn cost	Fabric cost
Raw material	59	33
Labor 1/	15	26
Capital 2/	16	27
Other 3/	10	14
Total	100	100

1/ Includes fringe benefits.
2/ Includes depreciation and interest.
3/ Includes power, waste, and auxiliary material.

In comparison, labor costs in China's yarn spinning and weaving is estimated at 5 percent of total production costs in 1985. 2/ Despite the low wages in spinning and weaving, averaging .20 cents per hour in 1985, labor costs accounted for 25 percent of its value added by manufacture compared with 46 percent for the U.S. industry. Although China's wage rate is only 2 percent of that in the United States, its low productivity largely offsets its low labor costs.

The cost of material is a major factor influencing textile industry competitiveness. Materials typically account for about 60 to 70 percent of the yarn manufacturing costs and 35 to 40 percent of the fabric manufacturing costs for most of the major textile-producing countries. 3/ This cost is

1/ International Textile Manufacturers Federation, 1985 International Production Cost Comparison, Spinning and Weaving, Zurich, p. 6.
2/ Estimated from data of Chinese government sources and Werner International Management Consultants, Inc., New York and Brussels.
3/ International Textile Manufacturers Federation, 1985 International Production Cost Comparison, Spinning and Weaving, Zurich, p. 6.

particularly higher for countries that depend on imports. In China raw materials are estimated to account for 35-45 percent of production costs in the spinning and weaving sectors. 1/ China's commodity prices are set by the Government and, therefore, prices may not reflect supply and demand and the true value of the goods. These pricing policies are used to influence its competitiveness in the international markets.

Another important cost factor is interest rates. Although data are not available on China's interest rates, it is believed to be lower than that in the United States and other major textile producers. An apparel company visited by Commission staff in Guangzhou recently obtained a series of loans from the Industrial and Commercial Bank (Guangzhou branch) at an annual interest rate of 0.66 percent. The officials noted that interest rates are extremely low for loans involving expansion of production capacity in state-owned enterprises. About three-fourths of the units are state-owned and, therefore, are likely to benefit from such low interest-rate loans.

By contrast, interest rates for capital projects in other major textile-producing countries were substantially greater, ranging from just over 7 percent in Japan and West Germany and 10.5 percent in the United States to as high as 28 percent in Brazil. 2/ Typically, in yarn and fabric manufacturing, worldwide capital costs account for a significant portion of total production costs. In yarn, capital costs in 1985 accounted for a low of 12-16 percent for Korea, Japan, West Germany, and the United States to a high of 29 percent for Brazil. 3/ In weaving, capital costs accounted for a low of 24-27 percent of fabric costs in Korea, Japan, West Germany and the United States to a high of 45 percent in Brazil.

Materials, direct labor, and capital costs usually account for about 85 to 90 percent of yarn manufacturing costs and 75 to 85 percent of fabric manufacturing costs for major textile producers. 4/ Among other cost items, the cost of fuel and energy accounts for a significant portion of the manufacturing costs in some of the countries. In Korea, the energy and fuel costs account for about 7 percent of the yarn manufacturing costs and 11 percent of the fabric manufacturing costs, approximately 50-70 percent greater than the labor costs. In the United States, fuel and energy costs are small, accounting for 4 to 6 percent of the cost of production. In India and Japan, energy and fuel costs also account for over 7 percent of yarn costs and 10 percent of fabric costs. In China, coal is used to supply about three-fourths of China's energy needs and is subsidized. The index of relative price level of coal in China is an estimated .44, indicating that coal is priced about 56 percent lower in China than abroad. 5/ Measured by consumption per unit of

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1/ Estimated by the staff of the U.S. International Trade Commission using China's commodity export prices to the United States and other official Chinese statistics.

2/ International Textile Manufacturers Federation, 1985 International Production Cost Comparison, Spinning and Weaving, Zurich, pp. 10 and 15.

3/ Ibid., p. 6.

4/ Ibid.

5/ U.S. Bureau of the Census, Center for International Research, China's Price Structure in International Perspective, June 1986, p. 13.

GDP, utilization of commercial energy is inefficient in China--twice as inefficient as India and four times as inefficient as Japan or West Germany. 1/ Nevertheless, China is believed to have significant cost advantages in fuel and energy over most of the major textile producers. In China's spinning and weaving mills, energy costs are estimated to account for approximately 3-6 percent of yarn and fabric costs. 2/

Compensation for indirect labor and many overhead items such as administrative expenses are generally lower in China and other developing nations than in the United States. However, China's transportation and insurance costs on its shipments to the United States are relatively large and are estimated to average 10 percent of the f.a.s. cost.

The greatest competitive advantage that China has in world markets is price, which for domestic and imported goods are fixed centrally by the State Price Bureau. 3/ Domestic prices are insulated from world-market prices for the dual purpose of maintaining domestic price stability and of protecting domestic industries. Fifty percent of the cotton yarn required for production is centrally allocated, the remainder obtained from the open market which costs almost double. This greatly reduces the average cost of production. 4/ Imported goods are sold in the domestic market at prices similar to those of domestically produced goods, regardless of the price at which imported goods were obtained. On the other hand, trade agencies buy export commodities at the ex-factory price for domestic procurement fixed by the Price Bureau, but sell at prices determined by world market conditions. One specific example is the self imposition of export quotas on cotton yarn and greige goods to maintain existing export price levels. This has mostly affected Hong Kong, which until recently imported significant quantities of greige goods from China.

Domestic prices of textiles in China are generally higher than the export prices. A number of studies by the World Bank and the U.S. Bureau of the Census, have all indicated that the relative price levels for textiles are higher in China than abroad by as much as 13 percent to 96 percent. 5/ It is therefore more profitable for enterprises to sell their products to local market than for exports. 6/ In Anhui, China, factories producing for export market set aside part of the production for the domestic market. This is less risky because compared to exports, local sales are usually more profitable and the quality standards in the domestic market are not so strict. 7/

1/ Asia 1986 Yearbook, published by Far Eastern Economic Review, Ltd., Hong Kong, p. 135.
2/ Interview with Vice Chief Engineer of Shanghai Mill No. 17 on Sept. 18, 1987, in Shanghai. Power costs at his plant account for 3 percent of total production costs, including a 10-percent gross profit. Officials at Mill No. 4 in Shanghai estimated that energy costs are about 5 percent of total production costs, also including a provision for a 10-percent gross profit.
3/ U.S. Department of Commerce, China's Economy and Foreign Trade, 1981-85, September 1984, p. 26.
4/ China Sources, December 1987, pp. 47-48.
5/ U.S. Bureau of the Census, Center for International Research, China's Price Structure in International Perspective, June 1986, pp. 13 and 19.
6/ Textile Asia, October 1986, p. 77.
7/ China Sources, December 1987, p. 48.

Management and workforce quality

An important factor in controlling production costs and improving productivity levels is managerial quality and technological competence. In China, the level of management quality is believed to be low. A major reason cited for the failure of China's 1984-85 economic reforms is the lack of managerial quality in the industrial sector. The number of graduates from institutions of higher education is small, accounting for less than 1 percent of total student enrollment, 1/ though enrollment is growing and a greater number of persons are being trained in management techniques. In the textile industry, university graduates and undergraduates account for less than 0.1 percent of the total workforce.

Workforce quality is also considered an important factor in cutting production costs and improving productivity. Although China has an abundance of labor, one Chinese survey found that less than 3 percent of the workforce in the large and medium enterprises consists of technicians. 2/ Over 30 percent of the workforce in the textile industry and one-half of that in the apparel industry did not attend school beyond the primary grades. 3/

Marketing Practices

Export marketing is handled by China National Textiles Import and Export Corporation (CHINATEX), which supplies the material for most of the export production. The factories producing finished items for export receive a processing fee from CHINATEX in Chinese currency. For goods sold in the home market, the factories buy their fabric through separate channels.

CHINATEX acts as the intermediary between the foreign buyer and the factory. As an example a foreign buyer might approach CHINATEX with a request for so much of a particular type of fabric or garment. If the item is something a certain factory had produced previously, CHINATEX might then and there decide on a price with the buyer and then approach the factory with the order. If the item had not been made by the factory, but it had the equipment to make it, CHINATEX might approach the factory to see if it could make the product in the appropriate delivery time frame. The factory might first produce a prototype and suggest a per-unit processing fee based on the amount of time and labor involved. The factory and CHINATEX would then negotiate to a mutually acceptable processing fee, and CHINATEX would go back to the foreign buyer with a price for the product.

1/ State Statistical Bureau of China, op. cit., p. 626.
2/ U.S. Department of Commerce, Foreign Economic Trends--China, July 1984, p. 6.
3/ State Statistical Bureau of China, op. cit., p. 90.

Textile and Apparel Trade

Textiles and apparel accounted for 30 percent of China's total exports in 1985, surpassing petroleum as China's principal export. China's trade in these products was marked by a continually increasing trade surplus during 1982-85 (table 6-5). However, China has consistently recorded a trade deficit in textile fibers, though its fiber imports have been trending downward with increased domestic production of cotton and manmade fibers. As a result, the fiber trade deficit, which peaked at $1.8 billion in 1981, decreased to $468 million annually during 1982-85.

Export Trends

China's exports of textile fibers, textiles, and apparel began their rapid growth during the late 1970's; they totaled just under $5.0 billion in 1980. Since then, there has been an uninterrupted annual growth of exports. During 1981-85, they rose by 64 percent, or by an average annual rate of 13 percent, to $9.3 billion. They increased by an estimated 29 percent in 1986 to $12 billion. About 47 percent of the exports consisted of textiles, exports of which increased by 9 percent annually during 1981-85. Exports of apparel, accounting for 40 percent of the total, rose by 16 percent per year. The remaining 13 percent consisted of textile fibers, exports of which doubled during 1981-85.The real export growth, measured in terms of Chinese national currency, showed dramatic increases during 1981-86. Textiles including apparel, rose by 27 percent annually during 1981-85 and by an estimated 39 percent in 1986. Textiles rose by 22 percent and apparel rose by 29 percent in the 1981-85 period. The lower export growth in dollars was the result of nearly 50 percent devaluation of Chinese currency against the U.S. dollar during 1981-86.

Table 6-5
Textile fibers, textiles, and apparel: China's imports (f.o.b.), exports (f.o.b.), and trade balance, 1981-85

(In millions of dollars)

Item	1981	1982	1983	1984	1985
Imports:					
Textile fibers	2,283	1,403	1,098	1,224	1,576
Textiles	1,574	1,154	1,018	1,530	2,098
Apparel	41	50	61	93	100
Total	3,898	2,607	2,177	2,847	3,774
Exports:					
Textile fibers	498	565	728	975	1,163
Textiles	3,079	2,849	3,156	4,077	4,380
Apparel	2,093	2,420	2,738	3,375	3,763
Total	5,671	5,834	6,622	8,427	9,306
Trade balance:					
Textile fibers	-1,784	-838	-370	-249	-413
Textiles	1,505	1,695	2,138	2,547	2,282
Apparel	2,052	2,370	2,677	3,282	3,663
Balance	1,773	3,227	4,445	5,580	5,532

Source: Central Intelligence Agency, China: International Trade, fourth quarter 1984, July 1985, and fourth quarter 1986, July 1986.

The major export items showing significant growth rates during 1982-86, according to Chinese Government sources, are shown in the following tabulation:

Item	1982	1986	Percent change 1986/82
Cotton yarn (million pounds)	107	503	370
Cotton fabrics (million yards)	1,289	2,253	75
Polyester/cotton fabric (million yards)	610	1,061	74
Apparel (million pieces)	405	1,040	157

Export Markets

Hong Kong, the United States, and Japan are the major markets for China's exports of textiles and apparel, accounting for a combined 52 percent of the exports in 1985. Hong Kong took one-fourth of China's exports, the United States took 15 percent, and Japan, 12 percent.

About 53 percent of China's textile and apparel exports to Hong Kong consisted of textile mill products and 40 percent, apparel (table 6-6). Textiles accounted for 40 percent of China's textiles and apparel exports to

Japan, apparel accounted for 38 percent, and the remainder consisted mostly of wool and silk fibers. Nearly two-thirds of China's textile and apparel exports to the United States were apparel items; most of the remainder were textile mill products.

Textiles and apparel are China's major export items to the United States, Hong Kong, West Germany, and Canada. Approximately 41 percent of China's total merchandise exports to Hong Kong in 1985 were textiles and apparel (table 6-7). Textiles and apparel accounted for 36 percent of China's total exports to the United States in 1985. This share increased to 47 percent in 1986. About 57 percent of China's total exports to Canada and 32 percent of its exports to West Germany, in 1985, were textiles and apparel.

Table 6-6
Textile fibers, textiles, and apparel: China's exports, by major products and markets, 1985

(In millions of dollars)

Product	Japan	United States	Hong Kong	West Germany	Canada
Fibers:					
Silk	68.1	5.3	28.3	1/	1/
Flax, ramie, etc	38.6	1/	1/	1/	1/
Wool, except animal hair	130.7	7.5	60.5	9.8	1/
Total	237.4	12.8	88.8	9.8	1/
Textiles:					
Textile yarn	115.5	1/	399.5	1/	1/
Cotton fabrics, woven	181.6	102.3	295.4	18.8	18.8
Synthetic fabrics, woven	39.0	1.9	185.9	1/	16.7
Other woven fabrics	40.3	2/ 34.0	2/ 210.0	1/	5.6
Fabricated textile products	42.4	132.0	106.7	26.8	14.9
Floor coverings	41.9	87.9	22.6	23.2	3.8
Total	460.7	358.1	1,220.1	68.8	59.8
Apparel:					
Men's outer garments	101.5	173.4	157.9	55.2	26.2
Women's outer garments	73.6	340.1	217.6	35.6	25.4
Undergarments, woven	52.9	101.4	72.6	7.4	10.1
Knitted outer garments	80.4	175.0	341.8	1/	19.0
Knitted under garments	81.9	78.3	90.9	12.8	8.0
Clothing accessories	48.4	28.5	31.3	1/	10.8
Total	438.7	896.7	912.1	111.0	99.5
All other 3/	13.2	133.4	71.0	40.4	8.7
Grand total	1,150.0	1,401.0	2,292.0	230.0	168.0

1/ Not available.
2/ Including specialty fabrics.
3/ Include items for which data are not separately reported.

Source: Central Intelligence Agency, China: International Trade, Fourth Quarter, 1985, July 1986.

Table 6-7
Total textile and apparel merchandise exports from China, by major markets, 1985

Market	Total merchandise	Textiles and apparel	Textiles' and apparel's share
	Million dollars	Million dollars	Percent
United States	3,853	1,401	36.3
Japan	6,289	1,150	18.3
Hong Kong	5,613	2,292	40.8
West Germany	725	230	31.7
Canada	295	168	57.0
All other	14,550	4,065	27.9
Total or average	31,325	9,306	29.7

Source: Central Intelligence Agency, China: International Trade, Fourth Quarter 1985, July 1986.

U.S./China Trade in Textiles and Apparel

China's second largest export market for textiles and apparel, after Hong Kong is the United States. Based on U.S. import data, textiles and apparel accounted for 47 percent of total U.S. imports from China in 1986 (table 6-8). By contrast, textiles and apparel accounted for just under 4 percent of total U.S. exports to China. Nevertheless, China displaced Japan as the fourth largest trading partner of the United States in textiles and apparel in 1986, following Hong Kong, Taiwan, and Korea.

Table 6-8
U.S.-China trade and share of textiles and apparel thereof, 1981-86

	U.S. imports from China	Textiles' and apparel's share		U.S. exports to China	Textiles' and apparel's share	
Year	Million dollars	Million dollars	Percent of total	Million dollars	Million dollars	Percent of total
1981	1,824	652	35.7	3,597	1,075	29.9
1982	2,195	849	38.7	2,902	401	13.8
1983	2,182	1,013	46.4	2,159	49	2.3
1984	3,040	1,298	42.7	2,989	146	4.9
1985	3,863	1,401	36.3	3,796	262	6.9
1986	4,672	2,184	46.7	3,076	117	3.8

Source: Compiled from official statistics of the U.S. Department of Commerce.

U.S. imports of textiles and apparel from China have grown significantly during the 1980's, increasing in dollar value by an average annual rate of 27 percent during 1981-86. The growth primarily resulted from the increase in shipments of apparel, which rose by 32 percent annually. In 1986 alone, imports of apparel rose by 68 percent. The real growth rate in terms of Chinese currency had been more dramatic, estimated at 41 percent annually for textiles and apparel.

U.S. imports of textiles and apparel in terms of square yard equivalents (SYE), the unit of quantity used by the United States to monitor imports at the aggregate level, increased by 205 percent during 1981-86 to 1.7 billion SYE in 1986 (table 6-9). The dollar value of these exports, using nominal exchange rate, rose by 235 percent during the period reflecting less than 2 percent increase in the unit value. However, measured in dollars, using the real exchange rate, shipments increased by 488 percent during the period, reflecting an annual increase of 14 percent in the unit value. This growth in China's real unit value resulted from a changing product mix from low-valued yarn and fabric to higher valued products such as apparel. In addition, China, like the other major suppliers faced with tight U.S. quotas, has been trading up to higher value-added goods. The significant devaluation of the Chinese yuan against the dollar, amounting to nearly 50 percent during 1981-86, helped keep prices of Chinese goods low. This increased their competitive advantage not only against U.S.-made goods, but also against those from other foreign competitors such as Taiwan and Japan whose currencies showed minimal fluctuations against the dollar during the period.

Table 6-9
Textiles and apparel: U.S. imports from China, by fibers, 1981-86

(In millions of square yard equivalents)

Item	1981	1982	1983	1984	1985	1986
Cotton	443	438	511	641	602	974
Wool	9	11	15	14	10	17
Manmade fibers	110	221	268	335	366	598
Other	1/	1/	19	32	71	125
Total	562	671	813	1,022	1,049	1,714

1/ Not available.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Although cotton textiles represented 57 percent of U.S. imports from China in 1986, manmade-fiber textiles with their 444 percent growth since 1981, nearly doubled their share to 35 percent in 1986. Consequently, cotton textile share dropped from 79 percent in 1981 to 57 percent in 1986. China's shipments of other fibers, namely products of silk, linen, and ramie grew rapidly, increasing from almost nil in 1981 to 125 million SYE in 1986, accounting for 7 percent of all textile and apparel shipments.

MFA Constraints

The United States currently has a 5-year agreement with China to control imports of textiles and apparel of cotton, wool, and manmade fibers through 1987. 1/ The agreement established specific quota limits for 33 product categories, providing 2-4 percent annual growth rate for quota items. The significant growth in imports of nonquota items from China during the agreement period led to bilateral negotiations and establishment of new quotas on additional categories, mostly apparel and furnishings bringing the current number of categories and sub-categories under specific quota limits to 67. In addition, there are several categories that are currently subject to unilateral restraints by the United States, mostly products of silk blends, linen, or ramie which were covered by the MFA for the first time beginning August, 1986. On five individual product categories, including four categories of the newly covered fibers, the United States and China have bilateral agreements covering imports through December 1991. In terms of trade, approximately 85 percent of China's total shipments to the United States are now covered by quotas compared with 62 percent in 1983 and 21 percent in 1981.

The increasingly tighter restrictions on U.S. imports of wool, cotton, and manmade-fiber products from China has contributed to the increase of its shipments of textiles and apparel that were not previously covered by the MFA, namely items of silk, linen, and ramie. Imports of such products had doubled or nearly doubled each year since 1983 to 125 million SYE in 1986. To stem the growth in these imports, the Administration imposed restraints on some of the goods as discussed above. In addition, the United States is currently negotiating a new overall agreement with China that would cover these and almost all other textile and apparel products.

Competitive Position

The textile industry plays a major role in China's economy. The industry, along with the apparel sector, is the principal source of output, income, and employment, accounting for 18 percent of industrial output and 12 percent of industrial employment. It is also the principal source of foreign exchange earnings, accounting for one-third of China's total exports. As the second largest industry after machinery, the textile industry has been designated as an "important industry" under the seventh 5-year economic development plan, to provide employment opportunities and generate foreign exchange for developmental projects.

1/ The agreement with China, which became a signatory to the MFA in December 1983, was negotiated under Sec. 204 of the Agricultural Act of 1956, which provides the authority for the United States to enter into textile and apparel trade agreements with MFA and non-MFA signatories. During 1987, China also became a signatory to the MFA extension, which among other things, covered silk blends, linen, and ramie products for the first time.

China's major competitive advantages are the price/value relationship of its exports resulting from low manufacturing costs based on low-cost labor, textile materials, and energy; and a pricing system that is not based on true costs. It has the world's largest capacity to produce textiles and, therefore, has the potential to increase its exports considerably.

China's overwhelming comparative advantage results from its relatively abundant supply of labor and consequently its extremely low labor costs, estimated to be roughly 2 percent of U.S. labor costs on an hourly basis in 1985. Offsetting much of that advantage, however, is its very low labor productivity. Measured in terms of net output per worker-hour, China's productivity is estimated to be roughly 4 percent of that of U.S. labor in the textile mill industry. 1/ This lower productivity is reflected in a gross output per worker one-eighth that of a U.S. worker, a figure probably exaggerated because it is measured in Chinese domestic prices which are considerably above world market prices. Moreover, Chinese worker productivity in state-owned enterprises from 1981 to 1985 improved less than a tenth as fast as that in the U.S. industry, although most of this is attributable to a productivity decline of nearly 11 percent from 1981 to 1982.

In addition to the limitations that its low productivity and the limitations its technology impose, China's growth potential is also affected by its limited capacity for high-quality dyeing and finishing, lack of capital and the foreign exchange needed for expansion and upgrading of production capacity, long lead times for delivery of export goods, inadequate management and technical personnel, quality problems, and the growing import restrictions it faces in industrialized country markets.

A major competitive advantage that China has exercised is its ability to adjust cost and price relationships and by fixing the cost of inputs and the price of exports. It has used both price setting and exchange rate adjustment to accomplish the latter. However, despite certain basic cost advantages and subsidization of its capital and possibly other costs, the industry still produces at a domestic price well above the world market price, requiring further major Government financial resources to underwrite its exports.

While China plans to expand the industry's production capacity, it also plans to improve productivity by installing new equipment and renovating existing machinery. Also related are plans to improve the industry's product quality, trade up to higher value-added products, and diversify its product mix. As a result, China's future competitiveness will likely be in the medium-priced, high volume market segments where its cost advantage will make it extremely competitive in the international markets.

1/ Another source, Werner International Management Consultants, Inc., has estimated China's textile industry productivity at 10-15 percent of that in the U.S. textile industry. Productivity calculated in terms of gross output per worker-hour (as opposed to net output per worker-hour), is estimated at 10 to 15 percent of that of the U.S. textile industry.

Foreign Competition

Japan

CHAPTER 7. JAPAN

Textile Industry

Japan's textile industry has a position in the Japanese economy similar to that of the U.S. textile industry in the U.S. economy. In Japan, textile and apparel shipments 1/ accounted for almost 4.6 percent of Japan's total manufacturing shipments in 1984, and U.S. textile and apparel shipments accounted for 5.0 percent of total U.S. manufacturing shipments that year. The Japanese concentrate a larger share of shipments on textiles as opposed to apparel; Japanese textile shipments represented 3.2 percent of Japan's total manufacturing shipments in 1984, and apparel accounted for 1.4 percent. In the United States, shipments of textile mill products and apparel accounted for approximately equal shares of total manufacturing shipments--textiles almost 2.5 percent and apparel 2.6 percent.

The textile industry in Japan, like that in the United States, has been declining in relative importance over the years. From 1965 to 1984, the percentage of textile establishments 2/ to all Japanese manufacturing establishments dropped from 22.4 percent to 20.5 percent, the percentage of textile employees to total manufacturing employees dropped from 17.3 percent to 11.8 percent, and the percentage of textile shipments to total shipments from 11.7 percent to 5.1 percent. 3/

Background

The textile industry has played a major role in Japan's post-war recovery, being one of several industries targeted for rehabilitation. 4/ The industry grew rapidly through the early 1950's; and by 1955, the Japanese placed voluntary export restraints on its shipments of cotton textile products to the United States, as part of a voluntary restraint agreement negotiated with the United States under section 204 of the U.S. Agricultural Act of 1956. In the 1960's, the Japanese textile industry shifted its emphasis from cotton textiles to manmade-fiber textiles because of the restrictions on cotton exports, which by then were controlled by the Long Term Arrangement Regarding International Trade in Cotton Textiles. 5/ These limits on Japanese cotton exports gave developing countries an opportunity to expand their textile

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1/ Manmade fiber shipments are not included.
2/ Includes textile mills, apparel and related product manufacturers, and manmade fiber producers.
3/ Japan Textile News (JTN), The Asian Textile Outlook 1988, "Japan," published in Japan by Osaka Senken, Ltd., p. 10.
4/ U.S. General Accounting Office, Report to the Chairman, Joint Economic Committee, United States Congress, Industrial Policy: Case Studies in the Japanese Experience, Oct. 20, 1982, p. 46.
5/ The Long Term Arrangement Regarding International Trade in Cotton Textiles, established in 1962, set out a framework with which participating countries could regulate trade in cotton textiles. This agreement, initially effective for 5 years, was extended twice--in 1967 and 1970--and by 1973, had 82 signatories.

industries. Japan's exports continued to decline in the early 1970's as a result of the effects of voluntary export restraints placed on its manmade-fiber textile exports to the United States, a rapid appreciation of the yen in 1971 and 1973, and the Japanese implementation of their Generalized System of Preference Tariffs, which provided developing countries easier access to the Japanese market. 1/ The oil crisis in 1973 also adversely affected the industry because of the subsequent rising raw material and fuel costs. 2/ Therefore, by the late 1970's, the Japanese textile and apparel industries found themselves, like the U.S. textile and apparel industries, facing increasing competition from the developing countries, especially Korea, Taiwan, and Hong Kong, and rising production costs and wages at home.

Structure

Japan's textile and apparel industry complex is divided into three segments--the upstream sector, consisting of approximately 85 manmade-fiber producers; the midstream sector, consisting of just over 103,000 textile mill product producing establishments; and the downstream sector, consisting of approximately 48,000 apparel and other finished textile-product manufacturers, wholesalers, and distributors. The textile industry is characterized by a large number of small establishments. In 1983, over 60,000 textile-producing establishments employed fewer than 4 workers. The upstream sector is made up of the large manmade-fiber producers, seven of which together account for approximately 11 percent of the Japanese textile industry's total output. 3/ Most of these Japanese manmade-fiber producers differ from their counterparts in the United States and in Europe, in that the Japanese firms are more involved in the production of yarn, fabric, and, even, apparel, and are not strictly large chemical companies. Some of the Japanese manmade-fiber producers are vertically integrated, producing some yarn and fabric and, in some cases apparel. The midstream sector, consisting of the spinning, weaving, knitting, finishing and dyeing mills is made up of a few large spinning companies and a large number of small and some medium-sized firms. 4 The average weaving establishment has an installed capacity of only about 20 looms, compared with one of the largest vertically integrated spinning companies, which has an installed weaving capacity of 6,000 looms. 5/ Many of the weavers in the midstream sector work on a commission basis for the large manmade-fiber producers and spinning companies.

1/ U.S. General Accounting Office, op.cit., p. 47.
2/ "Textiles and Apparel," Japan Economic Almanac 1986, p. 180.
3/ Ibid.
These companies' share of the industry's total shipments was calculated using these companies' textile sales figures for 1984 published in the report Textile and Apparel Industries - Japan, December 1985, prepared by the U.S. Commercial Specialist, FCS, Osaka, Japan, and the textile industry's total shipments figure for 1984 published in Manmade Fibers of Japan 1986-87, Japan Chemical Fibres Association.
4/ Fieldtrip interview with Nisshinbo Corp.
5/ Ibid.

Establishments and Employment

Although the total number of establishments in Japan's textile industry rose by almost 4 percent between 1970 and 1984, the midstream or textile mill segment of the industry declined by over 9,000 establishments as shown in table 7-1. The greatest reductions occurred in spinning mills, woven fabric mills, and dyeing and finishing mills. The downstream or apparel producing segment of the industry, which accounted for about one-third of all establishments in the industry, increased by almost 45 percent during the period.

Textile industry employment declined considerably as shown in table 7-2. Between 1975 and 1986, the total number of employees in the industry fell by almost 35 percent. Employment in the manmade-fiber sector and in spinning mills declined by over 50 percent.

Table 7-1
Establishments in Japan's textile industry, by sectors, 1970, 1980, and 1984

(Number of establishments)

Item	1970	1980	1984	Percent change 1970 - 1984
Total textile industry.....	146,286	147,968	151,816	3.8
Upstream sector--manmade fiber producers.....	77	87	84	9.0
Midstream sector--textile mills..	112,754	101,955	103,401	- 8.3
Silk reeling.....	686	317	9,949	
Spinning mills.....	1,369	1,022	932	-32.0
Twisting and texturizing.....	10,945	10,115	9,459	-13.6
Woven fabric mills.....	59,378	49,574	43,397	-27.0
Knitting mills.....	16,681	16,722	17,212	3.2
Dyeing and finishing.....	9,152	9,158	8,141	-11.1
Downstream sector--apparel and other finished products manufacturing.....	33,455	45,926	48,331	44.5

Source: Compiled from data in Man-Made Fibers of Japan 1986/87, published by the Japan Chemical Fibres Association.

Factors contributing to the overall declines include rising material costs and wage rates, increased competition from the newly industrialized textile and apparel producing countries (Korea, Taiwan and China), technological advancements made in automating the production process, and a certain amount of consolidation in the industry. The declines in 1986 also reflect deteriorating business conditions caused by the appreciation of the yen. 1/ Current trade literature reports that several cotton spinning mills

1/ "Japan," Comitextil Bulletin, 87/1-2, p. 112.

Table 7-2
Employment in Japan's textile industry, by selected sectors, 1975, 1980, 1982-86

(Number of workers)

Item	1975	1980	1982	1983	1984	1985	1986	Percent change 1975-1986
Textile industry:								
Manmade fiber producers	52,444	31,420	29,152	27,967	26,487	25,386	23,318	-55.6
Spinning mills	135,159	89,087	78,713	73,440	73,692	71,942	65,224	-51.9
Weaving mills	286,826	224,893	205,809	196,073	185,751	179,143	167,281	-41.7
Dyeing and finishing	57,831	47,242	44,455	43,259	41,803	40,608	39,028	-32.6
Knitting mills	94,085	88,737	88,322	85,852	84,071	81,628	78,321	-17.0
Total	844,284	676,810	636,543	607,374	593,051	579,996	550,626	-34.8
Woven apparel manufacturing	176,236	163,080	159,165	151,560	152,519	153,564	151,047	-15.0

Source: Compiled from data in "Japan," Comitextil Bulletin, 87/1-2, p. 125.

have shut down and some of the large spinning companies are planning to cut back their workforces. 1/ In addition, several of the large manmade fiber companies have job reduction programs that plan to cut back employment in the fiber divisions of these companies by approximately 8,000 in the next 2 years. 2/ Some of these workers will move to the nontextile divisions of these companies, especially as these firms continue to diversify into nontextile areas. Some Japanese companies aid displaced workers in finding new jobs. 3/

Current Financial Status of Industry

Reportedly, profits and income levels in general in the textile industry have fallen since the end of 1985, 4/ and one trade source reports that many textile companies are operating at a loss. 5/ The sales of the 7 largest manmade fiber producers declined 21 percent from FY 1985 to FY 1986 and their accumulated ratio of net income to sales fell from 4.3 percent to 3.9 percent during the same period. 6/ Projections made by the Industrial Bank of Japan for FY 1987 indicate that sales will decline only slightly from the FY 1986 level and that these companies will experience a small increase in profit growth because of decreased fixed costs. 7/ The 8 largest producers of cotton yarn also experienced declining profits from FY 1985 to FY 1986 as sales dropped 9 percent, net income dropped almost 25 percent, and the ratio of net income to sales declined from 2.4 percent to 2.0 percent. 8/ The high yen is currently the primary factor affecting the industry's financial status.

Relationship Between Segments of Industry

The Japanese textile industry is characterized by a unique type of "informal" vertical integration, which exists without formal ownership between the large manmade-fiber producers and the weavers and the knitters. Approximately 50 percent of Japan's production capacity for textile mill product manufacturers is accounted for by firms that have a direct link to the large manmade-fiber producers. 9/ The integration is a type of circular flowing distribution channel, with filament yarn produced by the large manmade-fiber producers flowing to the weavers, knitters, and finishers to be made into fabrics, and then the fabrics flowing back to the large manmade-fiber producers for marketing. Most filament fabrics are produced this way, with the manmade-fiber producers retaining ownership of the filament, then the fabric, throughout the process. However, most manmade

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1/ "Textiles," Japan Economic Almanac 1987, p. 166.
2/ Ibid., p. 167.
3/ Fieldtrip interview Levis Strauss, Japan KK.
4/ Comitextil Bulletin, 87/1-2, p./110.
5/ "Last Straw for Japan's Textiles?" The Journal of Commerce.
6/ Industrial Research Department, Industrial Bank of Japan, "Recent Trends and Future Outlook for Major Industries in Japan," August 1987, p. 5.
7/ Ibid.
8/ Ibid., p. 6.
9/ Fieldtrip interview with the Japan Chemical Fibres Association.

fiber staple and a small amount of filament yarn is sold on the open market to trading companies, spinners, or weavers. 1/ The large spinning companies in Japan have similar types of relationships with weavers and knitters. One large spinning company subcontracts out about 50 percent of its textile production. 2/ In general, production of Japanese textiles from fiber to fabric and, even in some cases, apparel is coordinated primarily by either the large manmade-fiber and spinning companies or by trading companies. Some overlap may exist between the two as the trading companies may handle many of the business transactions for the manmade fiber producers or act as intermediaries between the fiber producers and the textile mills.

The large manmade-fiber producers have developed strong relationships with groups of commission weavers over the years. 3/ From the beginning of the manmade fiber industry in Japan up to about 5 years ago, the manmade fiber producers provided their "teams" of commission weavers with technological knowledge, guidance and information, and financial assistance; and therefore, helped to establish a market for their manmade fibers. 4/ The Japan Chemical Fibres Association reported that the financial assistance was "indirect" and consisted of guarantees for the repayment of loans that the mills obtained from financial institutions. 5/ The weaving mills needed instruction on how to handle the new manmade fibers, and many were too small to obtain the capital to acquire the necessary equipment to process the fibers. Although a strong relationship still exists, the manmade-fiber producers no longer provide financial assistance to the mills and some have been attempting to lessen the mills' dependency on them. 6/ Because the manmade-fiber producers are facing increasing competition from Taiwan, Korea, and China in an already competitive market, they are emphasizing relationships with those weavers with the superior technology, creativity, and capability to produce high-quality fabrics. 7/ Currently, manmade-fiber producers continue to provide the mills with technical assistance, quality control, product specifications, and price information.

This special relationship that exists without formal ownership between the segments of the industry allows for a high degree of diversity and specialization to exist within the industry. For example, very few of the large manmade-fiber and spinning companies and the weavers have finishing operations. Most finishing in the industry is performed specifically by finishing companies, which specialize and excel in particular types of finishes. 8/ This allows the industry to have access to a wide variety of finishes and therefore to be able to quickly adapt to the changing fashions. Furthermore, the large companies and the weavers are not burdened with investment in finishing operations or equipment. 9/ The specialization and

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1/ Ibid.
2/ Fieldtrip interview with Nisshinbo Corp.
3/ Fieldtrip interview with Japan Chemical Fibres Association.
4/ Ibid.
5/ Ibid.
6/ Ibid.
7/ Ibid.
8/ Fieldtrip interview with Nisshinbo Corp.
9/ Ibid.

flexibility that this system permits for gives the Japanese textile industry a competitive advantage over some of its foreign competitors, which cannot so economically and quickly adapt to changing fashions.

Distribution Channels

Japan has approximately 10 major trading companies, 1/ all of which are involved to a certain degree in textile sales, both domestic and foreign. In one of the large trading companies, textile business accounted for 11.4 percent of its total turnover of all products, 2/ and another large trading company reported textile trade that accounted for 10 percent of its total revenue. 3/ Industry sources report that the gross margin on textile business of all trading companies is 2.8 percent. 4/

In general, the trading companies are involved in most aspects of the textile industry's distribution processes, including contracting of production and handling the majority of textile importing and exporting. One Japanese trade source estimates that 70 percent of Japan's woven fabric exports to the United States and Europe were handled by trading companies, and 30 percent were handled by the fiber producers. 5/ The trading companies utilize different forms of involvement. They may assume ownership of the fabric, in which case they buy the yarn or filament fiber and commission weavers to produce the fabric, which they then export under their own labels. In other cases, they may act as middlemen, buying the yarn from spinners and selling it to weavers while providing the financing. Generally, trading companies do not sell in the Japanese market where the local manmade-fiber producers' labels and especially foreign labels are more prestigious. 6/ In other cases, the trading companies also act as distributors between the Japanese textile mills and foreign apparel firms. Duties performed by the trading companies include day-to-day monitoring of orders and the coordination of delivery and payment. Some U.S. quotas are owned by the trading companies. 7/ Trading companies will also maintain inventories of commodity goods, but ship fashion products on an order basis only. 8/ The use of trading companies in the industry is yet another form of specialization and allows for flexibility, which is so important in the rapidly changing apparel fashion market. Because the trading companies handle multiple orders, apparel producers worldwide are able to place small orders with the trading companies, which group the similar orders together and approach the textile mills with one larger order. 9/

1/ Fieldtrip interview with C. Itoh and Co., Ltd.
2/ Ibid.
3/ Fieldtrip interview with Marubeni Corp.
4/ Fieldtrip interview with Kanebo, Ltd.
5/ Fieldtrip interview with Toray Industries, Inc.
6/ Ibid.
7/ Fieldtrip interview with Toyobo Co., Ltd.
8/ Fieldtrip interview with Marubeni Corp.
9/ Fieldtrip interview with the Kashiyama Co.

Marketing Practices

Japanese textile companies tend to establish long term relationships with their customers. 1/ For example, in Hong Kong, Japan's second largest market, a Japanese fabric manufacturer may be represented by one of the large Japanese trading companies which have offices there and which maintain their own stocks of fabric, or they may be represented by smaller local trading companies, or have their own agents. These agents frequently visit their clients, provide samples, and make weekly follow-up visits checking on deliveries. Most Japanese representatives in these foreign markets are knowledgable in the mechanics of trade and will handle the financing, shipping, and insurance for example. 2/

Foreign Investment

Some Japanese textile companies have plants in the developing countries of Asia. 3/ As of early 1985, members of the Japan Chemical Fibres Association had a total of 121 joint venture companies abroad in such countries as Korea, Taiwan, Thailand, Hong Kong, Indonesia, Malaysia, the Philippines, and also in Brazil, Nigeria, and the United States. 4/ However, the amount of foreign investment by the Japanese textile industry is declining, because much of the industry does not view foreign investment as part of its competitive strategy. On the contrary, according to Japanese industry sources, the large manmade-fiber companies laid the groundwork for the textile industries of some of their strongest competitors--Taiwan and Korea. 5/ In some cases, the Japanese companies supplied the capital to finance the purchasing of plants and equipment, developed the manufacturing processes, and provided the technical assistance. 6/ The following tabulation shows trends in foreign investment by the textile industry during 1951-83: 7/

Period 1/	Total Number of Cases
1951-62	40
1963-67	80
1968-71	166
1972-73	255
1974-77	183
1978-81	251
1982-83	116

1/ Fiscal year basis.

1/ International Trade Administration, U.S. Department of Commerce, "Hong Kong's Textile Fabrics Market," p. 9.
2/ Ibid., p. 10.
3/ "Last Straw for Japan's Textiles?," The Journal of Commerce.
4/ "Present Situation of Japanese Joint Venture Companies," JTN, No. 364, March 1985, p. 46.
5/ Fieldtrip interview with Teijin, Ltd.
6/ Fieldtrip interview with the Japan Chemical Fibres Association.
7/ Japan Chemical Fibres Association, Man-made Fibers of Japan 1986/87, p. 70; original source is "Overseas Investment Activities of Japanese Enterprises," published by MITI.

The peak years for foreign investment were 1972 to 1981. At least 61 percent of cases shown above included investment in Asian countries, 11 percent occurred in North America, 13 percent in Latin America, and most of the remainder in Europe and Africa. Overall investments during 1951-83 totaled $1.1 billion in Asia, $227 million in North America, $390 million in Latin America, and $209 million in Europe and Africa. 1/ One of the original reasons for diversifying into foreign countries was to set up spinning and weaving mills in the lower labor cost countries and therefore create a market for Japanese manmade fiber exports. 2/ In addition, the foreign governments encouraged foreign investments. But as the foreign countries began to build their own textile industries, their governments emphasized local ownership. 3/ In general, some of the joint ventures were 50/50 ventures and turned out not to be as profitable as expected. In spite of the 50/50 ventures, the Japanese companies were expected to bear the greater amount of financial burden. 4/ Consequently, many Japanese companies closed some of their foreign operations.

Producers' Shipments and Production

Japan's shipments of textile mill products totaled $33.9 billion in 1985; 5/ this compares with U.S. shipments of textile mill products of $52.6 billion in the same year. Production of textile mill products, as measured by a production index reported by the Bank of Japan, fluctuated during 1980-86, falling overall 6 percent, as shown in the following tabulation (1980=100): 6/

Year	Index
1980	100.0
1981	98.4
1982	97.4
1983	96.8
1984	99.0
1985	98.3
1986	94.3

The index follows world economic conditions from 1980-84. Production declined during the world recession of 1980-83 and recovered in 1984, reflecting rising exports especially to the United States. Domestic demand for Japanese textiles also improved as demand for apparel recovered and demand rose for nonapparel items like automobile-related products. 7/ However, this situation

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1/ Ibid.
2/ Fieldtrip interview with Toray Industries, Inc.
3/ Fieldtrip interview with Teijin Ltd.
4/ Ibid.
5/ This figure was calculated by converting Japan's 1985 shipments figure of 8,087,000 million yen published in The Bank of Japan's Economic Statistics Annual 1986, into dollars using the 1985 average annual exchange rate of 238.54 yen to the U.S. dollar as reported by the International Monetary Fund.
6/ Research and Statistics Department, The Bank of Japan, Economic Statistics Annual 1986, March 1987.
7/ Japan Chemical Fibres Association, Man-Made Fibers of Japan 1985/86, p. 1.

changed in 1985 as the Japanese textile industry entered a period of adjustment in which exports of textile mill products declined 7.3 percent in 1985 from the level in 1984. In 1986, as a response to the declining exports caused largely by the high yen, textile production declined approximately 4 percent from the 1985 level as many Japanese textile companies acted cautiously in planning their production. 1/

Japan's domestic production of manmade fibers, yarns, fabrics, apparel, and other textile products, during 1980-86, is shown in table 7-3. Production of most of the major product categories declined during the period, with the most significant declines occurring in 1986, primarily because of reduced demand for exports caused by the high yen. Production of manmade fibers and manmade-fiber fabrics, two of the major products manufactured by the Japanese textile industry complex, declined by 4 and 9 percent, respectively. Production of synthetic filament fabrics such as polyester were especially affected in 1985 and dropped 10 percent that year from the previous year's level. 2/ Some of the decrease in manmade fiber textiles reflected a worldwide fashion shift to natural fibers. Production of apparel also decreased in 1986 from 1985 levels.

Japan's textile industry has emphasized the use of manmade fibers and blends. In 1986, manmade fibers accounted for 52 percent of Japan's total yarn production, (cotton accounted for 37 percent); and manmade-fiber fabrics, including rayon, accounted for 60 percent of total fabric production in 1986, (cotton fabric accounted for 33 percent of the total). This emphasis on manmade fibers, however, has put Japan's textile industry at a slight disadvantage in the past few years because of the worldwide fashion trend towards natural fibers.

Capacity

Capacity declined in the textile industry, according to MITI's index of production capacity, as shown in the following tabulation (1980=100): 3/

Year	Index
1981.....	99.6
1982.....	97.7
1983.....	95.4
1984.....	93.5
1985.....	91.8
1986.....	89.2

1/ Comitextil, Bulletin 87/1-2, p. 109-110.
2/ Japan Chemical Fibres Association, Man-Made Fibers of Japan 1986/87, p. 1.
3/ Research and Statistics Department, The Bank of Japan, Economic Statistics Annual 1986, March 1987, p. 288.

Table 7-3
Textiles and apparel: Japan's production, by types, 1980-86

Item	1980	1981	1982	1983	1984	1985	1986 1/
Manmade fibers (1,000 tons)	1,832	1,798	1,759	1,786	1,834	1,834	1,760
Manmade-fiber yarn 2/ (1,000 tons)	735	703	724	696	730	702	3/ 620
Cotton yarn (1,000 tons)	504	456	470	438	437	437	445
Linen yarn (1,000 tons)	24	17	14	15	15	13	4/
Wool yarn (1,000 tons)	119	114	120	110	121	123	112
Silk yarn (1,000 tons)	18	17	15	15	13	12	4/
Yarn subtotal (1,000 tons)	1,400	1,307	1,343	1,274	1,316	1,288	3/ 1,201
Manmade-fiber fabric (million m^2)	3,159	3,121	3,024	3,219	3,297	3,068	3/ 2,873
Rayon fabric (million m^2)	882	775	740	708	697	719	700
Cotton fabric (million m^2)	2,202	2,067	2,030	2,079	2,090	2,061	1,974
Linen fabric (million m^2)	27	20	25	24	25	26	4/
Wool fabric (million m^2)	294	291	295	302	327	326	313
Silk fabric (million m^2)	152	137	136	122	115	115	4/
Woven fabric subtotal (million m^2)	6,716	6,411	6,250	6,454	6,551	6,315	6,001
Knit fabric (1,000 tons)	170	175	175	167	172	173	163
Tire cord fabric (1,000 tons)	105	101	80	94	101	95	4/
Fishing nets (1,000 tons)	30	26	27	27	26	26	4/
Dry-system nonwoven fabrics (1,000 tons)	70	72	77	79	83	83	4/
Narrow fabrics (1,000 tons)	24	23	24	23	25	25	4/
Towel (1,000 tons)	65	58	55	52	59	62	4/
Ropes, cord, and twine (1,000 tons)	49	39	40	39	42	40	4/
Carpets and rugs (million m^2)	90	84	88	86	95	90	4/
Lace (million m^2)	82	82	81	81	88	83	4/
Blankets (million m^2)	48	48	49	47	46	47	4/
Clothing (million pieces)	4/	2,766	2,784	2,742	2,836	2,750	2,649

1/ Data reported in Comitextil, Bulletin 87/1-2, p. 117.
2/ Includes production of manmade fiber textured yarns and manmade fiber spun yarns.
3/ Estimated based on data reported in Comitextil Bulletin 87/1-2, p. 117.
4/ Not available.

Source: Japan Chemical Fibres Association, Man-Made Fibers of Japan 1986/87 and from Comitextil, Bulletin 87/1-2.

The decline reflects the industry's efforts to alleviate a persistent overcapacity problem that has existed since at least the mid 1950's and which resulted partially from rapid technological advancements made in the production processes. The Government emphasizes modernization and has assisted the industry through several restructuring and scrapping programs to modernize and to reduce the overcapacity problem. However, in one case, the Government's scrapping program actually aggravated supply-demand imbalances in the fabric market by requiring the replacement of one shuttle loom with a higher capacity producing water jet loom. 1/

The textile mill industry's declining capacity is illustrated further in table 7-4, which shows installed capacity by type of equipment. The number of operable spindles fell 22 percent to 11.4 million spindles in 1985 from the level in 1974. The number of weaving looms declined almost 31 percent during the same period to almost 480,422 looms, and the number of knitting machines dropped 32 percent to 60,557 machines in 1985.

Government Assistance

Early Government assistance was aimed at solving the overcapacity problem. Spindle installation was limited under laws passed in 1956 and 1964 in an effort to deal with overcapacity in the spinning industry. 2/ The Textile Act of 1967 emphasized scrapping surplus equipment along with modernizing equipment and encouraging horizontal mergers as a means to help the Japanese textile industry achieve long-term goals. 3/ Also in the mid-1960's, as part of a major policy to rationalize and modernize the textile mill products segment of the industry, the Japanese Government instituted a series of scrapping programs to reduce capacity, and also offered preferential financing and tax incentives. 4/ The goals set in these initial scrapping programs were not met, and the consequence of the Government's overall textile assistance plan was an improvement in the financial conditions of the designated knitting, dyeing, and finishing mills, but no improvement in the spinning mills. 5/

Further scrapping efforts took place from 1978 to 1980, at which time certain segments of the textile mill industry, such as the staple fiber and wool spinning, the twisted yarn manufacturing, the cotton weaving, and the manmade-fiber filament weaving segments, scrapped between 10 and 20 percent of their production capacity. 6/ MITI reported that this Government assistance regarding the scrapping of old equipment is scheduled to expire at the end of 1987. 7/

1/ Fieldtrip interview with the Industrial Bank of Japan, Limited.
2/ U.S. General Accounting Office, Report to the Chairman ... , Industrial Policy: Case Studies in the Japanese Experience, Oct. 20, 1982, p. 49.
3/ Ibid.
4/ Ibid.
5/ Ibid, p. 51.
6/ Ibid.
7/ Fieldtrip interview with MITI.

Table 7-4
Installed capacity in Japan's textile mill industry, by types of equipment, 1974 and 1981-85

Type of equipment	1974	1981	1982	1983	1984	1985
Operable spindles (1,000 spindles).....	14,629	12,406	12,187	11,838	11,626	11,433
Weaving looms (number of looms).....	691,322	577,322	553,677	532,348	514,829	480,422
Special textile processing machines:						
Tire-cord weaving looms (number of looms).....	486	446	431	420	422	415
Towel weaving looms (number of looms)....	17,028	15,934	15,254	15,176	15,131	14,050
Jute weaving looms (number of looms).....	1,227	412	323	301	184	107
Hose weaving looms (number of looms).....	119	104	104	104	99	99
Knitting machines (number of machines)...	89,085	67,083	65,981	62,914	62,282	60,557
Carpet weaving looms (number of looms)...	471	275	260	258	279	280
Tufting machines (number of machines)....	125	184	194	195	214	225
Needle-punching machines (number of machines).....	180	141	142	153	145	144
Narrow weaving looms (number of looms)...	10,535	8,408	8,275	7,896	7,766	7,669
Lace machines (number of machines).....	1,964	1,345	1,350	1,345	1,454	1,400
Power sewing machines (number of machines).....	216,791	230,666	227,068	222,740	224,064	223,971

Source: Japan Chemical Fibres Association, Man-Made Fibers of Japan, 1986/87.

