Managing Restructuring in the Textile and Garment Subsector

Examples from Asia

Edited by
Saha Dhevan Meyanathan
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The World Bank
Washington, D. C.
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# CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Managing Restructuring in the Textile and Garment Subsector: An Overview</td>
<td>Saha Dhevan Meyanathan and Jaseem Ahmed</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Changing Trends in Global Textile Technology and Trade</td>
<td>Roy Pepper and Har Bhattacharya</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>Some Considerations on the Multi-Fibre Arrangement: Past, Present, and Future</td>
<td>Marcelo Raffaeli</td>
<td>59</td>
</tr>
<tr>
<td>4</td>
<td>Textiles And Clothing In Global Economic Development: East Asia’s Dynamic Role</td>
<td>Kym Anderson</td>
<td>83</td>
</tr>
<tr>
<td>5</td>
<td>India’s Textile Industry: A Case Study of Subsectoral Restructuring</td>
<td>Prafull Anubhai and V. L. Mote</td>
<td>109</td>
</tr>
<tr>
<td>6</td>
<td>The Indonesian Textiles and Garments Industries: Structure, Developments, and Strategies</td>
<td>Hal Hill</td>
<td>139</td>
</tr>
<tr>
<td>7</td>
<td>Restructuring of the Textile and Garment Industry in Korea</td>
<td>ji-Hong Kim</td>
<td>175</td>
</tr>
</tbody>
</table>

Bibliography ................................................................................. 197
FOREWORD

The industrial sector program of EDI's Finance and Private Sector Development Division focuses on the process of industrial change (adjustment, restructuring) and its role in economic development. The training curriculum is presented within a framework that allows discussion of the role of the state in facilitating this change, and organizes the subject matter into modules which can then be grouped according to the needs of the participants. The modules review the effect on industrial performance of financial, fiscal, trade, regulatory, and specific industrial policies; how changes in the global economy can affect sector or subsector performance and how a country may in turn adapt its policies; the required institutional framework and infrastructure, including supporting infrastructure such as entrepreneurship, management capabilities, and technology; and the social dimensions of industrial change. Specialized training activities draw from the framework and include the role of the financial sector in facilitating industrial change, subsector and enterprise restructuring, public enterprise reform, privatization, industrial pollution abatement, and the effect of market structure on competition and on small enterprise development. The framework as applied to the textiles and garments subsector is presented in appendix 1.1 of this book.

The program is articulated around cycles of regional and worldwide roundtables and seminars. Policymakers, mid-level civil servants, CEOs, and trainers are brought together to discuss agendas of specific issues and problems, often identified beforehand by the participants themselves.

The papers in this book have been used in a number of seminars conducted by the EDI in collaboration with the Asian Development Bank. Chapter 3 originally appeared in Textiles Trade and the Developing Countries: Eliminating the Multi-Fibre Arrangement in the 1990s (World Bank 1990). The Division would like to acknowledge the contribution of Roger C. Munter in editorial assistance and James E. Quigley and J. Brian O'Rourke in production assistance in the publication of this book. The views expressed herein are entirely those of the authors and do not necessarily reflect the views of EDI and the World Bank.

Amnon Golan
Director
Economic Development Institute
1
MANAGING RESTRUCTURING IN THE TEXTILE AND GARMENT SUBSECTOR: AN OVERVIEW

Saha Dhevan Meyanathan
and
Jaseem Ahmed

I. Introduction
The textiles industry (encompassing textiles and garments in this book) has been a subject of interest, change, debate, and government action. It is an industry often encouraged by governments and one with substantial contribution to manufacturing output, employment, and foreign exchange earnings in several developing countries. In most developing countries, it grew sequentially in a backward manner starting with clothing, then into the textiles industry, and finally into man-made fibers. Promotion of the industry in many developing countries has been through a number of measures starting with infant industry protection (through tariffs on textiles, yarns, and fabrics), sectoral aid measures (modernization assistance, subsidies for the purchase of inputs, tax-based incentives, and provision of software infrastructural support), and export promotion measures.

Until recently, the structure of the industry was characterized by large numbers of small- and medium-size firms. Industrial concentration was generally lower than other industries; but over the last few decades the trend toward oligopolistic market structures has become evident, particularly in the upstream segment of man-made fibers (which benefit from research and development activities, and firsthand knowledge of fashion trends and changing fiber preferences). In the downstream segment, this advantage dissipates rapidly due to greater number of firms, less favorable scale economies, less efficient production, and greater labor intensity (although technical change is becoming rapid in the cutting and pressing stages). This segment also faces growing internationalization of production, the restrictive effects of the Multi-Fibre Arrangement (MFA), and formidable international competition.
In addition, new technologies (that integrate spinning and weaving activities and others that increase production flexibility) and changing product composition (which is differentiated at the lower volume-specialty type fabrics and yarns) have intensified competition. Competitive advantage is now being driven by factors such as market access, connections with manufacturers of textile machinery and inputs, and flexibility in production, rather than low wage costs.

In brief, rapid technological changes, competition from new suppliers, protection of the sector, and the structural characteristics of the industry have led to many structural weaknesses. Many countries, developing and industrial, are therefore in the throes of restructuring this subsector in line with the changing dynamics of comparative advantage.

The chapters in this book address the changing structure of the industry and the factors that influence the change, adjustment, and restructuring undertaken by industrial and developing countries, and specific country cases of adjustment and restructuring.

II. Overview

A. Pressures to Restructure

The need to restructure the textiles industry stems from the pressures generated by global changes in technology, organization, and marketing on the one hand, and the uncertainties associated with the trade restrictions imposed by the developed countries on the other. Concern about the forces shaping the competitiveness of these industries and doubts regarding continued access to markets in developing countries has sharpened the focus on restructuring issues in recent times. MFA quota restrictions have already set in train a pattern of adjustment involving a geographical shift in the production of textiles and forced developing countries to diversify their respective markets and products, as well as move up the quality and technology gradient to maximize the returns on investments. Technological changes have given industrial countries a distinct advantage in the production and export of synthetic fibers and fabrics; the introduction of automation in garment production and new organizational and marketing techniques have introduced concerns regarding the durability of international trade patterns. Developing countries have expressed acute anxiety regarding the international competitiveness and long-term viability of their textiles and clothing industries. Trading opportunities are becoming less certain and more fleeting as a consequence of protectionism, market saturation, and technological suppliers, who try to find their niche in the international distribution of competitive advantage.

The ability of these suppliers to respond effectively to the above pressures is itself impaired by structural weaknesses and often inappropriate government policies. Infrastructural problems, in terms of inadequate power supply and transport facilities, loom large in most developing countries and can hinder the expansion of plants and restrict choice of location. Inadequate technical information has led to inappropriate design of plants and use of equipment. Lack of information about technological implications has hindered choice of appropriate technology. In addition, there has been wasteful utilization of raw
materials and essential inputs such as energy, and low concern for quality management and maintenance. The absence of competitive ancillary industries is a major structural weakness observed in many developing countries; inefficient support industries (fibers, machines, parts) are usually the result of high trade barriers that protect domestic textiles, rendering them and downstream production uncompetitive.

Underlying the call to restructure the industry is the desire to effectively respond to the challenges posed by external threats and domestic weakness. The central issue focuses on how developing economies can acquire the flexibility to assure future competitiveness in the face of rapidly changing technology and market conditions. In the context of restructuring, this central concern leads to a number of other issues, for example, what are the factors that should guide the choice of appropriate technology? Is it necessary to pursue the vertical/horizontal integration? What should be the respective roles of the public and private sectors in this process?

A number of definitions of restructuring may be envisaged. At one level, the normal process of industrial change by which industries and firms adjust to changed circumstances is a kind of restructuring. However, distinguishing between changes that are temporary or cyclical, and those that are long-term or structural is a crucial issue. Central to the concerns of this book is the notion of restructuring—which encompasses adjustment to structural as opposed to cyclical—difficulties, with the criterion of successful restructuring being defined as one that leads to a new international competitiveness. This leads to a focus on industry realignment based on competitive advantage and an increase in efficiency. From this perspective, an enterprise or sector may be said to be in need of restructuring when a differential emerges between the current performance of the enterprise or sector, and what is required for it to become internationally competitive. These gaps emerge as a result of global changes in technology, organization, and marketing. Successful restructuring may be said to have occurred when the enterprise or sector has shifted to a product mix and cost-structure that renders it competitive, and well-positioned to remain so. Thus, reducing costs and raising productivity, and finding a product niche are the two axes that the restructuring strategy must traverse. Because national industries are at different stages of development, their options will vary in respect of one or both axes. The division of labor implied is a positive aspect of the general prospects for restructuring, suggesting scope for different nations to find different product niches.

Ex post experience has demonstrated that restructuring at the firm level will not take place automatically to changes in macroeconomic policy or rapid shifts in global conditions. Governments need to establish policies that facilitate flexible resource movements in response to competition, promote institutions capable of filling information and capability gaps, and ensure that appropriate financing is available. Thus, there is a need to develop policies and institutional programs that help scale down uncompetitive industrial activities and promote and reshape those that can be internationally competitive.
B. Textiles and Structural Change

The importance attached to the textiles industry emerges from its major role in generating manufacturing output, employment, and exports, and the key role it has played in the initial industrialization process in most countries. Historically, this role has been due to the large domestic demand for what is a basic necessity, and to early success in mechanizing textile production.

As the first group of countries to industrialize moved up the development ladder, including the United Kingdom, United States, and Germany, other countries followed in their footsteps. The most important example of this in the late nineteenth century is Japan. Within a few decades after the war, as Japan's industries grew in range and sophistication, other developing countries began to follow a similar pattern, with increased competitiveness in cotton textiles and clothing—one of the early signs that industrialization was under way.

A frequently encountered phenomenon is that of countries in the early stages of industrialization becoming internationally competitive in a particular group of products—textiles, clothing, footwear, leather goods are among the standard examples—and successfully challenging countries further up the ladder of development. Countries at a low level of economic development are characterized by low levels of physical and human capital. With a relative abundance of low-skilled workers, these countries find that among manufactured goods their initial comparative advantage lies with those products wherein labor input is high. If national policies permit these industries to become efficient, they will become competitive suppliers in the world market. As these countries become more industrialized, real wages rise and they find themselves challenged, in turn, by less industrialized newcomers. This began happening to Japan's textiles and clothing industries in the early 1960s and is currently happening to some of the countries that challenged Japan some three decades ago. The phenomenon of competition from low-cost suppliers is neither unusual nor unique to the industrial countries.

Indeed, the strategy of industrialization followed by Japan (and subsequently by other economies such as the Republic of Korea and Taiwan [China]) has served as an example for other developing economies. A country with a poor natural resource base, Japan continuously changed its pattern of specialization by moving into more high value added industries. Japan achieved this by systematically following four phases in the product cycle: the importation of a new product (which generated new demand and provided opportunities for technology transfers); import substitution; exportation; and reimportation (once other developing countries had become more competitive in producing the product). The Japanese economist Akamatsu (1961) and his followers formulated this catching-up product cycle process as an explanation of the Japanese industrial growth pattern, which was termed as *ganko keitai*, or the flying wild geese pattern. In its economywide version, the flying geese theory envisages a continuous shifting of comparative advantage from developing countries at a higher stage of development to those at a lower stage. This is achieved by an increasing complementarity as the former vacate their niches in the production and export of relatively less sophisticated products to the developing nations.
Typically, this process is accompanied by the following pattern: as unit labor costs rise in labor-intensive and technologically less advanced industries, the countries at higher stages of development lose competitiveness and shift out of these industries, whereas productivity improvements, through learning by doing, increase the comparative advantage of low-wage countries at a lower stage of development, thus making it possible for them to increase production and exports of these industries. Relocation of industries is facilitated by direct investment and technology transfer by countries where such industries have become uncompetitive (through appreciating currencies as observed in East Asia recently) or have entered a declining phase. Thus, transnational corporations bring in technology and some packaged inputs, and use local labor and some materials for finishing and packaging, and then export through established marketing channels. Yamazama's (1988) account of the growth of the Japanese cotton textiles industry identifies 1879 as the year when domestic production first exceeded exports, with the completion of the import-substitution phase occurring in 1910 when exports exceeded imports. During the 1920s and through the 1950s, cotton exports were the most important export items. But from the early 1950s both production and exports decreased steadily, with imports increasing again toward the end of the decade, eventually exceeding exports in 1972.

These developments took place as the emerging economies of Hong Kong, Taiwan (China), and Korea, also termed as newly industrializing economies (NIEs), began to duplicate the Japanese experience. These economies first made inroads into Japanese cotton textiles markets (labor-intensive goods) while remaining net importers of synthetic products, which are capital-intensive. It is only in recent years that the NIEs have become significant exporters of synthetic fibers, while their share of the markets for labor-intensive items such as clothing is now being challenged by a new wave of exporters from low-income countries. For some of these low-income countries, the exports of clothing in particular has represented a most remarkable development of non-traditional manufactured exports. This is true of Indonesia and Pakistan, and even more so of Bangladesh, which saw an increase in the value of garment exports from about US$3 million in 1980 to approximately US$400 million in 1988.

Structural change of this type is part of the normal process of growth and development, and in an integrated world economy structural change in different national settings becomes closely linked through trade flows. International trade is thus a channel through which adjustment and the reallocation of domestic resources along lines of comparative advantage is brought about. The process has not been smooth, however, especially as far as textiles and clothing are concerned because of the lack of sufficient structural flexibility in the industrial countries, and partly on account of policies that have prevented adjustments that would otherwise have occurred fairly smoothly. These problems have been compounded by the fact that in industrial countries the textiles and clothing industry is a large industrial employer tending to be concentrated in particular geographic regions. The work force tends to have special characteristics (large numbers of women and other minorities), which means that its adjustment problems are likely to get more attention than those of other industries. These have been the principal considerations underlying
the industrial countries’ efforts to protect their domestic textiles industries against import competition from the developing country producers. From the perspective of developing countries, however, market access is of critical importance in ensuring that the structural change attendant to growth proceeds unhindered. That these changes are desirable and should be allowed free play is an underlying tenet of the international system of trade as codified in the General Agreement on Tariffs and Trade (GATT).

The changes in the industrial countries’ textiles and clothing industry as well as changes taking place in many other tradable goods industries have brought the trade-related problems confronting this industry into sharp focus. The fundamental issue continues to be the extent to which structural changes in national economies will be permitted to spill over into trade patterns. Thus, structural adjustment problems confronting the textiles and clothing industry in the industrial countries are in many respects the problem of structural adjustment in general. In view of the significant liberalization achieved by the various GATT rounds of talks to date, lack of similar movement in the textile sector has given it increased significance. Indeed policy decisions regarding the industry have come to be seen as a key indication of the industrial countries’ approach to structural adjustment in general.

Chapter 2 broadly analyzes the international and exogenous factors that have shaped the textiles industry. This chapter details the process of change and adjustment in the textiles industry in developing countries induced by structural change and protectionism in the industrial countries. Chapter 3 discusses the pressures and opportunities generated by the Multi-Fibre Agreement. In chapter 4 Kym Anderson analyzes the rise and demise of the industry using the experience of East Asia. In the following sections, we give a broad overview to provide a backdrop for these three chapters, and then closely examine the internal factors that bear on the textiles industry in developing countries. Finally, we briefly look at several country cases.

III. Recent Changes in the International Structure of the Industry: The Rise of Protectionism

A. Structure of Industry

It should be stressed that the product-cycle account of the industry is essentially a heuristic device, and in reality comparative advantage is affected by a number of factors, so that it is often difficult to distinguish between cyclical and structural change in competitiveness. Whereas the former are only temporary and may be redressed by macroeconomic policies alone, the latter imply the need for deep-seated changes in output and employment structure. Additionally, to a considerable degree, the industry is heterogeneous with respect to both product and process characteristics; different subsectors have evolved differently and face varying prospects.

The manufacture of final products from textile materials is divided into four stages. First, there is the production of natural and man-made fibers. The second and third stages are spinning, and weaving or knitting. The final stage is the production of end products—clothing and other household items, such as carpets and curtains and other man-made articles. Some of the production
processes do not involve spinning or weaving (for example, non-woven), whereas articles made from woven or knitted fabrics involve all four stages. These stages may be separated geographically within or across national borders. Furthermore, the individual items at each stage use materials, capital, and labor in widely divergent proportions. The textiles and clothing industry is still commonly thought of as labor-intensive. There is considerable variation among countries in the relative capital intensities because of the international differences in product composition and capital vintages of machinery. On the other hand, the clothing industry’s capital intensity is significantly lower than that of textiles. Within clothing, cutting and patterning can be many times more capital-intensive than sewing operations. Activities that are closely related to textiles and clothing include: (a) upstream: specialized suppliers of inputs including fibers, textile machinery, dyestuffs, and so on; and (b) downstream: wholesale and retail trade, fashion industry, and so on.

In the industrial countries, the relative contraction of the textiles and clothing industries has generally been accompanied by relative stability or even expansion in upstream activities. By contrast, in many developing countries the expansion of textiles and clothing manufacturing has not had a noticeable impact on upstream activities.

In a majority of developing countries, production of textiles is ordinarily to be found in organized and unorganized sectors. The former comprises large-scale mills, and the latter consists of small-scale plants whose activities include hand spinning, hand looms and power looms, hand and machine knitting, hand machine dyeing, printing, and so on. Production in the organized sector can further be subdivided on the basis of ownership into private and public sectors, and in the unorganized sector private and cooperative ownership are not unusual.

B. Structural Change in Industrial Countries

Since the 1960s major changes have occurred in the textiles industry in industrial countries as a result of technological advances, increased use of synthetic fibers, higher wage levels, and differences in consumer tastes. As a result, there have been significant shifts in comparative advantage in the textiles industry between industrial and developing countries.

In some parts of the industry, technological changes were sufficient to compensate for higher labor costs. Investment in faster and more automated equipment and the use of modern production techniques resulted in greater efficiency and a rapid increase in the capital intensity of spinning and weaving processes. Yet, technological innovation and increase in productivity have been less dramatic in the clothing sector, and clothing production has moved increasingly from the industrial to the developing countries.

The combination of higher capital intensity in spinning and weaving and the shift away from certain activities that are further downstream led to a significant decrease in employment in textile and clothing for all Organization for Economic Cooperation and Development (OECD) countries during the 1960s and 1970s, even as manufacturing employment increased. This development was accompanied by significant restructuring, which varied among countries and which involved different degrees of government involvement (see chapter 2).
The most promising results were achieved where restructuring efforts concentrated on specialized products emphasizing quality and style, which were often produced by small- or medium-scale firms with flexible and innovative leadership.

C. Protection in Industrial Countries

In addition to these structural changes, which involved firm and labor exit from the industry, industrial countries have had recourse to widespread use of protectionism to slow down the speed of adjustment. It would not be an exaggeration to say that in large part the effort to resist or manage structural change in the industrial countries was in response to the pressures generated by the product-cycle process recounted previously. In particular, it was in response to the growth of Japanese textiles exports between the 1920s and mid-1950s; subsequently, the targets have been switched opportunistically to emerging exporters from the developing countries.

The importance attached to this subsector led to the introduction of bilaterally imposed quantitative restrictions well before the emergence of the Multi-Fibre Arrangement. One of the earliest restrictive attempts to manage structural adjustment was the voluntary export restraint (VER) imposed on Japanese textile exports in 1936. With the establishment of GATT, recourse was provided to the safeguards clause, which permitted action to protect markets that had been disrupted by imports. (This concept of market disruption was refined subsequently to permit protection before actual disruption.) However, Japan's accession to GATT in 1955 meant that under Article 19 such measures had to be nondiscriminatory. Moreover, under GATT, Japan could retaliate. This problem was handled by the United States by persuading Japan to accept VERs once again in 1957. In 1959, the United States initiated a discussion to systematize the ad hoc measures being taken by a number of industrial countries to curb this form of market penetration. These discussions led to the adoption of the Short-Term Arrangement (STA), which remained in force from 1962 to 1973. These were, of course, deviations from one of the pillars of the system of international trade, the principle of nondiscrimination.

However, during the life of the Arrangements, and starting even before, two sorts of developments were under way that have shaped the structure of international trade in textiles and garments to date. One development was the growth of industrial country imports of cotton textiles from other developing countries, namely the NIEs, that penetrated markets previously held by the Japanese. The other was the rise in industrial country imports of non-cotton textiles.

These developments had been accompanied by a number of ad hoc, bilateral measures enacted by the industrial countries to regulate and protect their textiles and clothing industries. The desire to systematize and extend the measures to the countries and products found most threatening culminated with the MFA coming into effect in 1974. The basic objective of the MFA was "... 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 in both importing and exporting countries” (Article 1, paragraph 2). These were, more or less, also the objectives of both the STA and the Long-Term Arrangement (LTA).

The quotas on export volumes were set under bilateral arrangements, but flexibility was provided by permitting some swing (switching between product categories), carry-forward (advance use of the following years’ quotas), and carryover (use of quotas unutilized in the previous year). The MFA was extended in 1978 under depressed economic conditions in the OECD countries following the oil-price shock of 1973, which had exacerbated the structural problems faced by a number of industries, in addition to textiles. In particular, quota limits in the United States led to increasing market penetration by the NIEs in Europe. In deference to European concerns, MFA II proved to be restrictive by virtue of two innovations. The first was the introduction of the idea of “cumulative market disruption,” which permitted the restraint of even very small suppliers, provided aggregate imports had reached a certain level; the second was the clause on “... agreed reasonable departures ...” from MFA I, under which import growth levels were permitted to be reduced beneath those agreed upon earlier.

The Protocol for MFA III, which came into force in January 1982, saw a dropping of the “... reasonable departures ...” clause and the addition of an “anti-surge” provision to restrict growth of exports of a product whose quota had not been utilized. Thus, one restrictive instrument was replaced by another.

The character of MFA IV, which expired in 1991, appears to have been principally determined by U.S. concerns. At the initiative of the United States, all natural products were incorporated under MFA coverage, imports from the major suppliers were fixed to make room for growing imports from poorer countries, and the flexibility features (carryover, and so on) were made more restrictive. All these features were in fact elements of the bilateral arrangements that the United States had already entered into with its suppliers.

D. Some Aspects of Technological Change: The Threat of Automation

Technological changes have crucially transformed the industry in the last few decades providing a set of new opportunities, as well as new threats to the developing counties. A pivotal way these changes have occurred is through rapid progress in transportation, in air-freight facilities, containerization, telecommunications, and so on. These changes have greatly benefited the developing countries by reducing various costs and barriers associated with distance, which had previously restrained the internationalization of production. With the development of mass retailing, which greatly expanded the extent to which technological changes affected trade marketing strategies, production and distribution of clothing have been increasingly affected on a global basis.

At another level, technological advances made in synthetic fiber technology played a major role in revitalizing the textiles industry in the industrial countries in the 1960s and 1970s. More recently, some developing countries began producing synthetic fibers and have expanded their output substantially. Synthetic fiber manufacturers in the industrial countries have responded to this
and other developments by diversifying and upgrading synthetic fiber materials, as well as developing energy-saving technology. These innovations in turn have helped the industrial countries' textile producers to maintain their competitive positions in a variety of textile products.

Another type of technical change has been in the form of process developments. These have included the introduction of rotor spinning and shuttleless looms, efficiency improvements in conventional production methods, and the introduction of automation into various stages of production. During the last decade there has been increasing use of computerized production management and application of electronics to new textile and clothing machinery in search of higher productivity and improved versatility. Though the impact of these developments are difficult to foresee, one indication is that they are likely to create more opportunities for trade specialization in narrowly defined processes in the textiles and clothing industries than in the past.

E. Automation and Garment Production

The last developments have caused some concern in recent times and have led to suggestions that developing countries may be losing comparative advantage in garment production, their current mainstay. It is argued that technological developments leading to automation of production processes and shifts in tastes have set in train developments that are reducing the importance of the low labor cost advantage Asian suppliers enjoyed, though a reversal of trade flows has yet to occur.

The gist of this view is that fundamental changes in the structure and nature of the market for both intermediate (yarn and textiles) and final products (garments) have led to a shift away from mass-produced, standard products to demand for a differentiated set of products, characterized by higher quality and lower volumes. This transformation of the structure of demand has also led to a shift in the marketing and product strategies of retailers and manufacturers in the industrial countries, which in turn has stimulated innovations in the way that production is organized within firms and the relationships between buyers and sellers.

Of the technological innovations, the potentially most significant is concentrated in the pre-assembly phase of garment manufacture. Computer-aided design (CAD) systems for grading patterns and marking and computer numeric control-guided automated cutting systems to replace manual cutting techniques are among the most important developments.

The introduction of these technologies makes it possible to respond rapidly to changes in demand and specifications, and this is of growing importance in some product lines where retailers are demanding that suppliers offer a rapid turnaround on reorders. In addition, demand from retailers to provide greater product variety is playing to the new competitive strengths of the industrial countries.

Hoffman (Hoffman and Rush 1987) and others have suggested that the recent changes in the pattern of market demand have dovetailed nicely with the new technological base. The textile technology now in place facilitates rapid producer response to frequent style changes, greater emphasis on design
and styling, shorter runs, and the use of finer yarns and more lightweight fabrics. Thus it appears the restructured U.S. and EC producers who have survived the surge of low-wage textile exports from the developing countries are now poised to reap the benefits of their investment in new technology.

The issue is whether these gains would be at the expense of the developing countries, which partly would depend on the range of products affected. Nevertheless, there is a question as to whether the success of the industrial countries in modernizing the textiles industry and regaining comparative advantage will prevent developing nations from basing their textile exports on an integrated textile-clothing complex and mass production for undifferentiated markets. If this is not possible, many will remain as primarily clothing exporters and may find it difficult to make the transition to textile exporting.

It is important to point out that in contrast to pre-assembly operations, assembly operations are unlikely to be automated in the near-to-medium term. Moreover, pre-assembly operations account for only about 8 percent of the unit cost of garments. Thus, countries like Bangladesh, Sri Lanka, and China—who enjoy very low wages—are unlikely to face a rapid loss of comparative advantage to western producers at the standardized end of the apparel market. These countries will remain competitive because of their low labor costs, although perhaps with less room for maneuver. A substantial demand will still remain into the foreseeable future for the simple garment types produced by these countries. As demand in the OECD countries shifts to products in the higher quality range, the immediate challenge is to the NIEs, who are already complementing their offshore movements with large investments to upgrade their technological capabilities. On the other hand, countries like Thailand, whose phenomenal economic performance in the last five years has been export-led (with textiles emerging as the most important earner of foreign exchange), will face increasing pressure from rising wages.

In fact, the NIEs have already begun a process of investment in human and physical capital designed to allow them to upgrade their product lines (through the introduction of fashion lines, for example) and establish new markets. It is as well to note, however, that a successful strategy that seeks to export garments with greater design content and higher value added has to also incorporate marketing and distribution skills. Market knowledge, design intelligence, and production information are crucial elements of such a strategy. These are formidable requirements. As the economic history of the NIEs shows, their export-based success has relied upon the production of goods produced to designs from the industrial countries and sold to already existing market channels. Nor was there generally any investment in distribution channels, with goods being sold to the strategic link in the distribution countries.

It is essential, however, that the NIEs successfully adapt to the pressures facing them so that the next layer of developing countries (who face a lesser challenge) may also move up the ladder of comparative advantage. Liberalization, or market access, is at least as important as growth in the industrial countries for the heuristic model of restructuring presented earlier. This model only requires that nations attain different levels of development at different points in time, and that there be access to markets.
IV. Restructuring the Textile and Garment Industry

A. Structural Weaknesses of the Industry in Developing Countries

The response of developing country suppliers to the threats posed by technological developments, protectionism in industrial country markets, changing market structure, and so on, has been constrained by their own structural weaknesses. Domestically, these suppliers are burdened by problems of obsolescent equipment, a poorly trained labor force in the case of some, labor shortages in the case of others, a fragmented and often dualistic industry, and inadequate access to strategic marketing information. At a broader level, a fundamental problem has often been the nature of government policy that has been brought to bear on the textiles industry. Thus, a general proposition is that in developing countries a most important contributor to the structural deficiencies of the textiles industry has been government policy by virtue of its inconsistency and distortions induced by trade barriers, import restrictions, and entry and exit provisions.

In respect of trade distortions, high levels of protection on synthetic fiber production effectively imposes a tax on domestic textile production. Thus, textile producers are frequently granted tariff protection in compensation for having to purchase fibers at prices above the world market level. However, it then becomes necessary to grant protection to clothing producers in order to compensate them for having to purchase fabric at prices above world market levels. In addition to multiplying the inefficiencies arising from insufficient specialization, this policy penalizes the firms that would have been able to export if they had been permitted to purchase inputs at world prices. Thus, the lack of competitive support or ancillary industries is a major weakness of the textiles industry.

Weak physical infrastructure, particularly in respect of power and transport facilities, had particularly deleterious effects on the textiles industry. Though many mills are too small, expansion is often not possible due to insufficient availability of power. Poor transport facilities implies the inability to purchase inputs and sell final goods on a timely and reliable basis. This necessitates keeping large inventories of both inputs and final goods, which cannot be reliably transported and which tie down scarce financial capital.

The absence of an adequate information system is a major structural weakness constraining the efficiency and quality of management and its ability to foresee productive requirements. The lack of reliable and appropriate information, combined with the domestic orientation of production, leads to weak marketing skills and inability to react quickly to changes in demand in the international market.

Inadequate understanding of technological implications results in both management and labor paying insufficient attention to maintenance, and machinery often becomes worn out long before it does so in industrial countries. The use of worn-out and also obsolete equipment is quite common. In addition, waste control and quality management are both poor, or lacking, with the result that both machine and labor efficiency are lowered. Inadequate general or technical management, poor plant layout, insufficient preventive maintenance, and neglect of proper training and supervisory activities are all factors that
contribute to low productivity and inefficiency in the textiles industries of the developing countries.

Often, developing country firms have tried to compensate for their own inefficiencies by an inappropriate degree of modernization, installing equipment too complex and inflexible for their capacities and needs. This has frequently manifested itself in an excessive degree of integration of spinning and weaving operations that has tied down capital and, in view of the balancing required between spinning and weaving plants to minimize costs, reduced flexibility in responding to rapidly changing market conditions.

Government policies to promote employment, generally either by promoting more labor-intensive power looms or by overstaffing public enterprises, have meant that one key problem in technological modernization of the textiles industry in many countries is how to reduce the labor force without creating social and economic problems.

As long as the market for a country's textiles producers is relatively low-value and consists of standardized goods, technology choice can be determined largely by relative factor prices. In these conditions conventional looms remain competitive, and in fluctuating markets offer a greater degree of production flexibility. However, once the market demands higher quality and specialized goods, capital-intensive textile machinery becomes necessary, irrespective of factor prices, because it can produce quality and consistency unmatched by conventional (shuttle) looms.

To sum up, the common features of the textiles industries of developing countries include the following:

- inappropriate size of plants;
- inappropriate degree of integration of operations;
- high percentage of technologically outdated equipment;
- poor productivity and maintenance of equipment;
- excess use of or low-productivity labor;
- wasteful use of inputs, especially energy;
- low concern for quality management;
- low product mix due to lack of flexibility of equipment and inadequate resources for human resource development; and
- lack of management and marketing skills.

The need to enact effective structural adjustment measures in the industry is made problematical by import competition and the changing prospects for exports. Interindustry adjustment requires that productive resources shift out of the industry and relocate in other production sectors. This intersectoral shift of resources is seldom smooth or free of friction, and there is a legitimate role for adjustment policy interventions to minimize disruption. Structural adjustment also requires intraindustry adjustment, that is, for a progressive disengagement from the subsector and product categories within the industry, and a shift into others. The extent of this type of adjustment will be determined primarily by product differentiation, market segments, economies of scale in product lines, and forms of non-price competition that enhance the attractiveness of products and the reliability of supplies. It is quite possible that increases in the imports of some subcategories of goods will be matched or exceeded by exports of other
subcategories. Developing countries should recognize that restructuring their textiles industries will require, to varying degrees, both types of adjustment.

B. Restructuring Goals

It has been observed that such structural weaknesses in the textiles industry in developing countries have arisen in large part due to the disincentives of high and uneven protection and a pro-capital bias in investment incentives (de Vries and Brakel 1983). Despite this, the prevailing low labor costs, availability of inexpensive raw material sources, and technological know-how give most developing countries a continuing comparative advantage in many areas of the textiles and clothing industry. As part of their restructuring strategy, developing countries will have to identify the product lines that they can specialize in. The rise in the capital intensity in the production of textiles means that they are less attractive to developing countries in terms of employment creation. On the other hand, low-wage countries may be able to make economical use of older machinery for the production of simpler items for rural consumption and some specialty products. The availability of raw materials in some countries will enhance their competitiveness in certain lines. At any rate, successful restructuring will need judicious handling of issues of present structural weakness and future strategic realignment.

In view of the weakness, a restructuring program will have the following specific goals:

1. Increase productivity of factors, labor, and management. Raising the efficiency of labor will call for skill development programs, evaluation of work assignments, and the development of productivity-linked incentive schemes for workers; in respect of management, the type of ownership and the development of management skills and information systems are keys to enhancing efficiency and competitiveness.

2. Increase capacity utilization through improved maintenance and changes in operating procedures to improve efficiency. Improving the layout of plants and machinery, balancing equipment capabilities, appropriately replacing and utilizing equipment to improve capacity utilization, and developing input conservation schemes to reduce wastage of energy and raw materials are the relevant issues here.

3. Induce changes in the composition of output, through greater and more appropriate specialization. Insufficient product specialization in the presence of economies of scale has been a problem in many developing countries. As Pack (1987) documents, the absence of long production runs is linked to high setup costs and the inability to correct flaws quickly. The appropriate change may be induced by linking in a phased way, for example, assistance to upgrade technological abilities through measures to increase product specialization.

4. Promote changes in the organization of the industry by phasing out plants, where necessary, and encouraging more appropriate (probably less) integration of operations. This will require the relocation of plants, closure in some cases, merger in others, and the development of linkages between plants.
The economic characteristics of restructuring require that investments be channeled into products in which the country can achieve competitive cost levels and which appear promising in terms of demand projections. Problems of excess capacity and inflexibility in production are also of major concern. Production units of uneconomic size may benefit from consolidation through mergers, or if integration impedes the ability to react quickly to changing market conditions, it may be more appropriate to decentralize production units. In directing assistance to firms, clear restructuring objectives need to be stated, that is, integration and mergers, decentralization of large integrated spinning and weaving operations, or specialization in certain products—and their appropriateness established.

In addition, it will be necessary to provide institutional support to help firms develop competence in critical functional areas. These programs will, among others, include:

1. measures to help firms devise export marketing strategies;
2. programs aimed at creating a flexible and technical labor force with appropriate management capability;
3. funding for research and development, with a focus on applying technologies available internationally to domestic uses; and
4. mechanisms to help firms forge strategic alliances with companies operating globally.