MITI's current policy for the textile industry is outlined in "The Textile Industries Vision," published in 1983, which advised the industry to move away from the production of commodity products towards the production of high-valued goods. 1/ The paper also emphasized the need for communication and "solidarity" between the different sectors of the industry, specifically between the large manmade-fiber and spinning companies and the smaller textile companies. 2/ MITI feels that the industry is too fragmented and that a better flow of information between all sectors and their consumers must exist to improve the industry's competitiveness. 3/

The Government recognizes the importance of the industry as a source of employment in specific geographic areas and has established programs to assist especially the small and medium-sized firms. In addition to the scrapping programs described previously, the Japanese Government has assisted the smaller firms through two special financing programs. In 1974, the Law of Extraordinary Measures for the Structural Improvement of the Textile Industry was enacted. 4/ The law, which was extended every 5 years since and is scheduled to expire in 1989, is administered by MITI and applies only to small-and medium-scale companies. Under the law, local unions 5/ representing these textile companies meet and decide on structural changes and policy issues for the textile firms to follow. 6/ The law also establishes a credit system administered by the "Textile Industry Structural Improvement Business Association." The firms contribute funds to the Association, which qualifies them to receive loans 20 times that amount. At the end of FY 1986, the Association's outstanding credit debt totaled 2.8 billion yen. 7/ Small and medium-sized firms in the textile industry also are eligible for low-interest-rate loans from National or Government banks under a credit program, which is provided to all small and medium-sized businesses in Japan. 8/ Other than the previously mentioned programs, a spokesman for MITI stated that there are no other major Government programs in effect to assist the textile industry. 9/ Industry spokesmen for the larger firms report little Government assistance for the textile industry as a whole and do not expect any increased assistance in the future other than policy direction.

Domestic Consumption

Japan is reportedly the second largest market for textiles and apparel in the world after the United States. Japan's per capita consumption of textiles and apparel 10/ is approximately 80 to 85 percent of U.S. levels; in 1985, this

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1/ Ibid.
2/ Ibid.
3/ Ibid.
4/ Ibid.
5/ These unions are not labor unions, but include such representative groups as the chambers of commerce.
6/ Ibid.
7/ Ibid.
8/ Fieldtrip interview with the U.S. Consulate General in Osaka.
9/ Fieldtrip interview with MITI.
10/ Textile fibers are not included in these calculations; only textile mill products and apparel.

per capita consumption figure for Japan totaled approximately $381.80 1/ compared with $447.85 for the United States. Japanese domestic consumption of textiles--yarn, fabrics, and made-up goods--rose overall 23 percent from 1970 to 1986 and is projected to increase 7 percent in 1987, as shown in the following tabulation (in thousands of metric tons). 2/

1970	1,444
1975	1,309
1980	1,706
1985	1,784
1986	1,772
Projected 1987	1,901

Imports accounted for an increasing share of domestic consumption, from 4 percent in 1970 to 28 percent in 1986, and are projected to account for 29 percent in 1987. 3/ Industry sources claim that the Japanese domestic market is oversupplied by the domestic industry and by increasing amounts of imports from Korea, Taiwan, China, and other Asian suppliers. 4/

Investment in Plant and Equipment

The Japanese textile industry guided by the Government's restructuring laws has been trying to rid itself of outdated machinery and upgrade its technology. Investment in plant and equipment by a sample of firms in the textile industry totaled 110,300.0 million yen in 1986 or $654.5 million using the average 1986 exchange rate of 168.52 yen per U.S. dollar. 5/ This investment, reported in terms of yen, fluctuated during 1978-85, but increased overall 62 percent. Investment in 1986 declined 18 percent from the 1985 level, reflecting the cautious outlook of the textile industry. Over 55 percent of this sample of the industry's investment was accounted for by synthetic fiber producers in 1986, as shown in table 7-5. An additional 17 percent was accounted for by cotton spinning enterprises.

In FY 1985, the capital investments of the seven major manmade-fiber producers accounted for an average of 6.6 percent of their total FY 1985

1/ This figure is affected by the value of the yen and may be slightly understated because of the appreciation of the yen.
2/ Source of domestic consumption data is from material supplied to Commission staff in fieldtrip interview with the Marubeni Corp.
3/ Ibid.
4/ U.S. Department of Commerce, Market Research Study, "Textiles in Japan," July 1984, p. I-2.
5/ Compiled from data reported in Man-Made Fibers of Japan 1986/87, published by the Japan Chemical Fibres Association. The original source of the data is "Plant and Equipment Plans in Major Industries," published by MITI, and includes coverage of between 114 and 170 firms during the period.

sales, and ranged from 4.5 percent of total sales to 8.7 percent. 1/ These companies' capital investments are estimated to have declined, together, an average of 8.8 percent between FY 1985 and FY 1986. 2/ The declines were substantial in some of the major companies, ranging from almost 21 percent to 44 percent. 3/

Table 7-5
Investment in plant and equipment by Japan's textile industry, 1/ by segments of the industry, 1978, 1980, and 1982-86

(In millions of yen)

Segment	1978	1980	1982	1983	1984	1985	1986
Fiber production:							
Viscose rayon and cupra	4,600	7,300	7,500	2,900	9,900	10,400	8,400
Acetate	700	1,100	1,500	2/	2/	2/	2/
Synthetic fibers	35,900	46,700	64,200	48,700	62,900	77,400	62,000
Spinning:							
Rayon spinning	700	500	600	1,000	900	900	300
Synthetic fiber spinning	3,300	5,500	3,100	2,400	3,200	2,000	1,500
Cotton spinning	14,600	15,800	11,900	12,900	18,500	20,200	19,000
Wool spinning	4,000	5,000	4,100	6,500	10,600	1,400	5,400
Linen spinning	1,200	1,500	1,000	1,200	2/	2/	2/
Dyeing and fishing	9,800	9,600	13,500	1,700	11,400	10,100	7,600
Other	8,100	9,200	5,100	5,400	4,200	3,300	3,700
Total	83,000	102,200	111,000	99,400	124,800	134,600	110,300

1/ Includes investments of a sample of between 114 and 170 enterprises in the textile industry.
2/ Not available.

Source: Compiled from Japan Chemical Fibres Association, Man-Made Fibers of Japan 1986/87. Original source is "Plant and Equipment Investment Plans in Major Industries, published by MITI.

Research and Development Expenditures

The major textile companies following well-established Japanese industrial strategy have been reinvesting their profits in research and development to

1/ The average percentage decline was calculated using FY 1985 capital outlays and FY 1986 capital investment for the 7 major firms reported in the Japan Economic Almanac 1986, p. 182, and the Japan Economic Almanac 1987, p. 167, respectively.
2/ "Textiles," Japan Economic Almanac 1987, p. 167.
3/ Ibid.

continually improve their technological position. Expenditures for research and development in Japan's textile and apparel industries grew 36 percent from almost $2.1 billion in FY 1982 to $2.8 billion in FY 1985. 1/ However, this rate of growth was about half that of the rate for all Japanese industries. None of the large manmade-fiber companies plan to cut back on research and development. They are actively searching for nontextile areas to diversify into because of the increased competition from imports and the bleak textile export situation. 2/ Manmade fiber-producers, in particular, have been hurt by the high value of the yen because they are heavily export oriented; one industry source reported that exports of textiles account for approximately 40 percent of their sales. 3/ The fiber and textile mill companies are also attempting to cutdown on production costs and develop more efficient and energy-saving production facilities using Japan's advancements in electronics, for example. The industry is also utilizing research and development efforts to develop new materials, such as artificial leather and composite materials of natural and chemical fibers. 4/ One of the large textile spinning companies devotes 70 percent of its total research and development efforts to textiles, constantly working on the development of new textile products in order to compete with the new supplying countries, such as Taiwan, Korea, and China. 5/

Labor Productivity Comparisons

Productivity levels in the textile industries in the United States and Japan are similar, in spite of Japan's large number of small firms. It may be that the advanced technology of the large and medium-sized firms make up for the less productive small firms. In Japan in 1984, labor productivity as measured by the value added per wages in constant dollars totaled $2.33 compared with $2.39 for the United States. 6/ The value added per employee hour, another measure of productivity, totaled $14.76 in Japan compared with

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1/ These data were reported in material provided to Commission staff in Tokyo by MITI and does not include research and development expenditures for the manmade fiber companies.

2/ "Textiles," Japan Economic Almanac 1987, p. 167.

3/ Fieldtrip interview with the Industrial Bank of Japan, Ltd.

4/ "Textiles and Apparel," Japan Economic Almanac 1986, p. 182.

5/ Fieldtrip interview with Kanebo, Ltd., a large spinning company that has diversified into other textile areas and nontextile areas such as cosmetics, foodstuffs, and biotechnology.

6/ Data used to compile the Japanese textile industry's productivity as measured by the value added per constant wages included the textile industry's 1984 value added, salary paid all employees, and the wholesale price index, and Japan's consumer price index for all products. These data were taken from the Research and Statistics Department of the Bank of Japan's Economic Statistics Annual 1985, March 1986. Data used to compile the same ratio for the U.S. textile mill industry (SIC 22) included 1984 value added and salary for all employees in the industry, published by the U.S. Department of Commerce in the 1984 Annual Survey of Manufactures. Also included were the Producer Price Index for textiles and apparel and the Consumer Price Index for all products published by the U.S. Bureau of Labor Statistics.

$14.02 in the United States. 1/ Wages in the Japanese textile industry accounted for 56 percent of this labor productivity figure, whereas wages accounted for a slightly higher portion of labor productivity in the United States--62 percent. In 1985/86, wages paid in the Japanese and U.S. textile industries measured in dollar terms and taking into consideration a monetary value for other benefits received by Japanese textile workers, were similar--$8.20 per hour in Japan and $8.67 in the United States. 2/ However, this wage equality changed dramatically in 1987 after the appreciation of the yen, raising the Japanese hourly wage in U.S. dollars to $11.99 per hour compared with the U.S. wage of $9.24. 3/

Labor productivity in the Japanese textile industry grew at a similar, but slightly slower rate than that in the United States during 1981-85. Labor productivity in the Japanese textile industry grew at an average annual rate of 3.0 percent during that period 4/ compared with 3.8 percent for the U.S. textile industry. 5/

Production Cost Comparisons

Production-cost comparisons published by the International Textile Manufacturers Federation reported that Japan's total costs for spinning one kilogram of corded 100-percent cotton staple yarn totaled approximately $2.50 in 1985 compared with $2.27 in the United States. 6/ In Japan, raw materials

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1/ Data used to compile the Japanese textile industry's productivity as measured by the value added per employee hour included the textile industry's 1984 value added, a current exchange rate of 146 yen per U.S. dollar, and the average monthly hours worked by all regular employees in Japanese manufacturing. Data on hours worked by the Japanese textile industry were not available. These data, except for the exchange rate were taken from the Research and Statistics Department of the Bank of Japan's Economic Statistics Annual 1985, March 1986. Data used to compile the same U.S. productivity ratio included 1984 value added for the U.S. textile mill industry (SIC 22) and the annual number of employee hours worked in the industry published by the U.S. Bureau of the Census in 1984 Annual Survey of Manufactures. The value added was deflated using the Producer Price Index for textiles and apparel.

2/ Werner International Management Consultants, Inc., "Spinning and Weaving Labour Cost Comparisons," Winter 1985/86, Brussels and New York.

3/ Werner International Management Consultants, Inc., "Spinning and Weaving Labour Cost Comparisons," Winter 1986/87, Brussels and New York.

4/ This figure is based on the labor productivity index for the textile industry as reported in the Quarterly Journal of Productivity Statistics, No. 109, April-June 1985, published by the Productivity Research Institute, and reflects the increases in the productivity index from year-to-year, and for 1985, reflects the increase in the productivity index from the second quarter 1984 to the second quarter 1985.

5/ This figure is based on a productivity index for the U.S. textile industry developed by the staff of the U.S. International Trade Commission from data published by the U.S. Bureau of the Census in Annual Survey of Manufactures.

6/ International Textile Manufacturers Federation, 1985 International Production Cost Comparison, Spinning/Weaving.

accounted for 61.9 percent of the total cost of spinning the yarn, whereas in the United States, raw materials accounted for 59.2 percent. Capital costs as a percent of total cost were also similar between the two countries--16 percent in Japan and 15.7 in the United States, although the capital interest rate was very different--7.4 percent in Japan and 10.5 percent in the United States in 1985. Labor costs accounted for a higher proportion in the U.S. textile industry at 14.8 percent compared with Japan's 8.6 percent. However, power costs appeared to partially make up for this labor-cost differential as they accounted for 7.2 percent in Japan and 4.4 percent in the United States.

In a comparison of total costs of weaving one yard of an average quality 100-percent cotton fabric, total costs of the two countries were also very similar--$0.764 for Japan and $0.755 for the U.S. textile industry. 1/ Again, raw material costs in Japan accounted for a higher proportion of the total cost at 37.7 percent, compared with the United States, where raw materials accounted for 33 percent. Capital costs in both countries accounted for almost the same proportions--27.1 percent in Japan and 26.5 percent in the United States. Labor costs accounted for a higher proportion in the United States at 26.1 percent compared with 16.5 percent in Japan. Again power costs partially offset this differential. In Japan, power costs accounted for 10.5 percent, whereas in the United States, they accounted for 6.2 percent. Japanese industry sources claim that raw material costs for manmade fibers are also higher in Japan than in the United States because Japan uses more expensive imported oil, whereas the U.S. industry uses natural gas in the manufacture of these fibers. 2/

Foreign Trade in Textiles

Japan's total exports of textiles, (fibers, yarns, fabrics, and made-up goods, including apparel), declined overall by 26 percent from 1983-86, with the greatest decline occurring from 1985 to 1986, when exports fell by 22 percent, reflecting the influence of the high value of the yen, in spite of many of the Japanese textile companies' efforts to reduce production costs and to raise unit prices to make up for the appreciation of the yen. 3/ Imports also declined during 1983-86, but only by about 4 percent. Therefore, Japan's textile industry experienced a dramatic drop in its textile trade surplus, from 367.8 billion yen in 1983 to 1.2 billion yen in 1986 as shown in table 7-6. In terms of dollars, Japan experienced a trade deficit in textiles in 1986 of $34 million. MITI estimates that imports, in terms of quantity, will exceed exports in FY 1987 4/ for the first time since 1965, when MITI began projecting future domestic consumption trends. 5/

1/ Ibid.
2/ Fieldtrip interview with Unitika, Ltd.
3/ JTN, The Asian Textile Outlook 1988, "Japan," p. 21.
4/ FY 1987 covers the period April 1987 to May 1988.
5/ JTN, The Asian Textile Outlook 1988, "Japan," p. 15.

Table 7-6
Textiles and apparel: 1/ Japan's exports, imports, and trade balances, 1982-86

Item	1982	1983	1984	1985	1986
Exports:					
Million yen....	1,499,316	1,571,871	1,598,723	1,496,193	1,161,342
1,000 dollars..	5,917,145	6,408,108	6,511,010	5,971,372	4/ 6,550,595
Imports:					
Million yen....	2/	1,204,082	1,506,628	1,455,421	1,160,164
1,000 dollars..	5,404,442	4,768,053	5,964,864	5,713,774	4/ 6,516,559
Trade balance:					
Million yen....	2/	367,789	92,095	40,772	1,178
1,000 dollars..	512,703	1,640,055	546,146	257,598	-34,036

1/ Textiles and apparel refers to textile fiber (including wool tops) and their wastes, and yarns, fabrics, clothing, and other textile made-up goods.
2/ Not available.
3/ F.o.b. value.
4/ Dollar value for 1986 was estimated on the basis of trends reported in Comitextil, Bulletin 87/1-2, pp. 121-123.
5/ C.i.f. value.

Source: Compiled from Textile Exports of Japan, 1985, published by the Institute of Textile Trade Research and Statistics, and Comitextil, Bulletin, 87/1-2.

Over one-half of the value of Japan's textile exports are concentrated in fabrics, with a strong emphasis in manmade-fiber fabrics, as shown in table 7-7. In 1986, 73 percent of the total value of Japanese fabric exports, in terms of yen, consisted of manmade-fiber fabrics. Made-up textile goods, including apparel, home furnishings, floor coverings, etc., accounted for an additional 23 percent of the total export value, in yen terms, in 1986, and yarns accounted for 17 percent of the total. Again manmade-fiber yarns dominated the yarn exports, accounting for 76 percent of the total value, in yen terms, in 1986. Apparel alone, accounted for only about 10 percent of total textile exports.

Specifically, Japan's major product export is polyester filament woven fabric, which experienced a decline in 1986 because of strong world demand for natural fibers, the appreciation of the yen, increased competition from Korea, and slower demand for these fabrics in the Middle East. 1/

Imports of raw fibers and made-up goods dominate Japan's textile imports, accounting for 27 percent and 50 percent, respectively, of the total yen value in 1986, as shown in table 7-8. In general, imports of textiles made from fibers other than manmade fibers dominate the import market. Raw cotton and raw wool imports accounted for 87 percent of the total yen value of all fiber

1/ JTN, The Asian Textile Outlook 1988, "Japan," p. 22.

Table 7-7
Textiles: Japan's exports, by commodity types, 1982-86

Item	1982	1983	1984	1985	1986
Fibers: 2/					
1,000 dollars	596,514	614,709	624,255	594,467	650,614
Million yen	152,766	152,956	156,157	151,845	117,520
Manmade fibers (million yen)	3/	139,527	139,613	136,767	109,115
Cotton (million yen)	3/	3,034	3,173	3,030	1,284
Wool (million yen)	3/	1,759	1,621	1,481	694
Silk (million yen)	3/	2,170	3,518	2,017	890
Yarn:					
1,000 dollars	923,015	1,008,851	1,044,595	892,859	1,029,377
Million yen	251,823	266,568	276,062	238,752	194,879
Manmade fibers (million yen)	3/	191,973	197,522	182,374	148,483
Cotton (million yen)	3/	10,683	10,006	7,967	7,217
Wool (million yen)	3/	41,133	38,947	29,465	22,690
Silk (million yen)	3/	10,009	12,452	5,660	3,256
Fabrics:					
1,000 dollars	3,041,336	3,340,411	3,288,173	3,067,818	3,401,290
Million yen	758,728	805,983	785,661	745,527	584,283
Manmade fibers (million yen)	3/	619,132	580,339	545,398	426,553
Cotton (million yen)	3/	153,044	165,306	158,896	124,331
Wool (million yen)	3/	13,284	15,315	15,857	13,637
Silk (million yen)	3/	13,500	15,018	16,495	11,611
Knit fabrics:					
1,000 dollars	209,589	213,978	205,172	221,380	229,767
Million yen	51,785	51,053	48,434	53,914	39,477
Made-up goods:					
1,000 dollars	1,018,804	1,102,820	1,219,189	1,101,377	4/ 1,144,044
Million yen	330,309	346,364	380,843	360,069	264,660
Other:					
1,000 dollars	127,888	127,339	129,626	93,470	98,368
Million yen	46,095	51,053	48,434	53,914	39,477
Total:					
1,000 dollars	5,917,145	6,408,108	6,511,010	5,971,371	6,553,460
Million yen	1,499,316	1,571,871	1,598,723	1,496,193	1,161,342

1/ Dollar value data for 1986 are estimated using trends reported in Comitextil, Bulletin 87/1-2, p. 121.
2/ Includes wool tops and textile fiber wastes and probably does not include raw cotton.
3/ Not available.
4/ In this category, wearing apparel accounts for approximately 40 percent of the total dollar value of made-up goods in 1985 and totaled $428.6 million that year.

Source: Dollar values were compiled from Textile Exports of Japan, 1985, and yen values are compiled from Comitextil, Bulleting 87/1-2.

Table 7-8
Textiles: Japan's imports, by commodity types, 1982-86.

Item	1982	1983	1984	1985	1986
Fibers: 1/					
1,000 dollars 2/	2,324,046	2,073,907	2,481,248	2,152,277	1,895,611
Million yen	3/	493,222	586,284	522,013	318,183
Manmade fibers (million yen)	3/	6,971	6,426	5,925	5,792
Cotton (million yen)	3/	272,089	316,407	254,614	140,195
Wool (million yen)	3/	166,342	210,412	215,411	135,960
Silk (million yen)	3/	31,684	24,675	22,410	16,188
Yarn:					
1,000 dollars 2/	537,521	478,320	769,531	713,720	655,390
Million yen	3/	113,845	182,246	173,295	110,367
Manmade fibers (million yen)	3/	23,943	28,418	28,556	20,675
Cotton (million yen)	3/	54,372	104,353	98,626	55,721
Wool (million yen)	3/	13,708	16,203	13,156	13,377
Silk (million yen)	3/	11,710	20,289	20,083	9,660
Fabrics:					
1,000 dollars 2/	692,545	647,990	763,257	751,577	897,969
Million yen	3/	154,966	182,261	181,626	153,407
Manmade fibers (million yen)	3/	30,271	28,825	27,810	25,904
Cotton (million yen)	3/	47,877	72,710	67,036	52,365
Wool (million yen)	3/	43,919	40,668	39,492	34,485
Silk (million yen)	3/	24,015	26,676	34,659	30,303
Knit fabrics:					
1,000 dollars 2/	34,425	21,099	23,358	21,851	3/
Million yen 4/	3/				
Made-up goods: 5/					
1,000 dollars 2/	1,815,906	1,546,737	1,927,469	2,074,348	2,982,477
Million yen	3/	442,048	555,838	578,487	578,206
Total:					
1,000 dollars 2/	5,404,442	4,768,053	5,964,864	5,713,774	6,516,388
Million yen	3/	1,204,082	1,506,628	1,455,421	1,160,164

1/ Includes wool tops and textile fiber wastes and probably does not include raw cotton.
2/ Dollar value data for 1986 are estimated using trends reported in Comitextil, Bulletin 87/1-2, p. 121.
3/ Not available.
4/ Imports of knit fabrics, in terms of yen, are included in the total fabrics data above.
5/ In this category, wearing apparel accounts for approximately 82 percent of the total dollar value of made-up goods in 1986, and totaled almost $2.9 billion that year.

Source: Dollar values are compiled from Textile Exports of Japan, 1985, and yen values are compiled from Comitextil, Bulletin 87/1-2.

imports in 1986; cotton yarn accounted for 50 percent of total yarn imports; and cotton fabric accounted for 43 percent of total fabric imports, and manmade fiber fabric imports accounted for 17 percent.

Imports of made-up goods, of which apparel accounted for 67 percent of the total quantity in 1986, remained relatively stable in 1986, in terms of yen, close to the 1985 level, and imports of most other textiles declined. The declines in raw-fiber imports reflected the textile industry's efforts to adjust the supply demand problem. 1/ Industry sources predict that imports of made-up goods will increase in the future.

Because some Japanese textile companies were suffering from imports of cotton products, private talks were held between the Governments of Japan and Pakistan, and Korea, the two major suppliers of cotton goods, who agreed to voluntarily restrain their exports in order to avoid flooding the Japanese market.

According to a World Bank report, Japan's average textile tariff is lower than that of the United States and the EC, and Japan's quota restrictions compare favorably with these countries. 2/

The United States and Hong Kong are Japan's largest export markets, accounting for almost 17 and 14 percent, respectively, of total textile exports, as shown in table 7-9. Important textile products shipped to the United States include apparel, which accounted for 31 percent, in terms of dollars, of Japan's total textile exports to the United States in 1986 and synthetic filament fabrics and cotton fabrics, which accounted for 18 percent and 13 percent of the total, respectively. According to Japanese industry sources, Japanese fabric manufacturers compete in the U.S. fabric market by providing small runs of high quality fabrics. The U.S. industry often will not supply small runs of their fabrics because it is not cost effective in their highly automated mills. 3/ Over two-thirds of Japan's exports to Hong Kong, in terms of dollars, consisted of fabrics, primarily cotton and synthetic filament fabrics. Most of these fabrics are made up into apparel and exported to foreign markets like the United States.

Other leading markets for Japan's textile exports include China, Saudi Arabia, South Korea, and the Soviet Union. In 1986, exports to China declined 5 percent from 1985 levels. China had been a significant export market for Japanese polyester staple. 4/ However, because of the Chinese Government's policy to become self-sufficient in fibers, China is no longer a large purchaser. Exports to the Middle East also declined considerably, 12 percent, because of depressed markets there caused by lower oil prices. 5/

1/ Comitextil, Bulletin 87/1-2, p. 111.
2/ World Bank, Korea--Managing the Industrial Transition, vol. II, March 1987, p. 171.
3/ Fieldtrip interview with Toyobo Co.
4/ Fieldtrip interview with Teijin Ltd.
5/ Comitextil, Bulletin 87/1-2, p. 120.

Table 7-9
Japan's exports of textiles, by major markets, 1982-86

(In millions of dollars)

Market	1982	1983	1984	1985	1986
United States	695	912	1,073	987	1,090
Hong Kong	697	839	947	848	965
Korea, South	311	338	384	349	486
China	351	269	358	448	422
Saudi Arabia	470	458	435	350	322
Taiwan	203	208	227	215	319
Arab Emirates	199	279	247	240	228
U.S.S.R.	268	304	270	280	199
Australia	227	236	254	213	198
United Kingdom	134	147	144	150	194
Singapore	200	230	216	173	187
West Germany	97	100	95	117	181
Iran	159	426	240	153	99
Canada	81	97	101	103	124
Other	1,824	1,565	1,521	1,345	1,583
Total	5,917	6,408	6,511	5,971	6,597

1/ In this case, textiles and apparel refers to textile fiber (including wool tops,) and their wastes, and yarns, fabrics, clothing, and other textile made-up goods.

Source: Compiled from Textile Exports of Japan, 1983, 1985, 1986, published by the Institute of Textile Trade Research and Statistics.

Japan's largest foreign suppliers of textiles are Korea, China, Taiwan, and the European Community, as shown in the table 7-10. The United States is a relatively small supplier, accounting for almost 4 percent of the total value in 1986. Trade sources in Japan report that China has the potential to become an even larger textile-exporting nation. 1/ It has already more than doubled its production of raw cotton since 1983; however, the quality of its cotton does not equal that of the United States. 2/ China also is increasing its production of polyester fibers for export primarily to obtain foreign exchange. 3/

MFA Constraints

Trade in textiles between the United States and Japan has been controlled by various types of trade agreements, 4/ including bilateral trade agreements

1/ Fieldtrip interview with Marubeni Corp.
2/ Ibid.
3/ Fieldtrip interview with C. Itoh and Co., Ltd.
4/ See Background of The Textile Industry in Japan section for a discussion on the early types of agreements controlling Japan's exports.

negotiated under the Multifiber Arrangement (MFA), since Japan began its world market penetration in textiles. The latest bilateral agreement between the two countries was signed on February 7, 1987, after a period of approximately 13 months of negotiations. The prior agreement had already expired on December 31, 1986, and the United States was controlling Japanese textile exports during this period with unilateral restraints. The new agreement was made retroactive to January 1, 1986, and extends through December 31, 1989. The agreement, which covers cotton, wool, and manmade-fiber textiles, establishes group limits on much of Japan's exports to the United States. The three group limits cover apparel, manmade-fiber yarn, and non-apparel products, such as cotton yarn and fabrics and manmade fiber fabrics, including lightweight polyester filament fabrics. These group limits provide for a cap on average overall growth of less than 1 percent per group even though some of the individual products within the groups are not subject to specific U.S. import limits. In addition to being a signatory to the original MFA, Japan is also a signatory to the extension Protocol of July 31, 1987, which covers products of silk blends, linen, and ramie for the first time, effective August 1, 1986. Exports of these newly covered items from Japan are not currently subject to U.S. import restraints, but they are required to have Japanese export visas prior to entry into the United States so that the trade can be monitored. Products of silk blends, linen, or ramie are subject to future calls for consultations, which may lead to specific limits under the MFA, if growth of such exports threaten to disrupt the U.S. market.

With the one-percent growth restriction in the new agreement, MFA restraints on Japan's exports to the United States will limit its export growth to the U.S. market. Japan had already more than filled the new 1986 limits by the time the new agreement was signed in February 1987, and the excess trade was applied to the 1987 limits.

Table 7-10
Textiles: Japan's imports, 1/ by sources, 1983-86

(In millions of dollars)

Source	1983	1984	1985	1986
United States	161	179	169	200
European Community	603	628	672	943
Korea	708	1,004	938	1,292
Taiwan	286	388	364	552
Hong Kong	218	307	255	355
ASEAN countries	94	96	85	105
India/Pakistan	158	212	273	252
Latin America	27	40	34	24
China	622	888	957	1,133
Other	110	133	119	171
Total	2,987	3,875	3,866	5,027

1/ Data excludes textile fibers.

Source: Compiled from Comitextil, Bulletin, 87/1-2.

Competitive Assessment

The Japanese textile industry began its world textile market penetration in commodity goods in the 1960's utilizing its low labor rates which existed at that time. Because of rising labor and other production costs and increased competition from even lower labor-cost suppliers in the late 1970's, Japanese textile manufacturers began to emphasize product development and quality as well as effective marketing strategies. With the help of incentives provided by the Government and a close working relationship between the different segments of the industry, which, at one time included, for example, financial and technological assistance provided to the smaller weaving mills from the manmade fiber producers, Japan's textile manufacturers improved labor productivity and product development through investments in plant and equipment and research and development. This close relationship between the segments of the industry grants Japan an important competitive advantage, allowing for increased flexibility and marketability through specialization, whereby the industry is able to provide the world market economically with high quality small lot production. A second competitive advantage which has assisted and furthers the development of Japan's textile industry is Japan's investment environment, with its readily available capital and low capital costs.

In spite of these competitive advantages and the Japanese textile industry's relatively high productivity rates, a world wide reputation for high quality products, and highly effective marketing efforts, the rapid appreciation of the yen has caused the industry to lose some of its competitiveness in the world textile market primarily in the past two years. For example, labor rates in the Japanese textile industry escalated, in terms of U.S. dollars, to $11.99 in 1987 and surpassed the U.S. textile industry's labor rates of $ 9.24. The Japanese textile industry is and has been highly export oriented, with exports accounting for approximately 20 percent of Japanese textile producers' total shipments. The high value of the yen has increased the price of Japanese exports abroad in spite of many companies' efforts to absorb the price increases. Exports, in turn, declined both in actual terms--26 percent from 1983 to 1986--and in relative terms as its share of world textile exports dropped from 10.1 percent in 1982 to 9.4 percent in 1985. Meanwhile, imports captured an increasing share of the domestic market, from 16 percent in 1982 to 28 percent in 1986. Consequently, overall profits in the industry are down, 1/ and investment for equipment declined by 14 percent in 1986 from the 1985 level. 2/ Most of the investment which did occur that year went for maintenance and repairs and smaller portions were spent on automation. Reportedly, the industry also suffered the third greatest amount of debt in its history. 3/

1/ Comitextil, Bulletin 87/1-2, p. 110.
2/ Ibid., p. 112.
3/ Ibid., p. 113.

The Japanese textile industry had already been in the process of restructuring because of problems which occurred prior to the yen appreciation. The industry was suffering the effects of a worldwide trend away from manmade fibers, the mainstay of the industry, and the effects of a serious supply/demand imbalance which was fueled by rapid technological advancements and low-cost imports. The industry had been attempting to dispose of excess equipment for years and was continually in the process of improving the quality and sophistication of its products. But the appreciation of the yen called for further restructuring efforts and emphasized the necessity to move away from an export-orientation to a domestic market orientation. Members of the Japanese textile industry, especially the larger manmade fiber and spinning firms are responding with strategies to cut production costs and to diversify into nontextile areas. The manmade fiber producers, many of which also produce fabric or guide the production of fabric, are diversifying into films, plastics, pharmaceuticals, high performance industrial fibers, electronic equipment, information equipment, and foodstuffs, and some even into housing construction. 1/ Non-fiber sales of the 7 leading fiber companies, together, rose from accounting for an average of 32.8 percent of their total sales in FY 1983 to accounting for 36.3 percent in FY 1985. 2/ Much of this diversification is an extension of their textile business, and involves developing new uses for their fibers. 3/ A primary push for diversification are Japanese labor practices which make it difficult to lay off workers. 4/

Some textile industry members feel that the only way to regain their cost competitiveness is to build new plants which are highly automated and which operate at full capacity, thereby eliminating the higher labor costs. One such plant, a cotton spinning plant, is in operation in Japan which employs only 20 people and the production is performed largely by computers and robots. The automation has reduced production costs and improved quality. Another large company increased its investment to rationalize, streamline, and automate production of its wool fabrics and of textile machinery. 5/

Although some textile industry members advocate stricter import controls through the Multifiber Arrangement and/or through dumping procedures, MITI feels the current textile trade deficit will continue into the future and that any type of import protection would conflict with the Japanese Government's policy to correct the large trade imbalances it has with its trading partners. 6/ Statistics for fiscal year 1987 indicate that imports of textiles will exceed exports in terms of quantity for the first time since World War II. Therefore, MITI intends to induce a policy of specialized domestic production of high-valued fashionable merchandise, supplemented by mass-produced imports. 7/

1/ "Last Straw for Japan's Textiles?" The Journal of Commerce.
2/ These figures are compiled from data published in Japan Economic Almanac 1986, p. 182, and Japan Economic Almanac 1987, p. 167.
3/ Fieldtrip interview with Unitika Ltd.
4/ Fieldtrip interview with Teijin Ltd.
5/ "Big Job Cuts by Japanese Firms," Textile Month, January 1987.
6/ U.S. Department of State telegram, Japan, 11420, June 1987, p. 1.
7/ Ibid.

Future growth in Japan's textile industry is expected to be limited as the industry's primary focus is on remaining competitive by reemphasizing the production of high quality and high value added goods and by developing new and specialized products and markets. However, the industry is cautious as reflected in a slow down in investments in plant and equipment. In summary, although the quality of Japan's inputs and outputs remains high, the industry's cost effectiveness has been greatly diminished by the high yen.

Foreign Competition

Taiwan

Chapter 8. TAIWAN

Textiles, along with apparel, was among the first major industries developed in Taiwan during the early 1950's. During the 1960's and 1970's, the two interrelated industries received assistance from the authorities that enabled the textile industry to grow into a large export-oriented sector. During the mid-1960's, it became the largest exporter in Taiwan, a distinction it held until 1984, when it was surpassed by the electronics industry. Although no longer the largest exporter, the textile and apparel industries remain a very important contributor to Taiwan's economy, accounting for 21 percent of the total workforce and 17 percent of total manufacturing production. The textile industry, alone, accounted for 13 percent of both manufacturing activity and the national workforce.

Textile Industry

The textile sector in Taiwan, though no longer designated as a "strategic" industry, remains an important factor in the national economy. Strategic industries are targeted for special treatment to help foster their growth, including either a 5-year tax holiday or accelerated depreciation of high-technology equipment, reduced tax rates, and either deferral or rescission of import duties. During the 1980's when Taiwan's industrial base expanded significantly, the relative importance of the textile sector remained fairly stable. This is reflected in the sector's share of total output and employment in the manufacturing sector, based on data published by the Taiwan Textile Federation, as shown in the following tabulation (in percent):

Year	Output	Employment
1980	16.9	21.4
1982	17.6	21.7
1984	17.1	20.8
1985	16.8	21.6
1986	17.5	20.7

However, the relative importance of the textile sector showed divergent trends. In 1986 the sector's share of total manufacturing activity reached its highest since 1982, whereas its share of the manufacturing workforce declined to the lowest level since at least 1977.

The textile sector in Taiwan comprises three major industries: manmade fibers, textiles, and apparel. The textile industry is, by far, the largest of the three industries in terms of employment and value of production, as shown for 1986 in the following tabulation:

Industry	Production	Share of total	Employment	Share of total
	Million dollars	Percent	Number	Percent
Textiles	9,952	73	299,280	63
Apparel	1,958	14	157,437	33
Manmade fibers	1,784	13	16,945	4
Total	13,694	100	473,662	100

During 1982-86, employment in the overall textile sector increased by 9 percent (table 8-1). Apparel employment had the largest growth, increasing by 28,808 workers or by 22 percent. Employment in the larger textile industry grew by 9,800 workers or by 3 percent; the manmade-fiber industry had a decline in employment of 597 workers or 3 percent.

Table 8-1
Average number of employees in Taiwan's textile sector, by industries, 1982-86

(In number)

Item	1982	1983	1984	1985	1986
Manmade fibers	17,542	15,876	17,366	17,736	16,945
Textiles:					
Cotton	72,592	66,168	68,781	65,970	60,085
Wool	13,018	12,572	12,781	12,711	11,236
Silk	1,468	2,013	2,436	2,655	2,637
Manmade fibers	73,511	73,683	76,777	83,266	83,690
Finishing	15,719	14,105	13,046	12,829	12,826
Knitting	98,130	106,337	110,734	116,274	113,952
Other	15,042	15,210	15,125	15,394	14,854
Subtotal	289,480	290,088	299,680	309,099	299,280
Apparel 1/	128,629	132,313	145,058	158,137	157,437
Total	435,651	438,277	462,104	484,972	473,662

1/ Includes accessories.

Source: Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 54-55.

The textile, manmade-fiber, and apparel industries showed widely varying performances during the 1980's. In terms of production, real growth in the textile and apparel industries was significantly lower than that recorded in either the manmade-fiber industry or for all manufacturing during 1980-86, as shown in the following tabulation (in percent):

Item	1986/1980	1986/1985
All manufacturing	61	16
Textiles	29	9
Apparel	29	6
Manmade fibers	100	26

Industry structure

Taiwan's textile sector is made up predominantly of small- to medium-sized companies. In 1986, of 392 weaving mills, 230 had fewer than 50 employees, 128 had 50 to 199 employees, 24 had 200 to 499 employees, and 10 had 500 or more employees. 1/

The manmade-fiber industry has expanded significantly in the last several years. In 1984, total production, which in previous years had been stable at slightly less than $1.2 billion annually, rose to $1.56 billion, leveled off at $1.54 billion in 1985, and climbed again in 1986 to $1.78 billion, in nominal terms. 2/ By weight, manmade-fiber production in 1986 totaled 1.4 million metric tons, of which 69 percent consisted of polyester; 12 percent, nylon; 10 percent, acrylic; and 9 percent, rayon. 3/ The main reason for the expansion in manmade-fiber production was the growth in the production of manmade-fiber fabrics, particularly those of polyester and polyester blends. The textile mills have concentrated on manmade-fiber fabrics because such fibers are produced domestically unlike natural fibers such as cotton and wool.

According to the Taiwan Textile Federation Publication, Statistics on Taiwan Textile and Apparel Industries, 1984 and 1986 editions, total production by Taiwan's textile mills has grown substantially since 1977, as shown in the following tabulation (in billions of U.S. dollars):

Year	Value	Year	Value
1977.....	4.1	1982.....	7.2
1978.....	5.4	1983.....	7.1
1979.....	6.0	1984.....	8.7
1980.....	7.0	1985.....	8.3
1981.....	8.0	1986.....	10.0

This growth has been the result of some structural changes. Up through the early 1980's, the dyeing and finishing sectors were considered weak. The technology used was inefficient when compared with that of other nations. 4/ This significantly hurt the competitiveness of the textile mills as a result of the consequent higher costs and lower quality of dyeing and finishing. By 1985, after significant investment, the dyeing and finishing sector had been fully computerized, and was producing higher quality goods at relatively low prices.

1/ Taiwan Textile Federation, Taiwan Textile Industry Survey Report, 1986--Weaving, August 1987, p. 24.
2/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, p. 21.
3/ Ibid, pp. 22-25.
4/ Council for Economic Planning and Development, "Ten-Year Textile Industry Development Plan for Taiwan, Republic of China, (1980-1989)," vol. LVII, No. 6, June 1981, pp. 17-29, and vol. LVIII, No. 1, July 1981, pp. 9-17.

Partially as an outgrowth of this modernization, Taiwan's textile mill industry has shifted its focus more toward the export market. Total exports of textile mill products increased by 69.5 percent, from $1.8 billion in 1983 to $3.1 billion in 1986. 1/ The destinations of these exports reflect the main factors at work in the growth of the textile industry. Exports to lesser developed nations that have expanding apparel industries have grown significantly. This reflects the Taiwan industry's emphasis on expanding into new overseas markets. This is helped by the fact that, although direct exports to the People's Republic of China (PRC) are prohibited by law, indirect exports to the PRC through Hong Kong are gaining greater acceptance. In addition, increased exports to markets such as Japan, Hong Kong, Korea, and the EC demonstrate the increased level of competitiveness of the Taiwan industry. 2/

The apparel industry has not fared nearly as well. Total production, in nominal terms, increased by only 20 percent during 1982-86, from $1.6 billion to $2.0 billion. 3/ The primary reason is that the industry has not yet modernized its production facilities. 4/ For example, Taiwan has yet to develop an independent design capability. The slower growth in the domestic apparel industry as compared to the domestic textile industry has been a major reason why the textile industry has emphasized the development of overseas markets.

Domestic Production and Consumption

Total production of textile mill products for 1984, 1985, and 1986 was valued at $8.7 billion, $8.3 billion and $10.0 billion, respectively. The primary outputs of the Taiwan textile mill industry are manmade fibers and manmade-fiber fabrics, particularly polyester. In 1986, Taiwan produced, by quantity, twice as much manmade-fiber yarn as cotton yarn and two and one-half times as much manmade-fiber fabric as cotton fabric (table 8-2).

1/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, p. 79.
2/ Ibid, pp. 88-93.
3/ Ibid, p. 21.
4/ American Institute in Taiwan, Taipei, "Taiwan's Textile/Apparel Industry," Feb. 26, 1986, p. 7.

Table 8-2
Taiwan's production of textile mill products, 1984-86

Item	1984	1985	1986
Cotton yarn (bales)	1,074,926	1,085,110	1,248,444
Manmade-fiber yarn (bales)	2,181,628	2,229,773	2,465,874
Manmade-fiber textured yarn (metric tons)	256,593	331,275	363,677
Worsted yarn (metric tons) 1/	82,045	84,789	95,547
Woolen yarn (metric tons) 1/	15,275	11,606	11,045
Cotton woven fabric (1,000 square yards)	857,395	942,867	1,064,013
Manmade-fiber and manmade-fiber blend woven fabric (1,000 square yards)	2,229,700	2,385,507	2,436,641
Wool woven fabric (1,000 square yards)	28,106	115,799	25,308
Other woven fabric, including carpet (1,000 square yards)	32,569	30,005	27,477
Knitted fabric (metric tons)	82,158	79,900	95,242
Nonwoven fabric (1,000 square yards)	270,830	247,577	300,666

1/ Includes worsted or woolen yarn of wool, wool blends, and manmade fiber.

Source: Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 26-49; 1985 edition, pp. 26-47; 1984 edition, pp. 26-45.

Production capacity of the textile mill industry, as measured by the total number of machines, has remained relatively stable since 1983. In 1986, the total number of spindles remained at 5.2 million, whereas the number of looms declined to 76,394 from the 1985 total of 82,131. However, this measure of production capacity is somewhat misleading in light of improvements in technology.

Production capacity in the manmade-fiber industry in 1986 totaled 7,753 tons/day, compared with 7,333 in 1985 and 5,427 in 1984. Polyester capacity was 5,765 tons/day (74 percent of the total) in 1986 compared with 5,350 tons/day (73 percent) in 1985 and 3,803 tons/day (70 percent) in 1984. 1/

Apparent consumption 2/ showed no particular trend between 1982 and 1986. According to the Taiwan Textile Federation, apparent consumption of fiber increased, but apparent consumption of textiles and apparel has fluctuated erratically as shown in the following tabulation (in millions of dollars):

Item	1982	1983	1984	1985	1986
Manmade fibers	1,380	1,531	2,042	1,902	2,120
Textiles and apparel	4,517	4,230	5,149	4,448	5,136

1/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 13-14; 1985 edition, pp. 13-14; and 1984 edition, pp. 13-14.
2/ Apparent consumption was calculated as domestic production plus imports minus exports. As a result, changes in inventories will have an effect on apparent consumption data.

However, the apparent consumption figures do not reflect true consumption patterns in Taiwan, because of large swings in manufacturers' inventories during 1982-86.

Technology

The textile mill industry has increased its total production by improving technology rather than by increasing the number of machines. In recent years, the industry has replaced old shuttle looms with new shuttleless looms. By 1986, about 30 percent of the looms in use were shuttleless. 1/ Although this is an increase over prior years (it was 25 percent in 1985 and 19 percent in 1984), 2/ it does not compare with the levels in other nations that have mature textile industries. In 1986, 27 percent of the looms in operation had been purchased within the last 5 years. Of those recent acquisitions, 63 percent were shuttleless looms. 3/ The spinning industry continues to be dominated by ring spinning. In 1986, there were 3.8 million ring spindles and 105,000 open-end spindles. 4/ This is roughly the same proportion that has prevailed for the past 5 years.

The machinery used by Taiwan's textile industry comes from both foreign and domestic sources. In 1986, 34 percent of the looms in place were made in Taiwan, 32 percent were made in Japan, and the remainder were from a wide variety of other sources. 5/ In 1984, the total number of looms and knitting machines produced in Taiwan was 11,800. This increased to 29,021 in 1985 and declined to 25,961 in 1986. 6/

The apparel industry has been the slowest to modernize, still primarily using labor-intensive production processes, and generally producing low-value-added garments largely using designs supplied by the purchaser. To remedy this, Taiwan began to import some computerized design equipment in 1985. 7/ Although the equipment so far has had limited distribution, there are signs that it is beginning to have an impact. According to the Taiwan office of a major U.S. apparel retailer (K-Mart Taiwan, Ltd.), several Taiwan manufacturers at a September 1987 trade show at the Trade Center in Taipei stated that they had their own designers.

1/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, p. 15.
2/ Ibid, p. 15 and the 1984 edition, p. 15.
3/ Ibid, p. 15.
4/ Taiwan Textile Federation, Taiwan Textile Industry Survey Report: Weaving, Taipei, 1986, p. 13.
5/ Ibid, pp. 15-16.
6/ Industry of Free China, April 1987, p. 113.
7/ American Institute in Taiwan, Taipei, "Taiwan's Textile/Apparel Industry," Feb. 26, 1986.

Labor Costs and Productivity

Employment in the textile sector during the 1980's grew unabated until 1985. It rose from 437,032 in 1981 to 484,972 in 1985, and then dropped to 473,662 in 1986. The sector accounted for approximately 21 to 22 percent of total employment in all manufacturing. 1/

Taiwan's per capita income has increased substantially during the 1980's. So too have wages in the textile sector. Although still very low by U.S. standards, labor costs for manufacturers have grown significantly (table 8-3). The main cause of the increase has been the overall growth of the Taiwan economy. Other industries, particularly electronics, came into their own in the early 1980's, thereby increasing the overall demand for unskilled labor. These new strategic industries, which were aided by the public sector, offered higher wages and better working conditions in more modern facilities. The competition between industries for employees is manifested by the relative employee turnover rates. For manufacturing as a whole, 3.36 percent of all employees left their jobs in 1985. In the manmade-fiber industry, which has a higher wage rate than the manufacturing average ($1.69 per hour in 1986), the turnover rate in 1985 was only 2.05 percent. Textile mills were comparable to total manufacturing in both wages and turnover, whereas apparel, which has a lower wage rate, had a turnover rate of 4.83 percent. 2/

Table 8-3
Wages per hour in Taiwan, by specified industries, 1981-86

(In U.S. dollars)

Year	Fibers	Textiles	Apparel
1981	$1.16	$1.16	$0.95
1982	1.26	1.21	1.03
1983	1.40	1.25	1.07
1984	1.79	1.48	1.27
1985	2.21	1.48	1.21
1986	2.35	1.65	1.34

Source: Compiled from data published by the Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 61, 65.

In the textile mill and apparel industries, wage increases were not accompanied by corresponding increases in labor productivity. For the textile mill industry, labor productivity increased by 11.6 percent from 1981 to 1985, whereas it decreased by 20.9 percent in the apparel industry. However, in

1/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, p. 54.
2/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1985, Taipei, p. 69.

1986, labor productivity increased by 12.3 percent in the textile mill industry and by 5.4 percent in the apparel industry. 1/ This is significant, particularly when compared with the increased wage rate as shown in figures 8-1 and 8-2. The gap between wage growth and productivity represents a decrease in the comparative advantage of labor, which advantage has helped Taiwan in the past. As the Taiwan economy continues to grow, wages will continue to rise, increasing the need for technological improvement, particularly in the textile and apparel industries.

Raw Material Costs

Most textile mills in Taiwan are vertically integrated. They have both spinning and weaving/knitting operations, and many even have cut-and-sew operations. The principal raw materials purchased by the companies are natural fibers, particularly cotton, and manmade fibers. Taiwan's mills purchase their manmade fibers almost exclusively from domestic sources, but import all of their natural fibers. The use of wool and other animal fibers is relatively insignificant.

Because of the textile mill industry's reliance on imported cotton, total input costs can fluctuate greatly from year to year with Taiwan having almost no means of influencing them. Since 1983, on the basis of price primarily, Taiwan has varied its sources for cotton. According to the Taiwan Textile Industry Survey Report: Cotton Spinning, Taiwan changed its sources for raw cotton significantly between 1983 and 1986, as shown in the following tabulation (in millions of U.S. dollars):

1983 source	Value	1986 source	Value
United States.....	121	Pakistan.....	106
Brazil.....	34	Australia.....	38
India.....	30	United States.....	34
Mexico.....	30	Burkina Faso (Upper Volta).....	31
Other.....	162	Other.....	134
Total.....	377	Total.....	343

It should be noted that, because Taiwan companies are prohibited by law from purchasing materials directly from China, mills would have to make arrangements for entrept trade through Hong Kong in order to purchase Chinese cotton. In 1986, Taiwan purchased more cotton from Pakistan, which at that time was priced lower than U.S. cotton and is generally considered to be of lower quality.