C. Strategic Options for Asian Economies

Though every economy has unique features, some common features allow us to delineate groups of economies. In the first group are economies that have a domestic textiles industry that can competitively provide yarns and fabrics for products in the domestic market, but are not proficient enough to support the country's garments production, which relies primarily on imported fabrics and yarns. This group is primarily composed of the low-income countries, such as Bangladesh and Sri Lanka. In the second group of economies are those that are capable of exporting relatively low-value and simple textiles (gray fabrics and yarns) as well as some garments; Pakistan, India, the Philippines, and Malaysia constitute this group. In the third group are the major East Asian suppliers, Korea, Taiwan (China), Hong Kong, and China, which are capable of producing and exporting finished fabrics and garments on their own account.

The nature of the strategic options available to these groups of countries is somewhat different. Bangladesh and Sri Lanka's success as garments exporters has depended upon access to cheap textiles purchased from the world market, or supplied by the buyer of the finished product. The domestic textiles industry has hitherto been unable to provide competitively the fabrics and yarns required for this export trade, and yet the major option open to it is likely to be selective development of products required in apparel production.

The second group of options are to invest in finishing and processing in order to improve value added, and to raise productivity by upgrading technology. Indonesia is currently engaged in a major expansion of its finishing facilities, whereas Pakistan has spent significant efforts introducing modern open-end
spinning frames. By contrast, in India, government policies in support of the local textiles industry has slowed the rate of technological change.

The East Asian suppliers face the prospect of increasing competition from the next wave of exporters and therefore need to respond in one or both of two ways. First, they will have to respond to increasing competition in their product areas by lowering costs. With China as the exception, this group has invested in the new shuttleless looms but are not running them as productively as producers in the industrial countries. Second, in view of their excellent finishing facilities and advanced apparel manufacturing industry, they can think of competing in the higher value added lines with industrial country producers. However, the changes in the retailing systems in industrial countries that stress quick response strategies elevate certain factors above labor costs as the major determinant of competitiveness. Therefore, for this group of countries, productivity increases resulting from the introduction of updated management information and marketing systems capable of responding to buyers' requests quickly take on crucial importance.

A general proposition is that firms must choose the geographic markets to be targeted, and that for most developing country clothing exporters the American and European markets will predominate. Diversification away from MFA importers is highly desirable. Japan's market, which is not quota-restricted, is one of the few that can absorb a large volume of clothing imports. Nevertheless, due to the high quality standards demanded, the nature of the distribution system, and the close relationships among Japanese firms, developing country exporters face stiff challenges in entering the Japanese market on their own.

D. Restructuring and Role of Government

Rapid changes in technological and cost conditions stress the importance of the individual firm and entrepreneur and their reaction to shifting market forces. Government supported programs cannot anticipate the future structure of the industry but may provide a stable framework of policies that supports firm-level efforts to restructure. A number of important principles underlie a rational restructuring effort by the government. Thus, the intervention should facilitate change brought about by market trends and forces; it should be targeted to address specific market failures or externalities directly; it should promote, rather than stifle, competitiveness. On the other hand, extensive central guidance in respect of subsectoral allocation of capital, product mix, technology, and market orientation will lead to gross inefficiencies.

Underlying this framework is the view that effective adjustment and restructuring requires the promotion of competition. The presence of domestic rivalry can stimulate competition and promote efficiency. Competition among final output producers and among input suppliers is an essential component of a dynamic industry. Competitive advantage derives from improvement, innovation, and the ability to upgrade to more sophisticated products and technologies. The forces most likely to generate dynamism are the pressures and challenges of domestic and international competition. The capacity of firms to achieve and sustain competitiveness will in turn depend on the presence of specialized human resources, technical infrastructure, and other factors of
production; on the existence of home-based suppliers and related industries that are internationally competitive; and on the stimulating presence of capable local competitors. By stimulating specialized educational and research institutions and attracting entry into related industries, the national environment can become a self-reinforcing system that promotes rapid progress.²

In addition to domestic competition, policy deregulation of licensing requirements, exit and entry provisions, and so on, institutional and infrastructural bottlenecks affecting access to imported inputs and import financing would have to be addressed. Thus, in Bangladesh and Indonesia, the provision of an effective duty free and restriction free regime for exports was crucial for the strong growth of garments exports. (In Bangladesh it appears this administrative system worked efficiently only for the garments industry, which was quickly given high priority.)

The dynamic competitive advantage envisaged here calls for close cooperation between the state, the private sector, and multilateral institutions, but the principal impulse for change must come from the private sector. The role of official agencies is to provide physical and technical infrastructure (not necessarily along traditional lines, thus physical infrastructure may be provided along the lines of build, operate, and transfer; the costs of technical and research institutions may be shared between beneficiaries; and so forth), to promote agencies for the collection and dissemination of strategic market information, to establish policies that ensure resources are allocated in response to competitive forces, and to ensure adequate financing.³

The above considerations suggest a macro environment of policies containing the following critical components:

1. macroeconomic policies designed to provide a stable business environment, with exchange rates adjusted to maintain equilibrium between domestic and international prices;
2. competition policies; phased import liberalization; changes in regulations and incentives to reduce domestic barriers to entry, exit, and expansion; and export rivalry measures;
3. liberalization of factor prices and final output prices; and
4. institutional services and infrastructure to aid firm-level restructuring, including effective market information, human resource development, telecommunications, transport, and power.

As is to be expected, policies and institutions require time to take root. Prudent macroeconomic targets, proper sequencing of policies, and attention to institutional and infrastructural bottlenecks that can impede supply response can go a long way to establishing the appropriate framework for successful restructuring.

E. Provisions of Infrastructure

The provision of infrastructure includes not only investment in and maintenance of the hardware of transport, utilities, and communications infrastructure, but also the software, including support for research and development, marketing, training, technical assistance, and so on. The management of national transport, communications, and utility networks including roads, railways, water
Managing Restructuring in the Textile and Garment Subsector: Examples from Asia

supplies, power, sewerage, and so forth, is an essential ingredient of a successful strategy of industrial restructuring. A strongly held current perception stresses the importance of government not displacing efficient private initiatives in all areas of infrastructure provision, whether hardware or software.

Where public intervention is regarded as essential, care should be taken not to award inappropriate subsidies. Where true externalities are involved because of the non-appropriability of the benefits, as in research and development and training, some subsidies will be efficient, but even here increasing cost sharing should be aimed for over time.

In addition there will be a need to promote special institutions and mechanisms to promote the diffusion and use of technology, and also to improve market intelligence and competitiveness. Korea is an example where these institutions have been particularly effective. A number of public agencies offers technical extension services to local firms, particularly small- and medium-scale firms. The Korean Institute for Economics and Technology collects, processes, and disseminates scientific and technical information, and it publishes monthly periodicals covering various areas of engineering and new technology development. The Korean Productivity Center is a major organization promoting the adoption of micro electronics based factory automation and offers extensive training in the use of new technologies.

V. Background for Country Cases

The background to and objectives of domestic policies in textiles in developing countries have generally been different from those in industrial countries. The most important difference is related to the fact that instead of being regarded as declining or sunset industries, they have been considered growth industries, central to the development process. The mix of trade policies applied, not surprisingly, has varied from country to country and over time. By and large, countries concentrating on the domestic market have relied on measures to protect their textiles and clothing. The approach of countries engaged in export-oriented growth, in contrast, has been directed at reducing policy biases against exports. At the same time, reliance on domestic policies, investment incentives and subsidies, industrial estates, tax holidays, and so forth, varied greatly from country to country.

Often, however, the motivations behind the more general domestic policies have not been directly related to the competitive position of the textiles and clothing industries per se. Regional policies were meant to improve the geographical balance of the economy by promoting the development of backward or depressed regions. Social and manpower policies were aimed at improving welfare and employment conditions. Industry and technology policies pursued a variety of objectives, including the promotion and diffusion of new technologies and the strengthening of industrial and corporate structures.

Most developing countries have taken elaborate measures to protect and promote their textiles industries. High tariff walls, import license requirements, import prohibitions, and other nontariff and quantitative restrictions are just a few examples of the measures applied.

These tariff and trade restrictions have protected the local industries from foreign competition and provided local producers with the opportunity to
subsidize foreign sales with high-valued domestic sales. Thus, the high profits generated by domestic sales as a result of high levels of protection are used to offset the lower rates of profit from export sales. Because non-exporting textile and clothing companies have a profit advantage over companies that use the protected-market profits to subsidize exports, offsetting policies are called for, and protection may have to be complemented by an active policy of modernizing and restructuring the industry.

Thus some of the more advanced developing country exporters of textiles and clothing—motivated by actual or threatened difficulties in export markets and adverse wage cost developments—have tried to rationalize and downsize their industries while attempting to move upmarket in the range of goods offered. At a lower level of product and technological sophistication, other countries such as Thailand and Indonesia have promoted the development of clothing industries geared to exports by transforming imported yarns and fabrics. The instruments included export processing zones, investment incentives, and tax holidays. In contrast with some of the more advanced developing countries, however, there has not been an effective development of backward linkages into textiles or synthetic fibers.

In India, the textiles industry has a complex structure, ranging from cottage industries to large-scale establishments using modern equipment and technology. The India case study (chapter 5) presents an account of a highly regulated and sluggish textiles sector alongside an unregulated and thriving garments sector. Though India once dominated the world as an exporter of cotton yarn and clothing, it has now been overtaken by Korea and Hong Kong. Per capita availability of textiles since the late 1950s has remained virtually unchanged, there has been very little growth in employment, and much of the domestic discussion of the industry concerns the "sick mill" problem. These problems emerged fundamentally because of extensive, and often perverse, government intervention. Government intervention has been consistent with policy that has emphasized the government's responsibility for planned industrial development and regulation of the industry in the national interest. A complex system of incentives and restrictions has sought to guide investment into desired channels.

Indonesia (chapter 6) presents a case of a textiles industry that has benefited from macroeconomic and structural reforms that were aimed at establishing a more diverse and efficient economy. These policies were undertaken in response to the external shocks of the 1980s and included the maintaining of a competitive exchange rate through coordinated fiscal, monetary, and exchange rate policies; tariff reform and reduction; and the reduction of nontariff barriers and of export restrictions. In addition, measures have been taken to unencumber the regulatory framework, principally with a view to easing investment licensing requirements and encouraging foreign investors. The overall effect of these measures has been to expand nontraditional exports, of which textiles and garments have been notable performers. The industry was provided with very high effective protection, particularly for yarn, fiber, and cloth during the 1970s, with negative consequences for garment exports. In addition, the Indonesian government moved to establish an efficient system of duty drawback, rebate, and exemption facilities that were instrumental in enabling export firms to source their inputs
at international prices with a minimum of bureaucratic complication. These two sets of measures, exchange rate reform and trade reform, are credited with providing an essential boost to the growth of garment exports. There has also been a change in attitudes, in government as well as among businessmen:

...Business and government alike have become more internationally minded, the commercial support infrastructure required for a knowledge of international markets and export channels is vastly improved, and Indonesia—once viewed as simply a primary commodity exporter—is now slowly developing a reputation in international markets as a low-cost supplier of manufactures (Hill, chapter 6).

Korea has witnessed three distinct phases in government interventions in the industrial sector: (1) an early export expansion phase with numerous interventions to equalize incentives between imports and exports; (2) a strong import-substituting state in which interventions were designed to anticipate changes in comparative advantage, specifically to build up a heavy chemical and industry sector; and (3) the current regime that uses functional interventions to address specific malfunctions in what is essentially a market-driven process.

As Kim describes in chapter 7, the textile and garments industry in Korea is currently in transition, having lost comparative advantage in the labor-intensive segments and being commonly regarded as a sunset industry. Export growth has declined markedly since 1979, with the share in the principal overseas market (the United States) stagnant; its equipment aging; and the industry’s contribution to value added, employment, and exports declining in proportional terms. In response to the perceived crisis, the government’s adjustment strategy has focused on a variety of measures, including industry upgrading (through encouraging automation, research and development, and exit of less efficient firms), which has resulted in sharply increasing labor productivity and changes in the product mix.

VI. Concluding Observations on the Country Cases

The overall lesson to be drawn from these case studies is that stimulating investment through fiscal, monetary, tariff, and exchange rate policies is a necessary component of restructuring strategies. To judge by the experience of the East Asian NIEs and their emulators in Southeast Asia, restructuring and the promotion of exports will require—in addition to stable macroeconomic policies and the provision of infrastructure—the modification of incentive systems. In the countries that have successfully adjusted to outward orientation, this has involved the reduction or removal of the bias against exports through a reduction in effective protection and the rationalization of the structure of tariffs; the reduction of quantitative restrictions and import duties; the rationalization of bureaucratic processing of projects; support of financial markets, particularly in respect of funding of small and medium-size manufacturing ventures and the automatic supply of export credits for firms directly or indirectly involved in exports.

The East Asian experience served to emphasize the importance of both market forces and policies to support the acquisition of technical competence. Firms will need to mobilize adequate supplies of human capital of a specialized type, and the inevitable training bottleneck requires the attention that it has received, for example, in Korea and Singapore. Under the current
conditions of rapid changes in technological and market conditions, success will depend on quick reactions entailing proficiency in intelligence-gathering, marketing, product design, and technological absorptivity.

It will be too much to expect the developing countries to quickly build up the comprehensive system of institutional and support services that now exist in Korea, for example. However, exports of textiles will increasingly need to be aimed at specific markets, and it will be essential to establish mechanisms providing market feedback and information on domestic products to foreign buyers. These foreign buyers will demand consistent and superior quality standards, which will be achieved through gradual accretion, aided by such things as design schools, licensing, and foreign collaboration. (A summary of the discussions in this and the accompanying chapters is presented in appendix 1.1 in terms of a framework for the analysis and management of subsectoral industrial adjustment and restructuring.)
Appendix 1.1

Framework for the Analysis and Management of Subsectoral Industrial Adjustment and Restructuring

A. Background

What has been captured in this and the accompanying six chapters is a complex process of industrial change; adjustments and restructuring of the textiles and garments sector globally and in a number of Asian countries as a response to changes in comparative advantage or due to the use of policy interventions to directly alter the industrial structure. Why are countries concerned with industrial adjustment/restructuring problems? What factors induce adjustment or restructuring of industrial subsectors? What are the stages of the adjustment and restructuring process? How can countries manage the adjustment and restructuring process? The answers to these questions are not that straightforward: industrial change is a complex process and requires a multidisciplinary approach—including economics, business, sociology, and politics to analyze and manage the process. There is no single or most appropriate way to manage the adjustment and restructuring process: what is feasible will depend on the economic and political reality of the country concerned. To aid the process, we summarize below a functional framework that can act as a compass rather than a blueprint for industry subsector analysis and management in developing countries. We do this using the case of textiles and garments. We have used this framework in a number of seminars and workshops conducted by the Economic Development Institute of the World Bank to focus on industrial adjustment and restructuring issues faced by the policymakers and chief executive officers of enterprises. We start with a few definitions.

For ease of exposition, we define the industrial sector as being composed of many industrial subsectors (textiles and garments, electronics, footwear, and so on). Within each subsector there can be a number of subsector segments. In the case of the textiles and garments subsector, four segments can be identified: spinning, weaving, finishing, and garment making. In a number of chapters in this volume (chapters 2, 5, 6, and 7) the authors have used the term industry to include firms producing textiles and garments and proceed to describe the subsectors within the industry (weaving, spinning, and so on). There is no hard and fast rule as to which terminology is more appropriate. Much depends on the context within which the discussion takes place; we prefer to use the terms industry subsector (to refer to textiles and garments) and subsector segments (to refer to spinning, weaving, finishing, and garment making within the subsector).

B. Concern Over Industrial Adjustment and Restructuring

Why are countries concerned with industrial change in the textiles and garments subsector? There are two main reasons for this—external and internal. The external environment for industrial subsectors has changed dramatically. As described in this chapter and chapters 2 and 3, five clusters of change can be identified for the textiles and garments subsector (level one of annex 1.1): (a) the effects of the MFA; (b) trade and investment flows; (c) product and process
technological change (automation, integration of weaving and spinning, and so on); (d) changing composition of the international market (changing product composition, organization of marketing, and so on); and (e) offshore production (outward processing) by industrial countries. In addition to these industry specific factors, the global markets for the commodities of developing countries have taken a tumble leading to a long-term structural decline. Declining terms of trade and the consequent foreign financing through debt has exerted strong pressure on resource producing countries to increase manufactured exports and therefore modify their industrial structures (see Indonesia, chapter 6). Textiles and garments usually constitute a large part of their exports in the early stages of development (see Anderson, chapter 4), relying on low wage competition. There have also been internal reasons: change of economic systems (in the former socialist economies); restructuring of the state owned sector due to budget deficits (level two of annex 1.1); and the need for employment growth (see Indonesia, chapter 6). Therefore, the reasons for the adjustment and restructuring are increased competitiveness and efficiency; a reallocation of resources that will lead to sustained economic growth. This should then form the objective for positive industrial change: adjustment and restructuring for increased competitiveness, attained through increases in productivity (of labor and capital), changes in the composition of output, changes in the organization of the industry, and so forth. What needs to be understood is the fact that modernization is not enough for industrial change; the process is far more complex and requires a set of complementary actions. Analysis of the reasons for adjustment and restructuring and publicizing them in the media cannot be overemphasized if the process is to be understood and successfully implemented.

C. What to Adjust and Restructure? Subsector Diagnosis

What to adjust and restructure in a subsector depends on the structure of the subsector and the analysis of the factors that have caused industrial stress or uncompetitiveness within a particular country context. At this stage, the analysis of the subsector structure and its evolution becomes relevant (level three of annex 1.1). As industrial subsectors differ significantly in terms of products and processes, structural analysis is key. What factors determine subsector structure and its evolution? Here, industrial organization factors, that is, the technical and economic factors that affect the evolution of a particular subsector should be analyzed. Porter (1990) addresses these factors, which can be summarized as policy and non-policy related factors: (a) government policies affecting the functioning of the subsector (protection, tax breaks, capacity controls, licensing, and so on); (b) consumer demand and markets (domestic versus export market focus and implications for product quality); (c) suppliers and the influence they exert over the industry in terms of raw materials, technology, labor, finance, and so on; and (d) barriers to entry in terms of capital, technology, or skills.

The chapters in this volume elucidate these factors. First, starting with the technical factors, chapter 2 notes that the upstream segments of the industry (fiber and filament making, yarn making or spinning, and fabric making) have become technology and capital intensive, acting as barriers to entry, affecting scale and cost of production. On the other hand, in the downstream segment
MANAGING RESTRUCTURING IN THE TEXTILE AND GARMENT SUBSECTOR: EXAMPLES FROM ASIA

(garment manufacturing) such barriers to entry are lower, and labor intensity of production greater. These structural factors should be factored into the analysis, which must confront the scale, technology, and skill issues. Second, the pricing and availability of raw materials such as cotton and fiber (price controls, high indirect taxes, cotton prices, and so on, in the case of India, chapter 5) have generated problems for the subsector, constraining subsector competitiveness. Third, in terms of markets and consumer demand, the constraints imposed by the MFA have been referred to (and discussed in detail in chapter 3). Demand shifts make it necessary for the management of enterprises to change their product and market strategies. This may happen (Korea, chapter 7) or may not happen (India, chapter 5). Fourth, more important than the above two factors have been the policies that have affected the structure, evolution, and performance of the subsector in a number of countries: protection of synthetic fibers, entry and exit provisions, policies affecting size and location of plants, labor policies, and so on, that lead to declining productivity and competitiveness.

In addition to the analysis of the four factors above, we note two other factors that should be added to the list: physical and supporting infrastructure, and institutional support systems. Physical infrastructure constraints, especially telecommunications, power, and transport facilities have deleterious effects on the subsector, which now requires a quick response strategy to meet changes in consumer demand. Lack of supporting infrastructure in terms of appropriate skills, finishing, technological capability, and information lead to weak marketing and clustering of supporting industries. Problems with financial infrastructure (especially banking and prudential regulatory infrastructure) can often cause distress in both financial and industrial sectors.

The diagnosis should include the competitive positions of subsector segments and firms, causes of financial losses, and their size. The losses may result from some combination of macroeconomic shocks such as devaluation, inflation, cuts in fiscal expenditure, tariff changes or loss of markets, and microeconomic deficiencies and weaknesses such as poor management, inadequate distribution, obsolete technology, labor problems, or excessive indebtedness of firms. The exact causes are not always easy to identify and require considerable skill and resources to diagnose.

D. HOW TO ADJUST AND RESTRUCTURE? HOW TO MANAGE THE PROCESS?

Once the objectives of adjustment and restructuring are established and the analysis of the subsector and segments conducted, the next stage is the formulation of adjustment and restructuring strategies and action plans. This is perhaps the most difficult part of the adjustment and restructuring exercise. As countries differ in the severity of problems facing the subsector and differ in their institutional capabilities to implement policies, outcomes can differ significantly. Moreover, industrial adjustment and restructuring in growing economies would pose a different challenge than in countries that face stagnant growth prospects. The scope of restructuring of large subsectors would differ from restructuring small subsectors or when restructuring is needed in both the industrial and financial sectors. As we have mentioned earlier, there is no one
blueprint for this, but based on the experiences of developing countries, and particularly the three country cases described in this book, we provide a set of operations that can help direct the process.

**THREE LEVELS OF ACTIONS.** First, actions are needed at three levels: macro, subsector, and enterprise level. At the macroeconomic level, a sound and stable macroeconomic environment is vital. Restructuring and adjustment in the face of macroeconomic imbalances can cause further financial distress for firms.

Macroeconomic policies designed to provide a stable business environment, with exchange rates adjusted to maintain equilibrium between domestic and international prices, are essential, as are policies to promote competition through phased import liberalization, changes in regulations, and procedures to reduce domestic barriers to entry, exit, and expansion. Second, specific policies affecting the subsector, such as tariffs on textile inputs (cotton pricing and power in the case of India), technology restrictions, constraints to labor retrenchment, exit of firms, and so on, must be modified. Policies that led to policy induced structural weaknesses of segments (freeze on expansion on textile capacity) must be corrected. Third, at the enterprise level, having identified the problems, whether of a macroeconomic nature or due to microeconomic deficiencies at the firm or subsector level, a decision has to be made to limit the damage and minimize or prevent further losses. This may be achieved through appointing new management or strengthening management to impose financial discipline; deciding whether firms should be liquidated or rehabilitated, through the sale of assets, or a takeover by another enterprise, or privatized or divested in the case of public enterprises; or deciding whether personnel must retire or shift to another activity, location, or employer or be retrained. Activities that are the most obvious causes of losses should be stopped prior to a decision on the firms' final fate.

**SUPPORTING ACTIONS.** In addition to the above, two other areas should be included in the program. First, the easing of constraints to physical and supporting infrastructure should be phased in with the adjustment and restructuring process. The easing of supply constraints through private sector participation in the provision of physical infrastructure; the strengthening of the legal systems and prudential regulations (see Indonesia, chapter 6); and rationalizing and privatizing state agencies providing services to the subsector or firms, and amending policies that affect private provision of such services (in training, technology and information diffusion, and marketing) would help strengthen subsector clusters and interfirm linkages. Second, the adjustment and restructuring strategy should not neglect the focus on markets: the MFA, quota allocation system (see Indonesia, chapter 6); negotiating skills in securing market access; market diversification to non-MFA markets (Japan, Middle East, and so on); and upgrading product mix (quality) along the value chain through strategic alliances with foreign firms.
CONSENSUS AND COMMITMENT FROM STAKEHOLDERS. Having identified the series of actions needed in the program of adjustment and restructuring, the problem of building consensus for implementation from the stakeholders remains. Restructuring is quite skill intensive, and professional and technical teams will be required to introduce efficient production and competitive services and sound business practices. For restructuring efforts to be effective, a set of procedures needs to be followed, and this should have strong political support and consensus, especially concerning issues of labor retrenchment and the provision of a social safety net. Ideally, industrial adjustment and restructuring should be left to financial institutions and private sector agencies, with authorities providing a framework and incentives and the banking system providing the funding needed to rejuvenate the industrial units; but the state is inevitably drawn into the process due to distressed public enterprises, distressed financial institutions, or labor retrenchment from distressed firms. In the short run there may be no alternative to government-led workouts, yet the importance of providing financial institutions with the incentives to undertake these activities themselves cannot be overstressed. For these reasons it may be worthwhile at a broad level to establish a legal basis for adjustment and restructuring and public interest problems, including sharing of costs of restructuring (by shareholders, depositors, labor force, banks, firms, and the state), to be addressed in a manner sensitive to both efficiency and equity considerations. The private sector’s role in the planning and implementation stages should not be overlooked. The Korean case study (chapter 7) illustrates that the private sector through industry associations crafted a complementary strategy (automation, change in product mix to higher value added products, investing in design facilities, and so on) supporting the actions of the state (credit and tax preferences for adjustment, support for the textile machinery subsector and training, creation of a textile modernization fund, and so on). Most importantly, government intervention needs to have clear objectives and procedures to reduce its role in managing distress. Otherwise, governments risk becoming captive to a political process that directs more and more resources to loss making activities—bailing out banks and enterprises.

TIMING AND SEQUENCING OF ACTIONS. Generally, adjustment and restructuring call for a comprehensive and carefully sequenced effort over the medium to long term. The sequencing of actions and reforms is a complex one yielding few settled generalizations. At a practical level, much depends on the severity of the existing conditions and the particular institutional setup in individual countries. The issues include in which sequence and how fast to dismantle inefficient enterprises and rebuild profitability; if banks are also distressed, how they are to be recapitalized and strengthened; when to strengthen financial infrastructure; whether financial sector reforms should follow or precede real sector reforms, that is, whether price reform should come before enterprise reform; whether trade liberalization should come earlier or later; if financial reform should go hand in hand with enterprise reform or come earlier; and at the macroeconomic level, whether macroeconomic stabilization should precede sectoral reforms or be combined with them. Generally, four propositions have been derived from the experience of developing countries.
First, stabilization is a precondition for structural reform of the real and financial sectors, because macroeconomic instability reduces the efficacy of these reforms and because trade and financial reforms will have adverse macroeconomic consequences. Second, real sectors should be reformed before financial sectors; freeing the financial sector while the real sector continues to operate with distorted prices could significantly add to the volume of misdirected credit. (However, the depth of the distress may be too great to permit waiting for economic recovery to rescue banks, and their restructuring may have to go hand in hand with that of enterprises.) Third, in reforming the financial sector, liberalization of the domestic financial markets should precede liberalization of controls over external capital flows, otherwise there may be destabilizing outflows of foreign exchange. Finally, barriers to international trade should be removed prior to liberalization of the capital account. This is because opening the capital account can lead to capital inflows, which may result in a real appreciation of the exchange rate, with adverse consequences for the traded goods sector (textiles and garments in this instance). In any case, the strengthening of financial infrastructure can proceed prior to adjustment in the productive or financial sector.

The pace of reforms is linked to the initial state of the economy and affected enterprises, depth of the financial system, financial position of the private sector, the quality of information flows available to banks, the quality of prudential regulations over the financial system, as well as the credibility of policies. If the macroeconomic environment is unstable, institutional capacity for implementing policies is weak, bank supervision and business infrastructure are poor, and labor markets are rigid, reforms should be gradual. On the other hand, then, when the private sector is vibrant, macroeconomic dislocations and policy distortions are low, market infrastructure is sufficiently robust, and the capacity to design and implement policies and strategies is respectable, as in the Korean example (chapter 7), then the speed of reforms can be swift.

**IMPLEMENTATION, REVIEW, AND ADAPTATIONS.** The adjustment and restructuring strategy together with the action plan for the subsector must be implementable at the various levels, by the appointed work-out agents in the government or government agencies operating in concert with private sector organizations. Implementation is essentially a political process and involves interactions of politicians, government officials, and special interest groups. The issues that must be addressed and resolved include: (a) which agencies are responsible for implementation of the program; (b) what their capacity is (in terms of skill availability, organization, and resources) to implement reforms and actions; (c) how they will coordinate with other related agencies and the private sector at the national and regional level; (d) how the progress of the program will be monitored; (e) what the performance indicators should be for measuring progress toward objectives; and (f) how performance will be communicated to concerned parties and at what intervals. The answers to some of these questions will necessarily depend on the wider institutional issues covering the legal system, the character of the civil service, incentives, and so on, and these answers need to be contextually specific. The approach to industrial change described in the foregoing is grounded on the belief that as a
process, industrial change cannot be fully predicted in advance and as such must be adaptive, requiring modifications (see feedback arrows from implementation to subsectoral institutions, macro policies; from markets to international demand; and from sectoral to industrial and macro policies in annex 1.1).
Annex 1.1

SUBSECTOR ADJUSTMENT AND RESTRUCTURING FRAMEWORK

INTERNATIONAL ENVIRONMENT

MACRO POLICIES

SUBSECTOR DIAGNOSIS
(STRUCTURE & EVOLUTION)

INDUSTRIAL POLICY

SECTORAL POLICIES

SUBSECTOR SEGMEN TS

INFRASTRUCTURE AND INSTITUTIONS

MARKETS

FIRM ATTRIBUTES

ENTERPRISE RESTRUCTURING

FIRM

SUBSECTOR

STATE

STRATEGY/ACTIONS

TIMING AND SEQUENCING

IMPLEMENTATION
Endnotes

1. "Flying wild geese" is derived from a popular theme in classical Chinese and Japanese poetry; the inverse V-shaped growth curves that trace the sequence of import, domestic production, and export resemble the flying formation of migrating wild geese.

2. For a recent and very interesting exposition of just what it takes to attain "(dynamic) competitive advantage," see Porter (1990).

3. Promoting exports may require more than deregulation. Entering markets for industrial goods in industrial countries is a very different activity from selling domestically in developing countries, and a vigorous entrepreneurial group is needed to make the transition. The active interest of industrial country buyers, whether manufacturers or distributors, seems to be indispensable, at least in the early stages. Where there is no indigenous entrepreneurial group capable of developing new exports, the interest of buyers abroad would have to be accompanied by investment. Thus, export deregulation would need to be accompanied by vigorous attraction of potential customers, if not investors.

4. This section draws on "Textile Policy Issues of Developing Countries" (UNIDO 1989a).

5. In the case of the electronics subsector, for example, four segments according to major application areas can be defined: semiconductors, computers, consumer electronics, and telecommunications equipment. See B. Wellenius, A. Miller, and C. J. Dahlman (1993).


7. See Porter (1990) for an elaboration of this concept and box 2.8 in chapter 2 for an illustration.
2

CHANGING TRENDS IN GLOBAL TEXTILE TECHNOLOGY AND TRADE

Roy Pepper

and

Har Bhattacharya

I. Introduction

Throughout the 1980s, the World Bank has provided substantial support, approximately US$1 billion, to the textile and apparel industries in developing countries, through both direct investment projects and lines of credit to Development Financial Institutions (DFIs). The growth of the Bank’s portfolio, which is estimated to amount to about 5 percent of total global investments in the developing countries’ textile and apparel industries, has paralleled the growth of the textile and apparel industries in many developing countries. For such countries the industry has become a leading export earner since low labor costs have enabled them to make increasingly significant inroads into industrial country markets. However, on the one hand, increasing numbers of developing countries are trying to expand their sales in the textile industry—an industry that has been experiencing relatively low growth in global demand—while on the other hand, industrial countries are restructuring their own industries to control growth of textile and apparel imports. These contrary activities suggest that the Bank should evaluate carefully the prospects for further rapid development of the global textile industry and developing countries’ participation in it.

Therefore, in November 1986 the Bank circulated a paper entitled “The Textile Sector: A Development Strategy for the 1980s.” The paper, one of a series of studies designed to provide the Bank staff with a global overview of major industries, examined trends in global production, demand, and trade. It recommended development strategies for different groups of developing countries based on an analysis of factors determining competitiveness in the world textile industry. The paper was intended to provide Bank staff working on the textile industry with information and a perspective that would allow the design of realistic development strategies and action plans for individual developing countries.
The paper included a brief review of technological developments that had occurred in the previous two decades or so and identified some of the implications of these developments for developing countries. This chapter extends the earlier analyses and examines not only the technological changes in plant and equipment that affected scale and costs of production, but also marketing and other software developments that increasingly influence the responsiveness of producers and exporters to market developments. Section II traces the development in the textile and apparel industries in terms of production and consumption. In section III the recent technological developments in the textile industry are reviewed. The process of industrial adjustment of the sector in the industrial countries is the focus of section IV. The next three sections analyze the recent trends in textile and apparel trade; cross-country production participation; and marketing and distribution. Section VIII provides some concluding remarks.

II. Textile and Apparel Industries: An Overview

The textiles and apparel industry as a whole consists of four primary textile branches or industries: (a) fiber and filament making; (b) yarn making or spinning; (c) fabric making (weaving, knitting, and non-woven processing); and (d) household goods and industrial goods. This chapter deals mainly with the four primary textile branches and also looks briefly at clothing.1

Box 2.1: Contribution of Textiles and Clothing to Total Manufacturing Output, 1988

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Republic of Germany</td>
<td>4</td>
</tr>
<tr>
<td>United States</td>
<td>5</td>
</tr>
<tr>
<td>Japan</td>
<td>5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>6</td>
</tr>
<tr>
<td>Brazil</td>
<td>10</td>
</tr>
<tr>
<td>Mexico</td>
<td>11</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>15</td>
</tr>
<tr>
<td>Turkey</td>
<td>16</td>
</tr>
<tr>
<td>Tunisia</td>
<td>20</td>
</tr>
<tr>
<td>Greece</td>
<td>25</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>35</td>
</tr>
<tr>
<td>Pakistan</td>
<td>38</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>38</td>
</tr>
<tr>
<td>Mauritius</td>
<td>51</td>
</tr>
</tbody>
</table>


With textile goods considered a basic necessity of life, the textile complex is present in all countries of the world to satisfy this need. In fact, textile manufacturing has typically been one of the first operations in a country's process of industrialization. Compared to the developed economies, where the textile industry has diminished in importance, textile manufacturing is significant in the industrial sector in developing countries and contributes as
much as one-half of some countries' manufacturing output (see box 2.1). The textile industry is of particularly great significance for developing countries because it has high employment potential and can be set up relatively easily and with low investment.

The global textile industry is very large: in 1989 there were 165.6 million spindles; in 1987, 2.76 million looms. Because of extreme fragmentation and the widespread nature of the industry, it is difficult to provide reliable estimates of total global production of textiles and related employment. However, the size of the industry can be assessed from the fact that in 1988 the industry consumed 38 million tons of fibers, roughly equivalent to 180 billion meters of textile materials. A more reliable means of judging the size and relative importance of the industry would be to look at the textile and clothing industry's share of exports in total manufactured exports. Table 2.1 shows that the share of textile and clothing exports within total exports of manufactured goods was about 9.7 percent in 1988. More important, the table shows that developing countries' share of exports of textiles and clothing in their overall exports is relatively greater and of more significance than in industrial countries.