The manmade-fiber market is a completely different story. The demand for these fibers is supplied almost entirely by the domestic manmade-fiber industry, which has prospered during the 1980's. During the 1970's, the Taiwan authorities strongly encouraged and protected the development of the

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1/ Ibid, p. 60.

Figure 8-1. Textiles: Taiwan's wage and productivity indices, by year, 1981-1986

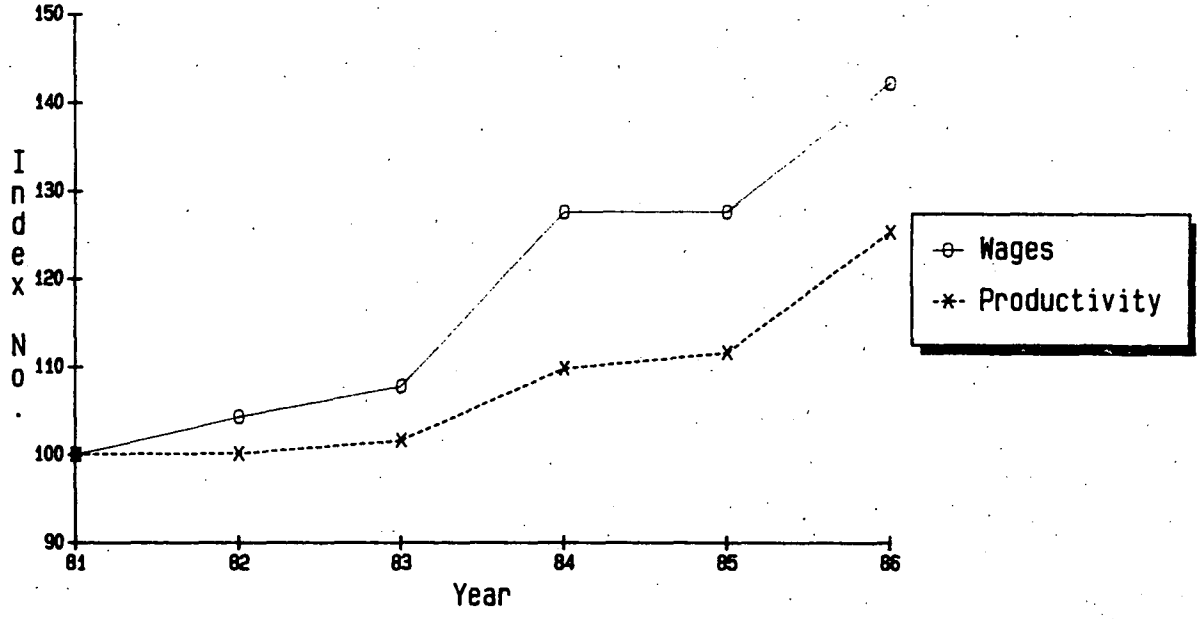
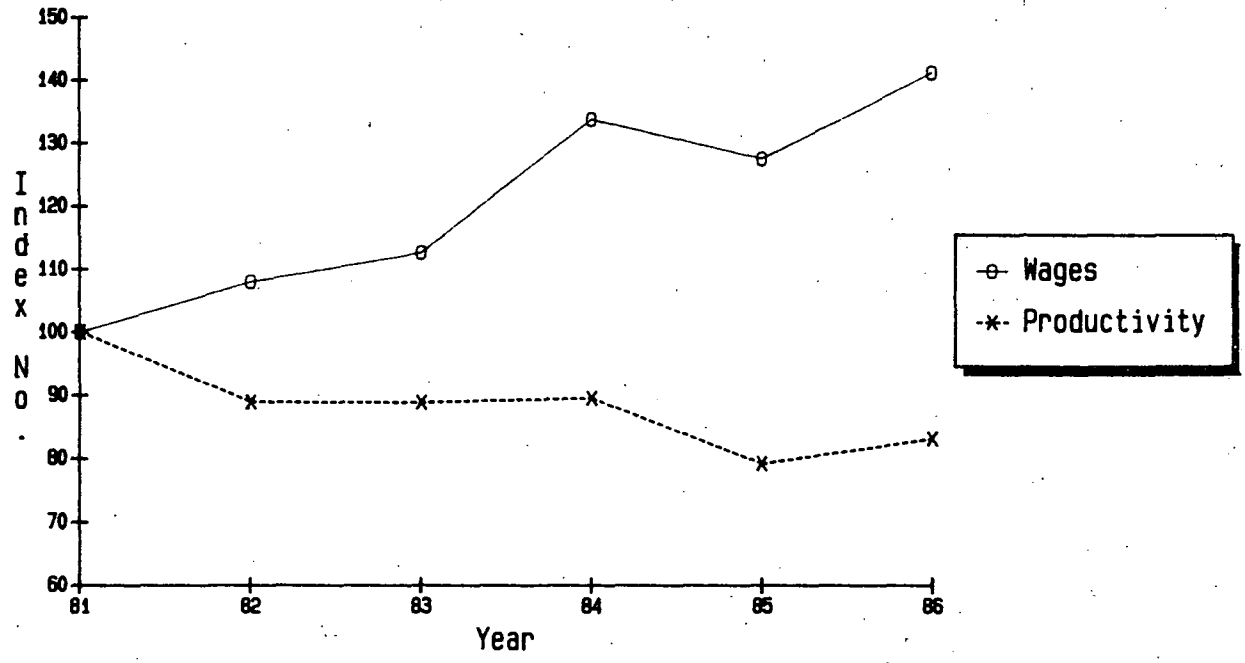


Figure 8-2. Apparel: Taiwan's wage and productivity indices, by year, 1981-1986



petrochemicals industry, the principal supplier of raw materials to the manmade-fiber industry, considering it a strategic industry. In 1981, after many complaints from downstream industries, including textiles, about the high price of raw materials caused by the protection of the petrochemical industry, the Taiwan authorities scrapped their scheme in favor of a price-fixing mechanism. Import restrictions on petrochemical feedstocks were removed, and domestic prices were pegged to the prevailing U.S. prices. 1/ This has greatly helped the downstream fiber and fabric industries to be much more cost competitive. Because of this target-price mechanism for petrochemicals, some analysts believe that Taiwan may be subsidizing the domestic industry. However, in interviews with selected officials of several major textile mills during September 1987 in Taipei, the officials stated that they knew of no such subsidies.

The strengthening New Taiwan dollar will have a significant impact on the textile mill industry's cost competitiveness. It will raise the cost of labor as well as the cost of domestic materials, relative to U.S. costs. The cost increases are comparable in magnitude with those occurring in Japan and Korea. On the other hand, it will lower the cost of all imported goods. In the areas in which raw materials must be imported, such as cotton and other natural fibers, the decline will partially offset the increase in labor costs. The parts of the industry that are likely to be adversely affected the most are manmade-fiber products that have a relatively high labor content, and low-value-added products that already are facing significant price competition from low-wage developing nations.

Because of the exchange-rate changes, which favor cotton textile producers over manmade-fiber textile producers, and because of the lower price of U.S. cotton in 1987, it could be expected that Taiwan's imports of U.S. cotton would rise significantly. Taiwan's imports of raw cotton from the United States totaled $90 million during the first half of 1987, compared with only $34 million for all of 1986. In addition, the cotton going to Taiwan is among the lowest priced cotton being exported by the United States. This is further evidence of the price sensitivity among Taiwan cotton textile producers.

Textile Trade

Taiwan's exports of fibers, textiles, and apparel in 1986 totaled $7.6 billion, representing 19 percent of Taiwan's total exports of $40.0 billion (table 8-4). Although exports of these products increased by 53 percent, during 1983-86, their share of Taiwan's total exports declined from 19.9 percent to 19.0 percent. During that time, fibers, textiles, and apparel were replaced by electronics as Taiwan's leading exported product. Imports by Taiwan of fibers, textiles, and apparel in 1986 totaled $1.2 billion, representing only 5 percent of the nation's total imports. This

1/ U.S. International Trade Commission, Foreign Industrial Targeting and Its Effects on U.S. Industries Phase III: Brazil, Canada, the Republic of Korea, Mexico, and Taiwan, USITC Publication 1632, January 1985, pp. 227-281.

Table 8-4
Fibers, textiles, and apparel: Taiwan's imports and exports, 1982-86

(In millions of U.S. dollars)

Year	Fibers	Textiles	Apparel	Total
		Imports		
1982	571.3	324.3	5.5	901.1
1983	535.4	364.4	5.6	905.4
1984	674.2	448.0	7.3	1,129.5
1985	590.7	394.2	8.7	993.6
1986	613.9	582.4	11.1	1,207.4
		Exports		
1982	159.9	1,767.8	2,890.8	4,818.5
1983	175.7	1,828.2	2,983.3	4,987.2
1984	191.5	2,192.9	3,761.0	6,145.4
1985	229.2	2,518.5	3,512.5	6,260.2
1986	277.6	3,098.0	4,259.0	7,634.6

Source: Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 79 and 102.

represented a 33-percent increase from 1982, when imports of these products were $905 million, but the share of total imports has remained relatively stable throughout the period. 1/

In 1983, Taiwan exported $261 million in cotton woven fabrics and $348 million in manmade-fiber woven fabrics. By 1986, exports of cotton woven fabrics had risen by 36 percent to $355 million, whereas exports of manmade fiber woven fabrics had risen by 137 percent to $825 million. This demonstrates the emphasis that Taiwan placed on manmade-fiber fabrics in the 1980's. During the period, imports of cotton woven fabrics increased from $47 million to $50 million, and imports of manmade-fiber fabrics increased from $116 million to $172 million. 2/

Export Markets

The largest markets for Taiwan's exports of fibers, textiles, and apparel are the United States, Hong Kong, 3/ Japan, West Germany, and Canada. In 1986, exports to the United States were 37 percent of the total; to Hong Kong,

1/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 77-100.
2/ Taiwan Textile Federation, Taiwan Textile Industry Survey Report: Weaving, 1986, p. 38-51, 1983, pp. 38-46.
3/ Export data for Hong Kong includes exports to the PRC through Hong Kong.

16 percent; to Japan 10 percent; to West Germany, 4 percent; and to Canada, 4 percent (table 8-5). Although Taiwan has made some gains toward diversifying its export markets, it still relies heavily on the developed countries to purchase its fiber, textile, and apparel exports.

Table 8-5
Fibers, textiles, and apparel: Taiwan's exports by markets, 1982-86

(In millions of U.S. dollars)

	1982	1983	1984	1985	1986
Fibers:					
Japan	56.5	51.4	70.4	107.1	103.9
Indonesia	30.6	23.3	28.2	27.9	28.3
Hong Kong	1/	1/	23.7	20.3	28.2
Korea	1/	20.8	1/	15.9	26.4
Philippines	15.3	21.2	12.2	9.4	20.6
Total	159.9	175.7	191.5	229.2	227.6
Textiles:					
Hong Kong	536.1	531.0	676.5	845.4	1,106.3
United States	145.2	201.6	254.0	270.8	337.0
Japan	129.7	139.1	229.9	328.7	251.1
Singapore	102.7	128.3	183.2	220.8	225.9
Australia	75.5	85.1	111.3	1/	114.5
Total	1,767.8	1,828.2	2,192.9	2,518.5	3,098.0
Apparel:					
United States	1,489.8	1,661.9	2,282.0	2,139.8	2,462.1
Japan	224.5	179.7	254.8	241.5	375.3
West Germany	178.0	165.5	167.1	145.8	235.0
Canada	119.7	146.4	177.8	178.0	216.3
Saudi Arabia	161.3	208.4	209.6	177.4	181.3
Total	2,890.8	2,983.3	3,761.0	3,512.5	4,259.0
Total:					
United States	1,635.4	1,864.4	2,537.7	2,414.9	2,812.6
Hong Kong	588.9	581.2	740.4	919.4	1,196.1
Japan	410.7	370.2	555.1	677.4	730.4
West Germany	217.5	201.5	199.1	180.9	286.4
Canada	1/	1/	209.6	217.6	277.9
Total	4,818.5	4,987.2	6,145.4	6,260.2	7,634.6

1/ Data not available.

Source: Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, pp. 83-85.

Export Agreements

Although it is not a signatory to either the General Agreement on Tariffs and Trade (GATT) or the Multifiber Arrangement (MFA), 1/ Taiwan has signed textile and apparel quota agreements with the United States, Canada, and the EC. Its current agreement with the United States was originally signed in 1982, was extended in 1986 to last through 1988, and was extended again in 1987 to last through 1989. This agreement limits the growth of Taiwan's exports to the United States to less than 1 percent per year in terms of quantity. Further extensions of the agreement will be dependent on Taiwan's progress towards lowering its tariffs to values less than those prevailing in the United States, as have the previous ones. 2/

The current agreement has three group limits: cotton, wool, and manmade-fiber non-apparel; cotton, wool, and manmade-fiber apparel; and products of silk blends and other vegetable fibers. Silk-blend and vegetable-fiber products were subject to quota for the first time beginning August 1, 1986, and were an area of rapid export growth for Taiwan. In the other two groups, quotas on non-apparel products were 88 percent filled during 1986 and quotas on apparel products were 93 percent filled. In 1986, U.S. quota restrictions covered 98.4 percent of all fiber, textile, and apparel imports from Taiwan, up from 92.1 percent in 1985 and 89.4 percent in 1984. 3/ Taiwan now faces both limited quantitative growth and very few areas of unrestricted exports to the United States, its largest foreign market. This further necessitates Taiwan's move towards higher value-added products and to greater market diversification.

Competitive Position

As part of its "Ten-Year Economic Development Plan" introduced in 1981, Taiwan's policymakers listed a series of goals for the textile and apparel industries. They included the following: 4/

1. Improvement of the dyeing and finishing and apparel industries to maintain vertical balance.
2. Merger of small- and medium-sized operations suitable for mass production.
3. Attracting foreign capital and high technology.
4. Export market diversification.
5. Upgrading of design capability to produce higher value-added and more fashionable products.

1/ Because of its unique diplomatic situation, Taiwan is not a member of any organization that recognizes China.
2/ Office of the United States Trade Representative, Press Release, Apr. 23, 1987.
3/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, Taipei, p. 81.
4/ Council for Economic Planning and Development, "Ten-Year Textile Industry Development Plan for Taiwan, Republic of China," vol. LVIII, No. 1, July 1981, pp. 9-17.

6. Liberalization of import controls to improve the quality of domestic products.
7. Increasing the level of automation.

Taiwan's textile mill industry has taken some significant steps to improve its competitiveness, principally with regard to equipment modernization. However, the implementation of the recommendations of the Taiwan authorities has been mixed. Since textiles is no longer a strategic industry and, therefore, no longer eligible for preferential treatment, most of the changes that have occurred have resulted from market forces.

One major change urged by the Taiwan authorities concerns the size and number of companies producing textiles and textile products. As stated previously, the textile industry consists mostly of small- to medium-sized firms. The policymakers would like to see the industry take two separate paths. They want consolidation of some companies to take advantage of economies of scale, particularly in the low-value-added market. On the other hand, they would like some companies to be small and flexible to take advantage of high-value-added markets, particularly in apparel. 1/ At the present time, there is no particular incentive for the companies to do either of these. By investing in modern equipment, the mills have improved output without consolidation, and the industry has to this point continued to expand without moving significantly into the higher value-added market. However, as other Third World countries continue to develop their own textile and apparel industries and as labor costs continue to rise in Taiwan, the market pressure for change will increase.

There are some signs that this change in industry structure will occur in the near future. The smaller and larger plants are investing more in new equipment than the medium-sized plants. Table 8-6 relates plant size, as measured by the number of employees, to loom age in 1983 and 1986.

Table 8-6
Percentage of looms less than 10 years of age, by plant size, 1983 and 1986

Year	Number of looms			
	Less than 50	51-200	201-500	More than 500
1983.....	61	67	65	53
1986.....	59	62	43	62

Source: Taiwan Textile Federation, Taiwan Textile Industry Survey Report - Weaving, 1986, Taipei, p. 13; and 1983 edition, p. 13.

In 1986, roughly 60 percent of the looms in mills with more than 500 employees or fewer than 200 employees were less than 10 years old, whereas 40 percent of the looms in mills with 201-500 employees were less than 10 years old. This is in contrast to 1983, when the medium-sized mills had the newer machinery.

1/ Ibid.

If this trend continues, the smaller and larger firms will be the most competitive and will come to dominate the industry. The manmade-fiber industry and the dyeing and finishing segment of the textile industry have modernized their production facilities rapidly. However, modernization in other sectors has been small.

This is mostly a result of the problems faced by the financial institutions. A large portion of the investment in Taiwan's manufacturing sector is accounted for by the strategic industries, reflecting their sizable tax advantages and investment incentives. The strategic industries are eligible to receive loans at below-market interest rates from publicly-owned banks, which make up the bulk of the banking system. 1/ All other industries compete for the remaining capital, which is supplied by either these public banks or private institutions. The private banks typically follow the policy objectives of the publicly-owned banks, and, like their public counterparts, have conservative lending practices for loans to non-strategic industries, making only "safe" loans. 2/ If funds are attainable, firms can turn to the unregulated "kerb" market, where private companies can obtain loans with little collateral at above-average interest rates. This adds costs and risks to technological advancement.

Other risks are inherent to an export-based industry. The industry is dependent on the policies of other nations and must react to forces over which it has little or no control. This is particularly true with Taiwan's textile industry, which relies on one country, the United States, to purchase about 40 percent of its exports. Because of this, the Taiwan authorities have urged the industry to diversify, both in terms of products and markets.

As stated earlier, Taiwan has encouraged the industry to move toward more high-value-added products to maximize export revenues within the existing quota framework. The industry has also been urged to diversify its export markets, particularly in countries without import restraints, in order to lessen the impact of actions taken by any one country. Taiwan's textile producers have already initiated steps to export or expand their exports to the developing apparel industries in a number of Asian countries. Taiwan, Korea, and Japan have become the major suppliers to this market, with Taiwan competing with Korea to supply the low- to medium-value-added fabrics and Japan supplying the high-value-added products.

Market diversification and the resultant increase in sales have enabled Taiwan's textile mills to expand their manufacturing capacity in the face of sluggish growth in demand for their output from the local apparel industry, a major market for its output. However, market diversification in the textile mill industry could undermine the competitiveness of Taiwan's apparel industry, to the extent that increased foreign competition for Taiwan's yarn and fabric could lead to price increases for the raw materials.

1/ Wu, Yuan-li, Becoming an Industrialized Nation: ROC's Development on Taiwan, Praeger Publishers, New York, 1985, pp. 53-69.
2/ Ibid.

Taiwan is now targeting Japan as its best potential new textile market. 1/ Japan's industry has become less competitive in recent years because of its high labor costs (comparable with those in the United States) and the rapid appreciation of the yen compared with both the U.S. dollar and the New Taiwan dollar. Despite these advantages, it has been difficult for Taiwan's manufacturers to sell in the Japanese market because of the established distribution channels. 2/ Although some sources believe that Japan may place quotas on textile mill products from Taiwan, others do not expect this to happen because, although Taiwan had a trade surplus with Japan in 1986 of $333 million in fibers, textiles, and apparel, its total merchandise trade deficit with Japan was $3.7 billion. 3/

To encourage companies to diversify their market base and upgrade their export product mix, Taiwan recently modified the method by which it allocates its U.S. quota. 4/ There are two types of quota: planning or basic quota, accounting for approximately 70 percent of Taiwan's total U.S. quota, and contingent quota, accounting for the remaining 30 percent. In general, planning quota is allocated on the basis of past performance and contingent quota is distributed to those firms exporting goods having the highest f.o.b. unit value in a given product category. The principal change involves the planning quota, in which 10 percent of the quota is retained by Taiwan and reallocated to exporters based on their export performance in non-quota countries, total value of exports, investment in equipment modernization and research and development, use of own brand name, and total taxes paid. Based on its performance in these factors, an exporter could receive all, more, or less than its 10-percent share back.

Because the Central Bank has lifted restrictions on the private use of foreign exchange, it should be easier for companies to invest in plants overseas. Some of this has already begun with plants owned by Taiwan companies opening in other lesser developed countries. There are several advantages which make this attractive. First of all, labor in these countries is much less expensive than it is in Taiwan. Secondly, it increases the amount of goods that the company can export into the United States.

However, foreign investment is not just restricted to developing countries. In April 1987, Taiyuen Textiles Co. announced that it was investing approximately $50 million in a spinning and weaving plant in the United States. According to C.J. Wu, President, Taiyuen Textile Co. Ltd., the plant will have 150 looms with a capacity of 1.5 million yards per month, and will be located in the Southeast. Such a small operation could not support a finishing and dyeing operation, but Mr. Wu hopes to expand the facility in about 3 years. He believes that the money saved on duties, freight costs, and

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1/ Interview with Michael Chang, Deputy Secretary-General, Taiwan Textile Federation, on Sept. 11, 1987, in Taipei.
2/ Ibid.
3/ Taiwan Textile Federation, Statistics on Taiwan Textile and Apparel Industries--1986, pp. 82, 103, and 122.
4/ The responsibility for administering the quota program has been delegated to the Taiwan Textile Federation. Information contained in this paragraph is from an interview with Mr. Chang, Deputy Secretary-General of the Federation.

electricity (electricity in Taiwan costs about 25 percent more than in the United States) will make up for the increased wages paid to U.S. employees. This would be the first such venture into the United States.

After many very successful years, Taiwan's textile mill industry has developed into a mature, highly competitive industry. However, the industry's global competitiveness is currently being undermined by the recent appreciation of the New Taiwan dollar, the significant increase in wages, and the tight quota restrictions on its exports to major markets. Nevertheless, the potential exists for Taiwan's textile mill industry to expand further its exports, given the efforts underway to trade up to higher value-added products and to diversify its export markets to reduce reliance on the United States and other developed countries for export growth.

Foreign Competition

Hong Kong

Chapter 9. HONG KONG

Textile Industry

The textile and apparel industry is a vital element of the Hong Kong economy. It is the largest industry in Hong Kong, accounting for 40 percent of export income and employing 43 percent of the industrial workforce. Nevertheless, the textile and apparel industry in Hong Kong has reached a mature stage. Although it recorded a strong performance in 1986, with growth expected to continue through 1987, the long-term prospects are less optimistic. The industry's competitiveness is currently being undermined by a particularly severe labor shortage that is driving up labor costs and reducing the level of manufacturing activity at which it would otherwise be operating. In addition, tight quota restraints in its major foreign markets have significantly limited its potential to increase exports.

Structure of the Industry

In 1973, the apparel industry surpassed the textile mill industry in relative importance in the economy. In 1986, apparel accounted for over 80 percent of total textile and apparel exports and 70 percent of all employment in the combined industries. Hong Kong's textile industry is not only small compared to the apparel industry, but also much smaller than the textile industries in the other major textile- and apparel-producing countries.

For the most part, the textile sector is not vertically integrated, but is composed of a number of separate entities that perform different functions in the production process. The exception to this rule is the weaving industry, in which there are some large producers that also do their own dyeing and finishing. This industry which specializes in manufacturing very basic heavy-weight fabrics, is moving towards a more capital intensive structure, with more automation and less room for flexibility.

Most of the fabric used by the apparel producers is imported to obtain the large variety of fabric desired. The high-end fabrics are imported primarily from Japan and Italy. One Hong Kong Government official said that the Hong Kong weavers are reluctant to invest in the type of machinery needed to produce the top-quality fabrics such as those produced in Japan, because they are afraid that once they make the investment, the Japanese will cut their prices and undersell them. Hong Kong does not limit imports of textile products, so the producers would be without recourse. 2/

The low-end fabrics are imported primarily from China, Taiwan, and the Republic of Korea. A good deal of the lower end fabrics are imported in gray form and are then converted by Hong Kong's finishers and dyers according to the garment manufacturers' specifications. 3/ The finishing and dyeing industry in Hong Kong is more advanced than that of China, Korea, and Taiwan, but is not up to the standard of Japan. 4/

1/ "Record Growth in Hong Kong Reexports Secures Territory's Future," China Sources, vol. 8, May 1987, p. 16.
2/ Interview with Mr. Fred Leung, Hong Kong Department of Trade, Washington, DC, Sept. 24, 1987.
3/ Interview with Mr. Alex Woo, Deputy Chairman, Central Textiles Ltd. and Chairman of the Hong Kong Spinners Association, Hong Kong, Sept. 14, 1987.
4/ Interview with Mr. Kayser Sung, Editor-in-Chief, Textile Asia, Hong Kong, Sept. 15, 1987.

Approximately 45 percent of the dyeing for local textile and apparel manufacturers is done in Hong Kong. Some of the dyeing is performed in the large weaving and finishing facilities. The remainder is done by smaller converters that handle only finishing and dyeing operations. 1/ Despite the importance of this sector to the Hong Kong apparel industry, it is experiencing some problems in terms of timing and delivery. The weavers give top priority to finishing their own goods, sometimes creating a delay for fabric that is being finished in their facilities on a contract basis. 2/

Installed capacity in the spinning industry has been cut more than one-half in the last 8 years, from 848,000 spindles in 1978 to 392,000 spindles in 1987 (table 9-1). Similarly, the installed capacity for the weaving sector has been reduced by 30 percent during the same period.

Table 9-1
Installed capacity for the spinning and weaving sectors, 1978, 1980 and 1982-86

(In units)

	1978	1980	1982	1983	1984	1985	1986 1/
Spindles:							
Installed.....	848,000	823,000	621,000	555,000	497,000	414,000	392,000
In operation..	810,000	749,000	479,000	464,000	414,000	351,000	377,000
Looms:							
Installed.....	30,254	28,532	22,480	22,108	21,512	20,563	21,416
In operation..	28,857	26,585	19,895	20,513	18,425	18,716	20,507

1/ Hong Kong Monthly Digest of Statistics, June 1987.

Source: Man-Made Fibers of Japan 1985/86; Japan Chemical Fibres Association, except where noted.

The majority of the spinning and weaving capacity is for cotton fibers. Open-end rotor spinning has grown in importance during the 1980's. The open-end yarns are used to manufacture heavyweight fabrics such as denim. From 1982 to 1985, open-end spinning capacity as a percentage of total capacity grew from 8 to 18 percent as can be seen in the table 9-2. Similarly, the proportion of looms which are shuttleless has increased from 16 percent in 1982 to almost 27 percent in 1985. These numbers indicate greater change than may be apparent, because the open-end rotors and the shuttleless looms are much more efficient than the older machines they replaced. Thus, whereas the total number of machines has decreased drastically during the 1980's, the actual reduction in the production of textile products has not been as drastic.

1/ Interview with Mr. Alex Woo, Hong Kong, Sept. 14, 1987.
2/ Interview with Mr. Fred Leung, Washington, DC, Sept. 24, 1987.

Table 9-2
Structure of the textile industry installed capacity

(Number of machines)

Industry	1982	1983	1984	1985
Spinning:				
Short staple	513,000	414,000	365,000	292,000
Long staple	32,700	-	28,000	28,000
Open-end rotor	49,632	60,200	56,300	51,500
Weaving:				
Cotton system, total looms	21,460	22,100	19,000	17,960
Shuttleless	4,000	4,000	4,600	4,800
Wool weaving looms	28	-	-	-

Source: Compiled from International Textile Machinery Shipment Statistics and International Cotton Industry Statistics, 1983-86.

Note.--Unavailable data indicated by -.

Table 9-3 shows a breakdown of the Hong Kong textile mill industry by sectors. The knitwear sector is the largest employer and is the largest investor in new plant and equipment. Knit cotton fabric is among the highest value-added per employee.

The finishing sector is the next most prominent sector in terms of value-added per sector and new investments. In particular, the bleaching and dyeing sector is the second largest employer and, at over $22 million, the second largest investor in new plant and equipment. It also has one of the highest value-added per worker.

The spinning industry is made up of a few, relatively large companies in the cotton and manmade-fiber sectors, and a large number of very small companies, employing on average less than seven persons per establishment New investment was more modest in the weaving industry than in other industries but the value-added per employee averaged $8 per employee.

Table 9-3
Structure of the Hong Kong textile mill industry by industry sector, 1985

Industry	Number of establishments	Number of persons employed	Average number of employees/ establishment	Value added 1/	Value added per employee	Gross additions to fixed assets 2/
				----In thousands of U.S. dollars----		
Spinning:						
Cotton	18	7,130	396	73,582	10.3	9,032
Manmade fiber	10	2,528	253	16,780	6.6	3,993
Other	186	1,351	7	5,817	4.3	619
Weaving:						
Cotton	212	12,935	61	112,623	8.7	4,147
Manmade fiber	2	4	2	-	-	-
Labels	192	2,263	12	18,521	8.2	4,185
Other	85	647	8	5,028	7.8	866
Knits:						
Cotton	415	5,865	14	58,652	10.0	7,309
Other	333	1,454	4	9,214	6.3	920
Outerwear	1,203	41,634	35	323,268	7.8	45,485
Finishing sector:						
Bleaching and dyeing	310	16,333	53	166,754	10.2	22,156
Textile stencilling and printing	457	6,119	13	59,625	9.7	5,910
Textile finishing	227	3,849	17	32,848	8.5	1,156
Other						
Miscellaneous products:						
Made-ups (not including apparel)	204	4,435	22	26,416	6.0	2,393
Cordage, rope, twine	8	69	9	-	-	-
Threads	140	1,880	13	13,951	7.4	1,047
Embroideries	267	2,430	9	14,285	5.9	1,289
Apparel, except knitwear	9,704	276,342	28	1,593,820	5.8	85,587
Other products	530	3,002	6	25,721	8.6	546

1/ National accounts value added equals gross output less consumption of materials, services, rents, and other operations expenses. (Gross output equals sales and rents received for work done, plus income from other sources, plus the net increase in inventory of finished and partially finished goods, and goods to be resold.)
2/ Gross additions to fixed assets of land, plant and machinery, and other fixed assets less disposals of the same.

Source: Hong Kong Census and Statistics Department.

Note.--Average exchange rate of US$1.00 = HK$7.79 for 1985 is used for value calculations.

Technology

The level of technology in the Hong Kong textile industry varies considerably between companies and sectors. In general, the knitting and finishing sectors have invested more in new equipment in recent years than the spinning and weaving sectors.

The purpose of new investment in the textile mill sector has not been to increase capacity, but to cut costs and to produce higher quality products. 1/ Since producers are limited in their major markets by quotas, increased profits must be made through lowering costs and producing higher value-added products. 2/ Hong Kong manufacturers expect about a 3-year return on investment, though this number may be as low as 18 months for smaller companies and as high as 5 years for the larger firms. 3/

The finishing sector has also upgraded its equipment and facilities to maintain competitiveness with neighboring countries and to produce a higher quality, higher value-added product. 4/

Overall, the textile industry appears to have benefited from higher growth rates in imports of new equipment than the manufacturing sector as a whole as can be seen in table 9-4.

Table 9-4
Index of imports of textile machinery compared to imports of all capital goods

(1981=100)

	1984	1985	1986 1/
Textile machinery (unit value index)..	142	147	178
All capital goods (unit value index...	135	135	154
Textile machinery (quantity index).....	98	143	161
All capital goods (quantity index)....	129	143	137

1/ Estimated.

Source: Hong Kong Annual Digest of Statistics, 1986 edition.

A survey done by Research Asia in late 1986 found that 50 percent of the 130 larger textile companies and only 20 percent of Hong Kong's estimated 15,000 textile firms had computers. Further, the study found that many

1/ Interview with Mr. Kee Chan, Xeng Tze Kiang Garment and Mr. Ernest Kwan, Wilson Clothing and Rainwear Co., Sept. 14, 1987.
2/ Interview with Mr. Y.T. Ying, Managing Director, Smart Shirts, Hong Kong, Sept. 15, 1987.
3/ Interview with Mr. Leung, Washington, DC, Sept. 24, 1987.
4/ U.S. Department of Commerce, International Trade Administration, Hong Kong Textile Fabrics Market, p. 4.

computers were being used for office functions such as payroll, rather than to enhance the manufacturing process. The report claimed that textile manufacturers needed to be educated, whereas the computer industry needed to spend more time working out what the textile industry needs. 1/

Foreign Investment

One source of new capital and technology in the textile and apparel industry has been foreign investment. In 1986, there were 123 foreign textile and apparel establishments in Hong Kong, 56 of which were wholly-foreign owned and 67 of which were joint ventures. The United States had the largest number of wholly foreign-owned establishments with 13 units, followed by the United Kingdom with 10. The United Kingdom had the largest number of total establishments at 24, followed by Japan at 17 and the United States at 16. The signing of the agreement that will transfer Hong Kong to China has had some negative effects on new foreign investment, although apprehension has eased since the signing of the Joint Declaration. Overall, the United States and Japan seem to have adjusted better to Hong Kong's future status than the European countries. Not surprisingly, China was the leader in net acquisition of fixed assets in 1985, with $1.638 million, followed by Japan with $1.422 million, and the United States at a distant third with $858,846. Net acquisition of new assets for the United Kingdom actually declined in 1985. 2/

Hong Kong Investment Overseas

Many Hong Kong textile and apparel manufacturers have been investing in production facilities outside of Hong Kong to help cope with the rising costs of production, to avoid quotas, and to benefit from the numerous fiscal incentives offered by many host governments. China has been a large recipient of Hong Kong investment over the last several years. It offers a large, relatively inexpensive pool of labor, plenty of land, a ready supply of raw materials, and, until fairly recently, quota allocation for many different products. Political reasons have also been given for investing in China in light of the future status of Hong Kong in 1997. Other countries that have been the focus of investment are Thailand, Malaysia, Taiwan, Korea, Nigeria, Jamaica, Mauritius, Malta, the Maldives, and Saipan. In addition, a few Hong Kong manufacturers have expanded their operations to Canada and the United States. 3/

Production Costs

Despite the increases in wages, Hong Kong's average total cost per hour is only 21 percent of U.S. cost. A normal work week for Hong Kong workers is 48 hours, 8 hours per day, 6 days per week. An operator works approximately 298

1/ "Precomputer Producers," Textile Asia, vol. 18, April 1987, pp. 111-112.
2/ U.S. Department of Commerce, Hong Kong Fabric Market Study, p. 53.
3/ U.S. Department of Commerce, Hong Kong Textile Fabric Market, p. 2 and "Hong Kong Textile Firms Move to Canada," Globe and Mail (Toronto, Canada), June 15, 1987, p. 21.

days per year. In comparison, a normal work week for a U.S. operator is 44 hours, or a 5-1/2-day week. A U.S. operator works approximately 245 days per year, or 17.8 percent less than the Hong Kong counterpart. 1/ The longer working hours in Hong Kong are in part indicative of the long-term labor shortage in Hong Kong.

Hong Kong does not have a minimum wage for employees; instead wages are determined according to market conditions. As can be seen in table 9-5, wages have more than doubled in 1976-86 in the manufacturing industries as employees became better educated and technological processes became more advanced. Wages increased particularly in the textile and apparel industries, where the competition for workers has been intense. According to The Hong Kong Federation of Industries, average monthly salaries in the spinning and weaving industries increased by about 25 percent between March 1986 and March 1987. 2/

Table 9-5
Hourly compensation costs for production workers in the textile mill industry compared to all manufacturing

(In U.S. dollars)

	1976	1980	1982	1983	1984	1985	1986
Hourly wages in textile mill industry.....	0.88	1.53	1.63	1.48	1.59	1.74	1.87
Hourly wages in all industries.....	0.87	1.51	1.67	1.52	1.60	1.75	1.89

Source: U.S. Department of labor, Hourly Compensation costs for production workers, September 1987.

As can be seen in table 9-6, real wages went up over 20 percent in the textile sector from December 1985 to December 1986. The average wage rate for textile and apparel workers is 10 to 15 percent higher than the average for other manufacturing sectors. 3/

The shortage of labor is one of the most immediate and serious problems facing the textile industry in Hong Kong. The Hong Kong Federation of Industries has claimed that there are 80,000 vacancies in the textile and apparel sectors, with the largest shortages occurring in the cotton spinning and weaving industries. 4/ A large shirt manufacturer in Hong Kong claimed

1/ Werner International Management Consultants, Inc., Spinning and Weaving Cost Comparisons, Spring 1987, New York and Brussels.
2/ "Manufacturers Jump the 1997 Gun," South China Morning Post, Sept. 15, 1987, p. 6.
3/ Textile Asia, April 1987, p. 49.
4/"Manufacturers Jump the 1997 Gun," South China Morning Post, Sept. 15, 1987, p. 6.

Table 9-6
Real wage index for textile and apparel industries

(1980=100)

Item	December 1985	June 1986	December 1986
Textiles.....	127.5	130.0	148.7
Apparel.....	146.7	133.0	157.8

Source: Hong Kong Monthly Digest of Statistics, June 1987.

that his operations were operating at 70-80 percent capacity, with sufficient machines and business, but not the number of necessary workers. 1/ The shortage has been generated by the recent boom in exports and the decline in the participation rate in the work force. The latter reflects the reduction in the number of married women who are working. As the standard of living goes up, the need and willingness of married women to work has decreased. In addition, workers have not been as willing to work in the textile and apparel industries, in which the working conditions, location, and opportunity for growth are more limited than in other industries such as toys and electronics. 2/ As a result, the textile industry has had a very high turnover in its labor force. Employees often stay with a single company for only 1 or 2 years, treating their employment as a training ground from which they can move to more attractive jobs. 3/

Several options have been suggested by the industry to alleviate the worker shortage. The industry's first choice is to recruit workers from overseas. Another proposal would permit Hong Kong's Vietnamese refugees to join the local workforce. The refugees, which currently number around 8,000, are kept in self-contained areas. Finally, the industry has suggested busing workers from China to either expanded or new industrial zones in Southern China. 4/ All of the industry's proposals have been rejected by the Government because they view the labor shortage as a temporary problem. They do not want to be locked into a long-term policy that could be difficult to reverse in the future. 5/ Rather, the Government is taking measures to encourage housewives to participate in the workforce by introducing new legislation that would allow companies more flexibility in establishing work hours and would provide more leisure time on weekends. 6/

1/ Interview with Mr. T.F. Ying, Managing Director, Smart Shirts, Hong Kong, Sept. 15, 1987.
2/ Interview with Mr. Ken Chan and Mr. Ernest Kwan, Hong Kong, Sept. 14, 1987.
3/ Interview with Mr. Fred F.W. Leung, Washington, DC, Sept. 24, 1987.
4/ "Manufacturers Jump the 1997 Gun," South China Morning Post, Sept. 15, 1987, p. 6.
5/ Ibid.
6/ "New Working Hour Laws to Ease Job Crises", South China Sunday Morning Post, Sept. 13, 1987, p. 1.

The minimum age for workers in industry is 15 years, with special mandatory conditions for those who are aged 15 to 17 years. Employers are required to take out an insurance policy for employees to cover accidents or death resulting from employment, but they are not required to pay any social security to the Government. Employers are now required to pay a long-service payment for employees that are dismissed who have 5 to 10 years service with the company. In the last 10 years, a total of 136 pieces of labor legislation have been enacted with the overall policy objective of improving the health, safety, and welfare of the workforce. 1/

Labor productivity defined in terms of value added per U.S. dollar of constant wages was $1.70 in 1983, $1.74 in 1984, and $1.57 in 1985. In comparison, the labor productivity for the United States during these same 3 years was $2.96, $3.10, and $3.18, respectively. The drop in labor productivity in 1985 for Hong Kong can be attributed to a temporary decline in economic growth, which reversed itself in 1986.

In general, labor productivity has improved as a result of an increasingly educated workforce and the gradual replacement of old machinery with more efficient machines. Labor productivity will probably improve even more as the standard of living in Hong Kong continues to improve and more people opt to work in cleaner, more technically advanced industries, such as electronics. Textile manufacturers will have to become even more labor efficient in order to remain competitive.

Another major component of the production costs is the raw material costs. Hong Kong is a beneficiary of a close and vast supply of cotton and cotton gray goods from China. However, Hong Kong manufacturers are also affected by the Government of China's policies on exports of such goods. Until recently, Hong Kong manufacturers had the option of buying from the Chinese State-controlled trading companies during one of their biannual trade fairs held in Canton, or through small, individually run factories or collectives that had been unofficially exempted from the State-controlled export quotas. The latter source of Chinese exports is known as "parallel exports" or "parallel trade" because it is outside the official State trading system. 2/ These enterprises undercut the prices on the official exports, putting downward pressure on the overall prices. In addition, their turnaround time of 2 to 3 weeks is much shorter than that for the State-controlled companies, which is 3 to 4 months. 3/

The parallel trading allowed Hong Kong apparel manufacturers and textile finishers to obtain a cheaper source of gray goods, at shorter notice, than they could with the state-run companies. However, the Chinese imports competed with the Hong Kong spinning and weaving industries.

Around June of 1987, the Chinese Government started to enforce its export quotas of cotton yarns and fabric to Hong Kong from all sources, including the individual enterprises and collectives. This move has brought up the prices

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1/ Hong Kong Government, Hong Kong 1987, p. 84.
2/ Personal interview, Mr. Fred Leung, Washington, DC, Sept. 24, 1987.
3/ Ibid.

of their cotton yarns and fabrics and significantly reduced the flexibility of the individual enterprises and collectives in providing goods on short notice. Yet in many instances, the Hong Kong fabric producers have been able to fill the gap with relatively short delivery times.

Real estate, another important element in production costs, is a valuable asset in Hong Kong. There is a shortage of space for manufacturing purposes, despite the Hong Kong Government's policies, which discourages the sale of real estate used for manufacturing purposes to developers of housing or office buildings. The weaving and finishing industries are particularly affected by the shortage because of the nature of their operations. A typical weaving mill in Hong Kong could house around 200 apparel operations. Similarly, the finishing and dyeing mill need large amounts of room in low buildings. 1/

Another cost that some companies are also facing, is the result of new environmental regulations on the discharge of effluent. These regulations affect only new companies, not including those that simply change ownership, and require only that discharges of effluent stay below a certain level. 2/ The Government is not pushing for a massive reform of the environmental laws, though their limited action has met with stiff resistance from the industry. 3/

Much of the finishing and dyeing sector in Hong Kong has moved to the New Territories and Southern China where there is available not only land for the low-level facilities that are needed to house the heavy finishing equipment, but also where they are exempted from the new environmental protection laws. 4/

Government Policy

There are several government bodies charged with facilitating business in Hong Kong. The Hong Kong Trade Development Council (TDC) is responsible for promoting and developing international trade. The council has 25 offices overseas and organizes more than 80 international projects a year. Such projects include participation in international trade fairs, economic and business missions, and the publication of various magazines on behalf of local industry. "Hong Kong Apparel," a glossy magazine published by the TDC, gives Hong Kong apparel manufacturers an opportunity to display their merchandise and publishes a list of apparel companies and addresses along with descriptions of the products they manufacture. 5/

The Hong Kong Export Credit Insurance Corporation (ECIC) insures exporters against the risk of nonpayment for up to 90 percent of the value of the goods or services. 6/ The ECIC not only insures against risk of

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1/ Ibid.
2/ Interview with Kayser Sung, Editor-in-chief, Textile Asia, Hong Kong, Sept. 24, 1987.
3/ Interview with Mr. Fred Leung, Washington, DC, Sept. 24, 1987.
4/ Ibid.
5/ The Hong Kong and Shanghai Banking Corporation, Business Profile Series, 1985, p. 14.
6/ Ibid.

nonpayment, but also plays an important role in its advisory capacity. The ECIC investigates a prospective buyer's credit worthiness before establishing a credit limit. The credit limit (the amount the ECIC agrees to insure) is the extent of credit that the corporation would be safe to offer the overseas buyer. This service is particularly valuable to the small exporter who does not have the time or resources to evaluate a buyer's credit worthiness. 1/ In 1984 the ECIC insured almost HK$744 million worth of exports and paid around $2.4 million in claims.

The Hong Kong Productivity Council and Center is responsible for promoting increased productivity by providing business with technical help, computer and economic research services, and other consulting services. It also conducts training programs in industrial technology and management techniques. The Center also publishes "The Directory of Hong Kong Industries" and participates in the Asian Productivity Organization and the Asian Network of Industrial Technology Information and Extension. 2/

In 1986 the Government began funding a 3-year plan to enhance the Hong Kong Productivity Council to provide more consultancy services in relation to industrial automation and precision tooling. 3/ The Hong Kong Productivity Center has assisted at least one textile company with the funding for the installation of a waste-treatment facility. 4/

Production

Production of yarns and fabric in Hong Kong peaked in 1976 and declined through 1986. The nature of production has changed as well. Textile producers in Hong Kong are often more involved now in the finishing of grey goods, which are imported primarily from China, than in the actual production of the yarns or fabric. 5/

The state of the Hong Kong textile industry is closely linked to the health of the Hong Kong apparel industry. In 1986, 98 percent of the spinning industry's output and 80 percent of the weaving industry's output were consumed domestically. 6/ The apparel industry generally specializes in cut and sew operations. The manufacturers usually work on a contract basis, making their garments based on styles and specifications given to them by the buyers. 7/ The apparel sector has moved steadily upmarket from the manufacture of cheap, mass-produced clothing, to the manufacture of top designer fashions. The move upmarket has led to a demand for small lots of high-quality, specialty fabrics, most of which are imported.

1/ Hong Kong Export Credit Insurance Corporation, Annual Report 85/86 (Hong Kong: Hong Kong Export Credit Corporation), p. 4.
2/ The Hong Kong and Shanghai Banking Corporation, Business Profile Series, 1985, p. 14.
3/ Hong Kong Government, Hong Kong 1987, pp. 75-76.
4/ Interview with Mr. Paul Selway-Swift and Mr. S.K. Chenny of the Hong Kong and Shanghai Banking Corporation, Sept. 15, 1987.
5/ U.S. Department of Commerce, Hong Kong's Textile Fabric Market, p. 3.
6/ U.S. Consulate, Hong Kong, "Annual Textiles Report", Aug. 14, 1987, pp. 6-7.
7/ Hong Kong Government, Hong Kong's Fabric Market, p. 1.

As can be seen in the table 9-7, production of yarn and fabric fluctuated moderately from 1982 through 1985, with a substantial increase in 1986. Production of yarn increased by 26 percent from 1982 to 1986, and that for fabric by 28 percent.

Table 9-7
Hong Kong's production of yarn and fabric, 1982-86

Item	1982	1983	1984	1985	1986
Yarn:					
Cotton yarn, gray (tons)	126,379	140,570	136,463	142,477	180,149
Cotton/manmade-fiber yarn (tons)	21,914	21,560	16,849	11,572	10,511
Manmade-fiber (staple) yarn (tons)	4,813	4,961	3,470	3,162	2,803
Woolen yarn (tons)	1,066	1/	1/	1/	1/
Wool/manmade-fiber yarn (tons)	556	545	1/	970	1,440
Total (tons)	154,728	167,636	156,782	158,181	194,903
Fabric: 2/					
Cotton piece goods	563,398	637,517	654,739	634,746	757,150
Cotton toweling	2,871	4,463	4,441	4,146	1,524
Cotton/manmade-fiber piece goods	62,992	65,030	58,003	39,285	40,632
Manmade-fiber piece goods	822	726	556	1/	633
Silk piece goods 3/	2,169	1,606	1,198	1,126	979
Fiberglass piece goods 3/	516	1,873	1,874	1,686	223
Cotton interlining	1,650	6,525	2,798	3,976	13,019
Total	634,418	717,770	723,609	684,965	814,660

1/ Not available.
2/ Data in thousands of square meters.
3/ Source for 1982-85 - Hong Kong Textile Fabrics Market, and Hong Kong Monthly Digest of Statistics for 1986.

Source: Hong Kong Annual Digest of Statistics, 1986 edition, except as noted.

The recent large demand for cotton yarns, particularly for the manufacture of denim, has fueled a modernization drive in the spinning industry. 1/ According to an executive with a large shirt manufacturer in Hong Kong, the spinners in Hong Kong have particularly benefited from a shortage of cotton yarn in Hong Kong and throughout Asia. 2/ At the end of 1986, the utilization rate in the spinning industry was high, at 96 percent. 3/ In light of new investment in the spinning sector, approximately 80 percent of Hong Kong's yarn production is open-end yarns, which are preferred for the manufacture of bottom-weight fabrics such as denim because of their higher quality. The other 20 percent of yarn production consists of combed yarn. 4/

The weaving industry in Hong Kong produces mostly heavyweight fabrics, such as denim and corduroy. Approximately 95 percent of the fabric production is cotton. 5/ The weaving sector has continually upgraded its machinery with high-speed shuttleless looms. Consequently, actual production levels have remained relatively steady. Modernization in the weaving industry has made it more efficient in its production of large, standard lots of fabric, but it has also made it less flexible. The industry is not prepared to manufacture the large variety of fabrics on a made-to-order basis that is required by the local apparel producers.

Table 9-8
Index of Hong Kong's textile and apparel production, 1982-86

(1981 = 100)

Item	1982	1983	1984	1985	1986
Textiles (includes knitting).....	94.6	103.5	115.0	119.6	150.0
Apparel (except knitwear).....	99.6	106.0	113.8	105.0	124.8

Source: Hong Kong Monthly Digest of Statistics, June 1987.

Consumption

As the largest supplier of apparel to the world, Hong Kong consumes a tremendous amount of fabric, most of which is imported. Hong Kong is the largest importer in the world of woven bleached cotton fabrics, woven

1/ Interview with Kayser Sung, Editor-in-Chief, Textile Asia, Sept. 15, 1987.
2/ Interview with T.F. Ying, Managing Director, Smart Shirts, Hong Kong, Sept. 15, 1987.
3/ U.S. Consulate, Hong Kong, "Annual Textile Report--1986", Aug. 14, 1987, p. 6.
4/ Interview with Mr. Alex Woo, Deputy Chairman, Central Textiles Ltd., and Chairman of the Hong Kong Spinners Association, Hong Kong, Sept. 14, 1987.
5/ U.S. Consulate, Hong Kong, "Annual Textile Report--1986," Aug. 14, 1987, p. 6.

continuous filament manmade-fiber fabrics, woven silk fabrics, and woven ramie fabrics. It is also the second largest importer of woven gray cotton fabrics. 1/

Changes in Hong Kong's apparent consumption of fabric from 1982 to 1986 corresponded roughly to its production of apparel. Consumption of fabrics rose in 1986 to 2.1 billion square meters from a low of 1.5 billion in 1982, representing a 40-percent increase in this 5-year period (table 9-9).