Table 2.1: Share of Textile and Clothing in Exports of Manufacturers (percent)

<table>
<thead>
<tr>
<th>Item</th>
<th>1963</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exports of</td>
<td>Manufactures</td>
</tr>
<tr>
<td>Share of textiles</td>
<td>7.8</td>
<td>8.4</td>
</tr>
<tr>
<td>Industrial countries</td>
<td>30.1</td>
<td>11.8</td>
</tr>
<tr>
<td>World</td>
<td>8.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Share of clothing</td>
<td>2.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Industrial countries</td>
<td>7.8</td>
<td>14.8</td>
</tr>
<tr>
<td>World</td>
<td>2.7</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Note: The share of textile and clothing in the exports of manufacturers excludes trade in petroleum.

Over the last 200 years developments in the textile industry have been so diversified that although the basic functions of each segment of the industry are similar in most countries, not all segments and characteristics are necessarily found across countries. Over time, the development of the textile industry has been in phases, with each country progressing as follows: (a) the first or the preliminary phase, which is characterized by cottage and/or very traditional production of simple goods for domestic use; (b) the second or the basic phase, which is marked by production of standard gray yarn and cloth for domestic consumption using early technology; (c) the third or the developing phase, which is characterized by a larger production size, use of intermediate-
level technology, and a more diversified product profile for the domestic market and the lower-end export market; (d) the fourth or the developed phase, which is characterized by the use of advanced technology, high capital intensity, export competitiveness, and so on; and (e) the final or declining phase, which is characterized by substantial downsizing of firms, production capacity, and employment. In fact, each country’s textile industry belongs—in full or in large part—to one of the above phases of development. A very generalized categorization of the present status of the textile industry for selected countries is given in box 2.2. It must be kept in mind, however, that a given country could have various segments within the textile sector in more than one phase of development. For example, India, Bangladesh, Indonesia, and so on, have various segments of the industry experiencing all phases of development. In the case of India or Pakistan, the cottage and hand loom sector belongs to the first phase, the power loom sector to the second phase, the cotton industrial sector to the third, the man-made fiber sector to the fourth phase, and the jute sector to the final or declining phase.

Box 2.2: A Generalized Categorization of Countries in Different Phases of Development

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Preliminary: Burma, Lao People’s Democratic Republic, and so on, and many countries of Africa</td>
</tr>
<tr>
<td>(b)</td>
<td>Basic: Malaysia, Philippines, Tanzania, Kenya, Nigeria, Egypt, and many countries of Latin America and Asia</td>
</tr>
<tr>
<td>(c)</td>
<td>Developing: India, Pakistan, China, Indonesia, Brazil, and Turkey</td>
</tr>
<tr>
<td>(d)</td>
<td>Developed: Italy, Korea, Taiwan (China)</td>
</tr>
<tr>
<td>(e)</td>
<td>Declining: Many Western European countries (United Kingdom, France, Sweden, and so on) and Japan</td>
</tr>
</tbody>
</table>

As a basic industry in both industrial and developing countries, the textile industry has attracted significant attention from governments, and its global operation is today heavily affected by government policies in trade and investment and by public involvement in textile production itself. In industrial countries, government involvement in the industry has generally been restricted to establishing trade policies, both on a unilateral basis and within the context of the Multi-Fibre Arrangement (MFA), and, with the exception of the United States, to supporting the restructuring of the domestic industry through protection and investment incentives. In many developing countries, and particularly socialist countries where all enterprises have been owned and managed by the state or its appointed representatives, government has been involved directly in textile production through public enterprises. Even where governments have not invested directly in production, they have generally pursued an active policy in favor of the industry because of its ability to absorb large amounts of relatively unskilled labor. It is noticeable that there has been a greater tendency for governments to establish public enterprises in textiles rather than in apparel production, generally for import substitution and employment reasons. In many developing countries, with the notable exception
Changing Trends in Global Textile Technology and Trade

of the newly industrializing economies (NIEs), this involvement has produced textile industries that have not kept pace with global developments in technology, production, marketing, and trade. Their textile industries now face the prospect of having to pass through a transitional stage, the difficulties of which are compounded by the need to restructure public enterprise production, ownership, and management.

A. Trends in Global Production and Consumption of Textiles and Apparel

Production of textiles and apparel has invariably been one of the first manufacturing industries established in all countries, since it provides one of the basic necessities of life. In the last fifty years, consumption of textiles and apparel worldwide, measured in terms of volume of fibers consumed, has grown at approximately 4 percent per year, approximately the same as global GNP in real terms. However, since 1973 there has been a deceleration in the growth of consumption to about 2.5 percent per year, associated with the slowdown in world economic growth and consumer expenditure. However, this relatively modest growth has been overshadowed by the rapid globalization of the industry and the growth of world trade in textiles and apparel. This has been particularly true in the last couple of years, as the growth rate of apparel exports has exceeded 10 percent per year after averaging about 5 percent for the early part of the decade. The deceleration in the rate of growth of fiber consumption has also been mitigated by the tendency for the retail value of each kilogram of fiber to increase. This is because the part of the industry producing higher value added textiles and apparel has increased relatively rapidly.

Box 2.3: Per Capita Fiber Consumption in Selected Areas, 1987 (kilotrams)

<table>
<thead>
<tr>
<th>All fibers</th>
<th>United States</th>
<th>European Economic Community</th>
<th>Japan</th>
<th>U.S.S.R. and Eastern Europe</th>
<th>Africa</th>
<th>Latin America</th>
<th>East and Southeast Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>All fibers</td>
<td>23.8</td>
<td>16.8</td>
<td>16.5</td>
<td>15.7</td>
<td>1.9</td>
<td>5.6</td>
<td>3.2</td>
</tr>
</tbody>
</table>


By 1989, total global production and consumption of all fibers reached 38 million metric tonnes (mmt), equivalent to 7.1 kilograms per capita; average consumption in industrial economies in the same year was about 16.6 kilograms per capita, compared with 5.1 kilograms in developing countries (per capita consumption of fibers for a few selected areas/countries is given in box 2.3). Over the last two decades, the highest rates of consumption growth have been in the developing countries; this reflects the fact that their population growth has been higher than in industrial countries and that the income elasticity of
demand for textiles and garments tends to exceed unity at low income levels and
to fall below unity at the income levels found in industrial countries. There
have also been major structural changes in fiber consumption in the past thirty
years, with man-made fiber (MMF) accounting for most of the growth. The
proportion of MMF consumption in total fiber consumption increased from 17.9
percent in 1950 to 47.4 percent in 1980; subsequently, due chiefly to a resurgence
of cotton use in denim jeans and in some luxury items, the MMF proportion has
stabilized at around 46 percent. At the same time, newer synthetic fibers
(polyamide, acrylics, olefin, and polyester), practically unknown before 1960,
have steadily replaced cellulosic fibers and now account for over 80 percent of
MMF consumption.

Growth of textile and apparel consumption has been accompanied by
significant changes in textile and apparel industries’ capacity and production
on a worldwide basis. Globally, the number of spindles increased from 126
million in 1960 to 161.9 million in 1980 and an estimated 165.6 million in 1989,
while the number of looms decreased from 2.6 million in 1960 to a little more
than 1.9 million in 1980 before rising again to 2.76 million in 1987. In both cases,
as explained in greater detail later in this chapter, the numerical expansions
underestimate the effective increase in production capacity, because unit
productivity of spindles and looms has increased considerably over this period.

Global production of textiles and apparel, measured in volume terms,
increased at an annual average of approximately 3.3 percent per year between
1960 and 1989. As might be expected, the slowdown already mentioned during
the 1970s and 1980s in the consumption of fibers was paralleled by a slowdown
in production of textiles, with higher growth (4.5 percent per year) experienced
before 1973 and lower growth (about 2 percent per year) since then.

Overall global growth in textiles and apparel has been accompanied by
very significant shifts in capacity and production among individual countries.
This reflects the growing importance of developing countries in the production
process and the fact that there is an increasingly specialized global market,
with a number of important producers gearing their investment and production
explicitly to exporting and to particular market niches. Because of higher
income and purchasing capacity in the industrial countries, and a relatively
higher discretionary share of consumer expenditure for textiles and clothing
(see box 2.4), the bulk of the global market for textiles and garments continues to
remain concentrated in industrial countries, while the production base has
shifted significantly from industrial countries to developing countries. Since
1960 the European Economic Community has closed more than half of its textile
and apparel industry, and substantial capacity has also disappeared in the
United States and Japan. Capacity in Asia has more than doubled over the
same period, with a small number of countries (India, China, Taiwan [China],
Indonesia, Hong Kong, and Korea) growing the most rapidly. In recent years,
other areas, such as the Caribbean, have begun to develop apparel
manufacturing as U.S. clothing manufacturers look for lower-wage locations.

It is important to note that the shifts in location of production represent two
separate developments: first, the elimination of particular companies in
industrial countries, and second, survival of companies through relocating
production capacity in countries with lower wages. The United States is a case
in point. While many companies that were unable or unwilling to relocate
capacity and unable to increase productivity sufficiently to offset high wages went out of business, some large manufacturers invested in plants overseas. A particular example is the Levi Strauss Co., which established major apparel manufacturing facilities in Hong Kong, Mexico, Belgium, and Scotland in the latter part of the 1960s. Similarly, several textile manufacturers have made investments abroad; for example, Burlington Industries now operates fourteen plants in six countries, and United Merchants has thirteen plants in three countries. The net impact of these developments has been a severe decline in textile (and apparel) employment in industrial countries. Between 1963 and 1983 the level of employment declined by 50 to 60 percent on average in Western Europe.

Box 2.4: Textile Consumption in Selected Countries, 1986

<table>
<thead>
<tr>
<th>Share of clothing in total consumer expenditure</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>8.7</td>
</tr>
<tr>
<td>Canada</td>
<td>9.4</td>
</tr>
<tr>
<td>Japan</td>
<td>6.6</td>
</tr>
<tr>
<td>European Economic Community</td>
<td>7.0–9.0</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>4.7–5.5</td>
</tr>
<tr>
<td>Latin America</td>
<td>5.5</td>
</tr>
<tr>
<td>Africa</td>
<td>2.8</td>
</tr>
</tbody>
</table>


These shifts of productive capacity toward developing countries have led to greater international specialization. Industrial economies that retain a textile and garment industry increasingly concentrate on capital- and technology-intensive primary textiles (although there has also been some shift in the share of capacity in this part of the industry toward developing countries, mainly the NICs) and fashion textile products. This is because marketing and design sophistication, along with geographic proximity to major markets, gives advantages even to high-wage producers. The developing countries have taken over much of the global market for apparel; in some cases they have emerged as subcontractors of firms from industrial economies looking for low-cost production capacity, but in recent years they have produced increasingly on their own. They have been able to take advantage of their low labor costs in what remains a labor-intensive activity.

This international specialization has resulted in world trade in textiles and garments expanding considerably faster than production; between 1960 and 1973, world trade in textiles and apparel expanded at about 12 percent per year and since then growth has been about 5 percent per year in real terms. World trade in textiles increased from US$4.7 billion in 1962 to US$66.2 billion in 1988, and growth of trade in garments was even faster, increasing from US$0.8 million to US$61.8 billion. The pattern of world trade has also changed; by 1988 the developing countries accounted for 35 percent of world exports of textiles and 56 percent of garments compared with only 15 percent and 10 percent, respectively, in 1955. This has been in spite of efforts by industrial
countries to slow down the penetration of their markets by cheaper products from developing countries.

B. Global Fiber Production

Global trends in major fibers production are shown in table 2.2. The table presents information on the four major fibers. It therefore excludes silk, the global output of which amounted to only 86,000 tons in 1986, although it is an important raw material for high-value apparel. The table also excludes the natural "hard" fibers, jute, sisal, and ramie, which together contribute less than 1 percent of the global fiber requirement in textiles and apparel.7

Table 2.2: Estimated World Production of Major Fibers

<table>
<thead>
<tr>
<th>Year</th>
<th>Cotton fiber</th>
<th>Wool</th>
<th>Man-made fibers</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Synthetic</td>
<td>Cellulosic</td>
</tr>
<tr>
<td>1900</td>
<td>3,162</td>
<td>730</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1940</td>
<td>6,907</td>
<td>1,134</td>
<td>-</td>
<td>1,127</td>
</tr>
<tr>
<td>1950</td>
<td>6,647</td>
<td>1,057</td>
<td>69</td>
<td>1,608</td>
</tr>
<tr>
<td>1960</td>
<td>10,113</td>
<td>1,463</td>
<td>702</td>
<td>2,656</td>
</tr>
<tr>
<td>1970</td>
<td>11,784</td>
<td>1,602</td>
<td>4,814</td>
<td>3,578</td>
</tr>
<tr>
<td>1980</td>
<td>14,228</td>
<td>1,608</td>
<td>10,682</td>
<td>3,554</td>
</tr>
<tr>
<td>1987</td>
<td>17,296</td>
<td>1,612</td>
<td>13,758</td>
<td>2,549</td>
</tr>
<tr>
<td>1989</td>
<td>18,733</td>
<td>1,933</td>
<td>14,717</td>
<td>1,946</td>
</tr>
</tbody>
</table>

Note: — indicates not available

Sources: Textile Organon, June 1990, and International Wool Secretariat.

As the table shows, there has been an acceleration in the growth of production and consumption of major fibers since 1950. Fiber consumption between 1950 and 1980 increased threefold, twice as fast on an annual basis as in the previous fifty years.

The growth in fiber production and consumption has been accompanied by significant shifts in the relative importance of different fibers and particularly by the rapid growth of synthetic fibers. Table 2.3 shows the evolution of the share of different fibers during this century.

Table 2.3: Share of Fibers by Type

<table>
<thead>
<tr>
<th>Year</th>
<th>Cotton</th>
<th>Wool</th>
<th>Cellulosic</th>
<th>Synthetics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>81.2</td>
<td>18.7</td>
<td>0.1</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>1940</td>
<td>75.3</td>
<td>12.4</td>
<td>12.3</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>1960</td>
<td>67.7</td>
<td>9.8</td>
<td>17.8</td>
<td>4.7</td>
<td>100</td>
</tr>
<tr>
<td>1970</td>
<td>54.1</td>
<td>7.3</td>
<td>16.5</td>
<td>22.1</td>
<td>100</td>
</tr>
<tr>
<td>1980</td>
<td>47.3</td>
<td>5.3</td>
<td>11.8</td>
<td>35.6</td>
<td>100</td>
</tr>
<tr>
<td>1987</td>
<td>49.1</td>
<td>4.6</td>
<td>7.2</td>
<td>39.1</td>
<td>100</td>
</tr>
<tr>
<td>1989</td>
<td>50.2</td>
<td>5.2</td>
<td>5.4</td>
<td>39.2</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Derived from table 2.1.
Cotton and wool, which were virtually the only fibers used in textiles in the early part of the century, have lost their predominance, particularly in the last two decades, as the use of MMF has increased. Although production and consumption of cotton has continued to increase, its percentage share in total fiber fell to under 50 percent for the first time in 1975, and since then it has more or less stabilized around 50 percent. Wool consumption rose gradually until 1970 and since then has stabilized, but its share has fallen continually and now amounts to less than 5 percent of total fiber consumption. This consumption now represents largely fine wool products, which have been resistant to competition from acrylics, and this market category is likely to remain dominated by pure wool. Today, MMFs constitute just under half of total fiber use. Within MMFs, there have also been important changes in the share of various products; the use of cellulosic fibers, which were the earliest MMFs, has declined since 1960 as new synthetic fibers have been introduced.

Substitution among different MMFs has been determined largely by fiber suitability for specific end uses. The major characteristics of different MMFs commonly used in the textile industry are summarized in box 2.5.

**Box 2.5: Principal End Uses of Man-Made Fibers**

<table>
<thead>
<tr>
<th>Fiber type</th>
<th>Major end uses</th>
<th>Basis for end use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyester</td>
<td>Trouser, skirts, bed, Linen, net curtain</td>
<td>• Improve wear, handling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Light resistance</td>
</tr>
<tr>
<td>Nylon</td>
<td>Carpet, pile, Women’s hosiery, Tire yarn, Weatherproof outerwear</td>
<td>• Durability, bulk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strength, elasticity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Durability, tenacity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Luster, durability</td>
</tr>
<tr>
<td>Viscose rayon</td>
<td>Linings, lingerie, Sanitary and medical Disposables, filter Cloths, underwear Tire cords</td>
<td>• Luster, handling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absorbency, comfort</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>Carpet backing and pile, Ropes, cords, sack Cloth, Geo-textiles Upholstery</td>
<td>• Strength, durability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strength, low weight</td>
</tr>
<tr>
<td>Acrylic</td>
<td>Knitwear, handknitting yarn</td>
<td>• Chemical resistance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Light resistance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Texture, bulk, heat retention, ease of care</td>
</tr>
</tbody>
</table>

Cellulosic fibers, which found wide acceptance in a variety of applications in the 1960s, have now been displaced to a large extent by synthetic fibers with
superior processing and performance characteristics. Similarly, nylon, the
oldest of the synthetic fibers, has also been displaced from certain apparel and
home-furnishing applications by polyester fiber. Nylon continues to account for
an ever smaller share in consumption of synthetics, and much of nylon
consumption is now for household goods such as carpets. It has been replaced in
clothing mainly because of its low breathability and its tendency to irritate the
skin. For industrial uses, such as tires, fishing nets, and industrial belts, nylon
remains an attractive material because of its elasticity, stress recovery,
resilience, strength, and abrasion resistance.

For the three main types of synthetic fibers (nylon, polyester, and acrylic),
the most important recent trend has been the increasing share of polyester
staple and filament, which now provide more than half of the world total
synthetic fiber. Polyester is increasingly preferred because it can be blended
with cotton for use in dresses, shirts, and trousers and because it exhibits high
tensile strength, durability, and abrasion resistance. A combination of polyester
and cotton, in varying proportions but most commonly 50/50 or 67/33, provides
good wearability and combines the comfort of cotton and the crease-resistant
properties of polyester. Polyester is also well established in household and
industrial uses. Acrylic and nylon have experienced a corresponding reduction in
their share, although acrylic fiber has almost held its own, particularly as a
low-cost substitute for wool in the knitwear industry; its resistance to shrinkage
is an advantage.

Within these global production growth rates, there has been considerable
change in the distribution of production by country. For example, in the case of
cotton, production in the United States in the last thirty years has stagnated at
around 3.3 million tons. As a result, the U.S. world market share fell from about
37 percent in the early 1950s to about 17 percent in 1987. Other traditional
producers, such as Egypt, Mexico, and Sudan, have also lost market share in the
past decades. The countries increasing their share of global production have
been chiefly China, now the largest producer and consumer in the world, the
former Soviet Union, and Pakistan, with smaller but significant increases in
India, Turkey, and some Latin American producers, notably Nicaragua, El
Salvador, Argentina, and Brazil.

In the case of wool, Australia, the former Soviet Union, and New Zealand
are the major producers, among them providing about 60 percent of world
production of raw wool, particularly for fine wools (Merino). As with cotton,
the United States has lost a significant share of the market; today its share is
only 2 percent, compared to 12 percent in the 1930s. In addition to the primary
producers, there are several countries producing small amounts. The major
newcomers are some Eastern European countries and China; the latter’s share of
global production reached approximately 28 percent in the 1980s, compared to
only 8 percent in the 1930s.

There has been a major shift in location for production of silk, away from
Japan, which supplied more than 80 percent of global output in the 1930s, to
China, which now supplies approximately 60 percent, and India, which equals
Japan’s current share of 13 percent.

There have also been significant changes in the location of production for
MMF during the last two decades. In particular, developing and Eastern
European countries have greatly expanded their share of world production,
while the shares of Western Europe and Japan have shrunk gradually. For much of the period, the United States more or less held its place but has lost a large part of its share since 1980. The global distribution of MMF production capacity for 1989 is represented in figure 2.1.

Figure 2.1: Global Capacity—Man-Made Fiber, 1989.

The major gainers within the developing country and Eastern Europe group have been Korea and Taiwan (China). There was an investment boom in MMF during the late 1960s and early 1970s in both industrial and developing countries, which led to surplus capacity after 1973 once domestic demand growth slowed. The search for markets led to man-made fibers becoming internationally traded commodities and to intense pressure on prices and costs, which more traditional producers in Western Europe had difficulty responding to.

The production cutbacks and restructuring strategies in the MMF industry (discussed below) in Western Europe did succeed, to some extent, in improving the health of the MMF industry as a whole and its ability to meet external competition. However, despite restructuring and associated labor-shedding (employment trends in the MMF industry for the United States, Western Europe, and Japan in relation to Korea are reflected in figure 2.2), the average labor productivity of Western European plants continues to be considerably lower than that of plants in the United States, Japan, Korea, and Taiwan (China) and has been increasing more slowly; see figure 2.3. Unless the industry improves its performance radically in the next few years, further capacity reductions in European plants may be expected in the future.

C. Global Trends in Spinning and Weaving Capacity and Production

Just as the location of production of fibers for textile and apparel products has undergone considerable change over the past decades, so has the scale and location of use of fibers changed. This reflects shifts in industrial comparative advantage as developing countries began their industrialization, as well as the desire of some countries to develop integrated textile and apparel industries.
The industrial countries' share of fiber consumption has shrunk in the face of faster growth of textiles consumption in developing countries and Eastern Europe. This section examines the development of the spinning, weaving, and dyeing and finishing industries on a global scale.

Figure 2.2: Employment in the Man-Made Fiber Industry

Figure 2.3: Annual Production/Employee (Man-Made Fiber Plant)

Note: Numbers in legend indicate the percentage of annual increase.

**SPINNING.** The number of spindles worldwide increased from 126 million in 1960 to 161.9 million in 1980, and to 165.6 million in 1989. The most important expansions occurred in the Asian NIEs and in developing economies, notably Korea, Taiwan (China), India, Indonesia, and Pakistan, and in Eastern Europe,
while the United States, Western Europe, and Japan experienced substantial declines.

Table 2.4 illustrates the major reduction over the past two decades in spindle capacity in the United States and in particular countries of Western Europe.

In contrast, sharp increases in production capacities during this same period occurred in several Asian countries. Although Korea experienced the largest growth rate, the countries experiencing the largest absolute increases in number of spindles were China and India, which between them now have a third of the world total of spindles. Table 2.5 shows the capacity expansion for selected Asian countries where growth in the past twenty years has been notable. It is of interest that the 1970s was the period of most rapid expansion for China, Taiwan (China), and Korea, whereas it was the 1980s for India and Pakistan.

Table 2.4: Spinning Capacity Reduction in Selected Countries

<table>
<thead>
<tr>
<th>Year</th>
<th>F.R.G.</th>
<th>U.K.</th>
<th>France</th>
<th>Italy</th>
<th>U.S.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>3,854</td>
<td>2,678</td>
<td>3,352</td>
<td>6,843</td>
<td>18,606</td>
</tr>
<tr>
<td>1980</td>
<td>2,577</td>
<td>1,860</td>
<td>2,315</td>
<td>6,360</td>
<td>17,063</td>
</tr>
<tr>
<td>1984</td>
<td>2,473</td>
<td>1,633</td>
<td>1,910</td>
<td>6,155</td>
<td>15,089</td>
</tr>
<tr>
<td>1987</td>
<td>2,354</td>
<td>1,348</td>
<td>1,552</td>
<td>5,784</td>
<td>12,359</td>
</tr>
</tbody>
</table>

Percentage reduction
(1970-87) 39 50 46 16 29

Note: F.R.G. indicates Federal Republic of Germany

However, the raw figures for the number of spindles are not very accurate measures of yarn producing capacities, since they comprise data on spinning technologies of different kinds of generations. In the early 1970s, when open-end spinning technology, a state-of-the-art system for yarn manufacturing, was first put into commercial use, most industrial and Eastern European countries adopted the technology quickly because of its labor-saving characteristics and higher productivity. However, adoption of the technology in Asian NIEs and in developing countries has been relatively slow, primarily because the labor cost savings in relatively low-wage countries have been insufficient to offset higher capital costs and increased power requirements.

A more realistic estimate of yarn spinning capacity is, therefore, obtained by converting the open-end capacities to "conventional spindles." Using the assumption that open-end capacities are 2.5 times more productive than conventional spindles, the adjusted global distribution of spinning capacities at the end of 1987, in spindle terms, can be represented by figure 2.4.

The overwhelmingly high concentration of open-end rotors in Eastern Europe should not be taken to mean that Eastern Europe enjoys a superior technological
Managing Restructuring in the Textile and Garment Subsector: Examples from Asia

The open-end equipment produced and installed in Eastern Europe generally lacks the technological sophistication and productivity potential found in the German and Swiss open-end equipment more usually installed in Western Europe. Similarly, the fact that 50 percent of global spindle capacity is located in Asia, with 40 percent in China and India alone, should not be taken as an indication that half the world’s productive capacity is concentrated in Asia. In terms of productive capabilities, a significant share of installed spindles in China and India is run-down and technologically backward. However, much of that backwardness is offset by operating plants for more spindle-hours per week compared to Western European plants. Typically, plants in Korea and India operate forty-nine hours per week, compared to forty hours in the Federal Republic of Germany (FRG), the United Kingdom, and France.

Table 2.5: Capacity Expansion in Selected Asian Countries

<table>
<thead>
<tr>
<th>Year</th>
<th>Korea</th>
<th>Taiwan (China)</th>
<th>India</th>
<th>Pakistan</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>1,540</td>
<td>2,552</td>
<td>18,857</td>
<td>3,403</td>
<td>18,000</td>
</tr>
<tr>
<td>1980</td>
<td>4,111</td>
<td>3,459</td>
<td>21,037</td>
<td>3,847</td>
<td>25,588</td>
</tr>
<tr>
<td>1984</td>
<td>4,310</td>
<td>3,812</td>
<td>24,906</td>
<td>4,299</td>
<td>23,100</td>
</tr>
<tr>
<td>1987</td>
<td>4,514</td>
<td>3,955</td>
<td>26,814</td>
<td>4,346</td>
<td>27,800</td>
</tr>
</tbody>
</table>

Percentage Reduction

(1970–87) 193 56 42 27 54


The four largest producers of cotton yarns between 1970 and 1987, in order of importance, were China, the former Soviet Union, India, and the United States. Since 1970, production in the first three has increased significantly as a result of domestic demand growth (all remain today insignificant exporters of yarn). Only the United States, in common with most other industrial country producers, has reduced production, although the restructuring of its industry resulted in renewed growth during the 1980s. The most rapid increases in production have occurred in East Asia, Pakistan, India, and Turkey. For China and India, rapid growth on an already large base has increased their share of world output.

Although none of the other rapidly growing countries has expanded output sufficiently to challenge the predominance of the four largest producers, some have become very significant in the world trade in yarn. The leading exporters of cotton yarn are Pakistan, Turkey, Brazil, Greece, and the Federal Republic of Germany. The Federal Republic of Germany is also the major importer of yarn, followed by Japan, about 90 percent of whose yarn imports are supplied currently by Pakistan.
WEAVING. The global number of looms (the final point of conversion of yarn to unfinished fabric) rose from 2.6 million in 1960 to 2.86 million in 1974, followed by a reduction in number to 1.9 million in 1980, and then a renewed increase to 2.76 million in 1987. As with spindles, the capacity changes in weaving were characterized by a major expansion in Asia and the Eastern European countries and a sharp decline in the United States, Canada, and Western Europe.

The decline in loomage capacity in most industrial countries can be seen more clearly from table 2.6.

Table 2.6: Capacity Decline in Looms in Selected Industrial Countries

<table>
<thead>
<tr>
<th>Year</th>
<th>F.R.G</th>
<th>U.K.</th>
<th>France</th>
<th>Italy</th>
<th>Japan</th>
<th>U.S.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>44.9</td>
<td>52.7</td>
<td>49.9</td>
<td>60.9</td>
<td>357.7</td>
<td>314.5</td>
</tr>
<tr>
<td>1980</td>
<td>37.1</td>
<td>28.1</td>
<td>37.1</td>
<td>47.2</td>
<td>282.0</td>
<td>233.6</td>
</tr>
<tr>
<td>1987</td>
<td>27.5</td>
<td>17.7</td>
<td>28.4</td>
<td>40.2</td>
<td>218.9</td>
<td>140.0</td>
</tr>
</tbody>
</table>

Percentage reduction

(1970–87) 38 66 43 34 38 55

Note: F.R.G. indicates Federal Republic of Germany

As in the case of spinning, Asian countries, notably Korea and Taiwan (China), enjoyed a prodigious growth of weaving capacity during the past two decades. In Latin American and African countries, capacity expansions were modest.
Managing Restructuring in the Textile and Garment Subsector: Examples from Asia

The tables on capacity changes in both industrial and developing countries conceal a significant upgrading of technological standards and unit productivity levels in the weaving subsector. Weaving technology underwent considerable change in the last two decades: constraints inherent in the earlier generations of shuttle looms, such as restricted fabric-width and low operating speeds, were largely overcome with the development of shuttleless looms. These technologically updated looms provided possibilities for weaving fabric widths up to 150 inches, compared to a maximum of about 72 inches on shuttle looms, and for achieving 2.5 to three times the output of shuttle looms. One reason for the overall decline in the number of looms in industrial countries has been the replacement of shuttle looms by shuttleless looms. Developing countries have also installed shuttleless looms, although at a slower rate than industrial countries.8

In the case of spinning, the high share of more technologically advanced looms installed in Eastern European countries does not necessarily reflect technological superiority. East European shuttleless looms are generally characterized by a relatively low level of sophistication and operating capabilities. They mainly represent early versions of the technology. The coexistence of different technologies in weaving makes it more useful to convert the basic data on the number of looms into a common unit to express more accurately the global distribution of productive capacity. Using the shuttle loom as the common denominator and assuming that average productivity for shuttleless looms is 2.5 times that of a shuttle loom, the breakdown of global capacities in terms of equivalent shuttle looms can be calculated, as shown in figure 2.5.

Figure 2.5: Global Weaving Capacity

III. Technological Developments in the Textile Industry

As with other well-established industries, such as steel and fertilizers, the rising costs of labor and inputs in industrial economies provided an opportunity for the developing economies. They had started textile and apparel industries...
to meet rapidly increasing domestic demand, but soon took advantage of their own lower rates to enter the export market. It was in the 1960s that the globalization of the textile and apparel industry and the relocation of production facilities began. At the same time, this increased pressure on producers in industrial countries stimulated them to make technical innovations, which resulted in a trend toward the use of more sophisticated and faster automated equipment.

Thus, over the past three decades, important developments have occurred at all stages of yarn formation, mainly for saving labor. In addition, increased use of MMFs and MMF/cotton blends have allowed simplification of the traditional yarn production process, which was developed originally for a variety of cotton fibers of different qualities. However, the main focus of technological progress has been the final spinning process. This was revolutionized by the introduction of “roto” or “open-end” spinning in the early 1960s. Open-end spinning technology offers considerable savings in labor and raw materials, although at the cost of greater capital and energy intensity. The continuing search for technologies has also led to many other developments besides open-end technology. Most of these are at an initial stage of development and have yet to be commercially adopted. The most important of the recent developments are friction spinning (also known as DREF spinning) and air-jet spinning.

The main thrust of technological progress in weaving has been to increase weaving machine productivity and to reduce labor costs. The major innovation in this area has been the elimination of the bulky and friction-producing shuttle. This has been replaced by other methods of transferring weft yarn across the width of the loom. In the last thirty years, shuttleless weaving machines, operating on various non-shuttle principles, such as projectile, rapier (rigid or flexible), air jet, and water jet, have proliferated.

Unlike spinning and weaving, finishing process technology has not changed dramatically from the past. The major emphasis in finishing has been on automation, energy conservation, recycling of chemicals and waste water, and reduction in the length of the production cycle. In recent years, greater attention has been given in industrial countries to energy conservation and water usage in the finishing industries. The intricacies of modern finishing processes are such that relatively few developing countries are capable of exporting finished fabrics to industrial country markets (most of the exports from developing countries are so-called gray fabrics).

While technological progress has been rapid in the primary textile industry in the last thirty years, technological change in the clothing industry has been rather slow. The movement of the apparel industry from industrial countries to developing countries stems from the natural comparative advantage of labor-abundant and low-wage developing countries in a labor-intensive industry. Apparel production has proven difficult to mechanize, although some progress has been made in streamlining pre-assembly operations, that is, design, size grading, laying, and cutting. In particular, the introduction of computer-aided designing (CAD) and computer-aided manufacturing (CAM) can reduce the number of workers and the need for worker training. Nevertheless, the whole pre-assembly stage accounts for only 5 to 7 percent of the total costs of apparel
manufacture, so even if the introduction of a CAD/CAM system saves 50 percent of the pre-assembly costs, the effect on total costs is not significant.

IV. Process of Adjustment in the Industrial Countries

The MMF industry and the textile and clothing sectors in Western Europe and Japan underwent more dramatic adjustments through downsizing than did these sectors in the United States. Since 1971, total employment in the two sectors has declined by 50 percent to 60 percent in the Federal Republic of Germany, France, the United Kingdom, and the Netherlands, and by about one-third in Japan. In contrast, the United States is in a relatively more favorable tier with Italy, with employment cutbacks limited to the range of 15 to 20 percent.

Adjustment programs have been more systematic in Western Europe, particularly for the MMF industry, than in the United States. After a period of rapid growth and high profitability, the downturn that began in 1974 caught many firms off-guard. They had commissioned or planned capacity expansion on the assumption of continued high growth rates for their products. Large production units, planned years ahead in the expectation that demand would continue to grow at its historical rate, were still coming on-stream as late as 1977, as some firms persisted in believing the slowdown was only temporary. Western European producers responded to excess capacity partly by capacity shedding and partly by lower capacity utilization (typically 60 to 70 percent) across the industry.

Continuing heavy losses and fears that weaker MMF-producing firms were unlikely to be liquidated quickly led Western European manufacturers as a group to approach the EEC commission in 1977 with a request for intervention. They wanted the commission to prevent individual governments from assisting their national industries and to allow the formation of a cartel to oversee capacity reductions. This arrangement allowed the companies to share capacity reductions of approximately 400,000 tons (approximately 16 percent of European fiber production capacity in 1977) between 1977 and 1979. When further falls in demand threatened, a second capacity-reduction agreement was reached in 1982 between the EEC commission and the European companies. This provided for a further collective reduction of 500,000 tons of production capacity through closure of weaker businesses. This would allow companies to concentrate on their stronger products and cost-efficient plants. In the textile and clothing industry, the Federal Republic of Germany and Japan appear to have had the greatest success. The Japanese government adopted a program to cut back an industry that had accounted for one-fourth of manufacturing output and one-half of exports in 1950. Conversion to non-textile products, investments abroad, shifting of production to Asian developing countries, and so on, all contributed to Japan's relatively successful adjustment. In the Federal Republic of Germany adjustment occurred through such mechanisms as a shift to off-shore processing with relatively little government intervention. Government subsidy programs in the United Kingdom and France were costly but unsuccessful efforts to save employment. In Italy it was the dynamism of unaided small- and medium-size firms that, taking advantage of low-cost labor, invigorated the industry. The chief lessons of the adjustment experience in industrial countries can be summarized as follows:
While trade protection has lengthened the time available for adjustment and has maintained incomes in the textile sector, it has failed on two counts. It has not protected jobs in the industry, and it has been extremely costly. Trade protection has not prevented the industry from shedding labor and from relocating away from the regions that were supposed to be the beneficiaries of the protectionist measures. By weakening the incentives to upgrade, innovate, and invest, protection can become a problem rather than a solution in the long run.