Hong Kong also reexports a significant portion of its imported fabric. Some of the imported fabric is also finished in Hong Kong and then reexported. Exports of fabric are almost as high as Hong Kong's production of fabric. One possible explanation for this high level of exports is that fabric that has been imported but finished in Hong Kong is classified as exports rather than as reexports. Consumption of fabric that is woven in Hong Kong is high, at 80 percent. 2/ The imports for consumption to consumption ratio may also be skewed because some of the imported gray fabric that is finished in Hong Kong is counted towards consumption, even though it is reexported as fabric.

The apparent consumption of yarns remained relatively steady through the first half of the 1980's until 1986, when consumption of yarn leaped 28 percent. Approximately one-third of the yarn consumed in Hong Kong is supplied by domestic manufacturers, the remaining two-thirds is imported.

Table 9-9
Hong Kong's apparent consumption of yarns and woven fabrics, 1982-86

Item	1982	1983	1984	1985	1986
Yarns:					
Production (tons)	154,728	167,636	156,782	158,181	194,903
Imports (tons)	239,252	320,568	366,910	427,118	511,291
Imports for consumption 1/ (tons)	186,013	251,493	231,884	239,718	314,483
Exports (tons)	21,397	30,297	26,537	20,590	27,334
Reexports (tons)	53,239	69,075	135,026	187,400	196,808
Apparent consumption 2/ (tons)	319,344	388,832	362,129	377,309	482,052
Imports/consumption (percent)	75	82	101	113	106
Imports for consumption/consumption (percent)	58	65	64	64	65

See footnotes at end of table.

1/ U.S. Consulate, Hong Kong, "Annual Textile Report--1987", Aug. 14, 1987, p. 9.
2/ Ibid., p. 6.

Table 9-9
Hong Kong's apparent consumption of yarns and woven fabrics, 1982-86--Continued

Item	1982	1983	1984	1985	1986
Woven fabrics:					
Production (thousand square meters)	634,418	717,770	723,609	684,965	814,660
Imports (thousand square meters)	2,034,158	2,353,693	2,718,764	2,937,991	3,766,820
Imports for consumption 1/ (thousand square meters)	1,375,889	1,590,192	1,717,986	1,606,649	2,049,743
Exports (thousand square meters)	507,966	640,351	647,433	607,758	805,665
Reexports (thousand square meters)	658,269	763,501	1,000,778	1,331,342	1,717,077
Apparent consumption (thousand square meters)	1,502,341	1,667,611	1,794,162	1,683,856	2,058,738
Imports/consumption (percent)	135	141	151	174	183
Imports for consumption/consumption (percent)	92	95	96	95	100

1/ Calculated by the staff of the U.S. International Trade Commission by subtracting reexports from imports. Consumption refers to the use of yarns and fabrics in Hong Kong for production purposes.
2/ Calculated by the staff of the U.S. International Trade Commission by adding production plus imports, minus exports and reexports.

Source: Production data compiled from Hong Kong Annual Digest of Statistics, Hong Kong Monthly Digest of Statistics and United Nations data for SITC 65 (textiles).

Foreign Trade

The Hong Kong textile mill industry is characteristic of the economy in general in that it is closely linked to the international trading sector. There are no duties or restrictions on imports of textiles or apparel products into Hong Kong. Whereas the majority of the final output from the textile sector is consumed domestically, almost all of its raw materials and inputs are imported, and the product for which the yarns and fabrics is ultimately used, namely apparel, is exported. In 1980, Hong Kong replaced Italy as the largest supplier of apparel to the world.

Table 9-10 shows imports, exports, and reexports of textiles and apparel for Hong Kong from 1982 through 1986. Apparel accounted for 82 to 85 percent of the total value of Hong Kong's exports for textiles and apparel for this period. The textiles and apparel trade balance experienced a positive growth

rate of 43 percent from 1982 to 1986 as a result of rapid expansion of apparel exports. In contrast, increased imports of textile yarns and fabrics produced a growing negative trade balance for the textile sector.

Table 9-10
Hong Kong's textile and apparel trade: by product category, 1982-86

(In millions of dollars)

	1982	1983	1984	1985	1986
Imports:					
Textile yarn and thread....	750.8	960.7	1,278.0	1,258.9	1,512.7
Cotton fabric, woven.....	600.4	648.2	850.1	748.1	978.1
Noncotton fabric, woven....	1,196.9	1,228.8	1,539.8	1,732.8	2,297.9
Lace, ribbons, tulle, etc..	62.9	61.6	80.0	76.4	97.1
Special fabrics.....	123.3	136.8	173.3	209.1	246.2
Textile made-ups.....	185.4	178.7	179.9	158.7	200.8
Floor coverings.....	47.9	47.8	57.5	63.4	71.9
Sub-total.....	2,967.6	3,262.6	4,158.6	4,247.4	5,404.7
Apparel not of fur.....	1,053.6	1,158.5	1,465.3	1,674.0	2,486.0
Apparel of fur.....	6.1	7.7	18.9	22.6	42.3
Sub-total.....	1,059.7	1,166.2	1,484.2	1,696.6	2,528.3
Total.....	4,027.3	4,428.8	5,642.8	5,944.0	7,933.0
Exports:					
Textile yarn and thread....	96.1	118.7	119.5	99.9	126.0
Cotton fabric, woven.....	413.0	472.6	556.7	511.0	687.8
Noncotton fabric, woven....	179.0	216.3	234.1	214.9	365.2
Lace, ribbons, tulle, etc..	14.7	18.1	24.5	24.3	37.5
Special fabrics.....	34.1	38.0	48.4	48.6	64.3
Textile made-ups.....	73.8	78.9	94.8	85.5	94.8
Floor coverings.....	20.0	24.0	24.8	21.4	26.6
Sub-total.....	830.7	966.6	1,100.8	997.6	1,402.2
Apparel not of fur.....	4,548.5	4,496.4	5,672.7	5,492.7	6,352.4
Apparel of fur.....	179.2	184.9	288.8	235.3	317.6
Sub-total.....	4,727.7	4,681.3	5,961.5	5,728.0	6,670.0
Total.....	5,558.4	5,647.9	7,062.3	6,725.6	8,072.2
Re-exports:					
Textile yarn and thread....	253.5	259.7	506.0	672.3	757.9
Cotton fabric, woven.....	145.8	150.5	212.4	246.2	358.4
Woven textiles, noncotton..	406.2	405.6	612.0	773.4	1,042.3
Lace, ribbons, tulle, etc..	29.8	30.1	34.6	35.2	40.0
Special fabrics.....	41.3	49.9	81.3	128.4	120.6
Textile made-ups.....	154.9	146.1	144.0	139.5	186.6
Floor coverings.....	23.7	22.4	26.1	28.9	38.6
Sub-total.....	1,055.2	1,064.3	1,616.4	2,023.9	2,544.4
Apparel not of fur.....	494.3	610.8	789.4	985.5	1,710.6
Apparel of fur.....	1.3	1.1	2.5	1.7	6.3
Sub-total.....	495.6	611.9	791.9	987.2	1,716.9
Total.....	1,550.9	1,676.1	2,408.3	3,011.1	4,261.3
Textiles trade balance.....	-1,081.7	-1,231.7	-1,441.4	-1,225.9	-1,458.1
Apparel trade balance.....	4,163.6	4,127.0	5,269.2	5,018.6	5,858.6
Total trade balance.....	3,082.1	2,895.3	3,827.8	3,792.7	4,400.5

Source: Compiled from United Nations data for SITC 65 (textiles) and SITC 84 (apparel).

Exports

The value of Hong Kong's domestic exports of textiles and apparel increased at an annual average rate of 9.7 percent from 1982 through 1986, from US$5.6 billion in 1982 to US$8.1 billion in 1986.

The value of exports of apparel and textile made-ups reflect the gradual orientation towards the manufacture and export of higher quality, fashion-oriented goods from Hong Kong. Increasing import quotas in its overseas markets, in addition to higher labor and other manufacturing costs, encouraged firms to provide higher quality, higher profit-margin products for export. The exception for this trend has been in the area of yarns and, in 1986, in that for fabrics. Whereas the United States has been the largest recipient of Hong Kong's apparel, China has been Hong Kong's major market for yarns and fabric. The quantity of exports to all countries also experienced significant growth from 1982 to 1986, particularly exports of apparel and made-ups (table 9-11).

Table 9-11
Value and quantity indices of Hong Kong exports to all countries

(1981=100)

Item	1982	1983	1984	1985	1986 1/
			Unit value		
Clothing	110	123	146	148	151
Textile fabrics	105	114	133	127	126
Textile yarn and thread	94	100	112	115	115
Textile made-ups and related articles	114	132	155	163	168
			Quantity		
Clothing	93	99	113	107	119
Textile fabrics	90	116	123	119	175
Textile yarn and thread	112	157	150	123	156
Textile made-ups and related articles	79	89	98	87	93

1/ Estimated.

Source: Hong Kong Monthly Digest of Statistics, 1986.

The growth in exports of higher value-added textiles and apparel is even more apparent in Hong Kong's exports to the United States. The unit value of apparel exports to the United States increased 69 percent from 1981 to 1986. Similarly, the value of fabric exports to the United States increased 41 percent (table 9-12).

Table 9-12
Value and quantity indexes of Hong Kong exports to the United States

(1981=100)

Item	1983	1984	1985	1986 1/
	Unit value			
Clothing	131	162	167	169
Textile fabrics	128	153	146	141
Textile yarn and thread	-	-	-	-
Textile made-ups and related articles	132	154	157	164
	Quantity			
Clothing	112	134	136	144
Textile fabrics	111	109	97	114
Textile yarn and thread	-	-	-	-
Textile made-ups and related articles	108	135	131	133

1/ Estimated.

Source: Hong Kong Annual Digest of Statistics.

Table 9-13 shows the top eight export markets for Hong Kong's textiles and apparel. In terms of value, not only did China account for the largest share of Hong Kong's exports of textiles, but this share grew from 19 percent in 1982 to 33 percent in 1986. The share of exports of textiles to the United States remained relatively steady, whereas the share of textile exports going to the United Kingdom declined from 10 percent in 1982 to 6 percent in 1986. Textile exports to Australia dropped from 10 percent in 1982 to 5 percent in 1986.

Both yarns and woven fabrics showed a moderate trend in growth in the first half of the 1980's, with minor setbacks in 1982 and 1985 and significant growth in 1986 (table 9-13). The most dramatic increase occurred in noncotton fabric, growing over 100 percent, from $179 million in 1982 to $365 million in 1986, and accounting for 26 percent of total textile exports in 1986.

In comparison, exports of cotton fabrics increased in value by 67 percent from $413.0 million in 1982 to $687,8 million in 1986, and accounted for 49 percent of total textile exports in 1986.

Table 9-13
Top eight export markets for Hong Kong's textiles and apparel, 1982-86

(In millions of U.S. dollars)

Market	1982	1983	1984	1985	1986
Textile yarns and fabric:					
China	155.4	218.1	259.2	270.6	467.5
United States	97.3	143.1	162.4	141.8	157.2
United Kingdom	82.4	82.7	77.2	67.2	84.3
Singapore	59.4	65.7	64.8	52.8	70.4
Philippines	62.7	67.3	69.3	56.7	69.1
Australia	78.8	63.6	86.7	64.6	68.9
Sri Lanka	19.6	28.9	36.4	26.0	43.8
Thailand	19.8	25.8	27.5	22.9	34.8
Other	255.3	271.4	319.2	295.0	406.2
Total	830.7	966.6	1,102.7	997.6	1,402.2
Apparel:					
United States	1,907.1	2,207.9	3,022.8	3,167.7	3,449.4
West Germany	711.3	625.3	709.1	582.3	810.1
United Kingdom	555.0	473.7	567.6	493.1	622.1
Japan	208.3	185.6	266.8	214.7	308.7
Canada	151.1	183.2	224.3	229.0	261.9
Switzerland	132.5	128.1	161.2	135.1	165.5
Netherlands	120.7	108.0	122.0	107.5	143.7
Sweden	127.7	93.8	115.8	112.3	136.3
Other	814.1	675.7	771.9	686.4	772.3
Total	4,727.8	4,681.3	5,961.5	5,728.1	6,670.0

Source: Compiled from United Nations data for SITC 65 (textiles) and SITC 84 (apparel).

Reexports

Reexports have grown in importance in Hong Kong's trading system, in part as a result of growing economic and political ties with China. In 1985, over 70 percent of reexports involved China as either a source of the goods which were reexported or the country of destination for the reexports. 1/ The growth of reexports of textiles and apparel grew by 175 percent from 1982 to 1986, with reexports to China accounting for 38 percent of the growth. Noncotton woven fabric accounted for the largest share of reexports reaching $1.0 billion in 1986, or 41 percent of reexports of textile products.

1/ Hong Kong Government, Hong Kong 1987, p. 12.

As can be seen in table 9-14, China's lead role as a market for Hong Kong's reexports of textiles has increased from accounting for 42 percent of Hong Kong's textile reexports in 1982 to 56 percent in 1986. After China, Hong Kong's reexports are dispersed among a number of different countries. Much of these reexports originated in China and passed through Hong Kong to the rest of the world.

Table 9-14
Top eight markets for reexports of textiles from Hong Kong, 1982-86

(In millions of U.S. dollars)

Country	1982	1983	1984	1985	1986
China	438.5	431.1	829.6	1,222.3	1,426.3
Korea	47.6	44.3	73.4	129.0	208.0
Japan	49.0	51.5	78.3	72.2	83.4
Macao	66.6	62.0	64.9	53.2	71.9
United States	36.7	47.3	59.3	55.1	66.8
Philippines	36.1	26.9	39.2	40.4	56.0
Taiwan	19.4	24.6	40.2	33.8	49.6
Singapore	36.0	41.7	37.1	38.1	49.2
Total	1,055.3	1,064.2	1,616.4	2,023.9	2,544.4

Source: Compiled from United Nations data for SITC 65 (textiles).

Imports

Hong Kong imports almost all of its raw materials and more than one-half of its yarn and fabric for production purposes. The majority of Hong Kong's fiber imports was cotton. China surpassed the United States as Hong Kong's largest supplier of cotton in 1983, and over one-half of Hong Kong's cotton imports came from China from 1984 through 1986. Hong Kong's imports of cotton from the United States dropped in value from $85.8 million in 1982 to $1.3 million in 1986 compared with its cotton imports from China of $107.3 million in 1986. Much of Hong Kong's imports of other fibers is subsequently reexported. For instance, Hong Kong imports silk from China, much of which is then reexported to Korea and Japan. 1/ Imports of yarns, fabrics, and other textile products grew by 82 percent in value from 1982 through 1986.

As can be seen in table 9-15, China is also the largest supplier of Hong Kong's textile products. Its market share has grown from 32 percent in 1982 to 42 percent in 1986. In contrast, Japan's share of the market has decreased by 6 percent, to 17 percent of the market.

1/ Data in this paragraph were compiled from United Nations data for SITC 26 (fibers).

Table 9-15
Top ten exporters of textiles to Hong Kong, 1982-86

(In millions of U.S. dollars)

Country	1982	1983	1984	1985	1986
China	964.9	1,231.3	1,675.4	1,632.3	2,289.7
Taiwan	557.3	555.8	751.9	928.4	1,168.4
Japan	693.8	793.0	899.3	826.4	938.8
Korea	276.1	249.7	346.2	355.9	477.2
Macao	66.8	70.6	103.3	84.6	92.9
Italy	36.3	43.1	58.8	61.3	67.0
United States	52.3	46.0	48.6	60.4	52.3
West Germany	29.6	32.4	35.7	40.8	51.5
United Kingdom	35.4	35.5	45.4	49.1	42.8
Thailand	33.8	25.4	23.5	23.4	33.2
Total	2,967.6	3,262.6	4,158.6	4,247.4	5404.7

Source: Compiled from United Nations data for SITC 65 (textiles).

MFA Provisions

Hong Kong has seven bilateral agreements that strictly limit its export potential to the countries. The agreements are with Austria, Canada, the European Community, Finland, Norway, Sweden, and the United States.

In July 1986, Hong Kong signed a new agreement with the United States that established specific quota limits on over 70 product categories, with three overall group limits. The group limits effectively cap the annual average growth rate of all textiles and apparel to 1 percent for the agreement term, 1986-91. The limit is much stricter than the previous agreement that restricted annual growth by category rather than by group. Since fewer quota categories were restricted under the former agreement, Hong Kong was able to achieve growth rates in the first half of the 1980's that are unlikely to be repeated. The new agreement also has had the effect of bringing imports of all fibers under control. Prior to the renewal of the MFA in July 1986, products of vegetable fibers other than cotton and silk blends were not included in the MFA and therefore were not subject to restraints. The current U.S.-Hong Kong bilateral agreement includes products made of these fibers in the list of items which are subject to quota. The quota utilization rate in Hong Kong for exports to the United States was 99.9 percent in 1986 compared with 96.0 percent in 1985. 1/

Hong Kong manufacturers can lease up to 50 percent of their quota to other manufacturers. When quota availability is extremely tight, a manufacturer can pay as much for the quota as it costs to make the product. Such high prices

1/ U.S. Consulate, Hong Kong, "Annual Textile Report--1987", Aug. 14, 1987, p. 1.

are not paid on a regular basis, however, but are usually paid when a manufacturer needs a small amount of quota to fill a large order. 1/

Competitive Assessment

The Hong Kong textile mill industry has undergone a period of rationalization since the 1970's and has emerged as a smaller, but more efficient producer, which specializes in heavyweight cotton fabric. From 1978 to 1986, capacity measured in terms of the number of spindles has decreased by 54 percent. In contrast, the apparel industry has emerged as the largest exporter of apparel, replacing Italy as the world leader in 1980. While exports of textiles accounted for around 2 percent of the world export market from 1982 through 1985, the apparel industry accounted for about 12 percent. While exports of textiles increased by 69 percent from 1982 to 1986, compared to a growth in apparel exports of 41 percent, a large share of these textile exports were actually imported gray goods that were finished in Hong Kong. Hong Kong is the third largest importer of textiles in the world after the European Community and the United States. Imports of fabric by the domestic apparel industry has contributed to Hong Kong's textile trade deficit, which grew by 35 percent from 1982 to 1986.

Rising production costs, tight quota restraints, and a heavy reliance on imports of raw materials have affected the competitiveness of the Hong Kong textile industry in its domestic and export markets. The labor shortage, caused in general by a decline in the participation rate in the workforce and a recent boom in exports, has driven up the cost of wages and has prevented manufacturers from operating at their potential capacity. The labor shortage has particularly affected the textile industry, which has been losing workers to more attractive, newer industries. To cope with the growing labor shortage, manufacturers have invested in labor-saving technology which has made the industry more efficient at producing high-volume, heavyweight cotton fabric. However, in the process they limited their flexibility to produce the small lots of various types of fabric required by the apparel industry.

Other manufacturing costs have also increased, as a growing number of industries compete for the limited resources of Hong Kong. The growing cost of real estate has particularly affected textile manufacturers, who need considerably more space for manufacturing than apparel producers. The shortage of manufacturing space has limited the potential of the industry to expand in Hong Kong.

MFA constraints have limited Hong Kong's ability to grow in its major export markets. In particular, the U.S.-Hong Kong bilateral agreement has restricted not only those MFA categories in which Hong Kong is already exporting but, through group quotas, has also limited the export potential of products which it may not be currently shipping. Hong Kong's agreements with the United States, the EC, and Canada all limit Hong Kong's growth to an average annual rate of growth of about 1 percent through 1991.

1/ Interview with Mr. Kee W. Chan and Mr. Ernest Kwan, Hong Kong, Sept. 14, 1987.

Hong Kong textile manufacturers also must import almost all of their raw materials, subjecting themselves to the uncertainty of market forces and exchange rate fluctuations. For example, the recent depreciation of the Hong Kong dollar relative to the yen and other currencies which are not pegged to the U.S. dollar has pushed up the price of raw material imports. Nevertheless, the depreciation has also helped it become more price competitive relative to the other large Asian producers, particularly Japan, in both its export and domestic markets. However Hong Kong textile manufacturers have benefited from this price advantage only to the extent that they manufacture similar or substitutable products. One Hong Kong shirt manufacturer claimed that he still imported fabric from Japan, despite the tremendous increase in price, because the material was not made elsewhere. 1/

The industry has been particularly competitive in the production of denim. The industry has invested heavily in new spinning and weaving machinery which is very efficient at producing heavyweight cotton fabric and has been further aided by the close and relatively cheap supply of cotton fiber from China. A recently large demand for denim in part explains the growth in Hong Kong's production of cotton yarns and fabrics from 1982 to 1986, of 42 percent and 34 percent, respectively. Nevertheless, Hong Kong's future success in maintaining and expanding its market share of denim is threatened by other lowercost producers, particularly China which is developing the ability to produce higher quality denim.

The industry's future competitiveness in both its domestic and foreign markets will depend almost entirely on its own ability to adapt to the changing conditions of the world market and to overcome the domestic constraints it faces in the production process. In the near future, the industry also faces pressure from the United States to revalue its exchange rate relative to the dollar, which would reduce its price competitiveness in the U.S. market, as well as in its other major markets. So far, the industry has invested heavily in new machinery to improve quality and efficiency in the production process and to move into higher value-added, higher fashion goods. It has also invested abroad to access foreign markets, as well as to take advantage of lower production costs. Despite the actions it has taken to remain competitive, the textile industry in Hong Kong is a mature industry which is not expected to experience any significant long-term growth.

1/ Interview with Mr. T.F. Ying, Hong Kong, Sept. 15, 1987.

Foreign Competition

Republic of Korea

CHAPTER 10. KOREA

The textile sector in the Republic of Korea (Korea) has played a major role in the development of the national economy, having been a major beneficiary of the Government's export policy during the period of industrialization that began in the early 1960's. The textile sector in Korea, until the 1960's, concentrated on producing low-priced products for domestic consumption.

Today, the textile sector, consisting of the textile, manmade-fiber, and apparel industries, is Korea's largest "single foreign exchange earner" and the largest employer in the manufacturing sector. It ranks among the world's 10 largest textile industries in terms of export volume and spinning and manmade-fiber capacities. 1/ In 1985, the textile sector in Korea contributed almost 14 percent of the value added in manufacturing and 23 percent of total exports. It also provided employment for 759,200 persons in 1986 out of a manufacturing workforce of 3.8 million. 2/ Moreover, the sector also has significant linkages with other industries, especially the machinery and chemical sectors (42 percent of the textile machinery used in 1980 was of domestic origin). 3/

The Textile Industry

Structure

The textile industry in Korea consists of several major segments distinguished by process and output: spinning, weaving, dyeing and finishing, knitting, and made-up goods other than apparel. The industry along with the manmade-fiber and apparel industries are interrelated to the extent that demand for manmade fibers, spun yarn, or woven fabric is derived from demand for the finished goods, especially apparel. Thus, although the focal point of the remainder of this chapter on Korea will be on the spinning and weaving industries and support industries such as dyeing and finishing, a brief discussion of the other industries will also be presented.

The industries constituting the textile sector vary considerably in their structural make-up. A relatively small number of large manufacturers exist in the upstream industries such as manmade fibers and spinning, whereas a large number of small producers are found in the downstream industries such as apparel and other textile products. 4/ The apparel industry, made up of many small family-owned firms working on contract for the large general trading companies, uses relatively simple technology and operates with limited capital. Because of the high labor intensity of its operations, the apparel industry accounts for slightly more than one-half of total employment in the textile sector (table 10-1). By contrast, the manmade-fiber, spinning, and knitting industries tend to consist of large-scale, generally capital-intensive operations. In between these extremes is the weaving industry, consisting of a larger number of small- and medium-size mills. 5/

1/ Japan Textile News, "Korean Textile Industry Today," December 1985, p. 32.
2/ Ibid.
3/ World Bank, Korea: Managing the Industrial Transition, vol. II, "Selected Topics and Case Studies," Washington, DC, March 1987, p. 150.
4/ Ibid.
5/ Interview with officials of the Korea Federation of Textile Industries.

Table 10-1
Average number of persons employed in Korea's textile sector, by industries, 1980-86

Industry	1980	1981	1982	1983	1984	1985	1986
Apparel	368,013	382,156	383,355	384,448	383,936	393,602	397,102
Spinning	118,905	117,063	111,583	112,374	109,294	103,853	105,370
Weaving	97,840	99,561	94,901	91,543	80,664	74,190	88,933
Knitting	60,030	54,839	51,910	51,551	59,520	70,624	79,866
Other	87,175	106,714	100,051	95,704	87,705	83,220	87,931
Total	731,963	760,333	741,800	735,620	721,119	725,489	759,202

Source: Compiled from data published by the Korea Federation of Textile Industries (KOFOTI) in The Statistics on Korean Textile Industries, p. 10. The data are for KOFOTI's member firms, which account for more than 90 percent of the textile sector's total output.

As of 1986, production workers' hourly compensation costs in Korea for all manufacturing industries averaged $1.55; for workers in the textile mill products industry, $1.09; and for those in the apparel industry, $0.91. This compares with an average of $8.81 for production workers in the U.S. textile mill industry. 1/ Labor productivity and wage indices for the textile industry in Korea in 1984 and 1985 are shown in table 10-2.

Spinning industry.--The spinning industry in Korea is characterized by a relatively small number of firms operating on a fairly large scale. According to the Spinners and Weavers Association of Korea (SWAK), the average number of spindles per mill in Korea is 140,000 versus about 20,000 in Taiwan. 2/ In addition, the number of employees per company averaged just over 1,000. Thus, because of its large economies of scale, Korea ranks among the lower cost spinners in Asia.

The Korean spinning industry's capacity, after showing little or no growth during 1980-82, resumed its expansionary phase in 1983 and by 1986 had reached its highest level during the 1980's (table 10-3). The expansion is expected to continue into 1987, at least in the cotton-system spinning segment, in which the number of spindles is projected to reach 3.5 million. Spinners operating on the cotton system account for three-fourths of the industry's capacity; the remainder operate on the worsted and woolen systems. About 35 firms spin yarn on the cotton system, of which 23 are member firms of SWAK and account for 90 to 95 percent of cotton-system yarn production. 3/

1/ U.S. Bureau of Labor Statistics, "Hourly Compensation Costs for Production Workers," September 1987. It should be noted that the labor turmoil that occurred in mid-1987 over workers' demand for increased wages, resulted in an average wage increase of 15.1 percent in the textile and apparel industries.
2/ Interview with selected officials of SWAK on Sept. 7, 1987, in Seoul.
3/ Ibid.

Table 10-2
Labor productivity and wage indices for all industries and the textile industries in Korea

(1980=100)

Item	1984	1985	Percentage change, from 1984 to 1985
Labor productivity index:			
All industries	155.8	166.6	6.9
Manufacturing industries	159.8	171.1	7.1
Textiles	145.5	153.5	5.5
Apparel	125.6	139.4	11.0
Wage index:			
Nominal:			
All industries	166.1	183.0	10.2
Manufacturing industries	167.2	183.8	9.9
Textiles	161.4	175.9	9.0
Apparel	169.5	183.1	8.0
Real:			
All industries	120.7	129.8	7.5
Manufacturing industries	121.5	130.4	7.3
Textiles	117.3	124.8	6.4
Apparel	123.2	129.9	5.4

Source: Korean Economic Planning Board, as reported by U.S. Embassy Seoul, "Annual Korean Textile Industry Report for 1985," Oct. 10, 1986, table 11.

The spinning industry is the second largest employer in the textile sector after the apparel industry. However, employment in the spinning industry, along with that in the weaving industry, declined during 1980-86, partly reflecting the introduction of new equipment and the resultant improvement in labor productivity. According to SWAK, wages, which had been raised 9.9 percent in April 1987, were raised by another 8.3 percent in September 1987 following the labor unrest that summer. This brought the total increase in labor costs, both direct and fringe benefits, to about 25 percent for the year. According to SWAK, a number of the mills have dormitories, and also own schools to provide education to mostly high-school girls who also work in the mills. Because of a labor shortage, the mills found it necessary to have schools in order to secure the necessary labor. 1/

Labor costs, both direct and indirect, account for slightly more than 10 percent of the spinners' production costs. About 60 to 65 percent of the production costs consist of raw materials, including freight costs to ship raw cotton from abroad. Approximately 80 percent or more of Korea's raw cotton is imported from the United States; wool is primarily imported from Australia. Almost all of the manmade fibers used by the industry are produced locally. 2/

1/ Ibid.
2/ Ibid.

Table 10-3
Capacity and production of yarns in Korea's spinning industry, by types of operating systems, 1980-86

Year	Spinning system			
	Cotton	Worsted	Woolen	Total
	Capacity (in number of spindles)			
1980	3,167,124	823,924	111,996	4,103,144
1981	3,192,212	839,080	115,264	4,146,556
1982	3,128,809	837,216	123,890	4,089,915
1983	3,243,040	895,412	131,059	4,265,511
1984	3,251,342	849,036	144,837	4,245,215
1985	3,297,692	809,648	151,577	4,258,917
1986	3,297,724	869,928	160,575	4,328,227
	Yarn production (in metric tons)			
1980	381,386	17,940	17,487	416,813
1981	383,872	23,964	17,024	424,860
1982	403,608	23,116	18,769	445,493
1983	420,081	25,833	22,563	468,477
1984	437,762	27,970	22,866	488,598
1985	438,950	28,676	21,396	489,022
1986	470,689	31,457	23,013	525,159

Source: Compiled from data published by the Korea Federation of Textile Industries (KOFOTI) in The Statistics on Korean Textile Industries, p. 4.

In recent years, spinners in Korea have shifted from heavy or coarse yarns to lighter and finer count yarns, because of low-price competition from Pakistan, China, and Indonesia, major suppliers of the heavier coarse yarns. Korea has the capability of spinning better quality, finer count yarns than these countries. The smaller Korean spinners, however, are currently producing mostly the coarser yarns that compete directly with products from Pakistan, China, and Indonesia. 1/

The spinning industry, especially the cotton-system segment, essentially makes only standard types of yarn. The industry's large-scale operations hinder its flexibility to shift production lines in response to changes in fashion and demand. 2/ More complicated yarns, such as fancies or twisted yarns, are imported principally from Italy and Taiwan. The industry's large-scale operations hinder its flexibility to shift production lines in response to changes in fashion and demand. In addition, the industry lacks the sophisticated and advanced equipment to make the fancy yarns. The spinners

1/ Ibid.
2/ Fieldtrip interview with company officials of Samsung Co., Ltd., Sept. 8, 1987, in Seoul.

that make fancy yarns are often the small firms, which lack the capital to invest in new equipment. 1/

Spinners in Korea are fairly weak financially and, therefore, depend largely on bank financing to fund their operations. Approximately 84 percent of their capital structure represents debt financing, typically subject to market interest rates. The remaining 14 percent is paid-in capital. This compares with 60-percent debt financing in Taiwan. 2/

The wide-scale improvement in profitability of the spinning industry during the 1980's, partly resulting from the "three blessings--lower oil prices, lower world wide interest rates, and a currency that is weak against the Japanese yen," plus the low price of raw cotton in 1986, has enabled it to invest in new equipment. Although the spinning sector is modernizing its facilities, virtually all of its spindles are conventional ring spinning with only about 300,000 drums (spindles) being open-end (OE) spinning. Investment in OE spinning is very small because it consumes much more electricity than ring spinning. Because the cost of electricity is very high in Korea 3/, spinners are much more reliant on conventional spinning, which is more labor intensive than OE. 4/

The need to increase spinning capacity partly reflects the current imbalance in supply of and demand for cotton yarn in Korea. A shortage of cotton yarn developed during the past year or so resulting from strong export demand and equally strong demand from local weavers. Korea's exports of textiles and apparel to Japan, and to other foreign markets in which Japan competes, have been growing rapidly during the past year or so because of the high value of the Japanese yen, particularly compared with the won. Based on a number of interviews with textile interests in both Korea and Japan, Korea offers Japan its greatest competition in textiles, particularly in terms of price and its improving quality textiles. 5/

To resolve the supply/demand imbalance, the Government restricted the quantity of cotton yarn exports during the first half of 1987 to 70 percent of the 1986 level and further tightened it to 60 percent during the second half. 6/ The status of the export restrictions for 1988 is uncertain, but will depend on market conditions and the cotton yarn supplies. 7/ At the same time, to alleviate the shortage of cotton yarns, the Government decided to carry out emergency importation of cotton yarns by establishing temporary tariff-rate quotas and reducing the tariff on imports within the quota from 20 percent to 2 percent ad valorem. 8/ According to selected officials of Korea's Ministry of Trade and Industry (MTI), 9/ the tariff-rate quotas for 1987 are shown in the following tabulation (in metric tons):

1/ Interview with selected officials of SWAK on Sept. 7, 1987, in Seoul.
2/ Ibid.
3/ Electricity costs in Korea are almost as high as those in Japan and much higher than those in Taiwan, Malaysia, Thailand, and Singapore.
4/ Interview with selected officials of SWAK on Sept. 7, 1987, in Seoul.
5/ Ibid.
6/ Interview with selected officials of Korea's Ministry of Trade and Industry on Sept. 9, 1987, in Seoul.
7/ Ibid.
8/ Ibid.
9/ Ibid.

Item	Amount eligible for reduced duty
Cotton yarn	9,000
Polyester spun yarn	3,500
Nylon filament nontextured yarn 1/	4,000
Acrylic spun yarn	4,000
Rayon spun yarn	500

1/ The tariff-rate quota for this nylon yarn was initially set at 2,000 metric tons for January-June 1987, but was subsequently extended for the remainder of the year for another 2,000 metric tons.

The status of the tariff-rate quotas for 1988 is uncertain and depends on market conditions. According to MTI, the quotas are likely to continue into 1988 but possibly at reduced levels.

Table 10-4
Spun yarn: Korea's production, by market of utilization, 1982-86

(In metric tons)

Market and type	1982	1983	1984	1985	1986
Domestic market:					
Cotton yarn	89,195	88,302	86,968	89,465	94,502
Cotton blended yarn	42,139	62,851	59,768	63,941	72,839
Manmade-fiber yarn	16,735	19,601	14,438	14,792	15,036
Total	148,069	170,754	161,174	168,199	182,376
Export market:					
Cotton yarn	151,187	130,008	141,306	135,833	129,249
Cotton blended yarn	121,087	138,920	149,720	149,711	174,100
Manmade fiber yarn	10,364	10,539	12,471	17,433	20,759
Total	282,638	279,466	303,497	302,977	324,107
Grand total	430,708	450,221	464,670	471,175	506,484

Source: Compiled from data published by the Spinners and Weavers Association of Korea (SWAK). Data are for members of SWAK, which account for approximately 90 to 95 percent of total spun yarn output.

Manmade-fiber industry.--The manmade-fiber industry in Korea, which dates back to 1959, when daily capacity totaled only 2 tons, comprised 12 firms in 1985. It contributes about one-third of total production of Korea's textile sector but employs only about 3 percent, or 20,323 persons, of its total labor force, 1/ reflecting the relatively high capital intensity of the industry.

The expansion of production facilities and the addition of new products during the 1960's and 1970's enabled Korea to become the sixth largest producer of manmade fibers in the world. Capacity was expanded during the

1/ Lucky Securities Report, February 1986, p. 3.

1960's to meet increased domestic demand and during the 1970's to achieve economies of scale. In addition, the expansion during the two decades was encouraged by the Government's policy to increase exports. Although capacity has doubled so far during the 1980's (table 10-5), the emphasis has also shifted to qualitative improvements to cope more effectively with growing protectionism in the major developed country markets and increasing competition from newly emerging synthetic textile exporters, such as China. 1/

Korea's production of manmade fibers has increased rapidly over the years. From 1971 to 1985, output rose by an average annual rate of 16.4 percent; from 1971 to 1981 alone, it grew by 24.1 percent annually. 2/ The growth in production slowed considerably during the 1980's, rising by only 6 percent in 1986, though the gain was the fourth consecutive one since 1982 when production declined. The industry's production is concentrated almost entirely in polyester, acrylic, and nylon (table 10-5).

Table 10-5
Production and production capacity in Korea's manmade-fiber industry, by types of fiber, 1980-86

(In metric tons)

Type	1980	1981	1982	1983	1984	1985	1986
	Production						
Nylon	119,897	124,260	119,490	123,928	133,283	138,443	139,494
Polyester	277,080	332,073	338,713	387,586	451,094	508,992	557,189
Acrylic	139,436	153,847	154,867	152,304	162,660	163,804	164,944
Vicose	25,438	24,673	13,594	10,749	10,569	11,619	11,771
Acetate	7,466	7,910	8,067	8,164	8,088	8,069	7,064
Other	3,897	3,123	2,100	554	952	431	-
Total	573,214	645,886	636,831	683,285	766,646	831,358	880,462
	Production capacity						
Nylon	105,633	151,839	159,074	163,098	167,444	176,981	178,711
Polyester	233,600	393,358	419,153	424,183	455,772	481,527	622,330
Acrylic	139,034	176,659	176,659	184,707	184,707	184,707	186,719
Vicose	23,823	43,943	43,943	43,943	43,943	43,943	43,943
Acetate	6,237	6,237	9,054	9,054	9,054	9,054	9,054
Other	12,032	9,457	8,773	3,823	3,823	3,823	3,823
Total	520,360	781,485	816,656	828,809	964,744	900,036	1,044,583

Source: Compiled from data published by the Korea Federation of Textile Industries (KOFOTI) and the Chemical Fibers Association in the Statistics on Korean Textile Industries, p. 2.

On the basis of the latest data available, the supply of raw materials for manmade fibers reached 1.033 million tons in 1985, up 19 percent from the

1/ Ibid.
2/ Ibid.

previous year; 314,568 tons were produced domestically. Thus, as of the end of 1985, the industry produced approximately 30 percent of its raw materials for the manmade fiber sector. This is lower than advanced nations and other manmade-fiber exporting nations. 1/

Weaving industry.--The weaving industry in Korea is made up of a relatively large number of small- and medium-size firms. In 1985, the industry consisted of 1,281 firms, employing a total of 74,190 persons, or 58 persons per firm. Partly because of its structural makeup, the development of the weaving industry has lagged behind that of the spinning and synthetic-fiber industries, which consist of larger and better capitalized firms.

The weaving industry consists mostly of mills making fabric on the cotton system and on filament looms (table 10-6). A large part of the industry's equipment is considered obsolete (i.e., more than 10 years old). Approximately 53 percent of the cotton-system looms and 43 percent of the filament looms in place during 1987 were considered to be obsolete. 2/ In addition, about 54 percent of the wool looms and nearly 35 percent of the embroidery looms were obsolete. 3/ Thus, this is hindering industry efforts to improve productivity and production of higher value-added goods. Consequently, Korea's textile industrial policy is now placing emphasis on improving the weaving industry, which employs about 89,000 persons. The Government is encouraging the industry to replace 70 percent of its looms over a 10-year period, but whether this occurs will depend on the capability of the business (see Government's role in the textile industry). 4/

Table 10-6
Average number of looms in place in Korea's weaving industry, by types, 1980-86

(In units)

Item	1980	1981	1982	1983	1984	1985	1986
Cotton-system looms	55,179	51,699	47,857	75,697	76,934	77,273	77,541
Filament looms	85,286	87,709	84,976	98,249	104,395	107,462	108,370
Wool looms	3,439	3,555	3,084	6,264	6,336	6,472	6,472
Embroidery looms	448	294	318	1,394	1,396	1,397	1,397
Towel looms	1,935	1,882	2,086	2,192	2,277	2,181	2,562

Note.--In 1986, Korea had approximately 10,000 water jet looms.

Source: Compiled from data published by the Korea Federation of Textile Industries (KOFOTI), in The Statistics on Korean Textile Industries, p. 3.

1/ Ibid.
2/ Interview with selected officials of KOFOTI on Sept. 7, 1987, in Seoul.
3/ Ibid.
4/ Japan Textile News (JTN) The Asian Textile Outlook 1988, published in Japan by Osaka Sen Ken, Ltd., p. 41.

Nevertheless, fabric production in Korea rose by 46 percent during 1980-86; in 1986 alone, it increased by 30 percent (table 10-7). Production of synthetic fabric increased by 80 percent during 1980-86 to bring such production almost equal to that of cotton fabric production, which increased by only 40 percent during the period. Production of worsted fabric showed little growth during the period. Although Korea reportedly is price competitive in worsted fabric of standard designs and dark colors, typically used in tailored clothing in the home market, it is not known for creative fashions or styling. 1/ Often times, Korea's exports of tailored clothing to the United States and Japan consist of garments that were assembled in Korea from fabric supplied by importers in those countries. 2/

Table 10-7
Korea's fabric production, by fibers, 1980-86

(In thousands of square meters)

Fiber	1980	1981	1982	1983	1984	1985	1986
Cotton.....	1,016,528	1,032,502	982,813	1,016,046	1,315,139	1,246,405	1,424,292
Worsted.....	36,020	33,660	35,457	36,490	40,175	37,096	38,118
Woolen.....	13,525	11,577	10,190	11,450	12,634	10,736	12,359
Silk.....	58,066	52,044	49,911	44,327	41,007	40,063	60,934
Rayon.....	127,566	62,624	34,414	17,341	18,371	17,948	27,298
Synthetic...	792,566	914,822	1,028,690	1,133,396	959,046	936,988	1,425,120
Total.....	2,044,271	2,107,229	2,141,475	2,259,050	2,386,372	2,289,236	2,988,091

Note.--Cotton fabrics include cotton blended yarn; worsted yarn includes wool blended fabrics.

Source: Compiled from data published by the Korea Federation of Textile Industries (KOFOTI) in The Statistics on Korean Textile Industries, p. 4.

Dyeing and finishing industry.--Korea's dyeing and finishing industry is the least developed industry in the textile sector. According to the Korea Federation of Textile Industries, 80 percent of the dyeing equipment in place during 1987 was obsolete. Nevertheless, the amount of equipment in the industry expanded from 3,600 to 3,800 machines during 1980-82 to just over 6,800 in 1983 and to almost 7,300 in 1986. The dyeing and finishing industry employed approximately 45,000 persons, or about 6 percent of total employment in Korea's textile sector, in 1985. A little over 60 percent of the dyestuff is supplied domestically, whereas the remainder is imported. 3/ To further the development of the industry, two special industrial complexes have been constructed since 1980, and the specialization and systematization of this industry has been encouraged. 4/ According to KOFOTI, the Daegu Dyeing

1/ Interview with selected officials of Samsung Co., Ltd., on Sept. 8, 1987, in Seoul.
2/ Ibid.
3/ Korea Federation of Textile Industries, The Textile Industries in Korea, 1986, p. 18.
4/ JTN, The Asian Textile Outlook 1988, "Korea," p. 46.

Industry Complex, built in 1982, contained 88 firms and the Panwol Dyeing and Finishing Industry Estate, built in 1983, contained 48 firms in 1985.

Apparel industry.--In 1985, the Korean apparel industry, the final stage of textile production, comprised 3,080 companies and accounted for more than 60 percent of Korea's total textile operations. The apparel sector had a total of 346,320 sewing machines, of which the majority were lock-stitch sewing machines and totaled 249,640 sets, or a little over 70 percent of the total sewing machines. The remaining machines were composed of special sewing machines. Of the total sewing machines, however, more than half are old machines that have been in use for 10 years or more. An effort is being made, however, to replace the older machinery with new machines. 1/

Of the machines owned by Korea, approximately 70 percent are Japanese models and about 15 percent were made domestically; the remainder are machines made in other foreign countries. However, the Korean apparel industry is continuing to develop, and is considering replacing the old-style Japanese-made machines with domestic or European-made models. 2/

The Korean apparel industry, with 397,102 employees in 1986, accounted for 52 percent of the total number of employees in the textile sector. 3/ The apparel industry is expected to contribute an even higher percentage of total employment in the future. This is due to the fact that, while the apparel industry is still greatly dependent on manpower, the other industries constituting the textile sector, e.g., weaving, are accelerating their efforts to implement labor-saving measures and automation. 4/

Domestic Consumption

The Korean textile sector today is planned around domestically produced manmade fiber and cotton imported from the United States to provide exports and supply the apparel sector, whose output in turn is sold principally in the export market. Data on apparent consumption in Korea's textile sector are shown in table 10-8.

Government Policy

The emergence of textiles as the major export industry in Korea can be traced to the export policy of the Government during the era of industrialization since 1960. Up until the 1960's, the textile sector was at an early stage of development and only manufactured low-priced goods for the home market. During the 1960's and much of the 1970's, the textile sector was supported by liberal credit facilities (through the nationalized banking system), rebates of import costs, and preferential tax and depreciation treatment. Before 1966, a Government policy was in effect that provided for controls on production and domestic prices for textiles and apparel. In 1967, a "temporary arrangement law" was enacted to restrain over-capacity in the sector.

1/ Ibid, p. 47.
2/ Ibid.
3/ Korea Federation of Textile Industries, The Textile Industries in Korea, 1986, p. 17.
4/ JTN, The Asian Textile Outlook 1988, "Korea," 1987, p. 50.

Table 10-8
Korea's imports, production, exports, and apparent consumption, by sectors, 1982-85

(In metric tons)

Item	1982	1983	1984	1985
Imports:				
Fibers	411,659	435,121	451,096	477,283
Yarns	46,510	43,960	45,592	53,924
Fabrics	31,700	42,029	44,684	50,593
Apparel	269	112	220	229
Other	54	94	181	220
Subtotal	490,192	521,316	541,773	582,249
Production:				
Manmade fibers	680,571	741,420	930,362	895,887
Natural fibers	6,945	5,372	5,062	5,180
Subtotal	687,516	746,792	835,424	901,067
Exports:				
Fibers	26,735	26,047	63,631	79,455
Yarns	153,731	184,261	193,267	202,815
Fabrics	291,888	335,073	345,541	350,928
Apparel	230,425	251,028	242,877	260,812
Other	2,923	2,067	2,963	2,419
Subtotal	706,702	798,476	848,279	896,429
Apparent consumption	471,006	469,632	529,918	586,887

Source: Compiled from statistics of the Korean Ministry of Trade and Industry published by the Korea Federation of Textile Industries (KOFOTI) in Statistics on Korean Textile Industries, p. 5.

By the mid-1970's, however, the Government began to develop a heavy- and chemical-industry sector in anticipation of a shift in Korea's comparative advantage and to diversify the base for growth and exports. The Government assumed that Korea would lose its competitiveness in light industries in the near future and that the light-industry sector would not be able to provide adequately for the country's future growth needs. The manner in which the switch was made to the heavy-industry sector proved detrimental to the textile sector. The two factors that most determined the textile industry's performance--capital and labor costs--were both sharply increased in the late 1970's. Capital costs rose as the flow of relatively cheap bank credit to the textile industry dried up and firms were forced on to the curb market for larger and larger proportions of their financing needs. Labor costs rose as the massive investment in heavy industry and inflation that was generated by this policy bid up the economy-wide level of wages. 1/

In the early eighties, however, the Government reduced its emphasis on heavy industry and designated textiles as an important sector. This was embodied in the then newly enacted Law for the Modernization of the Textile Industries and also in capacity control regulations, preferential financial arrangements, import protection, and encouragement of research and development. 2/

1/ World Bank, Korea: Managing the Industrial Transition, vol. II, p. 163.
2/ Ibid.

The law, enacted by the National Assembly on December 28, 1979, provided for the establishment of a Textile Modernization Fund. The fund was to provide funds to the industry to modernize its facilities, and the main beneficiaries were intended to be the small and medium-size firms that form the bulk of the industry. The fund was intended to be funded equally by both the Government and the textile sector, with each contributing 60 billion won. 1/ However, most of the funds were provided by the industry. The funds were used to help principal textile and apparel companies finance purchases of new equipment and for research and development. The law, including the fund, was subsequently abolished in 1986.

In July 1986, the Government of Korea, in keeping with its overall economic development plan for small- and medium-sized firms, implemented a policy designating certain industries for rationalization. The weaving industry was selected as one of those industries.

The main points of the rationalization program as it relates to the textile industry are to reduce the number of textile firms by 5 percent, to replace 34,100 looms 2/, and to modernize equipment. With respect to the latter, Government measures are being taken to provide financial assistance to purchase one water jet loom for every four outdated shuttle looms. 3/

At the end of 1986, a textile-industry promotion-policy program was announced by the Korean Trade and Industry Minister. The Government of Korea, in hope that Korea will become the number one textile exporter by the end of the century, is providing the textile industry with about $118 million to support facility renovation and approximately $12 million to expedite the development of fashion and technology. 4/ A $1.4 million fund has already helped to establish a Textile Technology Promotion Center. A 3-year plan will also make available $212,000 in the form of low-interest, long-term loans to textile firms for replacing outdated equipment, and $47 million is currently available for renovating the dyeing industry. 5/ Other measures covered under the textile promotion program include overseas investments (including direct investment in the United States), a strong push for textile exports to Japan, and improvement of small and medium-sized industries. 6/

The textile sector in Korea, does benefit somewhat from relatively high tariffs. Based on 1984 GATT data, the trade weighted average duty on Korea's imports of textiles and apparel is about 34 percent ad valorem. The highest average duty is levied on apparel, other made-up articles, and fabrics (45 to 50 percent ad valorem); lower duties are levied on fibers, (approximately 15 percent ad valorem), and yarns (30 percent). 7/ Even though more and more

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1/ The law designated KOFOTI as the principal statutory entity to carry out the modernization and development of the textile sector and to operate the textile modernization fund.
2/ As of October 1986, approximately 34,000 looms, out of a total of 198,968 looms, were considered outdated.
3/ JTN, The Asian Textile Outlook 1988, "Korea," p. 38.
4/ "South Korea: Saving Ambition," Textiles Asia, February 1987, p. 50.
5/ "South Korea: Responding to Change," Women's Wear Daily, Sept. 28, 1987, p. 6.
6/ Textile Asia, op. cit., p. 50.
7/ Interview with selected officials of KOFOTI on Sept. 7, 1987, in Seoul.

items are being removed from the restrictive import list, tariffs on textiles and apparel have remained high. Therefore, the effect of competition from other low-labor cost countries such as China is minimized. 1/

Korea's imports of textiles and apparel are also affected by nontariff barriers. For example, tariffs and purchase controls are applied to polyester fibers, causing distress among local users. Local users of these fibers have to buy domestically up to some specified level before being allowed to import. 2/

Foreign Trade

Korea's exports of textiles and apparel, its largest single source of exchange, totaled $8.7 billion in 1986, far exceeding the Government's target of $7.7 billion, and representing a 25-percent increase over 1985. This made Korea the fourth largest exporter of these products after Germany, Italy, and China. The growth in exports in 1986 is attributed to strong demand for Korea's textiles and apparel, which have become increasingly more competitive with Japanese products. Because of the relatively high level of the yen against the won, Korea, which had already enjoyed a cost advantage vis-a-vis Japan, was able to expand its exports of higher value-added goods.