Precisely those segments of the industry have prospered where protection was least needed or where a genuine comparative advantage existed. In Japan the knowledge-intensive segment of synthetic filament-based fibers and yarns has grown and prospered. In Italy and the Federal Republic of Germany, design and quality-oriented segments have prospered while the mass produced basic textile yarn segment, supposedly the chief beneficiary of protection and subsidies, has not regained competitiveness.

The high volume, standard product, mass market strategy has been a failure despite heavy automation. This is because of the quick diffusion of advanced technology to competitors and the continuing rise in labor costs. The large-scale vertically and horizontally integrated companies of the United Kingdom, France, and the former Federal Republic of Germany have been unsuccessful in achieving economic viability without government support. The large-scale units of the United States have done relatively better, but they would also not be competitive in a free trade environment.

Small-scale units, which have emphasized process flexibility, product diversity, and product quality, have been very successful. The most lucrative segment of the product market has been the high quality fashion and design-intensive segment. To be successful here, decentralization and specialization of production units have been useful, because this has allowed for flexibility to respond to fashion trend changes; for small batch production to meet the limited (and changing) consumer demand for high quality, high fashion products; and for emphasis to be directed toward craftsmanship.

V. Recent Trends in Textile and Apparel Trade

Today, total trade in textiles and apparel amounts to approximately US$128 billion, and it is growing rapidly; total trade is almost evenly divided between textiles and apparel, the former amounting to approximately US$66 billion and the latter to US$62 billion over the last three years. With the exception of Italy and the Federal Republic of Germany, all industrial economies have become larger net importers of textiles over the period, with the United States taking the lead, while a small group of developing countries (Korea, Taiwan [China], China, Hong Kong, and Turkey) have increased their standing as major net exporters. Since the middle of the 1980s, the Federal Republic of Germany has emerged as the single largest importer and exporter of textiles (both yarn and cloth), gradually reducing but not eliminating its deficit in textile trade. The Federal Republic of Germany has restructured its textile industry over the
past decade to increase the degree of specialization and to carve out a market niche at the high quality end of the market. It has eliminated most manufacturing at the lower end of the market in favor of outward processing and now depends largely on imports from developing countries to meet its demands for low value added products. Its production is concentrated at the high value added and high quality end of the market and is not threatened, at least for the time being, by competition from the NIEs. A similar pattern of restructuring and specialization is observed for Italy and Japan (both of whom have become the largest net exporters), Belgium, Netherlands, and Switzerland, which have all preserved a positive net export position while importing a substantial portion of their yarn and cloth requirements. On the other hand, the United States, United Kingdom, and France are primary examples of other industrial economies that have not been able to match their low-value textile imports by exports and have become net importers.

Among the developing economies, the NIEs, particularly Korea, Taiwan (China), and China have emerged as major exporters of low-to-medium value added textiles. This is now an intensely competitive segment of the global market, one in which many developing countries have been struggling for a share. Hong Kong is a large net importer of textiles from the developing countries, for reexport after finishing or for garment manufacturing; until recently, Hong Kong was not a significant producer of textiles, but in the last decade its output and exports of textiles have increased rapidly following the modernization and development of its spinning and weaving capacities. Similar developments, although on a somewhat smaller scale, have occurred in Taiwan (China) and Argentina. On the other hand, some developing economies (India, China, and Pakistan in particular) that were previously concentrating on gray yarn and cloth exports have recently entered into garment exporting with considerable success. Finally, there are many developing countries (such as Sri Lanka, Bangladesh, Mauritius, Tunisia, Morocco, Bahamas, Costa Rica) that because of low wage rates have attracted investment in garment manufacturing (often subsidiaries of companies in industrial countries). Generally speaking, these countries have not developed textile manufacturing capabilities and must import their yarn and cloth requirements.

World trade in textiles (and clothing) is heavily influenced by trade barriers in many industrial and developing countries. Many developing countries have high tariff barriers and import bans to protect domestic textile and apparel manufacturers; these enterprises frequently provide a significant share of industrial employment. In recent years several developing countries that have attempted to liberalize imports and to expose their industries to greater international competition have excluded the textile (and more so the apparel) industry from such reforms. They claim that such trade barriers can only be reduced as reciprocity for renegotiation or abolition of the most significant of the non-tariff barriers erected by industrial countries against textile and apparel imports, the Multi-Fibre Agreement (MFA). The MFA was signed in 1973 and renewed in 1977, 1982, and 1986, and is a legal framework within which countries agree to bilateral restraints on trade. Most major importers and exporters are signatories, except Japan, which protects its textile industry through the activities of trading houses, and Australia and New Zealand, both of which have high tariffs.
The impact of the MFA upon textile and apparel trade has been the subject of considerable speculation. Although it is generally argued that each renewal of the MFA has narrowed the access of developing country producers to industrial country markets, it remains true that significant changes in the pattern of trade have occurred nevertheless. The MFA has also provided an incentive for exporters to upgrade the quality and value added of their exports to maximize earnings from volume quotas, has stimulated exports in non-quota categories, and has also preserved the position of existing exporters from new, more competitive suppliers.

VI. Cross-Country Production Participation

One significant development in the global textile industry has been that production previously carried on in one country or even within one factory is increasingly being distributed to several production sites in different countries. This practice (off-shore production), which involves increased transshipment of intermediate products, is the outcome of a variety of factors: (a) the development of production capability in many developing countries; (b) country of origin regulations; (c) rapid shifts in comparative advantage; (d) increased scope for rapid and inexpensive international movement of goods; and (e) the existence of particular cost advantages in different locations. (Box 2.6 provides an illustration of the manufacturing cost comparison for cotton cloth among a few selected industrial and developing countries. A similar trend is seen for yarn.) In essence, some industrial country producers have chosen to improve their competitiveness by allocating different stages of production to different locations to take advantage of low-cost labor and services outside their main country of production. These developments have been complementary to efforts to regain competitiveness by investing in machinery and equipment in their own country, which greatly increases labor productivity. The increased interest of industrial country firms in this type of production-sharing offers opportunities for companies in developing countries to enter the world market and to become acquainted with modern technology and production processes.

Box 2.6: Comparison of Manufacturing Costs for Cotton Cloth

(US$ per yard)

<table>
<thead>
<tr>
<th></th>
<th>Brazil</th>
<th>F.R.G.</th>
<th>India</th>
<th>Japan</th>
<th>Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material</td>
<td>0.042</td>
<td>0.027</td>
<td>0.032</td>
<td>0.027</td>
<td>0.273</td>
</tr>
<tr>
<td></td>
<td>(29)</td>
<td>(23)</td>
<td>(30)</td>
<td>(26)</td>
<td>(38)</td>
</tr>
<tr>
<td>Labor</td>
<td>0.055</td>
<td>0.351</td>
<td>0.044</td>
<td>0.206</td>
<td>0.049</td>
</tr>
<tr>
<td></td>
<td>(7)</td>
<td>(30)</td>
<td>(6)</td>
<td>(20)</td>
<td>(7)</td>
</tr>
<tr>
<td>Power</td>
<td>0.017</td>
<td>0.010</td>
<td>0.090</td>
<td>0.120</td>
<td>0.098</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(8)</td>
<td>(11)</td>
<td>(11)</td>
<td>(9)</td>
</tr>
<tr>
<td>Capital</td>
<td>0.443</td>
<td>0.363</td>
<td>0.329</td>
<td>0.371</td>
<td>0.245</td>
</tr>
<tr>
<td></td>
<td>(53)</td>
<td>(31)</td>
<td>(42)</td>
<td>(35)</td>
<td>(34)</td>
</tr>
<tr>
<td>All others</td>
<td>0.078</td>
<td>0.090</td>
<td>0.089</td>
<td>0.089</td>
<td>0.090</td>
</tr>
<tr>
<td></td>
<td>(9)</td>
<td>(8)</td>
<td>(11)</td>
<td>(8)</td>
<td>(12)</td>
</tr>
<tr>
<td>Total Cost</td>
<td>0.835</td>
<td>1.175</td>
<td>0.784</td>
<td>1.056</td>
<td>0.725</td>
</tr>
</tbody>
</table>

Note: F.R.G. indicates Federal Republic of Germany.
Numbers in parentheses indicate percentage of total cost.

Companies that engage in offshore production have adopted several devices to promote it: (a) foreign direct investment; (b) licensing; and (c) subcontracting. Many transnational corporations are involved in more than one form of production participation.

Foreign Direct Investment (FDI) has been prominent in the man-made fiber sector. Initial investment patterns showed a marked concentration of FDI within the industrial countries of Western Europe and North America. Du Pont, for example, invested in subsidiaries or affiliate companies in Canada, Northern Ireland, Luxembourg, and so forth. Market access was also important where imports were either restricted or controlled, as in Brazil, India, Thailand, and Pakistan. Direct investments in these and other countries (Mexico, Colombia, and so on) by foreign companies marked the second phase of FDI, accompanied in part by divestment and withdrawal from developed markets (Du Pont, for example, closed plants in Northern Ireland and Canada). In textiles and clothing, in contrast, foreign direct investment by transnational companies has been limited. Japan has been the major exception: by 1986, Japanese investments in cotton mills accounted for 40 percent of cotton yarn capacity in Thailand, nearly 25 percent in Malaysia, and 17 percent in Indonesia. Although the clothing industry in industrial market economies and in several developing countries has increasingly become internationalized over the past two decades, direct investments have been limited. A few U.S. companies, led by Levi Strauss, have accounted for the bulk of foreign direct investment in the clothing sector.

Box 2.7: Forms of Cross-Country Production Participation

<table>
<thead>
<tr>
<th>Sector</th>
<th>Form of activity</th>
<th>Major principal countries</th>
<th>Major host countries</th>
<th>Influencing factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-made fiber</td>
<td>FDI</td>
<td>US, Japan</td>
<td>Mexico, Canada, Belgium</td>
<td>Expanding demand in host countries</td>
</tr>
<tr>
<td></td>
<td>Licensing</td>
<td>UK, FRG, France, Netherlands</td>
<td>India, Pakistan, Thailand, Korea</td>
<td>Market access in face of tariff barriers</td>
</tr>
<tr>
<td>Textile</td>
<td>FDI</td>
<td>Japan</td>
<td>Malaysia, Thailand, Indonesia, Sri Lanka, etc.</td>
<td>Host countries offer incentives, and assured market</td>
</tr>
<tr>
<td>Clothing</td>
<td>(i) subcontracting</td>
<td>US, Japan</td>
<td>S. Americas, Southeast Asia, East Europe, Mediterranean rim countries</td>
<td>Low labor costs</td>
</tr>
<tr>
<td></td>
<td>(ii) Licensing</td>
<td>US, UK</td>
<td>S. Americas, Southeast Asia</td>
<td>As above</td>
</tr>
</tbody>
</table>


Licensing has been more prominent in the man-made fiber sector and in luxury clothing, although there is some activity in branded textile products. In the MMF industry, licensing represents a complement to foreign direct investment. It has proved to be important for transnational corporations trying to maximize their returns from technology creation in the face of entry barriers in developing country markets. Its significance is expected to grow because of the commitment of a number of countries to develop at-home manufacturing capability to replace imported fibers. In clothing, licensing involves the use of brand names and trademarks. In many cases designers may license the rights to associate their name and label with items produced by domestic or foreign manufacturers; the use of such labels and trademarks is increasingly important from a marketing standpoint. Finally, developed country retailers have entered into non-equity arrangements for design, construction, and management of retail stores overseas; as part of the arrangements, the retailers' brands and trademarks may be licensed for manufacture and sale in the host countries.

Subcontracting involves a business relationship between two firms—a principal and a subcontractor—that are based in different countries. International subcontracting is more significant in the clothing industry than in any other sector except, perhaps, electronics. Typically, there are two types of subcontracting: (a) of the whole process; and (b) of a discrete process. Subcontracting of a whole process means that fabric or clothing is totally made abroad and brought in. Subcontracting of a single process takes the form of outward processing with, for example, yarn sent abroad for weaving and the finished fabric returned to the supplier. More common, however, is to send cut or uncut fabric to the supplier for garment making, and afterward the final product goes back to the supplier. The United States and the Federal Republic of Germany use this arrangement the most extensively. For the United States the main subcontracting countries are Mexico, Dominican Republic, Haiti, Bahamas, Costa Rica, Columbia, and so on. For the Federal Republic of Germany the major subcontracting links are with Eastern European countries, Malta, Turkey, Tunisia, and so on.

Box 2.7 provides a general picture of some of the important cross-country production links for the fibers, textiles, and clothing sectors between companies in the principal countries and companies in the host countries.

VII. Marketing and Distribution

This section deals briefly with the value added in the chain of processes for the conversion of textiles fibers through yarn, textiles production, garmenting, and markup associated with textile marketing and distribution channels. Given the complexities involved in each process of conversion and more so for marketing and distribution, it is difficult to be precise about value added or about marketing and distribution margins. This section provides only a broad indication on the subject.

A. Value Added

The selling prices of standardized basic textile materials (cotton yarn, gray cloth, and bleached fabric, which form the bulk of textile exports from
developing countries) have not changed much over the last decade. Box 2.8 presents estimates of value added at each stage of production from raw materials to garmenting. In fact, there are many factors that would influence these numbers, and some of them are indicated alongside. In view of the intensified competition and low margins in the global textile industry, all the pressure in the basic textile manufacturing industry has shifted toward cost control and management.

**Box 2.8: Value Added in the Sequence of Textile Processes in the Developing Countries**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Process</th>
<th>Value added (%)</th>
<th>Influencing factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material</td>
<td>Yarn</td>
<td>Spinning</td>
<td>15-25</td>
<td>Yarn type and count</td>
</tr>
<tr>
<td>Yarn</td>
<td>Gray cloth</td>
<td>Weaving</td>
<td>20-30</td>
<td>Type, width, and cloth construction</td>
</tr>
<tr>
<td>Gray cloth</td>
<td>Finished cloth</td>
<td>Finishing</td>
<td>25-35</td>
<td>Type of finishing</td>
</tr>
<tr>
<td>Cloth</td>
<td>Garment</td>
<td>Clothing</td>
<td>35-60</td>
<td>Type, design, etc.</td>
</tr>
</tbody>
</table>

*Source: Boston Consulting Group, Polish Textile Industry Restructuring, 1991, and discussions with various experts.*

**B. Marketing and Distribution Margins**

In contrast, it is in the marketing and distribution of textiles and garments where value added can be increased. Textile marketing involves several layers of middlemen before the goods reach the consumer: wholesaler; semi-wholesaler; retailer; and so on. Typically, in domestic marketing and distribution (from the mill gate to the retailer), the markup could be in the region of 80 to 100 percent over the mill gate price, whereas in the international distribution the markup is typically 200 to 300 percent. Box 2.9 provides a general indication of the margins at each major link of the distribution chain.

**Box 2.9: Margin Analysis at Different Stages of Distribution**

*(Mill Gate Price = 100)*

<table>
<thead>
<tr>
<th>Product</th>
<th>Market</th>
<th>Wholesale</th>
<th>Semi-wholesale</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yarn</td>
<td>Domestic</td>
<td>110</td>
<td>120</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>International</td>
<td>115</td>
<td>135</td>
<td>160</td>
</tr>
<tr>
<td>Gray cloth</td>
<td>Domestic</td>
<td>115</td>
<td>135</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>International</td>
<td>120</td>
<td>145</td>
<td>180</td>
</tr>
<tr>
<td>Finished cloth</td>
<td>Domestic</td>
<td>120</td>
<td>145</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>International</td>
<td>150</td>
<td>200</td>
<td>280</td>
</tr>
<tr>
<td>Clothing</td>
<td>Domestic</td>
<td>125</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>International</td>
<td>150</td>
<td>220</td>
<td>350–400</td>
</tr>
</tbody>
</table>

*Source: International Business Consultant, Ireland, and personal discussion with several textile consultants.*

As evident from above, with the markup in clothing distribution being the highest, the main technological innovations recently in the clothing industry have been related less to production and more to marketing and distribution and
have been driven primarily by the changing characteristics of markets in the major consuming countries. The supplier's market of the 1960s became a buyer's market in the 1980s. In response to the changing character of distribution, the higher standards of living, and the sharper fashion consciousness of affluent consumers, textile and apparel manufacturers in industrial countries have had to adopt aggressive market orientation and merchandising techniques to retain their markets and to meet competitive pressures from developing countries. Home sewing and custom tailoring of fabrics is almost extinct in industrial countries, so the main battleground is the area of industrially manufactured garments. The typical market in the industrialized countries can be divided into roughly three segments:

(a) **high-price market**: designer labels (Calvin Klein, Pierre Cardin, Armani, and so on), top manufacturer's brands (Levi's, Burlington, Tootals, and so on) supported by advertising;

(b) **medium-price market**: top retailers (Marks and Spencer, C&A, Sears, and so on) as well as manufacturers', retailers', and importers' brands; and

(c) **low-price market**: retailers' labels, importers' labels, and unlabeled products.