By category, exports of fabrics and apparel increased significantly in 1986. Exports of fabrics in 1986 reached a record $2.6 billion, a 35-percent increase over 1985. Exports of apparel totaled $5.0 billion in 1986, a 23-percent gain over 1985. Exports of yarns, however, remained relatively unchanged (table 10-9).

By markets, the United States, the EC, and Japan constituted 34 percent, 16 percent, and 15 percent, respectively, of Korea's total exports of textiles and apparel in 1986 (table 10-10). As a result, Korea's dependence on developed country markets reached almost 70 percent. Even though the highest growth was recorded in exports to the EC, Korean textile producers have been making efforts to diversify their markets, in order to reduce their dependence on U.S. and European markets where their products are subject to relatively tight restraints. This explains the significant growth in exports to Japan, which currently does not restrict shipments from Korea. 3/

With respect to imports, shipments of textiles and apparel into Korea totaled almost $1.8 billion in 1986. Of this amount, imports from the United States were $246 million, a 46-percent drop from 1985. By contrast, imports from Japan in 1986 totaled $528 million, representing a 36-percent increase over the previous year. Imports from Australia, also a major source, were $169 million in 1986. Imports from the United States, Japan, and Australia represented 54 percent of Korea's total textile imports in 1986. Raw cotton was imported mostly from the United States. Manmade fibers, yarns, and fabrics were imported largely from Japan. Raw wool was imported mostly from Australia.

1/ World Bank, Korea: Managing the Industrial Transition, vol. II, p. 165.
2/ Ibid; p. 165.
3/ JTN, The Asian Textile Outlook 1988, "Korea," pp. 43-44.

Table 10-9
Korea's exports of textiles, by items, 1981-86

(In thousands of dollars)

Item	1981	1982	1983	1984	1985	1986
Yarns:						
Cotton.....	276,235	228,155	227,592	296,456	222,565	213,886
Manmade fibers..	241,754	216,550	249,223	321,932	354,630	359,598
Silk.....	25,963	33,979	38,948	42,933	19,530	30,665
Total.....	622,226	545,424	594,799	701,588	694,238	698,284
Fabrics:						
Cotton.....	295,850	306,179	337,113	396,413	339,015	473,606
Wool.....	98,168	106,000	103,844	102,781	84,030	94,542
Manmade fibers..	949,175	880,795	1,014,643	1,052,603	1,093,824	1,448,422
Silk.....	114,220	100,224	94,970	99,905	100,819	127,059
Embroidery.....	95,846	101,034	99,900	103,486	83,187	88,748
Shibori.....	82,015	91,132	88,411	114,832	115,783	145,359
Total.....	1,704,556	1,635,701	1,787,950	1,938,718	1,889,018	2,549,014
Textile products:						
Cotton goods....	91,682	95,524	112,987	114,639	165,782	232,808
Apparel.....	3,532,736	3,447,427	3,377,673	4,098,000	4,074,106	5,021,878
Hosiery.....	115,529	114,877	96,896	107,942	102,015	130,614
Fishing nets and ropes.....	119,077	85,589	80,574	77,714	79,177	101,767
Total.....	3,859,025	3,743,417	3,668,130	4,438,295	4,421,079	5,487,068
Grand total...	6,185,807	5,924,541	6,050,879	7,078,571	7,004,336	8,734,365

Source: Compiled from data of Korea's Ministry of Trade and Industry, published by the Korea Federation of Textile Industries in the Statistics on Korean Textile Industries, p. 7.

The channels of distribution for textiles and apparel are characterized by a large number of distributors at the various levels of production and distribution. These include general trading companies (GTC's) other types of trading companies, wholesalers in the area of production, general primary and secondary wholesalers, and retailers. Because of the diversity of products, ranging from manmade fibers and fabrics to apparel and other finished products, these distributors play different roles, depending on company size, location, and function, including distribution of fibers to spinners, yarn to weavers, and woven textiles to dyers and finishers. 1/

The GTC's are believed to handle about 15 percent of Korea's exports of textiles and apparel. Because the GTC's usually guarantee price and quality and assure buyers of delivery on schedule, many foreign buyers specify that mills in Korea use a GTC. 2/ By law, only registered traders are authorized to import goods in their own names. Trader's licenses are issued by the

1/ American Embassy, Seoul, Korea, Market Research: Textiles and Textile Products, October 1985, p. 39.
2/ Interview with selected officials of Samsung Co., Ltd., on Sept. 8, 1987, in Seoul.

Table 10-10
Korea's foreign trade in textiles, by principal countries, 1982-86

(In thousands of dollars)

Country	1982	1983	1984	1985	1986
Exports:					
United States	1,619,003	1,981,146	2,585,108	2,599,491	2,963,877
Japan	974,102	721,660	1,018,927	965,765	1,332,110
EC	1,045,604	949,805	952,574	902,561	1,359,654
West Germany	436,880	422,447	417,715	376,270	581,020
United Kingdom	253,130	207,952	216,939	196,847	285,332
Netherlands	133,663	131,360	118,183	107,730	154,506
France	103,245	86,603	89,208	101,823	157,186
Hong Kong	262,173	259,040	378,133	422,862	511,819
Saudi Arabia	245,940	318,511	298,595	285,586	324,415
Canada	188,549	223,749	287,561	299,375	364,027
Sweden	67,281	51,158	56,121	55,754	81,073
Austria	38,595	46,481	59,318	53,684	64,060
Other	1,483,294	1,499,329	1,442,234	1,434,384	1,733,330
Total	5,924,541	6,050,879	7,078,571	7,004,336	8,734,365
Imports:					
United States	548,617	485,442	537,037	451,937	246,228
Japan	349,234	366,071	420,195	388,669	527,935
Australia	136,352	110,577	133,036	145,718	168,747
Hong Kong	31,226	39,790	52,060	48,498	50,681
European Community	42,815	54,578	78,193	37,209	101,177
Other	176,794	277,061	329,121	439,110	662,496
Total	1,285,038	1,333,519	1,549,642	1,511,354	1,757,264

Source: Compiled from data of Korea's Ministry of Trade and Industry, published by the Korea Federation of Textile Industries in the Statistics on Korean Textile Industries, pp. 7-8.

Government primarily on the basis of the applicant's export performance. All imported merchandise is handled by registered traders with the exception of goods brought into Korea by end-users under foreign economic assistance programs, goods imported in connection with foreign private investment, raw materials and components imported for processing and then reexported, and Korean Government procurement. A growing number of textile-manufacturing firms export their products and are registered traders. This enables the manufacturer to import needed raw materials and equipment for its operation without recourse to a middleman. 1/

The distribution of foreign textile goods tends to be simpler than that of locally manufactured goods, and large importers, usually the GTC's, tend to go for popular brand names under direct long-term distribution arrangements with the foreign manufacturers and market their products through their own sales

1/ U.S. Department of Commerce, Overseas Business Report, "Marketing in Korea," April 1985, p. 12.

outlets in the initial stage. This distribution of imported textiles, primarily yarn and fabric, is usually either directly from the supplier to the end user or from the supplier through a commissioned agent or registered trader to the end users. Registered traders or agents usually receive a 3 to 5 percent commission. Import terms of payment are normally letters of credit. 1/

MFA Constraints

Korea has bilateral textile and apparel quota agreements with the United States, Canada, and the EC. Korea's current agreement with the United States was concluded during the latter part of 1986 and covers the 4-year period retroactive to the first of that year. It replaced the 6-year pact that was scheduled to expire at the end of 1987. The current agreement limits the growth of Korea's exports to the United States, on the basis of the level of U.S. imports from Korea in 1985, to an average annual rate of 0.825 percent 2/ over the 4-year period of the agreement from 1986 to 1989.

The current agreement has six group limits: Cotton, wool, and manmade fiber nonapparel; cotton, wool, and manmade-fiber apparel, luggage; and for the first time, silk blend and vegetable fiber products including silk, ramie, linen and blended goods consisting of these textiles in groups three through five. Limits on silk blends and other vegetable fibers were added to the agreement beginning September 1, 1986, because exports of these items to the United States had shown substantial growth. The first two product groups, which accounted for most of the trade, faced relatively tight U.S. quota restrictions. Quotas on cotton, wool, and manmade fiber nonapparel items were 96 percent filled during 1986 and quotas on apparel of these fibers were 89 percent filled.

Competitive Assessment

The textile industry today is the largest "single foreign exchange earner" in the Korean economy and the largest employer in the manufacturing sector. In 1985 the textile industry contributed almost 14 percent of the value-added in manufacturing and 23 percent of total exports. It also provided approximately 20 percent of the employment in the manufacturing sector in 1986.

Exports of Korea's textile sector have shown rapid growth in a relatively short period of time, with the most recent growth attributed to the "three blessings" (the low value of the dollar; the low cost of crude oil; and low interest rates). In 1986, the Korean textile industry exported $8.7 billion, representing a 25 percent gain over that in 1985, and a 41-percent increase since 1981. Currently Korea ranks 4th in the world in textile export performance, after Germany, Italy, and China.

1/ American Embassy, Seoul, Korea, Market Research: Textiles and Textile Products, October 1985, pp. 40-41.

2/ The yearly rates of increase for exports from Hong Kong and Taiwan to the United States are also slightly less than 1 percent when averaged over the several years of the agreements.

The textile industry, however, is currently faced with serious internal and external pressures. The industry's competitiveness is being undermined by the rising value of the Korean won and mounting raw material and labor costs. Also, there is a considerable rise in protectionism by advanced textile importing nations, and growing competition from low cost producers in Asia, China in particular. For these reasons, it is anticipated that textile exports will grow at a much slower pace than in the previous two decades.

In recognition of these concerns, the Government of Korea and the textile industry are seeking a variety of measures to promote textile exports such as significant expansion of overseas investment, improving product quality by using modern equipment, and developing high value-added products.

An important strategy the Korean textile industry has taken recently to ensure future access in the U.S. market--which represents about one-third of Korea's total textile exports--is investment in textile plants in the Caribbean Basin to setup bases for textile exports to the United States, and direct investment in the United States.

Before 1986, Korea had invested very little in the Caribbean Basin. However, because of the proximity to the U.S. market, together with the U.S. Government's Caribbean Basin Initiative policy, 12 factories were established in 1986, and it is expected that this trend will lead the way for vigorous investment in that region by other Korean textile companies. 1/

According to KOFOTI, the number of investments during 1987 is expected to be above that in 1986, and as of August 1987 eight investment projects had already been approved by the Korean Government. To date, a total of 27 Korean textile firms, mostly weaving and spinning firms, are doing business in the Caribbean countries. 2/

In a further effort to overcome import restrictions, some Korean companies are going directly to the United States to build their textile plants. Two Korean companies, Seoul Dying Co., and Kunja Industrial Co., plan to set up factories in Los Angeles and South Carolina, respectively, by the end of 1987. 3/ Another plan involves the construction in the United States of a large-scale integrated textile plant. According to KOFOTI, the plant, scheduled to be completed by 1989, will contain 47,000 spindles with a monthly spinning capacity of 780 tons and various apparel workshops. 4/

Improvement of technology for the Korean textile sector as a whole has always been a basic condition for competitiveness. Consequently, it can be said that a major factor for ensuring future competitiveness will depend upon raising the level of technology and continuing to modernize facilities to develop new products. To help the industry the Government of Korea is providing technical training programs for high tech automatic equipment; a Government fund has also helped establish a Textile Technology Promotion Center.

1/ The Korea Herald, "L. America Emerges as Promising Area for Textile Investment," Oct. 29, 1987, p. 7.
2/ Business Korea, "A Strategy for Survival," September 1987, p. 9.
3/ Ibid.
4/ Ibid.

Certain sectors within the textile industry are making every effort to modernize. Under the newly enacted Korean Industrial Development Law, the weaving sector is progressing with the introduction of revolutionary looms, such as water jet and rapier looms, greatly increasing synthetic filament textile production capacity. Government measures include financial assistance toward the introduction of one water jet loom for every four outdated shuttle looms. A major change to the weaving sector urged by the Government concerns its size, and the plan for rationalization of the weaving sector includes reducing the number of weavers by 5 percent within the next 3 years. In 1986 Korea's fabric industry maintained approximately 196,000 looms, of which 77,000 were cotton weaving loom and 40 percent of those were outdated.

The spinning industry has also invested in new equipment, and as a result cotton spinning equipment will increase to almost 3.6 million spindles by the end of 1987. However, as a result of the high cost of electricity in Korea most of the additional spindles are the more labor intensive conventional ring spinning types. Moreover, in general, spinners in Korea are limited to making standard type yarns. In order to produce fancy yarns, which would enable spinners to produce a higher valued product, far more sophisticated equipment is needed. 1/

The expansion of production facilities and the addition of new products during the 1960's and 1970's in the manmade-fiber sector have made this sector in Korea's textile industry the sixth largest in the world in terms of production capacity. This sector today, which is the core of Korea's textile industry, is anticipated to maintain its upward growth in the future, however less aggressively than in the last 20 years.

There are several problems facing the manmade-fiber industry, many relating to the the textile industry as a whole, that must be resolved if this sector is to retain its leadership: (1) steps must be taken to secure adequate raw materials at competitive world prices (domestic suppliers of some vital raw materials tend to charge higher prices than international suppliers, thus hindering this sector's competitiveness and profitability), (2) increased automation is needed to enhance the competitive edge due to gains in labor cost, which are larger than Korea's principal exporting rivals, and to enhance productivity due to the dwindling number of textile workers, (3) increased R&D expenditures are necessary to narrow the technology gap that exists between Korea and leading nations like West Germany and Japan, and to better cope with protectionist measure by advanced nations, and (4) diversification of export markets is necessary to counter protectionism.

In regard to competitiveness, the apparel industry, which accounts for about half of the total number of employees in the Korean textile industry is faced with many other problems besides import restrictions. One of the most serious of these is the continued rise in wages. Because the apparel industry is a labor-intensive industry in which wages amount to 20 to 40 percent of production costs, the sudden jump in wages means that the international competitiveness of the textile industry will be negatively affected.

1/ Fieldtrip interview with company officials of Sumsung Co., Ltd., Sept. 8, 1987, in Seoul.

Another problem is that there are better paying less labor intensive jobs in other sectors, and workers are beginning to move away from the labor-intensive apparel sector. Some apparel exporting firms are also unable to cope easily with changing overseas demand for small quantities of many different varieties of apparel. Moreover, the development of new garment materials in Korea lags behind that of the developed countries due to the mass-production orientation of the Korean garment material manufacturing sector. In order to find solutions ot these problems, the Korean apparel industry will have to continue to increase productivity through the reform of the industry's structure and improve product quality.

When analyzing the textile industry alone, it should be noted that the wage increases in Korea are almost the same as those in Hong Kong and Taiwan, and the increasing costs of raw materials are a worldwide phenomenon, and not confined to Korea alone. In summary, whereas the Korean textile industry is presently facing problems that are inherent to a mature industry, it appears that the competitive power of Korea's textile industry should continue in the near future, although future exports will grow at a slower rate or stabilize.

Foreign Competition

Italy

CHAPTER 11. ITALY

Textile Industry

Italy traditionally has been the largest producer of textiles and apparel in the EC, accounting for about one-fourth of total EC production during 1982-86. West Germany was second, with 23 percent of total output, followed by France and the United Kingdom, with 12 and 9 percent, respectively. In 1984, Italy accounted for 36 percent of total employment in the EC textile and apparel industry, 38 percent of total investment, and 34 percent of total sales. 1/

Industry Structure

The Italian textile and apparel industries are highly fragmented, consisting of a relatively large number of small firms and a small number of large firms that are vertically integrated from yarn spinning to apparel production. Large firms dominate mainly the manmade-fiber sector of the industry. In the textile sector, about 84 percent of the firms employ less than 10 workers. 2/ The small, mostly family-operated, firms emphasize product quality and differentiation, greater flexibility of production, and technical innovation in production, which enable them to respond quickly to changes in fashion. 3/ In addition to independence and flexibility, the small firms are not subject to many Government regulations applicable to firms with more than 15 employees. Many of these firms purposely employ less than 15 people or subdivide into smaller production units with less than 15 employees. In addition, by using family operations for the production units, the firms benefit from lower labor costs and lower absenteeism. Often these small firms are linked to large firms through chains of subcontracting. 4/

Employment in the textile and apparel industries declined between 1.2 and 1.9 percent annually during 1982-86 (table 11-1). The decline in employment is attributed to improved production methods, and capital investments in labor- saving equipment. In the manmade-fiber sector, the decrease in employment is directly related to the restructuring plan undertaken by the EC between 1978 and the mid-1980's. 5/

1/ Dr. Angelo Zegna, "The Italian Story," IAF-International Apparel Conference, Berlin, June 5, 1986, table 12.
2/ Russell King, Italy, Landon, Western Europe: Economic and Social Studies, 1987, p. 98.
3/ World Bank, Korea: Managing the International Transition, vol. II, Selected Topics and Case Studies, Washington, DC, March 1987, p. 169.
4/ Russell King, op. cit., p. 53.
5/ U.S. Consulate, Milan, "Textiles Italy 1985," Dec. 19, 1985, p. 12-13.

Table 11-1
Employment in Italy's textile and apparel industries, by sectors, 1982-86

Item	1982	1983	1984	1985	1986
Wool.....	113,984	111,571	114,037	115,300	113,000
Cotton.....	61,400	64,000	67,000	64,300	63,000
Manmade fibers...	23,000	21,800	20,156	18,690	1/ 18,500
Silk.....	1/ 15,600	1/ 16,120	16,640	13,000	14,000
Knitwear.....	153,000	153,000	153,000	153,000	153,000
Apparel.....	202,000	194,000	183,000	179,000	173,600
Total.....	568,984	560,491	553,833	543,290	535,100

1/ Estimated by the staff of the U.S. International Trade Commission on the basis of Italian Government statistics and interviews with Italian trade association officials.

Source: U.S. Consulate, Milan, "Textiles, Italy," various annual reports, and Associazione Serica Italiana, "La Tessitura Serica nell'Anno 1986", except as noted.

In recent years, increasing automation has been a high priority for the textile and apparel industries, especially electronic data processing and production equipment. 1/ Automation expenditures in the knitwear sector, where electronic and information systems have radically changed production processes, were $388 million in 1986. 2/ Cotton spinners invested nearly $300 million during 1985-86 to improve plant and equipment 3/ and the wool sector invested $242 million in 1986. 4/ The silk producers also invested relatively significant amounts in plant and equipment to increase automation. 5/

Installed capacities in nearly all sectors of Italy's textile industry declined between 1982 and 1985 (table 11-2). Installed capacity for open-end rotors decreased by 19 percent, while installed capacity for long-staple spindles decreased by less than 1 percent. Spindles for the short-staple, or cotton, system accounted for 39 percent of total spindles, and those for the long-staple, or woolen and worsted system, accounted for 61 percent. This sharply contrasts with worldwide spinning capacity, in which the short-staple system accounts for 91 percent of total spindles and the long-staple system for 9 percent. 6/

1/ Ibid., p. 21.
2/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 7, 1987, p. 24.
3/ Ibid, p. 11.
4/ Ibid., p. 13.
5/ U.S. Consulate, Milan, "Textiles, Italy 1985," Dec. 19, 1985, p. 19.
6/ International Textile Machinery Federation, International Textile Machinery Shipment Statistics, Zurich, vol. 6/1983, vol. 8/1985, and vol. 9/1986.

Table 11-2
Installed capacity in Italy's spinning and weaving sectors, 1982 and 1984-85

Item	1982	1984	1985
Spindles	6,597,700	6,155,000	5,795,000
Short staple	3,047,000	2,650,000	2,249,000
Long staple	3,550,700	3,505,000	3,546,000
OE rotors	91,000	70,800	73,400
Looms	93,857	84,510	81,760

Source: International Textile Machinery Federation, International Textile Machinery Shipment Statistics, Zurich, vol. 6/1983, vol. 8/1985, and vol. 9/1986.

Italy ranks among the major world producers of woolen and worsted fabrics and wool manmade-fiber blended fabrics. Italy has 3.5 million long-staple spindles, or 23 percent of the world total, in 1985. According to the Prato Industrial Union, Prato alone has 400,000 spindles for combed (worsted) wool spinning and 800,000 spindles for carded (woolen) wool spinning. 1/ Prato is one of the major wool centers in Italy, known for its use of recycled, or regenerated, wool and rags for raw material.

In terms of weaving capacity, in 1985, Italy had 29,500 looms for weaving yarns spun on the cotton system (14,100 of which were shuttleless), 27,000 for filament weaving, and 25,200 for wool weaving. In 1986, 4,500 shuttleless looms were shipped to Italy, about 38 percent of total shipments to the EC in 1986. 2/ It is estimated that there currently are about 15,000 looms in Prato. 3/

The Italian textile industry, like several other older textile industries, such as those in France and England, is specialized on a geographical basis. The cotton-system mills are located in and around Bergamo; the woolen- and worsted-system mills, in Biella and Prato; the silk-system mills are around Como; and the knitwear industry in the areas around Carpi and Modena. This regional concentration affords the various subsectors the opportunity to centrally coordinate financing, marketing, and research and development. 4/ In addition, there are local support industries that provide specialized machinery and equipment and other services to the mills. 5/

1/ Interview with selected officials of Unione Industriale Pratese Sept. 25, 1987 in Prato, Italy.
2/ International Textile Machinery Federation, International Textile Machinery Shipment Statistics, Zurich, vol 6/1983, vol. 8/1985, and vol. 9/1986.
3/ Interview with selected officials of Unione Industriale Pratese Sept. 25, 1987 in Prato, Italy.
4/ World Bank, Korea: Managing the Industrial Transition, vol. II, Selected Topics and Case Studies, Washington, DC, March 1987, p. 169.
5/ Interview with selected officials of Unione Industriale Biellese on Sept. 24, 1987, in Biella, Italy.

Wool sector

Italy's wool textile industry (woolen and worsted), which ranks among the largest producers and exporters of wool textiles in the world, consists of an unknown but relatively large number of small, primarily family-operated, firms. The few large producers are generally vertically integrated from spinning to apparel production. The small operations typically specialize in only a small segment of the manufacturing process, such as washing wool, spinning yarn, dyeing, finishing, or weaving. A textile order may be processed by as many as 5 to 10 different firms, depending on the product and the degree of specialization involved. This longstanding division of labor enables the firms to minimize production and overhead costs and the capital investment needed to sustain their operations. According to an article published in 1982, overhead in small businesses was estimated at only 5 percent compared with 15 to 20 percent in large firms. 1/

According to trade association officials in the Italian wool industry, the system of small manufacturing units, known as "Pratese," was developed in Prato and is felt to be the key to the wool industry's success. The large number of independent or "craftmanship companies" are bound by "friendship relations" to the main design, marketing, and export firms. The small family-run firms are generally noted for their ability to produce new, artistic designs and quality fabrics and are considered to be highly creative in their use of colors and textures. 2/ These factors, combined with their ability to respond quickly to changing fashion market conditions, 3/ have enabled Italy to remain among the world's leading exporters of wool textiles.

The wool industry is geographically concentrated in Biella and Prato, where most of the population is involved in textiles or support industries. In Biella, 75 percent of the industries are textile related, and in Prato 85 percent of all workers are employed in textiles, with an additional 5 percent employed in related industries. In addition, both areas have textile machinery firms with specializations that range from the development of computerized weaving designs in Biella to those in Prato that specialize in refurbishing older equipment. Industry officials noted that the machinery industry also provides the industry with skilled textile mechanics that are readily available to work on production problems at individual plants, fabricating specialized machine parts if necessary. Trade associations in both areas provide assistance in meeting environmental regulations and arranging trade shows for their member firms. The association and marketing consortium in Prato, for example, to which 200 firms belong, sends yarn and

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1/ "Small Companies Fuel the Italian Economy, Thriving on Flexibility," The Wall Street Journal, Apr. 12, 1982, p. 1.
2/ Interview with selected officials of Associazione Dell'Industria Laniera Italiana on Sept. 21, 1987, in Milan, Italy.
3/ "Small companies Fuel the Italian Economy, Thriving on Flexibility," The Wall Street Journal, Apr. 12, 1982, p. 1.

fabric samples to trade shows around the world and maintains its own staff of stylists to assist firms in maintaining Prato's "fashion forwardness" in the world. 1/

Italy's production of wool textiles declined significantly during the early 1980's before recovering in 1984. According to the Italian Industrial Production Index compiled by ISTAT, the Government statistics agency, the industry's production in 1983 declined to its lowest level in many years. In 1984, production rose by 15.2 percent over the 1983 level, and the recovery continued in 1985, when it rose by another 11.1 percent. The recovery came to a halt, at least temporarily, in 1986, when production fell by 10.5 percent, though the level of production still remained above that of 1983. 2/ Production is expected to increase during 1987 and 1988, according to industry officials in Milan, Biella, and Prato. Production in 1987 is expected to include more fashion and higher quality fabrics with the emphasis on worsted rather than woolen fabrics, following the current fashion trend. 3/

The decline in production of wool textiles during the early 1980's is attributable to an increase in labor costs, a decrease in domestic sales, and an increase in competition from low-labor-cost countries. Labor costs (in U.S. dollars) in Italy's textile industry overall increased by nearly 50 percent between 1977 and 1982. 4/ Given the highly fragmented nature of the industry, it is unlikely that productivity gains offset the rise in labor costs. Although today the many small mills are considered to be a positive development, in the past they were considered to be a constraint to the effort to achieve efficiency with a low labor cost per unit. 5/

1/ Interviews with selected officials of Unione Industriale Pratese on Sept. 25, 1987, in Prato, Italy, and of Unione Industriale Biellese on Sept. 24, 1987, Biella, Italy.
2/ U.S. Consulate, Milan, "Textiles, Italy 1987, Sept. 4, 1987, p. 4.
3/ Interview with selected officials of Fratelli Balli S. p. A, on Sept. 25, 1987, Prato, Italy.
4/ U.S. Bureau of Labor Statistics, "Hourly Compensation Costs for Production Workers: Textile Mill Products Manufacturing, 1975-86," September 1987.
5/ U.S. Consulate, Milan, "Industrial Outlook Report-Italian Textiles 1982," Oct. 5, 1982, p. 10.

Table 11-3
Economic indicators for Italy's wool textile industry, 1982-86

Item	1982	1983	1984	1985	1986
Total sales (million dollars)...	1/	2,882	3,659	4,284	4,104
Total investments (million dollars).....	1/	89	139	158	242
Number of employees.....	113,984	111,571	114,037	115,300	113,000
Average labor cost (percent growth).....	18.4	17	8.6	12.4	1/
Capacity utilization (percent)..	65	67	72	73	69

1/ Not available.

Source: U.S. Consulate, Milan, "Textiles, Italy," and various annual reports, except as noted.

Italy produces and exports significant quantities of woolen fabrics of regenerated or recycled wool. The use of such wool began in Prato during the 1800's, and since then manufacturers have relied on used garments, rags, mill waste, and clips from all over the world for the raw material. These items are sorted by color and, to some degree, fiber content. After removing buttons, zippers, and other findings, the garments are put through an acid bath to break the fibers apart. The wool is then garnetted, carded, and spun into yarn, frequently with the addition of nylon or other manmade fibers to add length to the short-staple wool fibers, making the yarn stronger and easier to weave. This yarn reportedly costs a fraction of that of new yarn. 1/ The resultant fabrics compete with virgin woolen and woolen-blend fabrics, though in the low- to medium-priced segments of the market . Industry officials in Prato indicated that 20 to 25 percent of their woven fabric output consisted of reprocessed-wool fabric and that garment clippings or rags accounted for only 5 percent of all the materials used in their fabrics. 2/

Italy's exports of reprocessed-wool fabrics, particularly to the United States, is an important concern of U.S. wool fabric producers. The provisions of the Wool Products Labeling Act of 1939 applies to both domestically produced textiles and apparel and to imports of these products. The Act requires that the regenerated or recycled wool content be labeled as such. Because of the variety of raw materials used in Prato, mislabeling reportedly often occurs. U.S. wool fabric producers contend that this fabric has an

1/ Interview with selected officials of Forstmann and Co., Inc., on July 29-30, 1987 in Dublin, GA, and Northern Textile Association on Aug. 20-21, 1987 in Boston, MA.
2/ Interview with selected officials of Unione Industriale Pratese, on Sept. 25, 1987 in Prato, Italy.

unfair advantage over domestically produced products, which must comply with record-keeping requirements of the Wool Products Labeling Act. Domestic producers of these fabrics contend that the Prato fabrics also are not as durable as U.S. fabrics. 1/ However, consumers often cannot distinguish between products made from reprocessed wool and those made from virgin wool. In addition, the domestic industry states that a substantial amount of fabric from Prato goes to garment manufacturers in Europe and the Far East for apparel that eventually ends up in the U.S. market and is not labeled as being made from fabric containing reprocessed wool.

In a related matter, U.S. producers of luxury-fiber yarns, fabrics, and apparel formed the Camel Hair and Cashmere Institute of America in 1984. The purpose of the institute is to educate the public, retailers, and apparel producers about mislabeled fabrics, which, according to U.S. industry officials, often originate in Prato. Because the cost of these fibers is relatively expensive, there is a substantial economic advantage in deception and mislabeling. In recent years, the institute offered free testing to retailers or apparel producers who suspected goods to be mislabeled. Most retailers cooperated and removed mislabeled goods from their stores; however, the institute brought a lawsuit against several retailers. 2/

Manmade-fiber sector

The Italian manmade-fiber industry, like its counterparts throughout Europe, in the 1970's, was confronted with excess capacity, high production costs, and over-employment. 3/ There also was growing competition from low-labor-cost countries, which were expanding their production of less sophisticated fibers. Consequently, in 1978, the EC countries agreed to limit manmade-fiber production in member countries. The goal was to reduce production by 20 percent; by the mid-1980's, nearly 1 million tons per year of capacity had been eliminated by EC countries. During this restructuring program, Italy's manmade fiber industry reduced its workforce, closed outdated plants, and shifted into the production of higher quality fibers. 4/ In addition, product specialization was emphasized, particularly by the major producers.

The production of manmade fibers in Italy increased by 27 percent during 1982-86 to nearly 700,000 tons in 1986 (table 11-4). 5/ Italy accounted for slightly more than one-fourth of total EC production of manmade fibers and

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1/ Interview with selected officials of Forstmann and Co., Inc., on July 29-30, 1987 in Dublin, GA, and Northern Textile Association on Aug. 20-21, 1987 in Boston, MA.
2/ Interview with selected officials of Warren Corp. and The Northern Textile Association on Aug. 21, 1987, in Stafford Springs, CT and Boston, MA.
3/ U.S. Consulate, Milan, "Industrial Outlook Report--Italian Textiles 1984," Aug. 13, 1984, p. 5.
4/ Ibid, p. 5.
5/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 19.

about 5 percent of world production in 1986. 1/ In terms of Italian production, in 1986, acrylic fiber accounted for 43 percent, nylon for 24 percent, and polyester for 21 percent. 2/ The production of polyester and acrylic fiber is concentrated among large producers, and the production of nylon is spread among a growing number of small- to medium-sized producers. 3/ The effect of the restructuring program and the resultant increase in productivity is evident in employment, which dropped from an average of 23,000 workers in 1982 to 18,700 in 1985. 4/

Table 11-4
Production, employment, and capacity utilization of Italy's manmade-fiber industry, 1982-86

Item	1982	1983	1984	1985	1986
Production (1,000 tons)	552	569	639	691	699
Number of workers	22,952	21,782	20,156	18,690	1/
Capacity utilization (percent)	68	76	80	92	90

1/ Not available.

Source: U.S. Consulate, Milan, "Textiles, Italy," and various annual reports.

Executives from one of Italy's largest manmade-fiber producers stated that their firm's productivity-improvement program involved the increased use of automatic manufacturing equipment, including the use of robotics in operations like yarn doffing, improvements in plant layouts, and changing the fibers they use in order to have products that will run more smoothly through the equipment. In addition, the firm has attempted to improve its competitiveness by reducing its use of energy, since both the electricity and natural gas they use are imported and costly. Overall, the executives felt that although new technologies will continue to enter the manmade-fiber industry, the workforce has stabilized. It was their view that in the future more employees would be working in the service end of the industry rather than in the manufacturing end. 5/

1/ Ibid., p. 17.
2/ Ibid.
3/ U.S. Consulate, Milan, "Textiles, Italy 1985," Dec. 19, 1985, p. 13.
4/ U.S. Consulate, Milan, "Textiles, Italy 1986," Oct. 27, 1986, p. 19.
5/ Interview with selected officials of Snia Fibre on Sept. 22, 1987, Milan, Italy.

Cotton sector

The Italian cotton industry is divided into weaving and spinning sectors. As shown in the following tabulation, production (in metric tons) in both sectors fluctuated between 1982-86, partly due to increasing competition from low-labor-cost countries and slack domestic demand.

Item	1982	1983	1984	1985	1986
Yarns	224,823	221,500	230,540	221,115	230,323
Fabrics	221,297	213,400	231,391	226,401	226,692

Turkey, which produces cotton fiber and therefore has low raw material costs, and Greece are major suppliers of low-priced yarn and fabrics to Italy, supplying a medium/low quality product at very competitive prices. 1/ Cotton yarn producers benefited from lower cotton prices which (in dollar terms) were lower during most of 1986. 2/ The cotton sector also benefited from the strong performance of the knitwear industry, which consumes more than one-third of cotton yarn production (especially finer counts). 3/ The cotton industry, especially the spinning sector, has reduced costs in the past 10 years, mainly through restructuring and the use of labor saving, high-tech equipment.

In 1986, the cotton industry consisted of 480 plants owned by 421 firms. Of the 421 firms, 81 firms were in spinning only, 40 firms were in spinning and weaving, and 300 firms were weaving only. 4/ Employment has been decreasing in recent years, and totaled about 65,700 in 1986. 5/ In the early 1980's, investments in new plants and equipment slowed, primarily because of increased financing costs and reduced profits. 6/ However, both spinning and weaving companies made significant new investments ($300 million) in 1986, primarily for new machinery to further automate production processes. 7/ Investments in real terms were 20 percent higher than in 1985, and are expected to remain at the 1986 level in 1987. 8/

1/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 10.
2/ Ibid.
3/ Ibid.
4/ International Textile Manufacturers Federation, Country Statements, Zurich, 1987, p. 14.
5/ U.S. Consulate, Milan, "Textiles, Italy 1985," Dec. 19, 1985, p. 10 and U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 10.
6/ U.S. Consulate, Milan, "Industrial Outlook Report-Italian Textiles 1984," Aug. 13, 1984, p. 4.
7/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 10.
8/ International Textile Manufacturers Federation, Country Statements, Zurich, 1987, p. 14.

Silk sector

The development of the silk textile industry in Western Europe began with the introduction of the silkworm in the Como region hundreds of years ago. Today, the region's raw silk production has declined to about 10 tons per year, with China supplying about 90 percent of the raw silk used in Italy. 1/ The Italian silk textile industry also uses silk-like manmade fibers and blends of these fibers with silk. 2/ Approximately one-third of the value but only 12 percent of the quantity of the industry's total output consists of products of pure silk. 3/

The silk industry in Italy weaves about 80 percent of the silk fabric made in the EC. 4/ In recent years, Italy's competitive advantage has been in the luxury silk products market; however, China is becoming more competitive, mainly because of lower prices on unfinished fabric and quality control improvements. 5/

The quality work has enabled the Italian silk industry of engravers, printers, and finishers to gain a worldwide reputation. 6/ In recent years, the relatively low exchange rates for Italian lire have also helped the fabrics produced by these highly skilled engravers and printers to remain competitive. The majority of firms remain small, specializing in short production runs. 7/ Engraving screens for flat screen printing are made in Como. In terms of quantity, most of the printing is on synthetic fabrics, primarily because print runs on synthetics are much larger than for silk. For example, a print run on polyester fabric may be 10,000 meters, whereas the print run per design on silk could be 10 to 500 yards. 8/

Technology

Although the Italian textile machinery industry supplies only about 8 percent of the world market, it is technically advanced and competitive. 9/ Because most of the Italian textile mills specialize in one product area, the machinery industry has responded with custom designs and specialized machinery which it can then also export. Overall, about 60 percent of the Italian machinery sales during 1985 were exported. 10/ China was the major export market, followed by the United States.

1/ "Patterning in Italy," Textile Asia, February 1985, p. 120.
2/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 21.
3/ Ibid.
4/ Interview with selected officials of the Silk Association, on Sept. 23, 1987, in Como, Italy.
5/ Ibid.
6/ Ibid.
7/ "Patterning in Italy," Textile Asia, February 1985, p. 120.
8/ Ibid.
9/ "Italian Textiles: The Real Story," Textile Industries, August 1981, p. 34.
10/ "Looking to Further Growth in China," Textile Month, March 1986, p. 17.

Major Italian machinery firms include Savio, a producer of a diverse line of machinery and one of the world's largest producers, and Somet, the largest loom builder in Italy. At least one Italian loom company, Pignone, SMIT, has recently completed a "manufacturing associate agreement" with the China Textile Machinery Technology Import/Export Corporation. Under this agreement, the Chinese have been granted right to build Pignone looms in Shanghai. 1/

Domestically, although some Italian machinery firms find it difficult to secure sales within the country because of high interest costs for the financing of machinery sales, the Italian textile mill industry has benefited from the nearby technical expertise and in general has modernized its operations substantially in recent years. In the yarn spinning industry, almost 26 percent of the installed equipment for short-staple fibers and 18 percent of the equipment for long-staple fibers is less than 6 years old, compared with 3 and 13 percent, respectively for similar equipment in the United States (see chapter 2). Much of the new spinning equipment has been in the more efficient "open-end" rotors. In the short staple area, almost 12 percent of the installed capacity is in open-end rotors, compared with 9 percent in the United States.

Substantial modernization has also occurred in the Italian weaving industry. Overall, almost 31 percent of the looms are less than 6 years old, compared with about 20 percent in the United States. Although not always applicable to some of the higher quality, short production-run weaves and fabrics, the use of high-speed shuttleless looms is on the increase in Italy. In the cotton area, for example, almost 48 percent of the looms are shuttleless, compared with about 40 percent in the U.S. cotton industry. 2/

In addition, several mills have recently invested in dyeing equipment. According to ACIMIT (the Textile Machinery Producers' Association), sales of dyeing machinery (not including spare parts) totaled $26 million in 1985, a 50-percent increase over 1984 levels. 3/ Many of the new dyeing machines use less water, thereby cutting electricity costs by 40 to 50 percent. 4/

Italy's textile and apparel industries can also benefit from research and development programs established by the EC such as Basic Research in Industrial Technology in Europe (BRITE). Under this program, the EC can pay 50 percent of research and development costs, provided certain criteria are met, such as a minimum project size, and there is cooperation among EC countries. The initial phase for all industries in all EC countries was nearly $130 million, with a possible 4-year sum of $520 million. 5/ The textile industry hopes to receive its share of this program.

1/ "Looking to Further Growth in China," Textile Month, March 1986, p. 25.
2/ According to statistics of the International Textile Manufacturers Federation.
3/ "Italian Mills in Strong Effort to Modernize Dyehouses," Daily News Record, Aug. 14, 1986, p. 3.
4/ Ibid.
5/"Europe's Vital Assets for Future Success," Textile Month, January 1987, p. 30.

Marketing Practices

The Italian textile and apparel industries compete in the global market primarily on the basis of fashion, design, quality, and marketing. During much of the early 1980's they also benefited significantly from favorable exchange rates.

Many small mills, especially in the wool textile sector, have little influence over channels of distribution, pricing, and trademarks, which often determine sales and sales potential in foreign markets. Some smaller mills have developed export consortia to manage foreign distribution and marketing strategy. 1/ In the past 5 years, at least 80 firms have opened branches in the New York area. In 1986, two Italian trade associations, the Associazione Abbigliamento and Magliecalze, formed a new trade association, Italian Fashion Trading, Inc., in New York City. This association offers or plans to offer a wide range of financial, delivery, customs, and market-consulting services to Italian clothing companies exporting to the United States.

Labor Costs

Although there is considerable variation among sectors of the textile and apparel industries, labor costs generally account for between one-third and one-half of total production costs. 2/ In the apparel industry this percentage is closer to 40 percent because of its labor-intensive nature. In recent years, labor costs in Italy have increased significantly, making it one of the highest labor cost countries in the world. The cost per hour of labor performed by Italian textile workers currently ranks eighth in the world behind Switzerland, the Netherlands, Sweden, Belgium, Denmark, West Germany, and Norway. 3/ As of January 1, 1986, the average hourly labor cost in Italy's textile and apparel industries, as reported by the American Consulate in Milan, was as shown in the following tabulation:

Textile industry overall....	$10.25
Cotton industry.....	10.60
Wool industry.....	10.40
Knitwear industry.....	9.42
Clothing industry.....	9.53
Silk industry.....	10.17

A major reason for Italy's high per-hour cost is the relatively low number of hours actually spent on the job. In 1981, the Cotton Association reported that absenteeism in that industry averaged 13 percent (16 percent for

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1/ U.S. Consulate, Milan, "Industrial Outlook Report--Italian Textiles 1982," Oct. 5, 1982, p. 11.
2/ Werner International Management Consultants, Inc., "Spinning and Weaving Labour Cost Comparisons," Spring 1987, New York and Brussels.
3/ Ibid.

women and 9 percent for men). 1/ The high absenteeism, combined with vacations, strikes, and temporary layoffs of excess employees, brought the average number of hours per worker in Italy's textile industry to 1,709 in 1987, the lowest of any major producing country. 2/ In contrast, the number of hours per worker in the United States, Switzerland, Hong Kong, and Korea ranged from 2,092 to 2,388. 3/

According to officials in the wool industry, labor costs are also increased by regulations of the nationwide labor union. Such benefits include 5-week vacations and 14 months of pay for each 12-month year for production workers. 4/

Domestic Production

The Italian textile and apparel industries in 1986 registered sales of $25 billion, which accounted for about 17 percent of total sales of all Italian industrial products. 5/ Garments accounted for the largest share of total textile and apparel sales. In 1986, shipments of woven apparel totaled $9.2 billion, or about 38 percent of the sector's total sales, and sales of knitwear totaled $8.7 billion, or 33 percent. The wool textile sector was the second largest, with sales of $4.1 billion. 6/

Production in nearly all segments of the textile and apparel sector registered declines during 1982-83, primarily because of the worldwide economic recession. During 1984, however, all sectors showed significant growth, which continued through 1986 for most sectors, based on a production index compiled by the U.S. Consulate in Milan, as shown in the following tabulation (1980=100):

1/ U.S. Consulate, Milan, "Industrial Outlook Report--Italian Textiles 1982," Oct. 5, 1982, p. 5.
2/ Werner International Management Consultants, Inc., "Spinning and Weaving Labour Cost Comparisons," Spring 1987, New York and Brussels.
3/ Ibid.
4/ Interview with selected officials of Unione Industriale Pratese on Sept. 25, 1987, in Prato, Italy.
5/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 3.
6/ Ibid., pp. 3, 6, 13, and 24.

	1982	1983	1984	1985	1986
Total textiles and apparel.....	-3.0	-3.2	3.1	1.3	2.6
Total textiles.....	-1.9	-9.4	7.8	.9	3.2
Wool.....	-6.6	-9.6	15.2	11.1	-10.5
Cotton.....	3.5	-7.1	4.3	-10.7	16.6
Silk and manmade fiber.....	- .9	-4.9	5.3	4.3	1.6
Textile finishing.....	1.2	-6.1	3.9	-.8	-1.2
Knitted products.....	-3.2	-14.3	1.2	1.7	6.4
Apparel.....	+1.5	-6.8	9.1	-3.0	9.7

Italy's production for certain sectors, in terms of metric tons, is shown in table 11-5. (It should be noted that this table is not directly comparable with the production index because the categories vary to some degree.) In 1986, knitwear production increased by 9 percent over that of 1985 to slightly more than 300,000 tons. The cotton yarn sector benefited from this increase since more than one-third of the cotton-yarn production is consumed by the knitwear industry. 1/ Nearly all segments of the wool textile sector registered production declines, primarily because of a decline in exports and increased competition from low-labor-cost countries. 2/

Table 11-5
Italy's production of textiles and apparel, by types, 1982-86

(In thousands of metric tons)

Item	1982	1983	1984	1985	1986
Cotton yarns 1/.....	224.8	221.5	230.5	221.1	230.3
Cotton fabrics 1/.....	221.3	213.4	231.4	226.4	226.7
Wool yarns 2/.....	488.0	495.4	475.9	487.1	462.6
Wool fabrics.....	3/	3/	4/ 187.0	679.0	622.6
Manmade fibers.....	552.0	569.0	638.8	691.3	699.0
Silk.....	3/	3/	3/	33.6	34.0
Knitwear.....	255.8	263.6	264.3	275.2	300.0
Woven apparel.....	200.9	198.6	209.7	210.3	222.1

1/ Includes yarns of cotton and manmade-fiber blends, which account for 20 to 30 percent of cotton yarn output.
2/ Includes wool and manmade-fiber blended yarns.
3/ Not available.
4/ Does not include fabrics for home furnishings, which is estimated at between 400 and 450 thousand metric tons.

Source: U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, and preceding years' reports.

1/ U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 10.
2/ Ibid, p. 13.

Domestic Consumption

Italy is one of the world's major textile and apparel markets; its consumption pattern has changed over the years from a predominantly tailor-made market to a ready-made market. Per capita consumption of textiles and apparel in Italy is about 70 percent of that in the United States. In 1986, Italy's per capita consumption of textiles and apparel was $314 compared with about $450 for the United States.

Apparent consumption of textiles in Italy is difficult to determine because of the lack of statistics from the industry's many small producers. Although Italy's consumption increased in recent years, it is estimated that average overall growth in EC countries will be less than 1 percent in the next few years. 1/ The Italian industry is well developed and is the major supplier of textiles to the Italian apparel industry. The principal growth in imports, primarily cotton yarns, has come from other EC countries and low-cost suppliers such as Turkey, Greece, Thailand, and Pakistan.

Trade

Italy is the world's largest single exporter of textile and apparel products, in terms of value, with exports totaling $13.5 billion in 1986. The trade data are influenced by the rise in the value of the Italian lire relative to the U.S. dollar, in which the world statistics are calculated, and the ongoing shift of Italian exports to increasingly higher value-added goods as a result of increasing competitive pressures from the low-cost developing countries. 2/

Italy's imports of textiles and apparel, on the other hand, although increasing substantially during 1986, remained at a low level relative to its exports. The import product mix differs significantly from exports. During 1986, the average value per ton for textile and apparel imports was approximately one-half of that for exports, reflecting both the high volume of higher value-added apparel exports and the unfinished fabrics and raw materials coming into Italy for processing. According to Italian industry and trade association sources, these relatively low-valued imports included unfinished cotton fabrics from developing countries such as India, Thailand, and Turkey 3/; unfinished silk fabric from China 4/; wool sweater and garment "clips" (cut fabric sections) and product parts from the United States and other developed countries for use in reprocessed wool products 5/; less

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1/ "Europe's Vital Assets for Future Success," Textile Month, January 1987, p. 29.
2/ Associazioni Italiane Industriali Abbigliamento e Maglieria, Moda, Industria e Design, ICSID Congress 1983, p. 10.
3/ Interview with selected officials of Associazione Cottoniera Italiana, on Sept. 21, 1987, in Milan, Italy.
4/ Interview with selected officials of Associazione Serica Italiana, on Sept. 23, 1987, in Como, Italy.
5/ Interview with selected officials of Unione Industriale Pratese, on Sept. 25, 1987, in Prato, Italy.

expensive woolen fabrics from Czechoslovakia and Poland 1/; and manmade-fiber yarns from Turkey, Mexico, and South Korea. 2/ In addition, an Italian manufacturer of silk fabrics has reportedly entered into a joint venture in China to produce finished silk fabrics at prices 30 to 50 percent lower than Italian levels, which may also be entering the Italian market. 3/

Italy recorded a favorable balance of trade in textile and apparel products. The trade surplus grew by 73 percent in lire during 1982-86 to 12.9 trillion lire, or almost $9.0 billion (table 11-7). Apparel accounted for 70 percent of the trade balance, and textile mill products, the remaining 30 percent. During 1982-86, the trade balance for textile mill products, in terms of quantity decreased by 49 percent as imports of lower valued goods increased. In terms of lire, however, the trade balance for yarn and fabric increased by 69 percent during the period. The trade balance in apparel during 1982-86 increased by 10 percent in terms of quantity but by 75 percent in terms of lire.

Table 11-7
Italy's foreign trade in textiles and apparel, 1982-86

(In millions of U.S. dollars)

Item	1982	1983	1984	1985	1986	Percentage growth, 1982 to 1986
Textile mill products 1/:						
Imports	2,115	1,971	2,274	2,509	3,332	58
Exports	4,013	4,193	4,365	4,687	5,920	48
Trade balance	1,898	2,222	2,091	2,178	2,588	36
Apparel 2/:						
Imports	681	631	656	788	1,164	71
Exports	4,408	4,530	4,828	5,359	7,572	72
Trade balance	3,727	3,899	4,172	4,571	6,408	72
Textiles and apparel 3/:						
Imports	2,796	2,602	2,930	3,297	4,496	61
Exports	8,421	8,723	9,193	10,046	13,492	60
Trade balance	5,625	6,121	6,263	6,749	8,996	60

1/ Represents data for SITC 65 which does not include raw fibers.
2/ Represents data for SITC 84.
3/ Represents data for SITC 65 and 84.

Source: Compiled from data of the United Nations.

1/ Interview with selected officials of Fratelli Balli S.P.A., on Sept. 25, 1987, in Prato, Italy.
2/ Interview with selected officials of Snia Fibre, on Sept. 21, 1987, in Milan, Italy.
3/ "The China Connection," Women's Wear Daily, Sept. 28, 1987, p. 19.

Exports

Although Italy's total exports of textile and apparel products grew by 58 percent during 1979-86 to $13.5 billion, most of the growth occurred during 1984-86. The countries of the EC were the major export markets for Italian textiles and apparel, accounting for 64 percent, or $8.6 billion, in 1986 (table 11-8). The major individual markets were West Germany and France, which together accounted for 44 percent, or $5.9 billion, of the exports in 1986. They were followed by the United States, which accounted for just under 10 percent, or $1.3 billion, and the United Kingdom, which accounted for 7 percent, or $1.0 billion. Other markets included Canada and Japan, which together accounted for $0.6 billion of Italy's exports in 1986. The relatively low level of exports to Japan partly reflects the difficulty of obtaining the necessary financing in Japan. 1/ Trade sources indicated that the Middle Eastern countries, once major export markets for Italian products, had lowered their buying levels substantially since the oil crisis. 2/

In terms of individual products, apparel accounted for the majority of Italian exports at $7.6 billion or 56 percent of the total in 1986 (table 11-9). The greatest growth in apparel exports occurred in knit outerwear, exports of which rose by 17 percent on an annual basis during 1982-86 to $3.1 billion. 3/ Italy's exports of broadwoven fabrics and knit fabrics rose by 12 percent annually during 1982-86 to $3.6 billion, or 27 percent of total exports. Within this product group, broadwoven fabrics of manmade fibers and those of wool had the largest export volumes, totaling $1.0 billion and $0.9 billion, respectively, in 1986. Exports of Italian yarn rose by almost 10 percent annually during 1982-86 to $2.1 billion, or 16 percent of total exports. Exports of manmade-fiber yarn, 85 percent of which were destined to other countries of the EC, 4/ totaled $1.6 billion, and accounted for a substantial 76 percent of Italian yarn exports. Exports of floor coverings and miscellaneous textile products totaled $0.8 billion and accounted for the remaining textile exports from Italy.

1/ Interview with selected officials of Associazioni Magliecalze on Sept. 21, 1987, in Milan, Italy.
2/ Interview with selected officials of Unione Industriale Biellese on Sept. 24, 1987, in Biella, Italy.
3/ Interview with selected officials of Associazioni Magliecalze on Sept. 21, 1987, in Milan, Italy.
4/ Interview with selected officials of Snia Fibre on Sept. 22, 1987, in Milan, Italy.

Table 11-8. Textiles and apparel: Italy's exports, by specified world markets, 1982-86

(In thousands of U.S. dollars)

Commodity / Partner	1982	1983	1984	1985	1986
Textiles:					
Hong Kong	32,950	40,518	50,730	54,845	63,203
Korea, South	6,829	12,627	19,735	21,209	19,898
Taiwan	6,054	10,421	15,278	20,313	20,073
Other developing	437,059	392,347	345,068	364,022	471,329
China	5,035	2,819	4,386	6,372	8,534
Other NMEs	170,143	183,242	175,915	170,415	181,407
EC	2,455,073	2,604,393	2,589,377	2,841,780	3,715,301
United States	235,535	270,763	419,180	418,697	447,098
Canada	52,069	73,452	94,286	105,400	123,399
Japan	140,732	128,501	142,495	149,171	208,151
Other developed	468,925	472,869	507,235	534,472	660,914
World	4,010,405	4,191,950	4,363,687	4,686,696	5,919,305
Apparel:					
Hong Kong	46,582	44,245	40,440	50,500	66,451
Korea, South	944	997	829	776	1,419
Taiwan	125	361	457	709	1,807
Other developing	248,258	252,968	213,201	195,883	202,351
China	210	228	116	190	734
Other NMEs	26,814	42,063	46,397	62,689	50,247
EC	3,051,549	3,061,721	3,116,395	3,382,700	4,924,445
United States	227,414	297,191	531,484	675,901	867,507
Canada	28,328	35,206	51,531	67,472	100,987
Japan	146,380	150,736	138,346	155,499	209,894
Other developed	630,099	643,163	687,553	766,288	1,144,327
World	4,406,704	4,528,878	4,826,750	5,358,605	7,570,169
Total:					
Hong Kong	79,532	84,763	91,170	105,344	129,653
Korea, South	7,773	13,624	20,565	21,985	21,317
Taiwan	6,179	10,782	15,735	21,022	21,880
Other developing	685,317	645,315	558,270	559,905	673,680
China	5,245	3,047	4,502	6,562	9,268
Other NMEs	196,957	225,305	222,312	233,104	231,654
EC	5,506,623	5,666,114	5,705,772	6,224,480	8,639,746
United States	462,949	567,954	950,664	1,094,598	1,314,604
Canada	80,397	108,657	145,817	172,872	224,386
Japan	287,113	279,236	280,841	304,669	418,045
Other developed	1,099,024	1,116,032	1,194,789	1,300,760	1,805,240
World	8,417,110	8,720,828	9,190,436	10,045,301	13,489,475

Source: Compiled from data of the United Nations.

Table 11-9. Textiles and apparel: Italy's exports, by types, 1982-86

(In thousands of U.S. dollars and percent)

Commodity \ Year	1982	1983	1984	1985	1986	Annual growth
Silk yarn	17,129	18,787	28,369	23,102	18,340	1.72
Wool yarn	122,370	156,152	183,458	175,197	187,552	11.27
Cotton yarn	114,067	130,849	168,038	167,459	200,515	15.15
Manmade-fiber yarn	1,167,869	1,220,621	1,266,137	1,325,648	1,628,176	8.66
Other yarn	3,501	2,713	2,778	7,371	25,642	64.50
Total yarn	1,424,936	1,529,122	1,648,780	1,698,777	2,060,225	9.66
Grey cotton fabric	19,543	20,481	26,864	26,122	36,070	16.56
Finished cotton fabric	320,104	341,899	361,877	368,239	525,526	13.19
MMF fabric of continuous fiber	184,661	181,638	190,677	222,931	303,593	13.23
MMF fabric of discont. fiber	430,950	460,225	547,038	638,978	674,758	11.86
MMF pile fabric	32,189	35,057	33,509	33,850	39,095	4.98
Wool fabric	589,598	628,149	675,461	752,154	923,026	11.86
Other woven fabrics	235,243	259,540	306,155	325,893	403,454	14.44
Knit fabric	331,249	314,582	267,016	270,493	359,457	2.06
Total broadwovens and knits	2,293,972	2,411,990	2,586,448	2,869,144	3,625,549	12.12
Floor coverings	43,908	33,312	32,495	37,228	50,851	3.74
Other textile products	612,909	632,861	587,019	574,903	722,454	4.20
Total textiles	4,013,442	4,193,090	4,365,218	4,686,881	5,919,986	10.20
MB woven outerwear	898,384	928,714	972,510	1,023,313	1,369,632	11.12
WGI woven outerwear	801,339	850,190	887,722	977,718	1,429,140	15.56
MB woven underwear	62,264	61,940	69,289	73,500	105,035	13.97
WGI woven underwear	18,052	18,622	22,945	26,015	31,926	15.32
Woven accessories	218,665	211,441	227,444	273,931	373,782	14.34
Knit gloves	4,238	3,339	3,890	3,943	6,272	10.29
Knit stockings etc.	135,560	142,846	147,312	164,888	224,826	13.48
Knit underwear	276,210	278,900	278,463	304,630	432,660	11.87
Knit outerwear	1,649,902	1,669,731	1,838,006	2,114,894	3,099,755	17.08
Elasticized apparel	20,373	23,897	24,374	26,681	30,601	10.71
Total apparel	4,407,799	4,529,642	4,828,020	5,359,290	7,571,669	14.48
Total textiles & apparel	8,421,241	8,722,731	9,193,238	10,046,171	13,491,655	12.51

Source: Compiled from data of the United Nations.

Exports to the United States

Italy is the sixth largest supplier of textiles and apparel to the United States after the major Asian suppliers. The United States, in turn, is the third largest world market for Italian products and its importance has grown significantly in recent years. U.S. imports of textiles and apparel from Italy, based on official statistics of the U.S. Department of Commerce, are shown in the following tabulation (quantity in thousands of square yard equivalents and value in thousands of dollars):

Item	1983	1984	1985	1986
	Quantity			
Wool textiles and apparel....	18,954	42,173	41,939	38,133
Cotton textiles and apparel..	13,205	27,722	40,317	47,890
Manmade-fiber textiles and apparel.....	244,817	436,835	446,133	400,054
Total.....	276,976	506,730	528,389	486,077
	Value			
Wool textiles and apparel....	159,169	350,862	389,816	420,997
Cotton textiles and apparel..	65,006	122,850	175,333	234,379
Manmade-fiber textiles and apparel.....	150,041	262,620	293,664	322,979
Total.....	374,216	736,332	858,813	978,355

Several Italian trade sources expressed concern that U.S. tariffs significantly influence Italy's export product mix to the United States. For example, U.S. duties on wool broadwoven fabrics are higher than those on manmade-fiber fabrics and manmade-fiber and wool blended fabrics, an important factor behind their choice of fiber blends for export. In 1987, the rates of duty on woolen and worsted fabrics ranged from 33 to 42 percent ad valorem and on wool and manmade-fiber blended fabrics were about 15 percent ad valorem. In addition, they argued that under the proposed Harmonized System, scheduled to become effective during 1988, U.S. tariffs on fabrics containing 36 percent or more by weight of wool are classified as wool products and, therefore, dutiable at the higher rates of duty. Italian trade sources indicated this will force Italian manufacturers to use even lower amounts of wool in export products than previously, putting them more at a disadvantage in the U.S. market. 1/

1/ Interview with selected officials of Unione Industriale Pratese on Sept. 25, 1987, in Prato, Italy.

In addition, U.S. imports of silk, linen, and ramie products from Italy also increased significantly but from a much lower base. During 1986, imports of these items from Italy totaled just under $200 million. Major trade items included silk and silk-blend woven fabrics, dresses, and sweaters. Apparel items of nontextile materials such as leather, fur, and plastics accounted for the remainder of the trade.

During the second half of 1986 and the first half of 1987, the U.S. dollar weakened against the Italian lire, causing Italy's exports to the United States to decline as Italian products became more expensive to U.S. buyers. Italian trade sources report that this decline in exports, particularly in apparel, to the United States will continue through at least the end of 1987. 1/

Export promotion

The major thrust of the Italian export effort is to provide high styling, creativity, and newness in yarn, fabric, and apparel to the world markets. According to officials of the wool association in Prato, "fashion is the most added value" of Italian fabrics. 2/ A producer of men's suiting fabric indicated that "fashion direction" was the primary reason that his firm attracted buyers from all parts of the world. 3/ According to the Italian Wool Association, the decentralization of manufacturing and the emergence of a large number of independent "craftmanship" companies mentioned earlier has enabled Italy to remain an important supplier of fashion and quality fabrics. 4/

In addition to fashion and quality, there reportedly is a strong emphasis on customer service, which includes flexibility of delivery, no set minimums on the quantity of an item that can be ordered at one time, and guarantees on both delivery times and product quality. Some firms reportedly have a policy of meeting with customers at least twice per season, while others emphasize fast deliveries. Some fabric manufacturers reportedly offer delivery times of as little as 2 weeks from the date the order was placed for selected customers, including selected export customers, during the hectic fall-winter apparel season. 5/

1/ Interview with selected officials of Federtessile on Sept. 21, 1987, in Milan, Italy.
2/ Interview with selected officials of Unione Industriale Pratese, on Sept. 25, 1987, in Prato, Italy.
3/ Interview with selected officials of Cerruti S.P.A., on Sept. 24, 1987, in Biella, Italy.
4/ Interview with selected officials of Associazione Dell'Industria Laniera Italiana, on Sept. 21, 1987, in Milan, Italy.
5/ Interview with selected officials of Fratelli Balli S.P.A., on Sept. 25, 1987, in Prato, Italy.

As discussed earlier, the Italian fabric industry is segmented geographically, and each area has its own association to handle promotion of its product. Some of these associations coordinate large trade shows twice a year to gather and display their members' seasonal lines for overseas buyers. Among these shows are Ideacomo for silk and silk-like fabrics from the Lake Como area and Ideabiella for products produced on the wool system from the Biella area. In addition, the Italian Government, through its Istituto Nazionale per il Commercio Estero, promotes Italian products, including textiles, to the worlds' markets. This assistance is primarily in the form of marketing services, marketing studies, and trade shows aimed at such countries as the United States, Japan, Canada, and those of the EC. For trade shows, the Italian Government agency makes the arrangements and space rentals and individual firms pay a "political price," i.e., some percentage of the actual cost, for participation. In addition, for sales of large capital-expense items such as textile machinery, the Italian Government offers state insurance for sales to Third-World countries. This helps to ensure the stability of long-term sales arrangements to debt-ridden or politically unstable areas. 1/

Competitive Position

Italy ranks among world leaders in fashion and design, enabling it to remain globally competitive in both textiles and apparel. Its share of world textile exports expanded from 7.9 percent in 1982 to 11.3 percent in 1985 and its share of world apparel exports rose from 11.0 to 15.3 percent. In addition, Italy recorded an increasingly larger trade surplus in textiles and apparel; in 1986, the surplus totaled $9.0 billion compared with $5.6 billion in 1982. The major part of Italy's exports involves intra-EC trade, with the number countries of the EC accounting for $8.6 billion or 64 percent of Italy's exports of textiles and apparel in 1986. The expansion of Italy's textile and apparel exports, during the first half of the 1980's also benefited from favorable exchange rates, particularly in the U.S. market.

The textile and apparel industry's ability to remain competitive in the global market partly results from the decentralization of manufacturing that occurred in the early 1970's. This process resulted in a large number of small independent "craftmanship" companies. These companies, primarily family-operated firms, typically specialize in a limited number of stages in the production process, enabling them to emphasize product quality and differentiation, flexibility in production, and respond quickly to changing fashions; all of which are especially important factors in the fashion sector. Also related to the design of Italian products is the strong emphasis on customer service. The Italian industries are flexible with deliveries and often place no minimum quantities on a particular item. Although the Italian industry has remained competitive, the industry has had to contend with increasing costs, especially labor costs. Italy's labor costs in spinning and weaving are about 37 percent higher than those in the United States. In addition, productivity in Italy is about 75 percent of productivity in the United States.

1/ Interview with selected officials of Instituto Mazionale per il Commercio Estero, on Sept. 23, 1987, in Milan, Italy.

Italy is a world leader, particularly in wool and silk textiles, and higher priced knitwear. The majority of firms engaged in the manufacture of higher priced fabrics and knitwear are small but competitive, and specialize in short runs. Italy ranks among the largest producers and exporters of wool fabrics. In terms of Italy's exports to the United States, wool/manmade-fiber blends (such as those made in Prato) are approximately double the value of exports of higher priced woolen and worsted fabric. Italy has a competitive advantage in the cost of raw materials used in the fabrics woven in the Prato area, which use regenerated or recycled wool or rags as raw material. Often these fabrics compete internationally with wool products produced elsewhere. Italy's silk sector traditionally has had a competitive advantage in the luxury silk market. However, in recent years, China has become increasingly more competitive, mainly because of lower prices on unfinished fabric and improvements in quality control. 1/

To increase sales potential in foreign markets, some smaller mills, especially in the wool sector, have developed export consortia to manage foreign distribution and marketing strategy. 2/ In 1986, two Italian apparel associations established a trade association in New York City to offer financial and marketing services to Italian apparel firms exporting to the United States. In addition, two of the largest Italian apparel producers during the past year formed a joint financial service organization in Italy to strengthen their marketing services and seek new export markets.

In recent years, increasing automation has been a high priority for the Italian textile and apparel industries. In 1986, expenditures, especially electronic data processing and production equipment were about $1.3 billion. In recognition of its rising production costs, particularly labor costs, Italy's textile industry has been modernizing its manufacturing facilities. The rate of modernization in Italy's spinning and weaving sectors has been higher than that in the U.S. industry. In the short-staple or cotton-system spinning sector, 21 percent of the spindles in place in 1985 were purchased during 1980-85, compared with 3 percent for the United States. About 15 percent of the spindles in place in the long-staple or wool sector were purchased during 1980-85, compared with 10 percent for the United States. Nearly all the open-end spinning equipment in Italy was purchased during 1980-85, whereas slightly more than three-fourths of the open-end spinning equipment in the United States was purchased during the period. However, only about 8 percent of the installed spinning capacity (in terms of ring spindle equivalents) were open-end rotors, compared with 6 percent in the United States.As a result of the capital expenditures on new equipment during 1980-85, nearly one-half of Italy's looms are shuttleless, compared with just under 40 percent in the United States.

1/ Interview with selected officials of the Silk Association on Sept. 23, 1987, and U.S. Consulate, Milan, "Textiles, Italy 1987," Sept. 4, 1987, p. 21.
2/ U.S. Consulate, Milan, "Industrial Outlook Report-Italian Textiles 1982," Oct. 5, 1982, p. 11.

The potential exists for Italy to expand its textile and apparel exports, both absolutely and as a percentage of world exports. The ongoing modernization of manufacturing facilities and the emphasis on quality, style, and marketing largely offset its relatively high labor and other manufacturing costs. However, Italy's potential to expand its exports to the U.S. market, which are currently unrestricted by quotas, could be limited by passage of the Textile and Apparel Trade Act of 1987 (H.R. 1154 and S. 549). The Act provides for global quotas on U.S. imports of textiles and apparel.

Comparative Strengths of U.S. and Major Foreign Competitors

CHAPTER 12. COMPARATIVE STRENGTHS OF THE UNITED STATES AND ITS MAJOR FOREIGN COMPETITORS

Major Factors of Competitive Strength

Production Strengths

Comparative advantages and disadvantages in the area of production relate mainly to the costs of the inputs to production as indicated by wage rates, prices of raw materials, 1/ and interest rates; the quality and productivity of available labor and equipment; and the level of technology and research. The level of investment in technology and research also affects the present and future productivity of labor, attributes and quality of the product, and production efficiency.

Labor-cost comparisons, adjusted on the basis of current exchange rates, and compiled by Werner International Management Consultants, Inc., for spinning and weaving in the six competing countries considered here, indicate that Italy and Japan have higher labor costs than the United States and that Taiwan, the Republic of Korea (Korea), Hong Kong, and China have significantly lower costs than the United States.

In comparing labor costs in the latest period with data for earlier periods, Werner concluded that the dollar devaluation would have its main impact, with respect to U.S. cost competitiveness, on Western Europe and that the devaluation had not improved the U.S. cost competitiveness relative to most of the lower wage countries. There was little change from winter 1985/86 to spring 1987 in the ratio of foreign to U.S. labor costs in the case of China, Hong Kong, and Korea, but a slight increase in the ratio for Taiwan.

In the fall of 1987, however, interviews in these countries did indicate rising labor costs and concern about the availability of labor in most countries. Taiwan has been more affected by appreciation of its currency against the dollar than some of the other low-wage countries. Korea was experiencing increased labor costs as a result of strikes and large negotiated wage increases. In Hong Kong, there was a severe shortage of labor, with industry requesting the Government to allow foreign labor to enter the country, including Vietnamese refugees, or to set up zones near the border to use Chinese workers. In all the Asian countries, it was reported that it is becoming more difficult to obtain textile workers because of competition with other industries in which workers perceive working conditions to be better. In China, turnover among the labor force, mostly young females, was high, with workers taking jobs in other industries or leaving the labor force upon marriage. This turnover, as high as 20 percent annually in some plants,

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1/ Prices of raw materials readily available on the international market have little effect on the relative competitive position of countries, except for differences in transportation costs. However, when prices differ in local markets due, for example, to local regulations or subsidies, a country's ability to compete is affected. In the case of U.S. cotton, the price support program for cotton in the United States caused prices to be higher than world prices for a time, driving up production costs for U.S. mills relative to the rest of the world.

Table 12-1
Labor cost comparisons, by selected countries, April-June 1987

Item	United States	Italy	China	Hong Kong	Japan	Korea	Taiwan
Average cost per operator hour:							
Direct wages (local currency)..	7.09	8,149	.69	13.27	1,071	1,033	48.46
Other costs paid to operator (local currency).....	.66	3,102	.05	1.28	432	273	8.45
Other costs paid by company (local currency).....	1.49	5,293	.12	.53	254	189	14.32
Total cost per hour (local currency).....	9.24	16,545	.85	15.09	1,758	1,495	71.23
Rate of exchange as of Apr. 8, 1987 (U.S. dollars)..	1.00	1,306	3.72	7.81	147	844	34.12
Total cost in (U.S. dollars)...	9.24	12.67	.23	1.93	11.99	1.77	2.09
Ratio to U.S. cost (percent)...	100	137	2	21	130	19	23
Operation hours:							
Normal hours/operator/day.....	8	7.7	8	8	8	8	8
Normal hours/operator/week.....	44	38	48	48	40	48	48
Normal hours/operator/year.....	2,204	1,709	2,464	2,381	2,023	2,388	2,496
Overtime percent:							
Over normal pay - weekdays.....	38	27	1/	78	25	50	26
Over normal pay - national and religious holidays.....	81	54	1/	53	25	50	106
Shift premium percent:							
Second shift.....	0	6	1/	4	5	0	6
Night shift.....	0	37	1/	11	40	50	19
Mill operation:							
Mill operating days/year.....	241	268	1/	340	251	308	354
Mill operating hours/year.....	5,780	6,435	1/	8,160	5,737	7,392	8,496

1/ Not available.

Source: Werner International Management Consultants, Inc., "Spinning and Weaving Labour Cost Comparisons: Spring 1987," New York and Brussels.

caused lost time in recruiting and training of workers. Also, in some plants, as many as 15 to 18 percent of the total workforce may be engaged in nonproduction activities such as cafeteria operation or child care.

Fringe benefits account for a substantial portion of total labor costs in the United States and in many supplying countries, but the proportion differs considerably by country, as indicated by the ratio of direct wages to total labor cost per hour. These ratios in the spring of 1987 were as follows: United States - .77; Italy - .49; China - .81; Hong Kong - .88; Japan - .61; Korea - .69; and Taiwan - .68.

1/ Much of the change is due primarily to changes in the exchange rates.

The following tabulation shows total hourly labor costs, including fringe benefits, for textile workers in selected countries as a ratio to those for U.S. workers for two recent periods (in percent): 1/

Country	Winter 1985/86	Spring 1987
United States	100	100
Japan	95	130
Italy	95	137
China	2	2
Hong Kong	21	21
Korea	18	19
Taiwan	18	23

However, to arrive at the more meaningful comparison of unit labor costs, a productivity factor must be introduced. Data on international comparisons of productivity levels in spinning and weaving from Werner International, Inc., indicate that the United States has a significant advantage in productivity, with the level of productivity in Italy and Japan at about 75 percent of the U.S. level and in Hong Kong, Taiwan, and Korea at about one-half the U.S. level, as seen in the following tabulation comparing indexes of productivity (United States = 100):

Country	Productivity index
Italy	75
Japan	75
Hong Kong	50
Taiwan	45
Korea	45
China	1/ 10-15

1/ Estimated.

When the labor cost advantage is adjusted for productivity levels, the real labor cost advantage can be significantly less than the wage differential suggests, as seen in the following tabulation (United States = 100):

Country	Labor cost index	Productivity index	Adjusted labor index
Italy	137	75	182
Japan	130	75	173
Hong Kong	21	50	42
Taiwan	23	45	51
Korea	19	45	42
China	2	1/ 10-15	13-20

1/ Estimated.

The recently increased labor cost disadvantages of Japan and Italy are further aggravated by their lower productivity. The wage advantages of the three Asian NIC's, when adjusted for productivity, are only one-half as great as the wage differentials make them look. Japan and Italy have retained competitiveness in selected product lines by concentrating in areas where adding high value more than compensates for labor cost disadvantages, as in the high fashion area.

One indication of the current level of technology in the major competing countries is the amount of shipments of newer types of textile equipment to these countries and the level of current installations (table 12-2). Whereas it should be recognized that, for certain kinds of production, modern ring spinning and shuttle looms may be satisfactory, rotor or open-end spinning and shuttleless looms may be considered as the major types of new equipment.

Table 12-2
Installed spinning and weaving equipment, by types and by countries, 1985

Country	Spindles			Looms		
	Ring	Rotor 1/	Ratio rotor/ total	Shuttle	Shuttle-less	Ratio shuttleless/ total
	1,000 spindle equivalents		Percent			Percent
United States.....	13,526	875	6.1	95,010	61,760	39.4
Italy.....	2,249	183	7.5	15,430	14,080	47.7
Japan.....	9,359	523	5.3	224,900	30,060	11.8
Hong Kong.....	292	130	30.8	13,160	4,800	26.7
Korea.....	3,269	80	2.4	71,000	6,500	8.4
Taiwan.....	3,841	240	5.9	57,640	19,160	24.9
China.....	22,500	313	1.4	600,000	6,000	1.0

1/ In ring spindle equivalents (i.e., rotors x 2.5) on the cotton system.

Source: Compiled from International Textile Machinery Shipment Statistics, vol. 9/1986, International Textile Manufacturers Federation, Zurich, Switzerland.

Generally, the higher ratios for rotor spinning and shuttleless looms can be taken to indicate a more advanced state of technology in the industry; therefore, the data indicated advanced technology in the industries of the United States and Italy and less advanced technology in China and Korea. However, the implications of the data may change with full understanding of industry conditions in particular countries. For example, the Hong Kong spinning industry is quite small and not an international supplier; Japan has substantial requirements for fine yarns which are better produced on ring spinning equipment and its advanced finishing technology is not reflected in the data; and Italy probably has a large number of cottage industry looms not included in the data.

Marketing Strengths

In the U.S. market, the U.S. textile mill industry has some significant strengths relative to its foreign competition. Among the important advantages are those related to distribution costs, not only transaction 1/ and transportation costs, but also the cost benefits from lower inventories and fewer markdowns that accrue to their customers and to retailers. However, their domestic market potential has been continually reduced by increasing imports of apparel and other end products: large retailers and buying offices have increasingly developed their own capability for direct importing and often determine beforehand where and how the item will be produced, what quality and colors of material will be used, and the price of the final product. As a result, U.S. mills seem to be giving increasing attention to the requirements of retailers and to emphasizing the advantages U.S. suppliers can offer in such important areas as a shorter lead time from ordering to delivery of the product. As U.S. textile mills work with U.S. apparel producers to provide "quick response" in supplying the merchandise needs of retailers, they may be able to increase further the advantage they have in lead time. Typical lead times reported in 1986 for apparel were as follows (in number of weeks): 2/

Source	Lead time
United States	14.2
Europe	21.7
Major Far East	28.1
All other Far East	34.7

Studies have indicated that lead time for some items could be reduced to 4 or 5 weeks for domestic sources operating in a "quick response" mode, which might enable half of a season's volume to be provided by reorders. In order for U.S. mills to fully participate in the total effort required to achieve these results, they must be part of the information system that begins at the retail part of sale and transmits pertinent information quickly to the appropriate suppliers. In addition, the mills' manufacturing facilities must enable a certain degree of flexibility in shifting from one product to another, and mills must be willing to do short-run weaving and finishing. Some parts of the U.S. textile mill industry may feel little direct pressure from imports, but even these parts of the industry could benefit in the long run from more emphasis on quick response and flexibility. Segments that feel relatively less import pressure include tufted carpets, knit fabrics, nonwoven fabrics, certain woven fabrics such as automotive fabrics and furniture upholstery fabrics and weaving yarns. Overall, the U.S. industry supplies the bulk of the domestic market and has the advantage of being able to produce large runs of many standard fabrics and thus achieve the economies inherent in such continuous operations. In fact, foreign industries are generally unable to compete with the U.S. industry in the U.S. market in the case of the heavier weight fabrics sold here in large volume. Foreign producers have been able to penetrate the U.S. market mainly in lighter weight fabrics, where

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1/ Including travel, communication, and paperwork costs.
2/ Kurt Salmon Associates, "Survey of Retail Sourcing Plans," 1986.

labor and transportation are a smaller part of total cost, either by supplying low-priced commodity-type fabrics or by supplying high-quality fabrics with special weaves or finishes, often in small lots. The quality of U.S. products is generally regarded as good, but purchasers often indicate that they can more readily obtain exclusive designs or styles abroad, that some items simply are not available in the United States, and that, in some cases, U.S. quality is lower than that of the foreign product.

The marketing strengths of foreign suppliers differ by country. Japan has the ability to supply high-quality fabrics, with excellent designs and finishes, and to supply these in the small quantities often required for exclusive, high-fashion items; and Japanese trading companies facilitate the export process. However, labor and other production costs are high, as noted, and the industry appears to be placing less emphasis on the export market.

Taiwan produces textile products of good quality and variety, but as costs have increased, the industry has moved more toward large production runs to reduce unit costs. Government programs, using quota allocations as leverage, are encouraging modernization, diversification in products and markets, and concentration on products of higher added value. Taiwan is likely to place more emphasis on markets other than the presently dominant U.S. market.

Hong Kong will continue to emphasize exports of apparel rather than textiles and will only export fabrics with high-quality finishes, at times utilizing greige fabric or yarn imported from foreign sources such as China. The Korean industry is dominated by large, integrated operations, which are continuing to invest in equipment that will increase productivity in the face of rising wage costs. The emphasis seems to be on achieving a high level of technology in the weaving and finishing of manmade-fiber products, partly with a view to making competitive gains against Japan as a world supplier of these materials.

China seems likely to continue to make substantial investments in its textile industry and to make competitive gains against higher cost producers in the world market. Textile exports will continue to play an important role in the economy and as an earner of foreign exchange, but growing domestic demand may reduce the growth in such exports. More emphasis will be placed on exports of products of higher added value, including finished fabrics and apparel, rather than greige yarn and fabrics; where necessary, China will import fabrics needed to produce apparel for export.

Italy will continue to be a strong competitor in world markets, especially for wool and silk textiles, despite rising production costs, because of its emphasis on quality, style, and effective marketing. Knit goods have been a strong area for Italian exports but some silk products have encountered growing competition from Chinese exports.

Other Considerations

The financial performance of U.S. textile mills in 1986 and 1987 improved sharply and should enable the mills to obtain the additional financing necessary to undertake investments in capital equipment and in research and development. Interestingly, questionnaire responses do not indicate plans to increase investments in 1988, despite the likelihood that funds should be available. However, in some cases, debt service as a result of leveraged buyouts will reduce the availability of funds.

With the exception of China, industries in the major foreign competing countries do not expect to make investments that would substantially increase production capacity, although most plan to continue modernization to achieve higher productivity and higher quality. Even in China, textile investment will probably decline as a share of total investment in the industrial sector and will go mainly to new equipment for existing plants rather than new plants. Textile investment in Japan will probably be reduced, with termination of Government assistance. Taiwan and Korea will both continue to invest to upgrade quality and productivity, with Korea emphasizing high-tech facilities in the manmade-fiber segment; both will probably divert some textile investment overseas. Italy is expected to emphasize marketing and high fashion rather than productivity but will continue a gradual trend to a more capital-intensive industry.

The effects of exchange-rate changes are still taking place and may not be fully realized yet. The U.S. dollar has declined since 1985 against many foreign currencies, but exchange-rate changes did not have a significant effect on foreign competition in the U.S. textile market in 1986. Nevertheless, textile imports from the major suppliers slowed considerably in 1987 compared with 1986, and in the case of Japan, the value of U.S. imports declined in January-August 1987 from the comparable period in 1986. Imports from the other suppliers covered in this study increased only slightly, with Korea showing the largest increase and Taiwan the smallest. Korea's currency was incidentally the only currency that depreciated against the dollar through mid-1986, but it has begun to appreciate significantly since. Discussions with foreign suppliers indicate that they expect their currencies to either stabilize or rise further against the dollar and that exchange rate changes over the past 2 years will continue to have a positive effect on the cost competitiveness of the U.S. textile industry. Exchange rates since January 1985 are shown in table 12-3.

Questionnaire Responses from Producers of Textile Mill Products

As described in appendix C, questionnaires were used to collect information from both U.S. producers and purchasers of textile mill products, especially information on competitive strategies being used and on actions needed to enhance the competitive position of the U.S. textile mill industry. Usable responses were obtained from 108 producers and 153 purchasers, providing a response rate of 72 percent and 61 percent, respectively. Following initial questions to determine the type of firm, its participation in foreign trade, and other aspects of its operations, the questionnaire

Table 12-3
Exchange rates: 1/ Nominal-exchange-rate equivalents of selected currencies in U.S. dollars, real-exchange-rate equivalents, indexed by quarters, January 1984-September 1987

Period	Japan		Korea		Taiwan		Italy		Hong Kong 3/	
	Nominal exchange rate	Real exchange rate 2/	Nominal exchange rate	Real exchange rate 2/	Nominal exchange rate	Real exchange rate 2/	Nominal exchange rate	Real exchange rate 2/	Nominal exchange rate	Real exchange rate 2/
	U.S. dollars/yen		U.S. dollars/won		U.S. dollars/NT$		U.S. dollars/lira		U.S. dollars/HK$	
1984:										
January-March.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	4/
April-June.....	100.6	99.8	99.7	99.3	101.0	100.9	99.2	100.7	99.8	4/
July-September....	94.9	95.1	98.2	98.9	102.4	101.9	92.4	95.2	99.4	4/
October-December..	93.9	94.1	97.1	98.2	102.0	101.2	87.9	92.6	99.6	4/
1985:										
January-March.....	89.7	90.4	94.8	96.1	102.1	100.5	82.3	89.2	99.8	4/
April-June.....	92.1	92.1	91.7	92.9	100.9	98.4	84.4	93.3	100.2	4/
July-September....	96.8	96.4	90.1	92.1	99.6	97.2	87.7	97.7	100.1	4/
October-December..	111.6	107.9	89.3	91.2	100.4	96.8	95.0	106.1	99.8	4/
1986:										
January-March.....	123.0	117.8	89.7	92.1	102.3	99.2	104.0	117.3	99.8	4/
April-June.....	135.8	127.1	89.7	91.9	104.6	102.3	108.0	122.0	99.8	4/
July-September....	148.3	135.6	90.2	92.7	107.3	104.1	115.8	130.3	99.8	4/
October-December..	144.1	129.2	91.5	93.4	110.6	106.4	119.6	135.1	100.0	4/
1987:										
January-March.....	150.8	133.1	93.0	94.1	114.9	108.2	127.3	144.2	100.1	4/
April-June.....	161.9	139.8	96.1	96.9	121.6	111.3	127.9	143.9	99.8	4/

1/ Exchange rates expressed in U.S. dollars per unit of foreign currency.
2/ The indexed real exchange rate represents the nominal exchange rate adjusted for the relative economic movement of each currency as measured here by the Producer Price Index in the United States and the respective foreign country.
3/ Reliable producer price data for Hong Kong are not available. Therefore, accurate measures of the real value of the Hong Kong dollar cannot be calculated.
4/ Data not available.

Source: International Monetary Fund, International Financial Statistics, October 1987.

concentrated on the respondent's assessment of the competitive advantages and disadvantages of the U.S. industry and its products relative to major foreign competitors and the competitive strategies being used to counter import competition.

Overview of Producers' Responses

Many U.S. textile mills engaged in direct exporting or importing in 1986 but such trade was small relative to their domestic shipments. Twenty-nine percent of the reporting firms were direct importers and 66 percent were direct exporters. However, direct imports were equal to only about 2 percent of domestic shipments, and exports were equal to about 6 percent of domestic shipments in 1986. The foreign interests of a number of firms are reflected in their company structure: 17 percent of the respondents maintain a sales office abroad; 15 percent own or operate production facilities abroad; 8 percent participate in foreign joint ventures, countertrade, or licensing; and 6 percent are owned or controlled by a foreign firm.

Respondents to the questionnaire indicated expenditures for plant and equipment in 1986 equal to 4.9 percent of sales 1/ and expenditures for research and development (R&D) equal to 0.9 percent of sales. Planned future expenditures in these areas in 1987 and 1988 were about equal to those in 1986 for plant and equipment, but were lower for research and development, where decreases of about 10 percent each year were planned in 1987 and 1988.

Many U.S. mills feel their export potential is limited by a lack of price competitiveness and by tariffs and other barriers to entering foreign markets. Many also feel they should devote their full attention to the large U.S. market, which can absorb their entire output. Nearly all feel that foreign industries have an overall cost advantage, in particular on labor costs, but that the U.S. industry has the advantage on most noncost competitive factors such as delivery time, product quality and availability, and supplier relationships. Mills intend to rely strongly on guaranteed quality, timed deliveries, short lead times, higher quality and commensurate price, and large, consistent runs to maintain their competitive position in the domestic market. Actions that U.S. mills have recently carried out to meet foreign competition include investing in plant and equipment, either to expand or to cut costs, acquiring new product lines, improving product quality or design, and making changes in their programs for product service and support.

1/ Data of the U.S. Department of Commerce indicate capital expenditures for SIC 22 (textile mill products) of 3.2 percent in 1986.

U.S. Producers Who Import

Although imports amounted to less than 2 percent of domestic shipments, 29 percent of U.S. firms reported direct imports in 1986 as shown in the following tabulation:

Type of firm	Number of respondents	Percent importing	Percent exporting
Weaving mills	43	28	65
Knitting mills	16	31	50
Floor coverings	22	18	73
All other	27	37	70
Total	108	29	66

Broadwoven fabric weaving mills and producers of floor coverings were the most frequent importers.

The reasons most often cited for importing were lack of availability or a temporary shortage of the product from U.S. sources, and to supplement their own production to reduce overall cost. Other important reasons for importing were the desirable product features of the imports, insufficient capacity of the firm to meet demand, and to fill out a line with "low-end" goods. Several textile companies also indicated that imports consisted of affiliated or intracompany transfers (table 12-4).

Table 12-4
Top 9 factors influencing the decision of U.S. producers of textile mill products to import, by share of responses

(In percent)

Rank	Decision factor	Share of firms responding
1	Unavailable from U.S. sources	39
2	Supplement to reduce overall cost	29
3	Temporary U.S. shortage	26
4	Desired product features	23
5	Insufficient capacity to meet demand	19
6	Fill out line with low-end goods	19
7	Better product quality	16
8	Intra or affiliated company transfers	13
9	Fill out line with high-end goods	13

Note: Data represent percentage of the 31 importing producers responding to this section of the U.S. International Trade Commission survey.

Factors Limiting Producers' Exports

The most frequently indicated limitation on exports was a lack of price competitiveness, as shown in the following tabulation of factors limiting exports, by the share of respondents claiming the limitation (in percent):

Factors limiting exports	Share of respondents claiming to be affected
Lack of price competitiveness	38
Restrictive foreign tariffs	32
Foreign trade barriers	31
U.S. market large enough to absorb firm's output	22
Limited knowledge of export/ import regulations	12
Foreign markets serviced from facilities abroad	11
Cultural and language barriers	9

Four other factors were indicated as particularly significant: (1) restrictive foreign tariffs, (2) foreign trade barriers, (3) a large U.S. market that absorbs the firm's output, and (4) a limited knowledge of export procedures or foreign import regulations. Other factors of some significance were that the foreign market was serviced from abroad, and that there were cultural and language barriers. Floor-covering producers gave relatively more emphasis to the product not meeting foreign market standards and the foreign market being too small for profit as reasons for not exporting more (table 12-5).

Assessment of Cost Advantages

Despite some cost factors in which the U.S. has a competitive advantage, the great majority of respondents indicated that one or more foreign industries had an overall cost advantage compared with the U.S. industry, as shown in the following tabulation of respondents' answers (in percent):

Country	Foreign country advantage	U.S. advantage
Taiwan	73	0
Korea	73	0
China	72	0
Hong Kong	66	0
Japan	58	5
Italy	39	3

Table 12-5
Producers of textile mill products: Most important factors limiting the development of exports

Factors limiting exports	Weaving mills	Knitting mills	Floor coverings	Nonwoven mills	Other	All firms
	percent by type of firm					
Lack of price competitiveness	40	38	23	63	42	38
Restrictive foreign tariffs	35	19	27	25	47	32
Foreign trade barriers	47	19	23	0	32	31
U.S. market large enough	26	13	18	0	37	22
Limited knowledge of export/import regulations	9	19	9	25	11	12
Foreign market serviced from abroad	19	6	5	13	5	11
Cultural and language barriers	12	6	9	25	0	9
Joint ventures or licensing used to service foreign markets	9	6	0	25	0	6
Insufficient capacity to export	7	0	5	0	16	6
Product does not meet export market standards	5	6	14	0	0	6
Foreign market too small to be profitable	2	0	9	13	5	5
Perceived bias against U.S. items	7	6	0	0	0	4

1/Data represent percentages of the 108 producers; 43 weaving, 16 knitting, 22 floor covering, 8 nonwoven fabric, and 19 other mills answering this section of the U.S.I.T.C. survey.

The responding producers by a margin of four to one found foreign industries to have a cost advantage over domestic, with lower labor, material, and overhead costs accounting, in that order, for over one-third of the advantages noted. Together, government regulations and subsidies were said to account for nearly one-fourth of the advantage, ranking second and third, respectively, in the individual listings. Other factors frequently named as those in which foreign industries have a competitive advantage were exchange-rates in their effect on pricing, capital costs, and equipment costs (table 12-6).

Italy was less frequently mentioned than other countries by respondents as having an overall cost advantage. Respondents reported little difference among the other five countries related to overall cost advantage but they reported some differences with respect to individual cost factors. Italy and Japan were less frequently designated as having lower material costs or as having an exchange-rate advantage. Hong Kong was somewhat less frequently mentioned than the other Asian countries regarding government subsidies (table 12-7).

By contrast, only a minority of respondents identified any cost factors in which the U.S. industry enjoys a cost advantage. Factors in which the U.S. industry was judged to have an advantage more often than foreign industries were transportation/distribution costs and energy costs (table 12-8). Lower material costs, equipment costs, and inflation rates were also sometimes listed as U.S. advantages and, in the case of Japan, the United States was felt to have an exchange-rate advantage. Energy costs were designated as a U.S. advantage much more often by weaving mills than by other segments of the U.S. industry; the lower domestic inflation rate was designated most often by knitting mills; and lower material costs, by "other" mill producers (including yarn mills).

Assessment of Competitive Advantages on Noncost Factors

By a three-to-one margin, responding producers found the domestic industry to have noncost advantages over foreign competitors. The U.S. industry was designated as having an advantage more frequently than the six competing suppliers by a substantial margin on all factors except "government policies/practices." Noncost advantages of the U.S. industry most frequently mentioned were delivery time, product quality, supplier relationship/ reliability, product availability, and technical assistance. Areas in which the foreign industry was sometimes listed as having an advantage, in addition to government practices, were terms of sale/financing, product quality, and product design (tables 12-9, 12-10, and 12-11).

Considering both cost and noncost factors, producers indicated that the U.S. industry had an overall competitive advantage. A summary of comparisons of all U.S. versus foreign industries for the six competing countries showed that in 60 percent of the cases the U.S. industry was given the overall advantage compared with 40 percent for foreign industries.

Table 12-6
Producers of textile mill products: Competitive cost assessment

Rank	Item	Frequency of response
FOREIGN INDUSTRY ADVANTAGE		--percent--
1	Lower labor cost	16
2	Government regulations	12
3	Government subsidies	12
4	Lower materials cost	9
5	Overhead	9
6	Exchange rate advantage	6
7	Capital costs	5
8	Equipment costs	5
9	Energy costs	3
10	Domestic inflation rates	2
11	Transportation cost	2
12	Other cost factors	0
	Total	80
DOMESTIC INDUSTRY ADVANTAGE		
1	Transportation cost	8
2	Energy costs	3
3	Lower materials cost	2
4	Equipment costs	1
5	Domestic inflation rates	1
6	Lower labor cost	1
7	Exchange rate advantage	1
8	Capital costs	1
9	Government regulations	1
10	Overhead	0
11	Government subsidies	0
12	Other cost factors	0
	Total	20

Note: Data represent percentages of the 1687 total responses from the 64 producers answering this section of th U.S.I.T.C. survey.

Table 12-7
Producers' competitive assessment: percent 1/ of respondents stating that the FOREIGN INDUSTRY has the advantage on cost factors

Competitive cost factors	United States versus-- Taiwan	Korea	China	Hong Kong	Japan	Italy
Lower labor cost	88	84	83	75	53	36
Government regulations	56	56	50	53	52	39
Government subsidies	61	59	61	44	52	28
Lower materials cost	52	47	52	42	28	20
Overhead	42	42	42	38	38	23
Exchange rate advantage	36	34	36	28	14	13
Capital costs	27	23	25	22	28	14
Equipment costs	22	20	22	16	23	20
Energy costs	19	19	22	14	5	8
Domestic inflation rates	11	11	13	8	9	5
Transportation cost	9	9	6	8	6	3
Other cost factors	2	2	2	2	2	2
OVERALL COST ADVANTAGE	73	73	72	66	58	39

1/Data represent percentages of the 64 producers answering this section of the U.S.I.T.C. survey.

Table 12-8
Producers' competitive assessment: percent 1/ of respondents stating that the DOMESTIC INDUSTRY has the advantage on cost factors

Competitive cost factors	United States versus-- Japan	Italy	China	Hong Kong	Taiwan	Korea
Transportation cost	38	30	39	36	38	38
Energy costs	22	13	9	13	11	14
Lower material costs	14	14	3	5	3	3
Equipment costs	8	6	8	5	6	6
Domestic inflation rates	6	13	5	5	5	5
Lower labor cost	9	9	2	2	2	2
Exchange rate advantage	17	5	2	0	0	0
Capital costs	2	5	3	2	5	5
Government regulations	2	2	3	2	3	3
Overhead	3	2	2	3	2	2
Government subsidies	2	3	2	2	2	2
Other cost factors	0	0	0	0	0	0
OVERALL COST ADVANTAGE	5	3	0	0	0	0

1/Data represent percentages of the 64 producers answering this section of the U.S.I.T.C. survey.

Table 12-9
Producers of textile mill products: Competitive assessment of non-cost factors

Rank	Item	Frequency of response
FOREIGN INDUSTRY ADVANTAGE		--percent--
1	Government practices	12
2	Terms of sale/financing	3
3	Product quality	2
4	Product design	2
5	Supplier relationship	1
6	Technical assistance	1
7	Marketing practices	1
8	Product availability	1
9	Delivery time	1
10	Other non-cost factors	0
	Total	25
DOMESTIC INDUSTRY ADVANTAGE		
1	Delivery time	14
2	Product quality	11
3	Supplier relationship	10
4	Product availability	10
5	Technical assistance	7
6	Product design	7
7	Terms of sale/financing	7
8	Marketing practices	6
9	Government practices	1
10	Other non-cost factors	1
	Total	75

Note: Data represent percentages of the 1602 total responses from the 64 producers answering this section of th U.S.I.T.C. survey.

Table 12-10
Producers' competitive assessment: percent 1/ of respondents stating that the FOREIGN INDUSTRY has the advantage on non-cost factors

Competitive non-cost factors	United States versus-- Taiwan	Korea	Taiwan	Hong Kong	Japan	Italy
Government practices	56	56	53	53	53	39
Terms of sale/financing	11	11	13	11	13	8
Product quality	8	8	5	6	22	8
Product design	3	3	3	5	16	19
Supplier relationship	8	5	3	6	9	5
Technical assistance	6	3	3	5	9	6
Marketing practices	6	6	3	6	5	5
Product availability	5	5	2	2	5	5
Delivery time	3	3	2	2	3	2
Other non cost factors	2	2	2	2	2	2

1/Data represent percentages of the 64 producers answering this section of the U.S.I.T.C. survey.

Table 12-11
Producers' competitive assessment: percent 1/ of respondents stating that the DOMESTIC INDUSTRY has the advantage on non-cost factors

Competitive non-cost factors	United States versus-- Japan	China	Korea	Taiwan	Hong Kong	Italy
Delivery time	64	63	61	64	58	48
Product quality	34	56	53	53	45	31
Supplier relationship	39	52	45	45	44	30
Product availability	42	47	44	45	41	31
Technical assistance	28	38	34	33	33	20
Product design	20	39	39	36	25	13
Terms of sale/financing	27	31	33	33	27	20
Marketing practices	27	31	30	30	25	19
Government practices	6	6	6	6	5	6
Other non cost factors	2	3	3	3	3	2

1/ Data represent percentages of the 64 producers answering this section of the U.S.I.T.C. survey.

U.S. Marketing Strategies

Respondents were asked to identify, from among some 29 choices, which marketing strategies they, and their competition, rely upon in competing in the U.S. market. The results indicate that nearly all the listed strategies were relied upon to some degree by most of the domestic and foreign firms. However, there were notable differences in whether these firms place heavy, moderate, or slight reliance on particular strategies. Respondents indicated that their own (U.S.) firms placed heaviest emphasis on strategies related to service such as guaranteed product quality, deliveries timed to customer needs, large runs of consistent quality, and short lead times. They also emphasized high quality and price, innovative styling and fabrication, and either exclusive products or basics in large quantities. They have placed only slight emphasis on various types of advertising and on marketing research (table 12-12).

The perceptions of respondents regarding the competitive strategies of their domestic and foreign competitors were that their domestic competitors place heavy emphasis on most of the same strategies they do but also tend to give somewhat more importance to quantity discounts and mainstream styling. Foreign competitors were believed to place heavy emphasis on basics in large quantities, low unit prices for large orders, mainstream styling, and large runs of consistent quality. They regarded foreign competition as giving little attention to advertising, most aspects of customer service, or to innovative styling and fabrications (table 12-13).

The combined percentage of U.S. producers indicating heavy or medium reliance on the listed strategies, along with their perceptions of the extent to which foreign producers used these same strategies, is shown in table 12-14.

Table 12-12
U.S. Producers' marketing strategies for the U.S. market

Strategies	Degree of reliance			
	Heavy	Medium	Slight	Total 1/
	Percent			
Guaranteed quality	69	15	4	87
Deliveries timed to customer	67	16	4	86
Short lead times	49	26	8	83
High quality and price	33	31	17	81
Larger, consistant runs	57	17	6	81
Basics in large quantities	35	29	16	80
Short runs	22	31	25	78
Exclusive products	32	25	20	78
Research on market trends	20	30	27	77
Innovative styling	37	20	18	75
Quantity discounts	19	35	20	74
Brand advertising	8	25	40	73
Research on end user needs	19	26	28	73
Fashion direction to customers	31	25	17	72
Innovative fabrications	31	20	20	71
Off price promotions	6	21	42	69
Main stream styling	21	31	18	69
Increased sales to end manufacturers	32	16	20	69
Computer links to customers	15	14	39	68
Increased sales to converters	33	14	20	68
Joint ventures with customers	22	16	30	68
Retail sales analysis	13	19	34	67
Literature	7	25	33	66
Co-op advertising	9	18	37	64
Ad allowances	5	17	40	61
Origin advertising	19	10	32	61
Forward integration	6	10	44	60
Loss leader pricing	3	6	47	56
Product group pricing	9	18	29	56

1/ Detail does not add to total due to rounding.

Note: Data represent percentages of 108 producers answering this section of the U.S.I.T.C. survey.

Table 12-13
U.S. producers' assessment of foreign firms' marketing strategies for U.S. market

Strategies	Degree of reliance			
	Heavy	Medium	Slight	Total
	Percent			
Quantity discounts	37	13	3	53
Basics in large quantities	35	9	6	50
Exclusive products	6	21	21	49
High quality and price	6	17	25	47
Large, consistant runs	21	13	13	47
Brand advertising	2	6	39	46
Deliveries timed to customer	6	18	23	46
Short lead times	4	7	33	44
Guaranteed quality	10	18	16	44
Short runs	6	14	23	44
Main stream styling	21	13	9	44
Increased sales to converters	23	20	20	44
Joint ventures with customers	7	11	25	44
Literature	3	6	34	43
Increased sales to end manufacturers	16	15	12	43
Innovative styling	6	18	18	42
Research on end user needs	5	12	25	42
Fashion direction to customers	6	17	18	41
Innovative fabrications	6	19	16	41
Off price promotions	9	10	20	40
Co-op advertising	0	4	35	39
Ad allowances	1	6	32	39
Loss leader pricing	6	8	24	39
Research on market trends	8	7	23	39
Origin advertising	1	4	34	39
Forward integration	8	2	28	38
Computer links to customers	0	6	31	37
Retail sales analysis	3	9	25	37
Product group pricing	5	10	21	36

Note: Data represent percentages of 108 producers answering this section of the U.S.I.T.C. survey.

Table 12-14
Marketing strategies receiving medium to heavy attention by share of use by U.S. producers and foreign producers, as reported by U.S. producers

(In percent)

Strategy	U.S. producers	Foreign producers
Guaranteed quality	84	28
Deliveries timed to customer need	83	24
Short lead time	75	11
Larger, consistent runs	74	34
High quality and price	64	23
Basics in large quantities	64	44
Innovative styling	57	24
Exclusive products	57	27
Fashion direction to customers	56	23
Quantity discounts	54	50
Innovative fabrications	52	25
Mainstream styling	52	34
Research on market trends	50	15
Increased sales to end-product manufacturers	48	31
Increased sales to converters, and wholesalers	47	43

Sources of Competitive Relief

As seen in the following tabulation, of responses to the question of from what source do U.S. producers expect to obtain relief from import competition, the primary choices were the declining value of the U.S. dollar, U.S. action on MFA quotas and/or legislation, and the use of new technology/products (in percent):

Expected source of relief	Share of respondents
Declining value of the U.S. dollar	51
U.S. Government action (i.e., MFA quotas)	49
Use of new technology or products	49
U.S. legislative action	41
Imports are not a problem	30
Rising costs of competitors	25
No solution in sight	13

Different segments of the industry had somewhat different expectations. The greatest disparities of view between industry segments were over imports as "not a problem" (weavers--14 percent, floor coverings--65 percent) and importance of government action (floor coverings--20 percent, weavers--64 percent) or legislative action. Weaving mills expect relief to come mainly from U.S. Government action and new technology; knitting mills have similar expectations but several also indicated that imports are not a problem; floor covering mills indicated most often that imports are not a problem, followed by expectations that the declining value of the U.S. dollar and the use of new technology/products would provide relief from import competition; nonwoven fabric producers expect relief mainly from the declining value of the U.S. dollar, Government action, and rising production costs of competitors; and other producers of textile mill products (including yarn producers) expect relief from the declining value of the U.S. dollar, Government action, and the use of new technology (table 12-15).

Strategies Needed for Responding to Foreign Competition

In the opinion of domestic firms, the U.S. textile mill industry needs to take action in a number of diverse areas in order to meet the competitive challenge from foreign producers. Investments in plants and equipment was most frequently mentioned along with several areas of cost reduction, especially overhead and labor costs. Other important areas in which to concentrate efforts include product changes in terms of quality, design, and diversity; investment in research and development; and product promotion and marketing efforts. The suggested response areas were similar whether given in terms of the next year or in terms of the next 2 to 5 years.

Table 12-15
Producers of textile mill products: Expected sources of competitive relief

Sources	Weaving mills	Knitting mills	Floor coverings	Nonwoven mills	Other	All firms
	percent by type of firm					
Declining value of the U.S. dollar	48	46	40	71	68	51
U.S. government action (i.e. MFA quotas)	64	54	20	43	42	49
Use of new technology or products	62	38	25	29	58	49
U.S. legislative action	57	38	15	43	32	41
Imports are not a problem	14	38	65	29	21	30
Rising costs of competitors	26	8	15	43	37	25
No solution in sight	10	15	10	14	21	13

1/Data represent percentages of the 101 producers; 42 weaving, 13 knitting, 20 floor covering, 7 nonwoven fabric, and 19 other mills answering this section of the U.S.I.T.C. survey.

Table 12-16
Areas in which the U.S. textile mill industry needs to concentrate its efforts in response to foreign competition, by share of responses

(In percent)

Needed responses to foreign competition	Next year	Next 2 to 5 years
No special response required	17	12
Plant and equipment investments	64	68
Product changes	55	61
Overhead cost reduction	54	57
Labor cost reduction	50	55
Research and development investments	46	53
Product promotion	51	48
Production & transportation cost reduction	43	44
Materials cost reduction	39	44
Capital cost reduction	33	38
Reorganize, restructure capacity	26	31
Production levels and product mix	31	31
Pricing and/or financing terms	23	21
Foreign production or joint ventures abroad	13	21
Relocate, sell, or close plants/divisions	16	20
Acquisitions, mergers	17	20
Total	561	612

Responses that received somewhat more emphasis for the longer term than for the shorter term, (although not necessarily the most frequently mentioned) were investment in research and development; reorganize, restructure capacity; and foreign production or joint ventures. Overall, respondents saw more that needed doing in the next 2 to 5 years than next year, by an 11-to-10 margin.

A number of floor covering mills felt that no special response to foreign competition was needed, but where responses were suggested, the emphasis was on investments in plant and equipment and research and development. Knitting mills emphasized product changes, labor and overhead cost reduction, and investment in plant and equipment. Weaving mill responses were similar to responses for all respondents except that product promotion and marketing efforts were mentioned more often than in other segments. "Other" producers, including yarn mills, most often suggested investment in plant and equipment, product changes, and overhead cost reduction (table 12-17).

Although business strategies involving major changes in facilities were suggested less often than other more routine strategies, responses in this area may be regarded as particularly significant since they indicate a need for substantial adjustment. Some 20 to 31 percent of the respondents indicated a need for such adjustments in the next 2 to 5 years, including a need to

Table 12-17
Producers of textile mill products: strategies needed to counter foreign competition in the next year 1/

Strategy category	Weaving Mills	Knitting Mills	Floor Coverings	Nonwoven Fabrics	Others	Total
	Percent by type of firm					
Plant and equipment investments	69	54	40	86	74	63
Product changes	60	62	20	57	74	54
Overhead cost reduction	60	46	20	86	68	53
Labor cost reduction	57	54	15	86	53	50
Research and development investments	43	38	30	71	63	46
Product promotion	64	46	15	14	74	50
Production and transport cost reduction	50	54	20	57	37	43
Materials cost reduction	45	31	20	57	42	39
Capital cost reduction	50	8	10	29	37	33
Reorganize, restructure capacity	33	31	15	0	26	26
Production levels and product mix	45	38	5	14	26	31
Pricing and/or financing terms	24	38	0	43	26	23
Relocate, sell, or close plants/division	19	15	5	14	21	16
Foreign production, joint ventures	14	23	0	14	16	13
Acquisitions, mergers	21	23	5	14	16	17
No special response required	12	15	45	0	5	17
Other	5	8	0	14	5	5

1/ Data represent percentage of the 101 producers; 42 weaving mills, 13 knitting mills, 20 floor coverings, 7 nonwoven fabrics, and 19 other mills answering this section of the U.S.I.T.C. survey.

Table 12-18
Producers of textile mill products: strategies needed to counter foreign competition in the next 2-5 years 1/

Strategy category	Weaving Mills	Knitting Mills	Floor Coverings	Nonwoven Fabrics	Others	Total
	Percent by type of firm					
Plant and equipment investments	74	54	50	71	79	67
Product changes	67	62	25	71	79	60
Overhead cost reduction	67	54	15	71	74	56
Labor cost reduction	62	62	15	100	58	54
Research and development investments	55	38	35	71	68	52
Product promotion	62	46	10	14	68	48
Production and transport cost reduction	52	62	15	71	32	44
Materials cost reduction	52	38	20	57	47	44
Capital cost reduction	57	15	10	57	32	38
Reorganize, restructure capacity	40	31	20	14	26	31
Production levels and product mix	45	23	10	29	26	31
Pricing and/or financing terms	17	38	5	57	21	21
Relocate, sell, or close plants/division	17	31	5	29	32	20
Foreign production, joint ventures	26	31	5	0	26	21
Acquisitions, mergers	19	31	10	29	21	20
No special response required	5	8	40	0	5	12
Other	5	0	0	14	5	4

1/ Data represent percentage of the 101 producers; 42 weaving mills, 13 knitting mills, 20 floor coverings, 7 nonwoven fabrics, and 19 other mills answering this section of the U.S.I.T.C. survey.

reorganize, restructure capacity (31 percent); relocate, sell, or close plants or divisions (20 percent); acquire and merge (20 percent); and establish foreign production and joint ventures (21 percent) (table 12-18).

Actions Taken to Respond to Foreign Competition

Nearly half of the respondents (46 percent) indicated no special response to foreign competition last year than what they would do in the normal course of business, ranging from 67 percent of floor covering producers to a low of 15 percent for knitting mills.

Responses mentioned most frequently fell mainly into three categories--product-related, strategy-related, and labor-cost related--with progressively less attention paid to price, output, material, and promotion or marketing activities. Leading actions were as follows (in percent): 1/

Item	High	Low	Total
Improved product quality	75	48	65
Reduced service/support to cut cost	88	24	63
Acquired new product lines	76	29	63
Invested in labor-saving equipment	88	14	61
Improved product service/support	75	14	52
Investment in equipment for expansion	63	29	52
Matched competitors' prices	64	19	48
Improved product design	65	14	48
No special response	67	14	46
Invested in equipment to cut costs	56	29	45

Other leading responses were as follows: expanding market niches where firm has advantages; reduced output to cut inventories; and increased output of upscale goods.

In three segments, the most frequently employed strategy was to acquire new product lines, i.e., weaving mills (76 percent); knitting mills (71 percent); and nonwoven fabrics (71 percent). In floor coverings, the response was "no special response" (67 percent); and in the "other" segment, the response was "reduced service and support to cut costs" (80 percent), followed closely by improved quality and improved service/support (75 percent) (table 12-19).

The high frequency of multiple answers indicates that many producers employed a mix of techniques, including some that cut both ways--e.g., reducing service and support in some areas and increasing it in others.

1/ High and low percentages refer to the range, among industry segments, in the percentage of respondents designating a particular action.

Table 12-19

Producers of textile mill products: strategies used during the past year to respond to foreign competition

Stategies during past year	Weaving Mills	Knitting Mills	Floor Coverings	Nonwoven Fabrics	Other	Total
	Percent by type of firm					
No special response	41	14	67	57	44	46
PROMOTION AND MARKET RELATED:						
Improved buyer-incentives	21	21	14	14	25	20
Increased advertising	24	14	10	29	25	20
PRICE AND FINANCE RELATED:						
Matched competitor's prices	56	64	19	57	50	48
Improved financing	9	21	5	0	13	10
PRODUCT RELATED:						
Improved product quality	74	64	48	57	75	65
Reduced service, support to cut costs	74	64	24	71	88	63
Improved product service, support	62	57	29	14	75	52
Improved product design	65	43	33	14	50	48
Expanded market niches where firm has advantage	53	36	14	57	56	42
Added product features	35	29	29	0	13	26
OUTPUT RELATED:						
Reduced output to cut inventories	56	29	19	14	69	42
Increased output of up-scale goods	44	50	19	14	63	40
Relocated to cut transport costs	38	29	14	43	44	33
Diversified product mix	41	29	0	29	31	27
Concentrated on core products	32	21	10	14	25	23
Focused on most profitable lines	26	14	5	14	6	15
Sold or stopped making low-profit lines	29	7	5	14	6	15
Reduced output to cut losses	24	7	0	0	6	11
Consolidated production	6	14	14	0	19	11
STRATEGY RELATED:						
Acquired new product lines	76	71	29	71	69	63
Invested in equipment for expansion	62	57	29	43	63	52
Invested in equipment to cut costs	56	43	29	43	44	45
Expanded output & intensified ads	32	43	14	14	63	34
Modernized plant & equipment	32	57	10	57	38	34
Intensified R&D for technology	44	29	19	14	44	29
Intensified R&D to improve efficiency	41	21	10	14	44	27
Intensified R&D for new products	38	29	10	14	31	16
Expanded other export sales	15	29	5	29	19	12
Joint ventures with U.S. firms	15	21	5	14	6	12
Expanded sales to U.S. firms for 807 work	12	29	0	29	6	0
LABOR COST RELATED:						
Invested in labor-saving equipment	79	50	33	14	88	61
Reduced employment	35	21	5	14	38	25
MATERIAL COST RELATED:						
Used higher quality materials	32	21	14	0	25	23
Increased foreign sourcing of materials	6	14	10	14	19	11
Substituted lower cost materials	18	7	5	29	0	11

1/ Data represent percentage of the 92 producers; the 34 weaving, 14 knitting 21 floor covering, 7 nonwoven fabric and 16 other mills answering this section of the U.S.I.T.C. survey.

Questionnaire Responses from Purchasers of Textile Mill Products

Overview of Purchasers' Responses

Overall, 153 apparel and home-furnishing manufacturers, the purchasers of textile mill products, responded to the U.S. International Trade Commission survey. Although 42 percent of the respondents were direct importers, the majority purchased yarn and fabric solely from domestic mills and/or U.S. brokers, and those that imported, purchased a much larger share of their yarn and fabric from domestic sources than they did from foreign suppliers. In addition, because business is expected to remain good, the majority of the firms plan to increase their domestic purchases during the next 2 years. Forty-eight percent of the firms indicated they would even be willing to pay a premium for domestic products of comparable quality.

On the other hand, direct imports are substantial, particularly for men's suit firms, and more than one-half of the importing firms plan to increase their use of foreign sources during the next 2 years. The primary motivation for importing was to obtain yarn and fabric of comparable quality at a lower cost. In addition, they stressed that being able to purchase better designs, smaller quantities, and products unavailable in the United States were also important factors.

China, Korea, and Taiwan were felt to have the greatest competitive cost advantage over the United States, primarily because of lower cost labor and materials. Products from Japan, Italy, and Hong Kong were felt to be superior to those from U.S. sources in terms of product design.

Purchasers felt that U.S. mills should respond to the competition by attempting to match foreign prices, primarily by investing in labor-saving equipment and by accelerating research to improve plant efficiency. In addition, purchasers recommended that U.S. mills enhance the design and quality level of their products.

Importing Purchasers

Overall, a substantial percentage of the apparel and home-furnishing manufacturers in the Commission study, which are all purchasers of textile mill products, had direct ties to the international marketplace, either through their own foreign operations or through importing. Of the 153 purchasers responding to the survey, 2 are owned or controlled by a foreign firm, 21 own or operate a manufacturing facility abroad, 18 participate in foreign joint ventures, countertrade, or licensing programs, and 10 maintain a sales office abroad. In addition, a substantial 42 percent of the purchasers, the customers for U.S. textile mill products, imported at least some of their yarn or fabric directly from foreign suppliers during 1986 instead of purchasing these items from U.S. sources. As shown in table 12-20, all types of firms were engaged in importing, although the percent importing directly varied significantly by product area.

Table 12-20
U.S. apparel and home furnishings manufacturers which import directly, by type of firm

Type of firm	Total respondents	Share of respondents importing directly
		Percent
Men's suits	20	75
Men's furnishings	36	42
Rainwear	10	40
Children's wear and women's underwear	22	36
Women's outerwear	29	31
Home furnishings	23	26
Knit outerwear	13	15
Total	153	42

In terms of value, direct imports by all the firms totaled only a small percentage of the yarn and fabric purchased from domestic sources. However, two-thirds of the imports were for men's suit firms and women's outerwear firms, and an additional 20 percent were purchased for men's furnishings firms. In contrast to the total for all firms, direct imports by men's suit manufacturers accounted for a substantial portion of their fabric purchases, equaling 20 percent of their domestic purchases for the year. It should be noted that many of the firms, including men's suit firms, also purchase imported fabric through brokers. In many cases, however, respondents indicated that in the case of broker purchases they were frequently unaware of which fabrics or what percentage of the fabrics they purchased were imported products.

Import Decisions

Overall, almost two-thirds of the purchasers who import directly felt that one of the most important factors in their decision to import yarn and fabric was the lower cost of the imports compared with that of domestic products of comparable quality. This particularly outweighed all other considerations in the home furnishings sector. Also extremely important, according to slightly less than half of the respondents, was the ability to purchase exclusive designs or styles and certain nonexclusive yarns and fabrics, which reportedly were unavailable from U.S. sources. In addition, a significant number of the purchasers felt that they were able to obtain better quality products abroad (table 12-21).

Table 12-21
Purchasers of textile mill products: Most important factors influencing the decision to import

Import decision factors	Type of importer					
	Men's suits	Men's other	Women's outerwear	Other apparel	Home furnishings	Total
	percent of responses by type of firm					
Lower cost for comparable goods	67	80	60	36	67	62
Exclusive design or style	73	40	53	21	17	45
Unavailable from U.S. sources	60	47	47	36	17	45
Better product quality	47	27	47	36	33	38
Desired product features	40	47	13	21	17	29
Supplements to reduce overall cost	20	53	7	21	0	23
Temporary U.S. shortage	20	20	20	14	33	20
Other	0	7	13	0	0	5

Note: Data represents percentages of the 65 importing purchasers; the 15 men's suit, 15 men's furnishings, 15 women's outerwear, 12 other apparel, and 6 home furnishing firms answering this section of the U.S.I.T.C. survey.

A large percentage of the men's furnishings (clothing other than suits) firms felt that cost considerations were the most important reasons for importing. Men's suit firms and the women's outerwear firms, in addition to cost factors, were particularly concerned with exclusive styling and the ability to obtain yarn and fabrics abroad that were unavailable from U.S. sources. For all firms, the most frequently mentioned unavailable fabrics were wool and wool-blend worsted fabrics, Harris-type tweeds, and high-quality woven cotton fabrics for both shirts and blouses. The respondents also stated that they were unable to obtain from domestic sources silk and silk-blend fabrics, silk-like satin and jacquard fabrics of manmade fibers, madras, certain fleece goods, manmade suede, cotton yarn for knitwear, and low-cost industrial products for home furnishings. A major men's furnishings and sportswear firm also reported temporary shortages of denim fabric in the United States, which forced them to import.

Although the tight quota situation, according to the respondents, has put some restraints on imports, notably those from Korea and China, several firms mentioned that they had more reliable delivery times by using imports. They felt that some U.S. mills were not honoring contracts with regard to delivery dates, a critical element to many of the apparel manufacturers. Also, a major women's outerwear firm noted that they purchased fabrics from foreign sources closer to their cut and sew operations abroad, where a substantial portion of their finished apparel for the U.S. market was being manufactured.

Ways for U.S. Mills to Increase Domestic Sales

According to manufacturers of apparel and home furnishings, purchasing domestically rather than importing can be valuable to them because of shorter lead times, more reliable delivery, ease of doing business, marketing assistance, and other considerations. In fact, for the major types of fabric that they are importing directly, 48 of the importing respondents, or 68 percent, indicated that they would be willing to pay between 5 and 10 percent more for domestic fabric over foreign-produced fabric of comparable quality, as seen in the following tabulation:

Type of importer	Number of firms willing to pay premium	Average premium firms will pay Percent
Men's suits	12	7
Men's furnishings	11	10
Women's outerwear	11	9
Children's wear and women's underwear	7	12
Home furnishings	4	5
Rainwear	2	7
Knit outerwear	1	5
Total	48	9

In addition, 13 of the importers, or 20 percent, stated that they would be willing to pay premiums of 4 to 8 percent for domestic yarn over foreign-produced yarn of equal quality, as shown in the following tabulation:

Type of importer	Number of firms willing to pay premium	Average premium firms will pay Percent
Men's furnishings	5	8
Women's outerwear	3	8
Men's suits	2	4
Knit outerwear	2	8
Children's wear and women's underwear	1	5
Total	13	7

Aside from price considerations, 40 percent of the respondents, including both importers and nonimporters, felt that the most important thing domestic mills could do to encourage increases in their domestic purchases would be to shorten delivery times, shorten production runs, and accommodate small orders (table 12-22). A significant percent also felt that domestic mills need to be more flexible and offer a greater variety of styles. In addition, 20 percent felt that U.S. mills should provide more consistency in fabric quality, a larger variety of high-quality fabrics, and more innovative styling.

In terms of product areas, virtually all the men's suit firms stated that the mills could encourage them to increase their domestic purchases by providing quicker responses to orders and allowing smaller quantities for minimum orders. Women's outerwear and rainwear firms, on the other hand, were particularly concerned with the general quality level of domestic products and the consistency of that quality, in addition to quicker response times. Children's clothing firms requested more high-quality fabrics, particularly of the flame-retardant type, and lower minimums on orders.

Assessment of Competitive Cost Advantages

In general, although many purchasers did not import and had no opinion on overall cost competitiveness, the majority of those expressing an opinion felt that the six countries used for comparison in the Commission study--China,

Table 12-22
Purchasers of textile mill products: Most important things U.S. mills can do to increase respondents' domestic purchases, other than price reductions

Improvement items	Type of firm: Men's suits	Men's other	Women's outerwear	Children's clothing & women's underwear	Rainwear	Knit outerwear	Home furnishings	All firms
	percent of responses by type of firm							
Quick response	90	36	45	27	60	23	9	40
Short runs, small orders	85	39	34	32	50	23	22	40
More flexibility, variety of styles	55	22	24	18	10	0	9	22
More consistent quality	25	22	38	9	30	15	4	21
Innovative styling	55	22	24	14	0	8	4	20
Improve general quality	25	19	31	5	20	15	9	18
More high-quality fabrics	25	17	28	32	0	0	0	17
More research, product development	30	17	21	18	0	8	4	16
Joint planning, market analysis	5	11	14	5	10	8	0	8
Other	0	6	10	9	10	15	0	7

Note: Data represent percentages of the 153 importing purchasers; the 20 men's suit, 36 men's furnishings, 29 women's outerwear, 22 children's wear and women's underwear, 10 rainwear, 23 home furnishings, and 13 knit outerwear firms answering this section of the U.S.I.T.C. survey.

Korea, Taiwan, Hong Kong, Japan, and Italy--had an overall competitive advantage over the United States in terms of cost, as seen in the following tabulation (in percent):

Country	Foreign country cost advantage	United States cost advantage
China	46	6
Korea	44	3
Taiwan	40	3
Hong Kong	29	3
Japan	29	17
Italy	20	16

By a ratio only slightly less than that of producers (74-26 v. 50-20), purchasers also concluded that foreign producers have a cost edge on U.S. producers. Lower labor and material costs were considered the most important factors giving foreign countries the overall cost advantage, followed by lower overhead costs and assistance to foreign firms through government subsidies and favorable industry regulations (table 12-23). Overall, although the individual cost factors were not delineated, the United States was felt to have the cost advantage on transportation costs and an exchange-rate advantage relative to the currencies of Japan and Italy. Korea, China, and Taiwan were felt to have substantially lower labor costs compared with those in the United States and lower raw-material costs (table 12-24). In addition, almost one-third of the respondents felt that these three countries had lower overhead costs and advantages resulting from government subsidies and regulations that assisted the overseas industries. Approximately 20 percent stated that China and Korea had lower costs of capital as well. On the other hand, the three countries were felt to be at a competitive disadvantage for transportation costs (table 12-25).

In terms of labor and material costs, respondents indicated that Hong Kong also had the cost advantage over the United States but not at the level of importance indicated for China, Korea, and Taiwan. Lower overhead costs and favorable Government regulations, or the lack of regulations, were also mentioned by respondents as contributing to Hong Kong's overall cost advantage compared with the United States.

For Italy and Japan, respondents were divided in their opinion over whether the United States or the foreign country had the cost advantage for labor and material costs. Japan was thought to have the advantage on capital costs and Government subsidies, but was felt to be at a disadvantage in terms of transportation costs and the currency exchange rates. In contrast, Italy was felt to be at a disadvantage in terms of capital costs, energy costs, and transportation.

Table 12-23
Purchasers of textile mill products: Competitive cost assessment

Rank	Item	Frequency of response
FOREIGN INDUSTRY ADVANTAGE		--percent--
1	Lower labor cost	15
2	Lower materials cost	12
3	Overhead	9
4	Government subsidies	8
5	Government regulations	8
6	Capital costs	5
7	Equipment costs	5
8	Energy costs	3
9	Exchange rate advantage	3
10	Domestic inflation rates	3
11	Transportation cost	2
12	Other cost factors	0
	Total	74
DOMESTIC INDUSTRY ADVANTAGE		
1	Transportation cost	7
2	Energy costs	4
3	Exchange rate advantage	3
4	Government regulations	3
5	Domestic inflation rates	2
6	Capital costs	2
7	Equipment costs	2
8	Lower materials cost	2
9	Lower labor cost	1
10	Government subsidies	1
11	Overhead	1
12	Other cost factors	0
	Total	26
GRAND TOTAL		100

Note: Data represent percentages of the 1196 total responses from the 70 purchasers answering this section of the U.S.I.T.C. survey.

Table 12-24
Purchasers' competitive assessment: percent 1/ of respondents stating that the FOREIGN INDUSTRY has the advantage on cost factors

Competitive cost factors	United States versus-- China	Korea	Taiwan	Hong Kong	Japan	Italy
Lower labor cost	54	56	50	43	31	26
Lower materials cost	43	43	41	34	21	21
Overhead	29	29	29	24	23	13
Government subsidies	29	31	27	13	24	11
Government regulations	23	27	23	17	23	16
Capital costs	20	20	17	13	17	4
Equipment costs	16	19	16	11	13	4
Energy costs	13	16	13	10	4	3
Exchange rate advantage	13	11	10	11	6	6
Domestic inflation rates	14	11	7	11	7	4
Transportation cost	7	9	7	7	4	4
Other cost factors	0	1	1	0	0	0
OVERALL COST ADVANTAGE	46	44	40	29	29	20

1/Data represent percentages of the 70 purchasers answering this section of the U.S.I.T.C. survey.

Table 12-25
Purchasers' competitive assessment: percent 1/ of respondents stating that the DOMESTIC INDUSTRY has the advantage on cost factors

Competitive cost factors	United States versus-- Japan	Italy	China	Hong Kong	Taiwan	Korea
Transportation cost	20	17	24	13	20	17
Energy costs	14	16	10	10	7	9
Exchange rate advantage	17	9	4	3	7	6
Government regulations	7	6	13	7	6	6
Domestic inflation rates	9	10	1	3	7	6
Capital costs	7	11	4	6	3	4
Equipment costs	4	10	6	4	1	4
Lower materials cost	16	10	0	0	1	0
Lower labor cost	13	10	0	0	0	0
Government subsodoes	3	4	3	6	1	0
Overhead	4	6	0	0	0	0
Other cost factors	1	1	1	0	1	0
OVERALL COST ADVANTAGE	17	16	6	3	3	3

1/Data represent percentages of the 70 purchasers answering this section of the U.S.I.T.C. survey.

Assessment of Competitive Advantage on Noncost Factors

Purchasers also share the view of U.S. producers that they have the edge in noncost advantage. Overall, the noncost areas in which the foreign industries were felt to have an advantage were product quality, product design, and government practices. In contrast, where the United States was felt to have the advantage, the most important factors were felt to be delivery times, supplier relationships and reliability, and product availability (table 12-26).

According to respondents, Japan was felt to be particularly competitive in terms of product quality and design. Japan's Government practices were also felt to be an important factor in their competitiveness (table 12-27). On the other hand, the most important factors in choosing the United States over Japan for a particular purchase were the better delivery times and better supplier relationships (table 12-28).

In contrast to the items from Japan, fabrics from China were not chosen for their product designs but rather for their price competitiveness. In fact, the United States was felt to be more competitive than China on innovative design and delivery times as well as supplier relationships and reliability, the availability of particular products, and the terms of financing a sale.

According to respondents, the most important noncost factors in choosing the United States as a source rather than Korea, Taiwan, Hong Kong, or Italy were also better delivery times and better supplier relationships. The terms and length of financing also made the products of the United States attractive. On the other hand, Hong Kong and Italy were felt to be superior to the United States in terms of product design and innovativeness and to some extent on government practices and regulations.

Strategies for Responding to Foreign Competition

Overall, 73 percent of the respondents recommended that U.S. textile mills respond to foreign competition by attempting to match foreign prices. They recommended investments in equipment to expand and to cut labor and other costs, intensified research and development to improve efficiency, and the elimination of some product features in order to reduce costs. Also the respondents recommended that U.S. mills improve the quality and design of their products, invest in new equipment for expansion, possibly into new product lines, and intensify their research into both new technologies and new products (table 12-29).

Virtually all of the men's suit manufacturers felt that the most important strategy to respond to foreign competition would be for U.S. mills to improve their product design. Next in importance were recommendations to match foreign prices, invest in new equipment to cut costs, and eliminate some product features in order to reduce costs. Men's furnishings firms were

Table 12-26
Purchasers of textile mill products: Competitive assessment on non-cost factors

Rank	Item	Frequency of response
FOREIGN	INDUSTRY ADVANTAGE	--percent--
1	Product quality	7
2	Product design	7
3	Government practices	6
4	Product availability	4
5	Terms of sale/financing	3
6	Supplier relationship	3
7	Technical assistance	2
8	Marketing practices	2
9	Delivery time	1
10	Other non cost factors	0
	Total	35
DOMESTIC	INDUSTRY ADVANTAGE	
1	Delivery time	12
2	Supplier relationship	9
3	Product availability	8
4	Terms of sale/financing	7
5	Product design	7
6	Product quality	6
7	Technical assistance	6
8	Marketing practices	6
9	Government practices	3
10	Other non cost factors	1
	Total	65
GRAND TOTAL		100

Note: Data represent percentages of the 1276 total responses from the 70 purchasers answering this section of the U.S.I.T.C. survey.

Table 12-27
Purchasers' competitive assessment: percent 1/ of respondents stating that the FOREIGN INDUSTRY has the advantage on non-cost factors

Competitive non-cost factors	United States versus-- Japan	Korea	Taiwan	China	Italy	Hong Kong
Product quality	44	29	16	13	17	17
Product design	41	21	9	1	16	34
Government practices	21	21	20	17	17	17
Product availability	21	10	10	9	11	13
Terms of sale/financing	11	9	7	6	9	6
Supplier relationship	14	6	7	4	7	7
Technical assistance	14	4	6	1	7	6
Marketing practices	11	6	7	3	7	4
Delivery time	6	0	1	3	3	3
Other cost factors	3	0	0	0	0	0

1/Data represent percentages of the 70 purchasers answering this section of the U.S.I.T.C. survey.

Table 12-28
Purchasers' competitive assessment: percent 1/ of respondents stating that the DOMESTIC INDUSTRY has the advantage on non-cost factors

Competitive non-cost factors	United States versus-- China	Korea	Japan	Taiwan	Italy	Hong Kong
Delivery time	43	43	40	39	27	31
Supplier relationship	33	33	21	29	19	24
Product availability	33	27	24	29	19	21
Terms of sale/financing	31	21	19	24	19	19
Product design	39	24	6	27	7	16
Product quality	30	20	7	24	16	17
Technical assistance	24	23	13	23	13	17
Marketing practices	24	20	17	20	14	17
Government practices	16	7	7	7	6	9
Other non cost factors	1	3	0	1	1	3

1/Data represent percentages of the 70 purchasers answering this section of the U.S.I.T.C. survey.

Table 12-29
Purchasers of textile mill products: Recommended strategies for U.S. mills to respond to foreign competition

Strategies for U.S. mills	Men's Suits	Men's Other	Women's Outerwear	Other Apparel	Home Furnish-ings	Total
	Percent by type of firm					
No special response	6	4	13	25	20	14
PROMOTION AND MARKET RELATED:						
Improve buyer-incentives	28	30	22	34	7	26
Increase advertising	22	11	13	16	0	13
PRICE AND FINANCE RELATED:						
Match competitor's prices	78	81	65	72	67	73
Improve financing	6	15	35	22	20	20
PRODUCT RELATED:						
Improve product quality	50	59	61	53	27	52
Cut product features to cut costs	78	48	61	56	13	50
Improve product design	83	41	48	31	13	43
Reduce service, support to cut costs	33	52	43	28	13	36
Improve product service, support	39	33	30	28	0	28
Add product features	44	22	30	22	0	24
OUTPUT RELATED:						
Diversify product mix	56	33	48	19	0	31
Reduce output to cut inventories	39	41	17	16	0	23
Sell or stop making low-profit lines	33	15	26	9	7	17
Increase output of up-scale goods	17	19	17	6	7	13
STRATEGY RELATED:						
Invest in equipment for expansion	61	56	48	53	47	53
Invest in equipment to cut costs	78	44	61	47	20	50
Acquire new product lines	56	48	48	44	60	50
Intensify R&D to improve efficiency	72	63	39	47	20	50
Intensify R&D for new technology	56	48	61	41	27	47
Intensify R&D for new products	50	41	52	44	27	43
Modernize plant & equipment	22	22	52	34	27	28
Expand output & intensify ads	22	30	30	16	13	23
Ventures with foreign market leaders in U.S.	22	26	26	16	0	19
Joint ventures with market leaders abroad	22	22	22	13	7	17
Ventures with foreign technology leaders in U.S.	17	15	30	16	0	17
Expand sales to U.S. firms for 807 work	17	30	13	16	0	17
Ventures with foreign technology leaders abroad	17	22	13	16	7	16
LABOR COST RELATED:						
Invest in labor-saving equipment	72	70	57	63	40	62
Negotiate lower wage/benefit package	33	19	22	28	7	23
MATERIAL COST RELATED:						
Use higher quality materials	33	44	35	25	7	30
Increase foreign sourcing of materials	33	22	9	19	7	18

1/ Data represent precentage of the 115 purchasers; 18 men's suit firms, 27 men's furnishing firms, 23 women's outerwear firms, 32 other apparel firms and 15 home furnishing firms answering this section of the U.S.I.T.C. survey.

primarily concerned with price considerations and recommended that U.S. mills look particularly at increasing their research and development in areas that might improve manufacturing efficiency.

Women's outerwear firms and other apparel firms also felt that meeting the foreign price was the most important competitive strategy, followed by improving the quality of the U.S. products. In addition, women's outerwear firms recommended researching and investing in new technology to cut costs, and the other apparel firms recommended increased investments in currently available labor-saving equipment. Home-furnishings firms recommended that, in addition to meeting the foreign competition on prices, U.S. mills diversify by acquiring new product lines.

Future Purchases

According to respondents, the immediate future for the yarn and fabric suppliers, the U.S. textile mill industry, seems generally bright. Approximately 64 percent of the survey respondents plan to increase their purchases of domestic yarn and fabric during the next 2 years (table 12-30), primarily to handle an expected increase in business. Also helping the sales of the domestic fabric industry, according to respondents, is the new "TSUS 807" provision of the tariff schedules, which permits apparel assembled in the Caribbean Basin from U.S. fabricated and cut materials to be subject to much more liberal quantitative restrictions on entry into the United States as finished clothing than would otherwise be the case. Both the old and the new TSUS 807 provisions exempt from tariffs the value of the U.S.-made components in the imported final product. Firms stated that the TSUS 807 provisions were excellent methods for supporting the U.S. textile mill industry and that the provisions would be even more helpful if the remaining duties on the value added abroad were reduced as well.

In contrast, 24 percent of the firms expect to increase their purchases of imported yarns and fabrics during the next 2 years, particularly their imports from China. On products from Japan and Italy, however, the respondents were divided on whether they would increase or decrease their imports. Despite their high regard for the product design and quality of fabrics from Japan and Italy, firms were concerned with the competitive disadvantage in terms of currency exchange rates. For yarns and fabrics from Korea, Hong Kong, and Taiwan, respondents planned to decrease their purchases, in part because of the currently tight U.S. quotas on products from those countries.

Table 12-30
Purchasers of textile mill products: Future purchases of yarn and/or fabric; expected changes during the next two years

Item	Increase	Decrease	Same or no response
	percent		
Total domestic purchases	64	10	26
Total imported purchases	24	19	58
Fabrics for use in imports from the Caribbean Basin under new TSUSA 807 provision	13	0	87
Imports from China	10	5	85
Imports from Japan	10	13	77
Imports from Italy	8	7	85
Imports from Korea	6	11	84
Imports from Hong Kong	3	7	89
Imports from Taiwan	2	7	91

Note: Data represent percentage of the 123 purchasers responding to this section of the U.S.I.T.C. survey.

Appendix A

Request Letters from

Committee on Finance

U.S. Senate

United States Senate
COMMITTEE ON FINANCE
WASHINGTON, DC 20510

February 12, 1986

The Honorable Paula Stern
Chairwoman
U.S. International Trade Commission
701 E Street, N.W.
Washington, D.C. 20436

Dear Madam Chairwoman:

The Committee on Finance requests that the United States International Trade Commission conduct a series of investigations under section 332 of the Tariff Act of 1930, on the international competitiveness of selected major United States industries.

The 99th Congress faces important decisions regarding a wide range of trade issues, including Administration efforts to launch a new round of multilateral trade negotiations aimed at reducing international barriers to trade in goods, services, and investment flows. To guide Congress in decisions about the future of the international trading system, the Committee needs to understand the competitive strengths and viability of key U.S. industries, the extent and nature of competition facing these industries in foreign and domestic markets, and the extent to which any current trade problems result from special situations such as the strong dollar, debt and interest rate problems, or from more fundamental competitive problems.

Several witnesses appearing before this Committee have stressed that U.S. competitiveness and industrial viability must be gauged in terms of performance in international as well as domestic markets. It is important for these studies to examine the viability of these industries and U.S. trade negotiation objectives from the vantage point of the global nature of competition and the internationalization of production and ownership.

For each of these industry studies the Committee requests coverage of:

1. Measures of the current competitiveness of the U.S. industry in domestic and foreign markets;

2. Comparative strengths of U.S. and major foreign competitors in these markets;

3. Nature of the main competitive problems facing the U.S. industry;

4. Sources of main competitive problems; to what extent from:

   a. special transitory or reversible situations such as exchange and interest rate problems, as opposed to

   b. fundamental or structural problems;

5. Competitive strategies; how important are foreign and U.S. markets to future competitiveness, in terms of economies of scale, growth rates, and pre-empting of market advantages.

The Committee decided not to identify specific industries or numbers of studies, but envisages up to seven studies. The Committee has instructed its staff to work out with ITC staff the specific industry selection and production schedule, depending on availability of appropriate staff to conduct them within the requested time. However, it requests that all studies be completed within 18 months and submitted to the Committee individually as completed.

The industries to be studied should be pivotal to overall U.S. industrial and technological strength, by virtue of being (a) either pathbreaking in the development of leading edge technologies that will shape future competitiveness of other U.S. industries, or (b) supplying critical equipment or materiel used in other important industries. The selection should be diverse enough that the range of their impact should reach broadly across the entire spectrum of U.S. industrial strength, represented by the seven tariff schedules. Examples would be key industrial agricultural commodities, selected synthetic organic chemicals, and textile fabrics, along with the equipment producing industries associated with each.

The Committee recognizes that much of the information and data desired may not be available from secondary sources and that primary data gathering may prove essential to understanding global industry competition. It requests that in meeting the objectives of these studies the Commission develop new sources of information outside the United States through both interviews and questionnaires where possible, to assure effective assessment of the strengths and weaknesses of foreign competitors, and of the terms of competition in key foreign markets.

Sincerely,

Bob Packwood

BOB PACKWOOD

United States Senate

COMMITTEE ON FINANCE
WASHINGTON, DC 20510

April 2, 1986

Dr. Paula Stern
Chairwoman
United States International
Trade Commission
701 E Street, N.W.
Washington, D.C. 20436

Dear Chairwoman Stern:

Pursuant to my February 12th letter to you requesting a series of investigations on U.S. international trade competitiveness under section 332 of the Tariff Act of 1930, this is to confirm that the following specific sector studies are requested within that general heading:

Auto parts and equipment
Optical fibers and associated technology and equipment
Steel sheet and strip and associated equipment
Textile mills and associated equipment
Building-block petrochemicals: Competitive implications for construction, cars, and other major consuming industries

The Committee still has under consideration additional requests within the overall survey, and will relay those to you shortly.

The Committee understands that the International Trade Commission cannot begin and complete all the studies simultaneously, but requests that it begin them as soon as staff resources are available so the Committee will have results available as soon as possible for its consideration of the future of the trade agreements program.

Sincerely,

Bob Packwood

BOB PACKWOOD
Chairman

Appendix B

Notice of Institution

of Investigation 332-229

Background and Scope of Investigation

The Commission on July 9, 1986, approved the institution of investigation No. 332-231, following receipt of letters on February 13, 1986, and April 2, 1986, from the Chairman of the Committee on Finance, United States Senate, requesting that the Commission conduct a series of investigations under section 332(b) of the Tariff Act of 1930 (19 U.S.C. 1332(b)) concerning the international competitiveness of a broad range of selected major United States industries. Institution of this study is scheduled for September 8, 1986.

The Commission investigation will examine the steel and strip industry and its major foreign competitors, to determine the impact of global competition on the industry, and to assess how the industry is responding to these dynamic forces. As requested by the Committee, the Commission's report will analyze and address: (1) Measures of the current competitiveness of the U.S. industry in domestic and foreign markets; (2) comparative strengths of U.S. and major foreign competitors in these markets; (3) the nature of major competitive problems facing the U.S. industry; (4) the sources of these problems, including the extent to which they arise from special transitory or reversible situations or are the result of more fundamental or structural problems; and (5) the importance of U.S. and foreign markets to the future competitiveness of U.S. and foregin producers, in terms of economies of scale, growth rates, and pre-empting of market advantages.

Public Hearing

The Commission will hold a public hearing on this investigation as well as the four others in this series (Inv. Nos. 332-229 through 332-233) at the United States International Trade Commission Building, 701 E Street, NW., Washington, DC beginning at 10:00 a.m. on February 24, 1987. All persons shall have the right to appear in person or be represented by counsel, to present information and to be heard. Persons wishing to appear at the public hearing should file requests to appear and prehearing briefs (original and 14 copies) with the Secretary, U.S. International Trade Commission, 701 E Street, NW., Washington, DC 20436, not later than noon, February 2, 1987. If the Commission decides to hold one or more hearings outside of Washington DC, it will issue a supplemental notice of hearing by January 16, 1987.

Written Submissions

Interested persons are invited to submit written statemens concerning the investigation. Written statements should be received by the close of business on March 12, 1987. Commercial or financial informaiton which a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's *Rules of Practice and Procedure* 19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. All submissions should be addressed to the Secretary, United States International Trade Commission, 701 E Street, NW., Washington, DC 20436. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting our TDD terminal on (202) 724-0002.

Issued: July 22, 1986.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 86-17104 Filed 7-29-86; 8:45 am]

BILLING CODE 7020-02-M

[332-229]

U.S. Global Competitiveness: Textile Mill Industry

AGENCY: United States International Trade Commission.

ACTION: Institution of investigation.

EFFECTIVE DATE: July 9, 1986.

FOR FURTHER INFORMATION CONTACT: Reuben Schwartz (202-523-0114) or Joseph Williams (202-523-5702), Textiles, Leather Products, and Apparel Division, Office of Industries, U.S. International Trade Commission, Washington, DC 20436.

Background and Scope of Investigation

The Commission, on July 9, 1986, approved the institution of investigation No. 332-229, following receipt of letters on February 13, 1986, and April 2, 1986, from the Chairman of the Committee on Finance, United States Senate, requesting that the Commission conduct a series of investigations under section 332(b) of the Tariff Act of 1930 (19 U.S.C. 1332(b)) concerning the international competitiveness of a broad range of selected major United States industries. Institution of this study is scheduled for September 2, 1986.

The Commission investigation will examine the U.S. textile mill industry and its major foreign competitors to determine the impact of global competition on the industry, and to assess how the industry is responding to these dynamic forces. As requested by the Committee, the Commission's report will analyze and address: (1) Measures of the current competitiveness of the U.S. industry in domestic and foreign markets; (2) comparative strengths of U.S. and major foreign competitors in these markets; (3) the nature of major competitive problems facing the U.S. industry; (4) the sources of these problems, including the extent to which they arise from special transitory or reversible situations or are the result of more fundamental or structural problems; and (5) the importance of U.S. and foreign markets to the future competitiveness of U.S. and foreign producers, in terms of economies of scale, growth rates, and pre-empting of market advantages.

Public Hearing

The Commission will hold a public hearing on this investigation as well as the four others in this series (Inv. Nos. 332-229 through 332-233) at the United States International Trade Commission Building, 701 E Street, NW., Washington, DC, beginning at 10:00 a.m. on February 24, 1987. All persons shall have the right to appear in person or be represented by counsel, to present information and to be heard. Persons wishing to appear at the public hearing should file requests to appear and prehearing briefs (original and 14 copies) with the Secretary, U.S. International Trade Commission, 701 E Street, NW., Washington, DC 20436, not later than noon, February 2, 1987. If the Commission decides to hold one or more hearings outside of Washington, DC, it will issue a supplemental notice of hearing by January 16, 1987.

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Interested persons are invited to submit written statements concerning the investigation. Written statements should be received by the close of business on March 12, 1987. Commercial or financial information which a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's *Rules of Practice and Procedure* (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. All submissions should be addressed to the Secretary, United States International Trade

Commission, 701 E Street NW., Washington, DC 20436. Hearing-impaired individuals are advised that information on this matter can be obtained by contacting our TDD terminal on (202) 724-0002.

Issued: July 22, 1986.

By order of the Commission.

Kenneth R. Mason,

Secretary.

[FR Doc. 86-17105 Filed 7-29-86; 8:45 am]

BILLING CODE 7020-02-M

INTERSTATE COMMERCE COMMISSION

[Docket No. AB-19 (Sub-121X]

The Baltimore and Ohio Railroad Co.; Exemption; Abandonment in Richland County, OH

AGENCY: Interstate Commerce Commission.

ACTION: Notice of Exemption.

SUMMARY: The Interstate Commerce Commission exempts The Baltimore and Ohio Railroad Company, Inc., from the requirements of 49 U.S.C. 10903, *et seq.*, to abandon its 17.75-mile line of railroad in Richland County, OH, subject to standard employee protective conditions.

DATES: This exemption will be effective on August 29, 1986. Petitions to stay must be filed by August 11, 1986, and petitions for reconsideration must be filed by August 19, 1986.

ADDRESSES: Send pleadings referring to Docket No. AB-19 (Sub-No. 121X) to:

(1) Office of the Secretary, Case Control Branch, Interstate Commerce Commission, Washington, DC 20423.

(2) Petitioner's Representative: Lawrence H. Richmond, 100 N. Charles Street, Baltimore, MD 21201.

FOR FURTHER INFORMATION CONTACT: Donald J. Shaw, Jr., (202) -275-7245.

SUPPLEMENTARY INFORMATION: Additional information is contained in the Commission's decision. To purchase a copy of the full decision, write to T.S. InfoSystems, Inc., Room 2229, Interstate Commerce Commission Building, Washington, DC 20423, or call 289-4357 (DC Metropolitan area), or toll-free 800-424-5403.

Decided: July 22, 1986.

By the Commission, Chairman Gradison, Vice Chairman Simmons, Commissioners Sterrett, Andre, and Lamboley.

Noreta R. McGee,

Secretary.

[FR Doc. 86-17089 Filed 7-29-86; 8:45 am]

BILLING CODE 7035-01-M

[Finance Docket No. 30867]

The Southern Michigan Railroad Society, Inc., Doing Business as Southern Michigan Railroad—Operation Exemption

The Southern Michigan Railroad Society, Inc., doing business as Southern Michigan Railroad (SMR), has filed a notice of exemption to operate [1] a 13.45-mile line of railroad abandoned by Consolidated Rail Corporation. The line is a portion of the former Clinton Secondary Track, extending between milepost 0.25 and milepost 13.70 in Lenawee County, MI. Any comments must be filed with the Commission and served on Jeffrey Dobek, P.O. Box 434, Clinton, MI 49236, telephone (517) 456-7029.

The notice is filed under 49 CFR 1150.31. If the notice contains false or misleading information, the exemption is void *ab initio*. Petitions to revoke the exemption under 49 U.S.C. 10505(d) may be filed at any time. The filing of a petition to revoke will not automatically stay the transaction.

Decided: July 24, 1986.

By the Commission, Jane F. Mackall, Director, Office of Proceedings.

Noreta R. McGee,

Secretary.

[FR Doc. 86-17202 Filed 7-29-86; 8:45 am]

BILLING CODE 7035-01-M

DEPARTMENT OF JUSTICE

Lodging of Consent Decree in U.S. v. Georgia-Pacific Corp.

In accordance with the policy of the Department of Justice, 28 CFR 50.7, notice is hereby given that on July 14, 1986, a proposed consent decree in *United States* v. *Georgia-Pacific Corporation*, Civil Action No. 85-1075, was lodged with the United States District Court for the Western District of Arkansas, El Dorado Division. This consent decree settles a lawsuit filed June 4, 1985, pursuant to section 113 of the Clean Air Act ("the Act"), 42 U.S.C. 7413, for injunctive relief and for assessment of a civil penalty against Georgia-Pacific Corporation ("Georgia-Pacific"). The complaint alleged, among other things, that Georgia-Pacific on at least three occasions violated the applicable New Source Performance Standard ("NSPS") for the pollutant total reduced sulfur at a recovery furnace designated "8R" at Georgia-Pacific's kraft pulp mill in Crossett, Arkansas. The complaint alleged that Georgia-Pacific's violations of the emission standard constituted violations of section 111(e) of the Act, 42 U.S.C. 7411(e), and entitled the United States pursuant to section 113(b) of the Act, 42 U.S.C. 7413(b), to obtain a permanent or temporary injunction and recover a civil penalty of not more than $25,000 per day of violation.

Under the terms of the proposed consent decree, Georgia-Pacific will undertake a program to attain and thereafter maintain compliance with the New Source Performance Standard for total reduced sulfur applicable to recovery furnace 8R, including: a trial period using water in the bottom of recovery furnace 8R's wet bottom precipitator, which period shall last no later than April 30, 1986; if Georgia-Pacific selects the use of water in the wet bottom precipitator as its permanent method of complying with the Act and the NSPS for total reduced sulfur, then Georgia-Pacific will demonstrate final compliance by June 20, 1986; if Georgia-Pacific does not select the use of water in the wet bottom precipitator as its permanent method of complying with the Act and the NSPS for total reduced sulfur, then Georgia-Pacific will install a dry bottom precipitator and demonstrate compliance using it by June 30, 1987. The proposed consent decree also calls for stipulated penalties against Georgia-Pacific for failure to meet the deadlines set by the decree or failure to meet the emission limitation for total reduced sulfur set by the decree. Also, the proposed decree calls for Georgia-Pacific to pay a civil penalty of $35,000 with respect to the violations of the clean Air Act alleged in the complaint.

The Department of Justice will receive comments relating to the proposed consent decree for a period of 30 days from the date of this publication. Comments should be addressed to the Assistant Attorney General of the Land and Natural Resources Division, Department of Justice, Washington, D.C. 20530. All comments should refer to *United States* v. *Georgia-Pacific Corporation*, D.J. Ref. 90-5-2-1-781.

The proposed consent decree may be examined at the following offices of the United States Attorney and the Environmental Protection Agency ("EPA"):

[1] SMR's notice of exemption is for acquisition and operation of the line. However, because the line has been abandoned by Conrail (*See* Docket No. AB-167 (Sub-No. 156N), *Conrail Ab. of the Clinton and Vulcan Secondary Tracks, MI* (not printed), served March 1, 1982), no authority is needed for acquisition since the line no longer functions in interstate commerce. *See* Finance Docket No. 30641, *Borinstein R.R. Co.—Exemption from 49 U.S.C. 10901* (not printed), served April 12, 1985.

Appendix C

Study Design

To obtain the type of information requested by the Senate Finance Committee and fully evaluate the global competitiveness of the U.S. textile mill industry, the U.S. International Trade Commission developed two different questionnaires as a primary information gathering technique. The questionnaires were developed to obtain information on the industry's competitive strategies and its competitive position relative to its major foreign competitors. A questionnaire was developed for U.S. producers of textile mill products and the other questionnaire was designed for U.S. purchasers of such products, such as manufacturers of apparel and home furnishings. Information from usable returned questionnaires was verified and processed so that determining the identification of an individual respondent firm would not be possible in the public report.

The remainder of this appendix describes the survey design and methodology. Information on the samples developed to survey U.S. producers and purchasers of textile mill products is shown in the following tabulation:

Item	Producers	Purchasers
Number of firms in universe	1,700	5,000
Number of firms sent questionnaires	150	250
Number of usable questionnaires returned	108	153
Number returned but not usable	17	21
Adjusted sample size	133	229
Expected response rate (percent)	50	60
Usable response rate 1/ (percent)	81	67
Actual response rate (percent)	72	61

1/ The usable response rate is defined as the number of questionnaires returned with usable information divided by the adjusted sample size. The adjusted sample size is defined as the number of questionnaires sent minus the number of questionnaires that were returned but not usable.

The universe used for U.S. producers of textile mill products was firms classified in Standard Industrial Classification (SIC) 22, Textile Mill Products 1/ and the universe used for purchasers of such products was firms classified in SIC 23, Apparel and Other Textile Products. 2/ The universes used for the producers and purchasers were compiled from data bases of Trinet, Inc., an information services company that compiles industry establishment and company files by SIC codes. Firms producing apparel and other textile products are the principal purchasers of domestically produced textiles; and a number of these firms also import textiles directly from foreign producers.

1/ For purposes of the sample design, the following segments of SIC 22 were excluded: SIC 2251, Women's Hosiery, Except Socks; SIC 2252, Other Hosiery; SIC 2253, Knit Outerwear Mills; SIC 2254, Knit Underwear Mills; SIC 2292, Lace Goods; SIC 2293, Padding and Upholstery Filling; SIC 2298, Cordage and Twine; and SIC 2299, Other Textile Goods.

2/For purposes of the sample design, knit outerwear mills classified in SIC 2253, were included with SIC 23 in the universe used to select the purchasers sample, because they generally purchase their yarn from textile mills.

The different segments of both the textile mill industry and the apparel and finished textile products industry differ with regard to conditions of competition in the marketplace. Therefore, the universes for the producers and the purchasers were subdivided into the following distinct groups for the purposes of selecting samples from each of these groups:

Producers	SIC groups
Weaving mills	2211, 2221, 2231, 2241
Knitting mills	2257, 2258
Floor coverings	2271, 2272, 2279
Nonwoven fabrics	2297
Other (yarn mills, finishing mills, etc.)	2261, 2262, 2269, 2281, 2282, 2283, 2284, 2291, 2294, 2296

Purchasers	SIC groups
Men's suits and coats	231
Men's furnishings	232
Women's outerwear	233
Children's outerwear and women's underwear	234, 236
Rainwear	2385
Home furnishings	2391, 2392, 2394
Knit outerwear	2253

A stratified sample was then designed for each industry segment to ensure that a cross-section of small, medium, and large firms were covered, since the size of a firm may affect its competitiveness or, at least, its perception of competitiveness. The stratification was based on company sales. The number of usable producer and purchaser questionnaires returned, by groups, is shown in the following tabulation:

Producers	Number of usable questionnaires returned
Weaving mills	43
Knitting mills	16
Floor covering producers	22
Other 1/	27
Total	108

Purchasers	Number of usable questionnaires returned
Men's suits	20
Men's furnishings	36
Rainwear	10
Children's clothing and women's underwear	22
Women's outerwear	29
Home furnishings	23
Knit outerwear	13
Total	153

1/ Nonwoven fabric producers were included in this group.

Appendix D

United States Textile Machinery Industry

APPENDIX D. U.S. TEXTILE MACHINERY INDUSTRY

As textile production is produced on highly specialized machinery, the competitiveness of the textile mill industry is to a certain extent determined by the equipment it is able to obtain. The textile machinery industry is global, and, since 1984, approximately 50 percent of the U.S. market has been supplied by imports.

Description and History

Establishments manufacturing textile machinery are classified in the Standard Industrial Classification (SIC) system under SIC 3552, Textile Machinery. This industry includes establishments whose primary products consist of complete machinery, parts, attachments, and accessories for use in the textile mill industry. Mills use this machinery to produce yarns and fabrics from natural and manmade fibers.

The textile machinery industry was one of the first capital-goods industries developed in the United States. It facilitated the growth of the U.S. textile mill industry by developing and modifying technologies to meet the changing needs of the textile mill industry. The domestic machinery industry had supplied nearly all the machinery used in the mills during the growth of this industry and, as recently as 1960, supplied 93 percent of the domestic market. Since then, new technologies developed by foreign firms have led to substantial import penetration. Slightly more than one-half of domestic consumption now comes from overseas suppliers.

The decline of the U.S. textile machinery industry began in the mid-1960's, if measured by market share, and coincided with, and in some ways resulted from, many structural changes in the industry. In the early 1960's, the largest U.S. textile machinery makers, the "Big Five" (Draper Corp., Saco Lowell, Whitin Machine Works, Leesona, and Crompton and Knowles), were acquired by large, publicly owned conglomerates. As profits of the conglomerates declined, they sold most of their textile machinery operations by the early 1980's. Today, almost every U.S. textile machinery manufacturer is privately owned. 1/

During the upheaval of the industry in the 1960's, many foreign firms moved to establish markets in the United States. Their products were technologically advanced, and their customer orientation appealed to many U.S. mills. Import penetration grew rapidly, especially after 1965, as mills increasingly opted for technologically superior foreign products. The decline of the industry, although slowing, will continue until a position of technologic superiority can be attained. The following tabulation summarizes the industry's activity over the past 25 years:

1/ U.S. Department of Commerce, A Competitive Assessment of the U.S. Textile Machinery Industry, 1987, p. 6.

Year	Establishments 1/	Total employment	Industry shipments in 1982 dollars	Import market share
		1,000	Million dollars	Percent
1960.....	553	39.0	1,697	6.9
1970.....	579	38.4	2,012	30.6
1980.....	666	27.4	1,405	43.5
1984.....	596	20.0	1,019	52.9
1985.....	588	18.7	926	49.6
1986 2/..	550	18.5	948	57.5

1/ Figures for 1960 and 1970 were obtained from the 1958 and 1972 Census of Manufactures. The remaining figures were obtained from the U.S. Bureau of Labor Statistics.
2/ Estimated.

Source: U.S. Department of Commerce, except as noted.

The number of establishments has not declined in accordance with the decline in employment because, as shipments have decreased, companies have cut plant utilization and employment. This has resulted in a relatively small decline in the number of establishments, though these establishments may often be substantially underutilized.

Profile of the U.S. Textile Machinery Industry

Originally, textile machinery manufacturers were located near their customers in the Northeast, but as many mills moved South, many machinery manufacturers followed suit. As of 1982, approximately 511 textile machinery firms were operating approximately 550 establishments. The industry is geographically concentrated with 40 percent of all establishments located in North and South Carolina and 7 percent in Georgia. The northeastern States of Massachusetts, New York, New Jersey, Pennsylvania, and Rhode Island accounted for another 31 percent of the establishments.

Concentration ratios within the industry have been declining. Whereas the 4 largest companies accounted for 35 percent of the value of shipments in 1963, they accounted for 22 percent of the value of shipments in 1982.

Today's textile machinery firms have a higher specialization ratio than in the past. The specialization ratio for the industry rose from 87 percent in 1963 to 96 percent in 1982. Although some companies still produce a range of products, more are concentrating on a specific stage of the production process. Many have switched production to areas where the U.S. industry is still competitive, such as dyeing, tufting, warp preparation, auxiliary equipment, finishing, and staple-fiber processing. Many makers of spinning, weaving, and knitting equipment have been forced to cut production substantially or leave the industry altogether.

Types of Equipment in Current Use

Textile machinery can be broadly divided into four functions: (1) fiber preparation; (2) yarn processing; (3) fabric formation; and (4) textile finishing. The types of machinery used and the processes involved differ depending on the type of fiber used and the type of fabric to be produced. The following is a brief description of the traditional processes involved in textile production. 1/

Fiber preparation machinery

Staple fibers arrive at mills in bales that must be opened, picked, and in the case of cotton, cleaned, using bale opening, picking, and cleaning machines and hoppers. If different fibers are to be mixed, it is done through blending machines.

Carding machines function to straighten, or make parallel, the fibers into a soft, untwisted, ropelike material called sliver, while removing any remaining trash and short fibers. Combing is an optional step used when processing cotton or wool which produces a stronger, finer, and smoother yarn. Drawing machines combine slivers to form a more uniform sliver which is then sent to the roving frame. Roving prepares the sliver for the spinning frames by further drawing it, adding a slight twist for strength, and then winding it onto a bobbin. This stage is eliminated by the open-end spinning processes.

Yarn processing machinery

Spinning machines form the fibers into yarn by reducing the roving or sliver to the required fineness, adding twist, and then winding the yarn onto a cap, bobbin, paper tube, or other package. The three basic kinds of spinning machines are fly frame spinners, ring spinners, and mule spinners. Fly frame spinners are used primarily to spin worsted and coarser yarns. Ring spinners are the most widely used spinning machine. Mule spinners are used primarily to spin soft, finer grade yarns such as wool. Open-end spinning equipment is gaining wider use and will be discussed in the "Recent Developments" section.

Winding machines rewind yarn from the spinning frame package into larger forms suitable for other processes, such as hanks or skeins for dyeing operations, cheeses (cylindrical packages of yarn on paper or wooden tubes) for warping operations, and cops for loom shuttles used in the insertion of the filling yarn in weaving operations. This stage may also be eliminated by some open-end spinning processes.

Texturing machines are used to alter the texture of manmade fibers to add either bulk or stretch to the yarns.

1/ For a more detailed discussion of the different types of textile machinery, see Summary of Trade and Tariff Information: Textile Machinery and Parts, U.S. International Trade Commission, 1983, pp. 34-39.

The various types of warp-preparing machinery include beamers, warpers, slashers, warp-tying, and warp drawing-in machines; these machines are used to prepare warp yarn for use in looms, warp knitting machines, and other textile machines. Slashing machines are used to apply a protective coating to strengthen the warp yarns for the weaving process.

Fabric formation machinery

Weaving machines (looms) produce fabric by interlacing warp yarns, which run lengthwise through woven fabric, with filling (weft) yarns, which run crosswise at right angles. The different types of looms include shuttle and shuttleless looms and pile fabric looms. Fly shuttle looms accounted for 57 percent of the looms in place, while the newer shuttleless looms, which are made mostly by foreign firms, accounted for 43 percent of the looms in place at the end of 1986.

Knitting machines interloop a vertical row of stitches with a horizontal (or crosswise) row of stitches by the use of a needle to form rows of connected loops. Knitting machines are generally divided into four categories: circular, full-fashion hosiery, flat, and warp.

Other fabric formation machinery includes tufting machinery, nonwoven machinery, and specialized textile machinery. Tufting is a process mainly used for making rugs and carpets by punching loops of yarn through a woven or nonwoven backing material. Nonwoven machinery mainly includes machinery for bonded fiber fabrics. Specialized textile machinery includes cordage machinery, lace and net making machinery, embroidery machinery, braiding machinery, and others.

Textile finishing machinery

Many different types of finishing equipment are needed for the great variety of raw materials used in textile manufacturing and the number of different finishes desired, but they are generally classified as either wet or dry processes. Among the most important finishing operations are washing, drying, bleaching, dyeing, printing, mercerizing, shearing, napping, singeing, and moireing. Much of the equipment used comprises vats, tanks, troughs, or other containers fitted with simple mechanical features such as rollers and stirring agitators.

Recent Technological Developments

Textile machinery has undergone a great technologic transformation over the past two decades that affected every segment of the textile industry. Increases in machine speeds and versatility and improvements in product quality and energy efficiency have contributed to the textile mill industry's productivity growth and improved work environment. Automation of basic production processes and use of computer-controlled monitoring equipment have characterized this wave of high-technology developments. Many of these technologies were developed in the mid-1960's, but have only recently gained widespread incorporation into the production process.

Basic production technologies

New technology in opening, picking, and cleaning machinery has automated this previously manual process, adding to productivity and enhancing the work environment. Chute-feeding has been the most important new technology in carding equipment. The use of chute-fed cards encloses the process and provides for a continuous automated process of cleaning and carding, eliminating most manual operations including doffing, racking, and transport. Other production advantages resulting from the use of new carding technology include greatly increased speeds, increased productivity, improvement in quality and control, reduced use of floor space, and reduced dust exposure.

Spinning has traditionally been labor intensive, but a relatively new process, open-end spinning, eliminates the separate step of roving, thus contributing to an automated system. The most significant benefit of this technology is fourfold to fivefold increases in productivity over that of the spinning. Other benefits include the ability to process a lower grade of cotton, increased adaptability, reduced noise level, and reduced dust exposure. Manufacturers are presently working to overcome its limitations to produce finer yarns.

Innovations in spinning attachments include automatic doffing (unloading) machines and automatic devices for piecing (tying) broken yarn. Automatic splicing devices and automatic feeding devices have decreased the labor intensity of the winding process. Warping is one area where manual handling is widely used, particularly the placement of beams onto a frame, but new technology has increased the speeds at which yarns are wound onto beams.

Shuttleless looms have revolutionized the weaving process. Although the majority of the world's weaving is still done on shuttle looms, shuttleless looms are taking an increasing share of the market. The four basic types of shuttleless looms are missile or projectile, rapier, air jet, and water-jet. Recent advances in air jet weaving are expected to make it the most widely used shuttleless system by the end of the decade. Shuttleless looms have many advantages over traditional fly shuttle looms including increased productivity (by as much as three times that of shuttle looms), improved quality, greater cloth width capabilities, and enhanced work environment. Some shuttleless looms can produce only a limited variety of fabric constructions, but research is being conducted to make these looms capable of producing a greater variety of constructions.

Innovations in knitting have been towards more automation and more computer control, including computer-aided design and manufacturing.

Technology in the tufted carpet sector has reduced the production costs of carpets significantly. The technology is now well developed and highly standardized.

Information and control technologies

Computerized monitoring technology has been implemented in varying degrees throughout the textile mill industry. Robots are being used for some materials handling while many more applications are envisioned in the areas of

materials transfer, inspection, and process control. Computer-aided fabric design and manufacturing systems for some fabric formation operations are currently being developed and implemented, resulting in more accurate and quicker rendering of fabric designs, as well as a huge reduction in transmission time of information from design to manufacture. The further incorporation of advanced computer technology is expected to continue to reduce unit labor costs, while improving quality and flexibility.

Apparel

Although this section of the assessment is concentrating on textile machinery, new developments within the apparel industry warrant consideration. The apparel industry, characterized by relatively simple technology and a high degree of labor intensity, has the potential for automation that can produce substantial improvements in productivity. Electronic control devices have been developed for machine operations, as well as overall factory management. One such system is automated sewing of sleeves for men's suits, which is being developed by Textile/Clothing Technology Corp. (TC Square), a tripartite effort of industry, labor, and the U.S. Government. Success has also been found in automated sewing of coat backs and trousers with future applications being developed in automatic sewing of knit parts. Other computer and robotic applications are also in the works.

Although the U.S. Government is contributing to TC Square, the amount of money involved ($3.5 million per year) is a fraction of that being contributed by the Japanese Government ($60 million over 5 years) to the automation of their apparel industry, according to the Office Of Technology Assessment. Additional amounts are being applied to microelectronic and other technologies for textile applications. A program in Europe entitled BRITE (Basic Research in Industrial Technologies for Europe) is a broad research and development program to bring together complementary research from different countries in the European Community to work on projects which will improve the competitiveness of European industry. 1/ Of the 125 million European Currency Units (ECU) (approximately $145 million) available for all programs between 1985 and 1988, 10 million to 15 million ECU (or approximately $11 million to $17 million) is to be applied to textile and apparel research. These sums will be matched by the industries.

Competitive Position of the U.S. Textile Machinery Industry

Although the new technologies have enhanced the U.S. textile mill industry's productivity, few of the innovations in production equipment have been developed by domestic machinery makers. U.S. textile machinery manufacturers have introduced computer-controlled production monitoring equipment and other state-of-the-art microelectronic technology. U.S. makers have modernized installed equipment by rebuilding cards and converting shuttle to shuttleless looms and lead in the development of equipment designed to reduce energy consumption in the dyeing and finishing processes. But much of

1/ Commission of the European Communities, Information Package: BRITE, p. 1.

the business of domestic firms is in parts, attachments, and servicing of existing machines, which now account for over 50 percent of all product shipments. Foreign firms have developed the state-of-the-art machinery which has had the biggest impact on the industry.

Because the U.S. textile industry has tended to equip itself with the most technologically advanced machinery, imports of textile machinery have risen substantially over the past two decades. In 1984, imports overtook U.S. suppliers' share of the domestic market and now represent over 57 percent of apparent U.S. consumption. West Germany, Switzerland, Japan, Italy, and France supplied 83 percent of all such imports, which totaled over $900 million in 1986. A rough estimate of import penetration in the major segments of the textile machinery industry for 1986 is shown in the following tabulation (in percent): 1/

Fiber to fabric	Fabric formation	Finishing	Other
75.0	84.4	48.1	18.8

Between 1975 and 1985, exports have decreased in value and as a percent of product shipments (from 35 percent to 25 percent), with parts and attachments accounting for an increasing majority of all such exports. Although U.S. machinery makers have never held a substantial share of the world export market, they have seen their share of it drop from 8 percent to 5 percent between 1975 and 1985. Product shipments of textile machinery during 1972-85 fell at a compound rate of 4.9 percent, in 1982 dollars, while imports have risen substantially, especially within the past decade.

With the decreased shipments came decreased employment. The U.S. Bureau of Labor Statistics places employment in the textile machinery industry at 18,500, less than one-half the number employed in 1974. A large part of this decline occurred during the first half of the 1980's, a period dominated by a recession at first and continuing unfavorable exchange rates. 2/

1/ Imports and exports were compiled from official statistics of the U.S. Department of Commerce. U.S. producers' shipments were estimated from statistics published in the 1982 Census of Manufactures and were adjusted slightly to reflect changes in the industry. The import penetration figures are presented only as an illustration and should NOT be considered absolutes.

2/ Official statistics of the U.S. Bureau of the Census show 1986 employment at 15,500 and also show a more rapid rate of decline than the statistics of the U.S. Bureau of Labor Statistics (BLS). This inconsistency arises from different methods of acquiring and estimating the data. The industry asserts that both employment statistics overstate the actual industry employment while understating the rate of employment decline, especially in recent years. According to a competitiveness study, commissioned by the American Textile Machinery Association and conducted by ICF, Inc., which surveyed 40 to 60 percent of the U.S. textile machinery industry (measured by dollar sales and which included all the major producers), industry employment declined by 42 percent between 1980 and 1986. This compares with a 33-percent decline during the same period according to Census Bureau data, and a 32-percent decline according to the BLS statistics.

The primary cause for this deterioration is the technologic superiority of foreign machinery. 1/ Although the U.S. industry has maintained technological parity with foreign manufacturers in the areas of dyeing, tufting, warp preparation, auxiliary equipment, staple fiber processing (bale to spinning), and finishing equipment, it has fallen behind (in some cases, far behind) in machinery for the major process areas of spinning, weaving, and knitting, as well as machinery for nonwoven fabric production, twisting, high speed winding, texturing, and printing.

The U.S. textile machinery industry devoted less resources to research and development during the 1960's and 1970's, compared with European and Japanese machinery producers, which were developing new products. Besides technology, delivery and service by U.S. textile machinery producers are perceived to be inferior to that of foreign suppliers, both in home markets and abroad. 2/ Within the U.S. market, many of the larger foreign machinery producers have established local marketing representatives, distribution centers, assembly plants, and, in some cases, manufacturing facilities. Through their customer orientation and advanced product lines, they have developed close ties with their U.S. customers.

Although equipment price ranks behind productivity, quality, and ease of maintenance and operation in purchasing decisions of the textile mills, it does have some effect, especially for smaller firms that have limited capital allocated to purchases of machinery. High and increasing material and capital costs, compounded by the appreciation of the dollar between 1980 and 1985, increased the price differential between U.S. and foreign equipment and adversely affected sales both at home and abroad.

Other conditions that have lessened the competitiveness of the domestic textile machinery industry in export markets include tariff disparity and export financing programs of other textile machinery producing nations. In addition, the product liability system has contributed to a competitive edge of foreign manufacturers over U.S. producers, according to "An International Study of Product Liability Costs and Systems for Five Domestic Machinery Industries," a study conducted under a cooperative agreement with the U.S. Department of Commerce and various machinery industry associations.

Effect of the Competitiveness of the U.S. Textile Machinery Industry on the Competitiveness of the U.S. Textile Mill Industry

The question of how the competitiveness of the U.S. textile machinery industry affects the competitiveness of the U.S. textile mill industry rests on three important factors: technology, service, and price. It appears that the machinery industry's competitiveness does not affect the mill industry's competitiveness because the high-technology machinery for the major process

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1/ The discussion in the next several paragraphs is based largely on the U.S. Department of Commerce report, A Competitive Assessment of the U.S. Textile Machinery Industry, pp. 32-39.

2/ Ibid., p. 35.

areas are already being supplied by foreign firms. Also, there is no machinery that is made by U.S. firms that is not available from foreign suppliers. In addition, these firms maintain service and other facilities in the heart of the U.S. textile industry.

Until recently, the United States had not been the first to benefit from the new developments of these foreign machinery makers; many of these developments had been tested in the home (or near-home) market before being marketed around the world. This had given other major textile producing countries, such as Japan and Italy, a competitive edge. Because the U.S. textile mill industry is the second largest in the world after China and spends more on new machinery and equipment than almost any other country, several foreign machinery makers have established major research centers in the United States in the past few years in order to respond to the needs of the U.S. mills (their most important customers) and obtain a larger share of this market.

The cost of machinery is the greatest source of concern that U.S. textile mill executives have concerning the machinery industry's effect on their competitiveness. The devaluation of the dollar against the currencies of the major foreign machinery producers during the past couple of years has caused prices of imported machinery to increase considerably. A domestic textile machinery industry that was technologically competitive would reduce the problems associated with exchange-rate fluctuations as well as help maintain price competition in the international market.

Appendix E

Literature Survey

and

Methodological Concerns

APPENDIX E. REVIEW OF LITERATURE ON COMPETITIVENESS AND METHODOLOGICAL CONCERNS

Previous Studies of Competitiveness

The studies discussed below are believed to be a representative sampling of the extensive recent economic literature on the issue of international competitiveness of U.S. industry. The listing should not, however, be taken to be exhaustive. The focus of the discussion to follow will be on the basic methodologies and measures of competitiveness employed in these studies, rather than on their conclusions for the particular industries under investigation.

1. Annotated bibliography

   a. Joseph L. Bower, When Markets Quake (Boston: Harvard Business School, 1986).

This focuses on company and government strategies over the past ten years in the world petrochemical industry. No explicit definition of competitiveness is given, but there is some discussion of changes in country trade balances and shares of world exports in petrochemicals. In addition, favorable reference is given to Chem Systems' "survival matrix" which ranked companies on the basis of relative cost, product mix and geographic location of their facilities. The appropriate market is taken to be global due to low transport costs and homogeneous product. Shifts in currency values are seen as crucial. Emphasis is placed on political factors in determining country responses to international pressures, with a slow response observed to market forces.

   b. William H. Branson and James P. Love, "Dollar Appreciation and Manufacturing Employment and Output," NBER Working Paper No. 1972, 1986.

They estimate the responsiveness of U.S. manufacturing output and employment to changes in the real exchange rate, using quarterly data from 1963 to 1985, at the level of individual industries. Chemicals industries were found to suffer large employment losses when the dollar appreciates (a 10% real appreciation of the dollar was predicted to cause a 1.7% decline in employment in "plastics materials and resins").

   c. Dennis M. Busche, Irving B. Kravis, and Robert E. Lipsey, "Prices, Activity, and Machinery Exports: An Analysis Based on New Price Data," Review of Economics and Statistics, Vol. 68 (May 1986), pp. 248-255.

      Irving B. Kravis and Robert E. Lipsey, "Prices and Market Shares in the International Machinery Trade," Review of Economics and Statistics, Vol. 64 (Feb. 1982), pp. 110-116.

      Robert E. Lipsey, "Recent Trends in U.S. Trade and Investment," in Miyawaki (ed.), Problems of Advanced Economies (Heidelberg: Springer-Verlag, 1984), pp. 58-79.

Robert E. Lipsey and Irving B. Kravis, "The Competitiveness and Comparative Advantage of U.S. Multinationals, 1957-83," NBER Working Paper No. 2051, 1986.

This series of papers examines changes in U.S. shares of world exports and investigates the causes. The first two listed make no explicit mention of competitiveness, but focus on determinants of the demand for U.S. exports of machinery and transport equipment. They find that changes in U.S. export prices relative to those of our competitors have a substantial effect on relative export quantities (and so shares of the world export market) but that the full effect may take up to 4 years to be felt--this suggests that it may take several years for the desirable trade balance effects of a currency depreciation to be felt.

The last two papers analyze trends in U.S. export shares, as an indicator of U.S. competitiveness. The comparative advantage of the U.S. and its multinational firms is measured in terms of the distribution of exports across industries (e.g., industries with larger shares of U.S. exports than of world exports are taken to be industries in which the U.S. has a comparative advantage vis-a-vis the rest of the world). They do point out two limitations of measuring international competitiveness by export share movements: (1) a decline in the U.S. share of world trade has accompanied declines in the U.S. share of world population and income, suggesting that a constant share "is not a reasonable norm against which to judge changes in the U.S. share of trade;" and (2) this measure of competitiveness ignores distortions in the composition of trade due to government intervention.

The paper by Lipsey and Kravis distinguishes between factors determining the competitiveness of the U.S. as a production location and those determining the competitiveness of U.S. firms (whatever the geographical distribution of their production). They identify 2 competing hypotheses for the loss of U.S. competitiveness: (1) macroeconomic factors, such as national price levels and incomes; and (2) factors internal to firms, such as research and development, technology, investment, management strategies. These latter factors are transferable across countries, within firms, and so will be unlikely to contribute to national competitiveness or comparative advantage. Lipsey and Kravis suggest that a large difference between the trade performance of the U.S. and U.S.-based firms would allow one to determine the policy-relevance of the two hypotheses. They report that while the U.S. share in world manufacturing exports fell from 22% to 14% over that period, the share of U.S.-based multinationals was steady at about 18%. The conclusion is that American management and technology remained competitive, maintaining export shares in rapidly growing world markets, and that the decline in the U.S. country-share of world exports is largely due to relative price changes determined primarily by movements in exchange-rates and inflation.

d. James M. Jondrow, David E. Chase, and Christopher L. Gamble, "The Price Differential between Domestic and Imported Steel," Journal of Business, Vol. 55 (July 1982), pp. 383-399.

They discuss reasons why imports of a seemingly homogeneous product (steel) sell for a lower price than the domestic product without rapidly increasing their share of the market. The explanation supported by evidence

is unfavorable service characteristics (e.g., long lead times required and insecurity of supply). This suggests that -- in the absence of specifically controlling for all such relevant characteristics -- domestic and foreign product are best treated as imperfect substitutes, with the demand for imports depending on the prices of both imports and domestic goods. To the extent changes in relative costs pass through into differences in the prices of imports and domestic goods, import penetration will be affected.

e. Robert Z. Lawrence, Can America Compete (Washington: Brookings Institution, 1984).

This study, looking only at the period up to 1980, analyzes the sources of structural change in U.S. manufacturing. He finds changes in domestic consumption to be a more important cause of structural change than changes in international trade, with U.S. comparative advantage declining in products of unskilled labor and standardized capital-intensive products, but increasing in high-tech products. Lawrence mentions the terms "international competitiveness" and "U.S. industrial competitiveness" without explicit definition, but seems to use a country's "success" in international markets as synonymous with international competitiveness and focuses in his analysis on growth in exports compared to import growth, the trade balance, the U.S. share of world trade in manufacturing, productivity growth, investment and R&D spending, and profit rates as indicators of that success.

He compares U.S. industrial performance with that of other developed economies from 1973 to 1980, and generally the U.S. manufacturing sector fares well-- in terms of growth in production, employment, R&D and capital spending. He estimates the effects of exchange rates on U.S. manufacturing and attributes most of the changes in U.S. exports and imports during 1980-83 to the dollar appreciation; however, by measuring real exchange rate movements with relative export and import prices (which may be related to relative costs and industrial structure) this doesn't rule out the importance of more industry-specific explanations for changes in U.S. competitiveness.

f. Richard Baldwin and Paul R. Krugman, "Market Access and International Competition: A Simulation Study of 16K Random Access Memories," NBER Working Paper No. 1936, 1986.

Marvin Lieberman, "Learning-By-Doing and Industrial Competitiveness: Autos and Semiconductors in the U.S. and Japan," NBER Working Paper, 1986.

John Zysman and Laura Tyson (eds.), American Industry in International Competition (Ithaca: Cornell University Press, 1983).

These works take a more dynamic view of industrial (and international) competition than that traditionally taken by economists.

Baldwin and Krugman model international competition in an oligopoly market with "strong learning effects," simulating the U.S.-Japanese rivalry in 16K RAMs from 1978 to 1983. Their results suggest that a protected home market was a crucial advantage to export performance of Japanese firms but that this policy produced more costs than benefits for Japan (through higher prices for consumers). Lieberman discusses the implications of "learning-by-doing" -- "production technology undergoing continual improvement that is largely a function of accumulated experience" -- which he claims to be a common feature of complex manufacturing industries. In these industries, the behavior of prices, profits and shares of the market will depend on the slope of the learning curve (rate of productivity gains), the time horizon used by firms in decision-making, and the rate at which learning diffuses among firms. A role for government in influencing these factors will be important in international competition.

The Zysman and Tyson volume is a series of industry case studies depicting the problems of adjustment and change in response to international competition in seven sectors: consumer electronics, steel, semiconductors, footwear, textiles, apparel, and autos. The editors, in their introductory essay, state that "[the] well-being of firms in these sectors depends on defending home markets against foreign firms and selling in markets abroad." This suggests at least an implicit view of international competitiveness in terms of export-shares and import- penetration. They do define "comparative advantage" as the relative export strength of a particular sector compared to other sectors in the same nation (and acknowledge the need to adjust for market-distorting government policies). On the other hand, "competitive advantage" is defined as the relative export strength of the firms of one country compared to the firms of other countries selling in the same sector in international markets.

Zysman and Tyson argue that in many cases a nation can create its own comparative advantage by the efforts of government and industry to create competitive advantage in the market; they refer specifically to government policies protecting a home market so as to allow either production economies of scale or learning curve economies. The case studies highlight the role of Japanese industrial policy in promoting expansion of growth-linked industries. Typical of competition between advanced countries is apparently that market success depends on the management of complex processes of product development and manufacturing, not simply national differences in factor costs such as wages or raw materials.

g. J. David Richardson, "Constant-Market-Shares Analysis of Export Growth," Journal of International Economics, Vol. 1 (May 1971), pp. 227-239.

This is a critique of the constant-market-shares analysis, both in theory and in practice. This analysis attributes any change in a country's exports in a particular sector due not to growth in the market to changed "competitiveness." Richardson questions the use of relative prices to measure relative competitiveness (ignoring quality, service, financing differences between the products of competing nations) and suggests that a measure of "a country's true competitiveness ... might be whether the country was increasing

its export shares in rapidly growing commodities and markets" (the analysis assumes the commodity and geographic distribution of exports to be unrelated to competitiveness).

h. John W. Suomela, "The Meaning and Measurement of International Price Competitiveness," Business & Economics Section, Proceedings of the American Statistical Association, 1978.

This paper discusses the ambiguities in the term "competitiveness," as applied to firms, industries and countries. It reviews several empirical studies which have attempted to measure "competitiveness" or "price competitiveness"-- these have interpreted the measures employed as predictors of relative export quantities or relative export shares or the balance of trade in an industry sector. These measures include ratios of wholesale price indexes, export unit values, relative unit labor costs, import prices divided by export prices, and relative profits. An import demand model is formulated to specify theoretically correct price indexes, which unfortunately do not correspond to available data.

i. U.S. Federal Trade Commission, Staff Report on the U.S. Steel Industry and its International Rivals: Trends and Factors Determining International Competitiveness, Bureau of Economics, 1977.

Despite the title, no definition or strict measure of international competitiveness is given. At various places the study suggests the importance of exports, import penetration, and rates of growth in production as indicators of a country's "competitive position" or "importance" in the world steel industry or "relative standing ... among the world's steel producing nations." However, in the summary chapter, the study is described as one attempting to explain the pattern of trade flows of the U.S. steel industry over a 20-year period.

Chapter 3 examines relative trends in steel-producing costs in the U.S., Japan and the EC, evaluating the impact of relative costs on international trade flows. Implicitly, the authors seem to have a spatial oligopoly model in mind-- changes in relative production costs among countries may have a strong influence on trade flows as relative cost reductions by one country allow it to expand into areas formerly controlled by other countries. (This is not to say that relative cost changes do not play a role in spaceless models; there, cost changes imply supply shifts which are likely to lead to changes in export shares even if, in a homogeneous world market, price and marginal cost are unchanged.)

After comparing quantities and average prices for inputs involved in steel-making in the U.S. and Japan, covering 70% of variable costs in the U.S., comparisons of levels and trends in unit costs in the two countries are given. Problems with these comparisons are acknowledged: (1) the assumption that the relative cost of excluded inputs has not changed significantly over time is crucial (and no check of the realism of this assumption is given); and (2) price and quantity data are not exactly comparable for the two countries due to industry definition differences, product-mix differences, and differences in the use of spot vs. contract prices or arms-length vs. transfer

prices. The primary difference between U.S. and Japanese unit costs was found to be unit labor costs, due mainly to the wage-rate differential; the overall Japanese cost advantage increased from 1956-68, but was little changed over the 1968-76 period.

Less sophisticated methods, using product-specific average revenue less an overall-industry return on sales, were used to estimate the U.S./EC cost differential; results showed relative U.S. costs increasing from 1954 to the late 1960s then decreasing. Some discussion of shipping costs is given but there is no analysis of changes over time.

Based partly on a simple linear regression of Japanese and EC import penetration in the U.S. on relative costs, the study concludes that the primary explanation for increasing import penetration is relative production cost changes. It should be noted that since exchange-rate effects are incorporated in the measured cost changes there is no allowance for a separate influence for these effects.

j. U.S. Department of Labor, Office of Foreign Economic Research, Report of the President on U.S. Competitiveness, 1980.

This is essentially a study of U.S. export performance, although other indicators of international competitiveness used include the trade balance and the "terms of trade" -- the latter measured by the U.S. export/import price ratio. A long list of determining factors is considered: inflation, rates of investment, productivity growth, skilled labor resources, technological innovation, unit labor costs, tariff and nontariff barriers to U.S. exports, U.S. foreign investment and technology transfer, tax measures, energy factors, labor-management relations, the role of engineering and other services in the export of capital goods. Of these factors, investment, technology, and productivity were seen as areas where the U.S. had lagged behind its competitors; in addition, nontariff barriers and exchange-rate movements had major impacts on U.S. exports. As an index of "revealed comparative advantage" the study adjusts the U.S. export-share in a particular product by the U.S. share of total world exports; similarly, for industries without much exporting, a relative import penetration ratio might be useful in judging comparative advantage among U.S. industries.

Summary of Results

The conclusion to be drawn from these studies is that "international competitiveness" does not have a precise, theoretically-derived definition, but rather is a term that different people use to mean somewhat different things. However, the unifying theme is that the interest is always in some measure of "success" in world markets. The most common measures of this success in particular product markets seem to be shares of world exports or production or the level and trends of a country's trade balance in a sector. Determinants of this success are the relative production costs and exchange rate effects predicted by a simple static model of international competition, as well as more dynamic factors such as productivity growth, investment, and management (and perhaps government) strategies. The comparison of these

studies should alert one to the importance of choosing appropriate statistics to answer a question: e.g., Lawrence finds R&D in manufacturing grew faster in the U.S. than in other OECD countries, while the Labor Department study finds that the U.S. ratio of R&D to GNP has declined in the U.S. relative to other developed nations. Both of these results are correct yet they lead a reader towards opposite conclusions on the trend of U.S. investment in technology.

Methodological Concerns

The preceding section found that discussions of international competitiveness of U.S. industries generally fail to precisely define how competitiveness should be measured. The problem is that there is no unique measure, but rather several dimensions of the issue. The purpose of this section is to set out an analytical framework relating several measures of competitiveness to determinants of industrial performance in world markets.

Definitions of competitiveness

Consider the U.S. industry to face a competing industry in world markets, with the two industries selling somewhat differentiated, though similar, products; for an example, suppose the U.S. and Japanese automobile industries competed in markets throughout the world but were viewed by consumers as selling products not perfectly substitutable for each other. Separate but interrelated markets for the products of the two industries exist with prices and quantities sold determined by elements of supply and demand. Given that the U.S. and foreign products are substitutes, anything which serves to lower the price of the U.S. [foreign] product will reduce the demand for the foreign [U.S.] product. In turn, the U.S. price will be determined by marginal cost, the sensitivity of demand to price (price elasticity of demand), and the market structure and strategic behavior of the U.S. industry.

Now, what is meant by competitiveness? At the most basic level, this is simply "success" in world markets, which can be measured by the share of the combined markets for U.S. and foreign-made products held by U.S. producers (or the U.S. share of world exports); this seems to be the most-commonly-adopted measure of international competitiveness. Clearly, by this measure, any change which increases world sales of U.S. products while reducing (or even increasing less than proportionally) sales of foreign-made products implies an increase in U.S. competitiveness; it should be recognized that competitiveness so defined includes the effects of all governmentally imposed aids and sanctions affecting both the U.S. and foreign industries. Such a measure, if examined over a period of years, will be quite sensitive to the changing stages of economic development occurring in both competitor and consumer nations -- it has been argued, for example, that with the post-war re-emergence of Japan and the European Community, followed by the rise of the newly-industrializing countries of the Pacific Rim, one would expect to see the U.S. share of world exports declining (and whether we view this as a decline in competitiveness or not may be a matter of semantics).

An alternative measure of competitiveness is simply the profitability of the domestic industry, although, again, this measure is quite sensitive to government-imposed import barriers and export aids. Finally, net investment in the domestic industry is both an indicator of competitiveness and a predictor of future profitability and market share. These latter two measures are probably more directly affected by the overall state of the domestic economy than is the share of world consumption or world exports (although this will also be affected by macroeconomic factors influencing exchange rates and inflation). While there are exceptions, generally all three of these indicators of competitiveness will move together and will be similarly affected by changes in circumstances of supply or demand.

Determinants and indicators

Suppose there is an increase in the cost of producing an additional unit of the domestic product; this could be due to increases in resource costs, inefficiencies in management techniques, use of outdated or inappropriate technologies, increasing interest rates, higher regulation-related costs, or a depreciation of the domestic currency value (raising the cost of imported inputs). This increase in costs will be translated into reduced supply and a higher price for the U.S. product. The higher price will stimulate increased world demand for the foreign-made product. The result will be a reduced U.S. share of the world market (and of world exports), lower profits, and (especially if the lower profits are expected to persist) reduced investment in the U.S. industry. Similar results would ensue from reduced costs to the foreign industry: a lower foreign product price would lead to reduced demand for the U.S. product, a smaller world market share, and reduced profits and investment.

If transportation costs are an important consideration in world trade of a particular product (as where the ratio of value to weight is relatively low), a reduction in costs in the industry of one country will enable it to expand the geographical area in which, including transport costs, it enjoys a cost-advantage. We would expect to see this translated into increases in world export shares, profitability, and domestic investment. Similarly, a reduction in transportation costs specific to a particular producing country (as could occur if shipping cost was subsidized by the government) would expand that country's geographical marketing area and increase the three measures of competitiveness discussed above.

It should be emphasized that anything which affects the cost of production to the U.S. industry relative to foreign production will have an influence on competitiveness. The cost factors mentioned above are just examples and should not be taken to be an exhaustive list; different elements of cost will be more important in determining U.S. competitiveness in different products.

Changed conditions of demand, specific to one of the two countries' industries, would also have an impact on international competitiveness. An increase in demand for the product of the U.S. industry could be due to a change in consumer tastes or an improvement in the perceived quality either of the basic product or of service and distributional aspects related to the U.S.

product; it could also be due to more rapid income growth in parts of the world targeted by the U.S. producers than in the rest of the world market. Regardless of the cause, an increase in demand for the U.S.-made product would increase sales and the price of that product. While there may be a resulting increase in demand for the foreign-made product as well this should be of smaller magnitude, leading to the conclusion that the world market share of the domestic industry will rise, as will profits and investment. Improved technology, resulting from increased research and development in the industry, may have the dual effect of reducing costs and improving quality (and, therefore, demand).

Finally, the nature of competition in the domestic industry may affect the industry's success in world markets. To the extent that vigorous competition among domestic producers allows for pricing closely aligned to costs, while still allowing for profits to be invested in research and development and capital equipment, the U.S. industry will be better able to compete with imports and to sell abroad. Such competition may also stimulate improved management techniques, which by lowering costs will further reduce prices and enhance the U.S. industry's competitive position.

Summary

The brief discussion above suggests that international competitiveness is an issue that needs to be evaluated from a multidimensional perspective, examining both indicators and determinants of competitiveness. Three indicators of competitiveness are: (1) world export shares (or shares of world consumption); (2) profitability of the domestic industry; and (3) trends in net investment in the domestic industry. Determinants of competitiveness are (1) cost factors, both specific to the industry (including resource costs, labor costs, interest rates) and economy-wide (such as capital costs, general input-cost inflation, exchange-rate changes); (2) demand factors, including the quality and reputation of the domestic product, as well as the growth of incomes in primary export markets; and (3) domestic market structure and conduct considerations. To the extent government actions influence any of these factors they will affect the international competitiveness of the industry. Of course, explicit nontariff barriers erected by governments will have more direct impacts on indicators of competitiveness.

Under the cost factors determining competitiveness, one may consider differing U.S./foreign trends in:

(a) wage rates and labor productivity, or unit labor costs (which effectively combines the two);

(b) feedstock prices;

(d) intensity of use of inputs, which may be related to differing technologies, age of capital equipment, or the degree of vertical integration;

(e) transportation and distribution costs --their importance, and the geographical distance to major markets from U.S. and other suppliers.

Note that to the extent cost measures are converted to dollar equivalents, the issues of general inflation and exchange rates are controlled for.

Under demand factors, one may consider whether the U.S. and foreign products are homogeneous or differentiated in some way, whether primary markets of the U.S. industry have grown at different rates than primary markets of foreign competitors, patterns and changes in delivery lags, service, quality from competing sources.

Market structure can be evaluated by looking at the number of firms in the industry, the share of the top firms, conditions of entry into the global industry, the type of ownership, and the degree of vertical integration and diversification in the industry. Some qualitative assessment on the competitive environment-- the extent to which firms compete or cooperate -- is useful.

Finally, government aids such as subsidies (including subsidies to related industries), tariffs, quotas, and other nontariff measures should be mentioned, with some attempt at assessing their impact.

Appendix F

MFA

Category Descriptions

CORRELATION:

U.S. Department of Commerce | International Trade Administration
Office of Textiles and Apparel

TEXTILE AND APPAREL CATEGORIES WITH TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED

Cotton
Wool
Manmade Fibers

1986

INDEX AND CONVERSION TABLE

INDEX AND CONVERSION TABLE

CATEGORY NUMBER	DESCRIPTION	CONVERSION FACTOR	UNIT OF MEASURE	PAGE
	GROUP 3 - APPAREL:			
	Cotton			
330	Handkerchiefs	1.7	Doz.	43
331	Gloves and mittens	3.5	Dpr.	44
332	Hoisery	4.6	Dpr.	45
333	M&B Suit-type coats	36.2	Doz.	46
334	Other M&B coats	41.3	Doz.	48
335	WGI coats	41.3	Doz.	50
336	Dresses	45.3	Doz.	54
337	Playsuits, sunsuits etc.	25.0	Doz.	55
338	M&B knit shirts	7.2	Doz.	57
339	WGI knit shirts and blouses	7.2	Doz.	58
340	M&B shirts, not knit	24.0	Doz.	60
341	WGI shirts & blouses, not knit	14.5	Doz.	62
342	Skirts	17.8	Doz.	63
345	Sweaters	36.8	Doz.	65
347	M&B Trousers, slacks, Shorts	17.8	Doz.	66
348	WGI Trousers, slacks, Shorts	17.8	Doz.	68
349	Brassieres & body supporting garments	4.8	Doz.	71
350	Dressing gowns etc.	51.0	Doz.	72
351	Nightwear and pajamas	52.0	Doz.	73
352	Underwear	11.0	Doz.	75
353	M&B down-filled coats etc.	41.3	Doz.	76
354	WGI down-filled coats etc.	41.3	Doz.	76
355	M&B rubber/plastic coats	41.3	Doz.	76
356	WGI rubber/plastic coats	41.3	Doz.	76
359	Other cotton apparel	4.6	Lb.	77
371	Other apparel subj cotton restr	17.8	Doz.	93
	Wool			
431	Gloves and mittens	2.1	Dpr.	148
432	Hoisery	2.8	Dpr.	98
433	M&B Suit-type coats	36.0	Doz.	99
434	Other M&B coats	54.0	Doz.	100
435	WGI coats	54.0	Doz.	1o01
436	Dresses	49.2	Doz.	103
438	Knit shirts and blouses	15.0	Doz.	104
440	Shirts and blouses, not knit	24.0	Doz.	105
442	Skirts	18.0	Doz.	106
443	M&B suits	54.0	Doz.	107
444	WGI suits	54.0	Doz.	109
445	M&B sweaters	14.88	Doz.	114
446	WGI sweaters	14.88	Doz.	115
447	M&B Trousers, slacks, Shorts	18.0	Doz.	116
448	WGI Trousers, slacks, Shorts	18.0	Doz.	117
455	Rubber/plastic coats	54.0	Doz.	118
459	Other wool apparel	2.0	Lb.	118

INDEX AND CONVERSION TABLE