The market strategy increasingly adopted in the clothing industry can be summarized as "quick response," whereby efforts are being made, based on just-in-time production principles, to shorten product cycles and to improve quality and responsiveness of service. The strategy comprises a number of components: first, it involves closer, and therefore more permanent, relationships between apparel manufacturers and retailers; second, it involves shorter lead-times and production runs to permit rapid response to fashion changes in increasingly specialized and segmented markets and to save inventory costs; and third, it involves locating production close to the final market to allow rapid response. As competition between suppliers becomes more severe, so apparel retailers, many of whom are now attempting to create their own market niches and images, can be more demanding and selective in favoring suppliers who show understanding, ability, and willingness to help solve the marketing problems jointly with the retailers for their common benefit. And as competition between retailers intensifies in developed country markets, so the retailers apply pressure on manufacturers to respond to the ever changing market. While the quick response strategy was developed to meet the demands of the high-price market, elements of it are now spreading to all market segments.

VIII. Concluding Remarks

We have provided in this chapter the structure and major trends in the global textile and apparel industries. We conclude with four observations.

First, the development of the industry over time has been in phases: preliminary; basic; developing; developed; and declining. Second, industrial countries are moving into the declining phase while many developing countries are now in the basic and developing phases. Third, the extent to which developing countries can further the growth of the industry depends on their ability to deal with: emerging technological developments in the industry; competition from new waves of exporters; new factors of competitiveness (quick
response strategy, management, information, and marketing); and the MFA. Fourth, adjustment and restructuring of the industry in industrial countries have included rationalization, downsizing, and offshore production through direct foreign investment, subcontracting, and outward processing. Offshore production not only offers the industrial countries an avenue for adjustment but the opportunity for developing countries to forge strategic alliances with major markets.
Endnotes


2. Because of the significant difference in the industry structure and performance between the former Federal Republic of Germany (FRG) and the German Democratic Republic (GDR), the former names have been used throughout this chapter.

3. For details of the MFA over time and its impact upon textile trade, see chapter 3.

4. This measure underestimates to some degree the growth of the industry because technological and product developments have allowed reductions in the amount of fiber used per unit of output.

5. China and India together produce nearly 33,000 million meters of cloth per year or 20 percent of total global production.

6. Compared with Japan, foreign investment by U.S. companies has been limited. Japan has very significantly internationalized its textile operations to remain competitive, and a significant proportion of Japan's textile imports comes from overseas subsidiaries of Japanese textile firms. In other cases, such as in Pakistan, Japan has assured itself economic supplies of textiles by using buy-back arrangements in return for exports of textile machinery.

7. The most significant of these fibers is jute, whose annual production amounts to about 4 million tons. However, only a very minor amount enters into the textile industry, and most is used for sacks, carpet backing, cable insulation, and so forth. Jute is now facing increasing competition from polypropylene and seems to be losing out to this and other newer synthetics.

8. In some cases the installation of shuttleless looms has been very slow. In China and India, which produce 30 percent of the global output of cloth, almost all for domestic use, 80 percent of output is produced by traditional non-automatic (plain) looms, less than 20 percent is produced by conventional first-generation automatic shuttle looms (of about 1950 vintage), and less than 0.2 percent comes from shuttleless looms.

9. In addition to the MFA, the European Economic Community has preferential tariff provisions for some trading partners, the 66 African, Caribbean and Pacific countries under the Lomé Convention, whose exports enter the European Economic Community free from tariffs. Under Item 807 of its tariff code, the United States has special arrangements for Caribbean and Mexican assemblers of garments using U.S. fabrics; tariff concessions are also given under the MFA scheme.

10. The development of the electronic "point of sale" system, which allows retailers to quickly collect data on sales of individual items and to translate the information into new orders, has been essential for this development.
11. Although this frequently means that local suppliers may be preferable because transport and communications are easier, it is not always the case. There have been, for example, cases where U.S. apparel manufacturers have found that domestic suppliers of materials are, in spite of geographical proximity, unable to match the responsiveness of overseas suppliers.

12. In order to establish their own identities, many major retailers have established segments of the market that they can satisfy with a coordinated selection of garments. This segmentation has been made on the bases of factors, such as age of the target customer, styling (color, design, high fashions, popular fashions, professional wear, formal wear, leisure wear, and so forth), frequency of buying, and fashion changes. Consequently, in place of the traditional two seasons (fall/winter and spring/summer), markets have become accustomed to as many as six to eight miniseasons per year. These more frequent seasonal fashion changes have tied buyers strongly to their established suppliers, created pressure to reduce lead-times, and perhaps made penetration of these markets for developing country suppliers, except for an “onward processing basis,” more difficult.
3
SOME CONSIDERATIONS ON THE
MULTI-FIBRE ARRANGEMENT:
PAST, PRESENT, AND FUTURE

Marcelo Raffaelli

I. Introduction

So much has been written about the costs and benefits of protection in general, and of the Multi-Fibre Arrangement (MFA) in particular, that I do not feel the need for an introduction repeating what has been said so competently in publications of the Organization for Economic Cooperation and Development (OECD), the World Bank, and the General Agreement on Tariffs and Trade (GATT), and in works by Cable (1987), Hamilton (1990), Sampson (1987), Silberston (1984), and others. I start, therefore, from the proposition that the MFA has harmed consumers in importing countries by forcing them to pay more for their clothing and textile products, and it has harmed exporting countries by reducing their potential export revenues and employment opportunities, while leading to a less than optimal allocation of resources in both importing and exporting countries.

In the first part of this chapter, I shall comment on the effects the implementation of the MFA has had on exporting countries. In the second section, I present some preliminary thoughts on how to do away with the MFA. Appendix 3.1 shows how the MFA has had the effect of increasing barriers to trade instead of reaching its avowed objective of liberalizing trade. Appendix 3.2 demonstrates the effects in Latin America and the Caribbean, an area of lesser importance in international trade in textiles and clothing and therefore less talked about in the literature on the MFA.

I consider the MFA as a political solution to a trade problem that was raising parochial calls for protectionism in some industrial countries. The agenda of the 1959 session of GATT Contracting Parties contained no mention of market disruption; at the request of the United States, the plenary decided to discuss the avoidance of market disruption before the term had been defined and, therefore, before determining whether the provisions of the General Agreement were appropriate to find the means to ameliorate the adverse effects of an abrupt invasion of established markets while continuing to provide
steadily enlarged opportunities for trade. A working party appointed in June 1960 was, in its report, of the view that it would be desirable for the contracting parties to place on record that they recognize the existence of a problem which has been called market disruption. Having recognized the existence of such a problem the contracting parties should establish procedures to facilitate consultations on these problems (GATT 1960).

From the beginning it was a game with a foregone result. Both the Cotton and the Multi-Fibre Arrangements were supposed to deal with an economic concept: market disruption; unfortunately for the developing countries, almost all industrial participants applied these arrangements with politics, not economics, in mind, and developing countries, being less able to retaliate, were sacrificed to appease the protectionist lobbies. As had been the case in the working party on market disruption, so also in both textile Arrangements the notion of comparative advantage was ignored, and competitiveness became something threatening; low cost (incidentally, a much used term that does not appear in the MFA) is implied to be the result of disreputable maneuvers such as paying slave wages, receiving hidden subsidies, and so on.

This interpretation is a distortion of the market disruption definition found in the MFA, according to which the disruptive imports can come from any country, developing or industrial. But at this point a political (and cynical) defense is offered by the countries applying restrictions: the MFA allows one to apply restraints but does not force one to do so. Therefore, even if an industrial country causes market disruption to a second industrial country, which applies restrictions to developing countries, the latter industrial country is not obliged, under the MFA, to restrain the former (GATT 1986). This position is explained by the argument that industrial countries maintain open markets for trade between themselves and implies that open markets do not exist in developing countries, which of course is untrue, both for large suppliers such as Hong Kong and Singapore, and for Costa Rica, Sri Lanka, Uruguay, and others that have no restrictions on textile imports.

II. Effects of Present Arrangements on Exporting Countries’ Participants in the MFA

As a start, one must distinguish between those long-suffering exporting countries that have been under restraint since the beginning of the MFA and those that are newcomers as exporters of textiles. The former have seen a curtailment of their possibilities to expand exports of products for which they hold a competitive advantage. For some countries, it is a matter of only a few items; for others, it is a matter of seeing a long list of products placed under limit.

For the new entrants (the MFA parlance for newcomers), it can be a very different story: some became exporters of textiles and clothing due to the impossibility of efficient producers exporting all that the market would take. These new entrants are, in a sense, creatures of the MFA. But there are other newcomers that would have appeared on the scene in any event; China is the example that comes immediately to mind.

By exporting countries we shall understand, as in the MFA fora, those countries suffering restrictions to their textile exports: developing countries and
Some Considerations on the Multi-Fibre Arrangement: Past, Present, and Future

a few Eastern European countries. Japan, which is under restraint in the United States, is considered in the MFA fora as an importing country.

The implementation of the Arrangement had several specific effects on the exporting countries, albeit they do not affect every country the same way. But a list, at least partial, might include the following effects:

- limitation of competitive exports;
- disruption to individual lines of production;
- transference of resources to less efficient lines of production;
- discouragement and/or distortion of investment;
- switch from less sophisticated products to different, more sophisticated products;
- improvement in quality;
- transference of production to third countries;
- fight for a guaranteed share of the market;
- quota ownership and attendant problems;
- costs of quota management;
- political costs.

A. Limitation of Competitive Exports

While it seems tautological that quotas will limit competitive imports, quotas are sometimes imposed and maintained on products that at a certain moment enjoyed an upsurge in exports due to factors that have little to do with competitiveness. Generally, however, quotas are introduced to limit competitive imports, thus restraining legitimate export possibilities of the exporting countries.

There are many cases of exporting countries being unable to export more because the quota ceiling has been reached (see annex 3.1); every case in which the exporting country has to avail itself of the flexibility provisions of the bilateral agreement (swing and borrow-forward, also called carry-forward) is a case where the quota had a limiting effect on the country's possibility of exporting more of a competitive product. The harm is compounded if the annual growth rate is below the MFA's norm of 6 percent.

Furthermore, quota distribution or allocation can seldom be so efficient that no waste of quota exists. It can be safely assumed that if a quota is utilized at a level of 80 or 85 percent, then the exporting country would, in the absence of a quota, have exported more than its full level.

B. Disruption to Individual Lines of Production

One of the basic objectives of the MFA is ensuring the orderly and equitable development of this trade (that is, world trade in textile products) and avoidance of disruptive effects in individual markets and on individual lines of production in both importing and exporting countries (GATT 1986). Notwithstanding, one of the practically inevitable effects of quotas is the disruption of individual lines of production in exporting countries.
Application of the MFA with an eye on domestic constituencies has resulted, in many instances, in premature requests for consultation, with a detrimental effect on trade, as uncertainty is generated or, worse, orders are either suspended or canceled, the importer in the importing country having chosen to look for an alternate source of supply.

Sometimes the request for consultations is accompanied by the imposition of a temporary restraint, designed to avoid a surge in imports during the consultation period. Such temporary measures have a disruptive effect, even if at the end of the consultations it is agreed that there was no basis for a restraint.

Disruption to the exporting country can also occur when the importing country insists on the establishment of a "group limit," which covers, among others, products that are neither causing market disruption nor posing a real risk of market disruption, in other words, products that are not subject to quotas but whose exports cannot freely develop due to the ceiling established. This is in contradiction with the original complaint of importing countries; namely, that trade was concentrated in a narrow range of commodities; for this reason, both the Cotton and the Multi-Fibre Arrangements refer to disruptive effects on individual lines of production (GATT 1960).

C. Transference of Resources to Less Efficient Lines of Production

If a product is placed under limit, its line of production may be forced to be cut down, and, to avoid leaving idle equipment and/or labor, it may be decided to start production of another product under less efficient conditions. Resources are thus allocated less efficiently, and a less viable structure of production may be set up.

D. Discouragement and/or Distortion of Investment

The existence of quotas discourages investment in the restrained country, and not only in products already under restraint. It has been seen in the MFA fora how an exporting country, once having had one product under restraint, usually finds that diversification into other products only results in an increase of the number of products under restraint. Domestic capital, if it cannot be invested in textiles, is probably invested in some other activity in the same country; foreign capital, if it cannot be invested in textiles, will not perhaps be interested in investing in any other sector in that country. A distortion will also occur if, for instance, the domestic capital is diverted to a second-best option or if the foreign capital is applied in the textile sector of an importing country.

E. Switch from Less Sophisticated to Different, More Sophisticated Products, and Improvement in Quality

In order to make the most of its resources, a producer may switch production from less sophisticated products to different products with higher value added; for instance, it may switch from knitted underwear to knitted dresses. This may be said to be a beneficial effect, at least to those industrial concerns that succeed in making such a switch. The switch may also be made toward better
quality of the same product: for instance, from cheap sweaters to high quality ones, from T-shirts to knitted designer shirts, and so on. The best-known example of these two occurrences is that of Hong Kong, whose share of textiles (defined here as yarns, fabrics, and made-ups) in total exports has fallen, while that of high quality and design clothing has increased.

These switches or improvements can, however, constitute further examples of distortions of efficient resource allocation in both exporting and importing countries.

F. Transference of Production to Third Countries

This effect results from action by both exporting countries and importing countries. Japan, Hong Kong, Korea, and India (in Nepal) have set up subsidiaries or joint ventures abroad in order to meet the demand in importing countries in excess of their own quotas for the products concerned.

But importing countries have also transferred production abroad, and while it cannot be said that these initiatives were, in all cases, due to the existence of the MFA, they may have been, at least in part. In the case of U.S. investments in the Caribbean and Central America, the MFA-derived supply constraints may have played a role.

All such transfers have the effect of increasing the number of suppliers of textile products, some of them, as said above, being nonspontaneous exporters. As explained in the previous section, it can lead to less efficient allocation of investment, on a global scale, than would occur in a free trade situation.

Finally, one word of caution. The existence of the MFA may also discourage investment abroad if prospective investors fear that their future production can become subject to a quota. All will depend on the psychology of the investor.

G. Fight for a Guaranteed Share of the Market

One of the effects of the perpetuation of the MFA is that many exporting countries have become accustomed to it, or have decided that since it is useless to fight for free trade, they had better fight for a larger slice of the restricted market.

This has led to some exporting countries agreeing to restraints for products that are in no way posing a risk of serious damage to the importing country. The protectionist lobby in the importing country is happy, because it has secured a restraint, and the exporting country is happy, because it has acquired, at no cost (or so it thinks), a share for future development of exports in which it has little or no interest at the moment. These cases of myopia are, unfortunately, numerous.

They also seem to give credence to statements by importing countries' governments and protectionist lobbies that the MFA was conceived as a market sharing arrangement, and that what matters is not to liberalize trade, but rather to apportion equitable shares of the market (among developing countries, of course, since industrial countries do not have to worry about the MFA).
H. Quota Ownership and Attendant Problems

Much has been written on quota ownership, quota sales, and quota rents. The truth is that the problem is not as widespread as the literature on the MFA suggests. I suspect that this distortion derives from the fact that everyone researching the MFA of necessity goes to Hong Kong; not only is it the most important MFA exporter, but it has a long tradition of being under restraint and, very important to the researcher, has an efficient and open administration of its MFA agreements.

Once in Hong Kong, the researcher becomes acquainted with: (a) how quota rights may be sold; (b) how some quota owners make a living just from selling their quotas; (c) how in these cases, the export price may be increased by an amount equivalent to the price paid for the quota; and (d) how, in cases regarding a few products, importers may find themselves bidding against other importers in order to buy from a Hong Kong producer.

These findings have led to some confusion, for the reasons exposed below. To begin with, one should distinguish what has been called "quota rent" from what I shall call "quota sale price" and from plain profit.

Quota rent has sometimes been described as the overprice that exporters collect in the cases described in (d) above. But such instances are not the rule; in the case of most textile products, importers are able to find other countries, restrained or not, with both quota (if the country is restrained) and quality, from which to buy. Thus, as a rule they will not find it necessary to bid against other importers.

Quota sale price would be the amount of money for which the quota owners sell their quotas, as described in (b) above. Again, this is not the rule: many exporting countries do not grant ownership of the quotas, but only a preference in quota allocation, to firms that have exported previously. Usually this preference is lost if the quota is not utilized. Also, even in countries that allow quotas to be sold, most quota owners prefer to use them, not to sell them.

If the quota was bought, it is not sure that all of the amount paid by the exporter will be passed on to the buyer: the whole amount or just part of it may be added to the sale price, or nothing at all. The price will depend on what the market will bear, be it in countries where quotas are owned and may be sold, or in any other country.

And then there is the profit that normally accrues, in commercial transactions, to the seller. I do not believe that it has been demonstrated that the profit is higher for textile products under quota.

It would be wrong, therefore, to conclude that quotas bring an extra benefit to the exporting country, as such a conclusion would be based on a distorted observation. Of course, I agree with those who say that the consumer in the importing country will in the end pay a higher price, as this is the point of the whole exercise: to create a scarcity so that the protected producers in the importing country will be able to keep their prices high and, in consequence, themselves in business.

Nevertheless, there is no doubt that ownership of quotas—where it exists—has certain effects in exporting countries: (a) potentially competitive producers may find themselves shut out of the picture; (b) the individuals who own quotas become interested in the maintenance of the restrictive system.
In any case, the redistribution of quotas in order to accommodate new exporting concerns is usually a headache for those administering the quotas in the exporting country, and is a problem linked to political costs, as discussed below.

I. Costs of Quota Management

While I know of no calculation of the cost of managing quotas, it must add up to a considerable amount. In Hong Kong alone, hundreds of people work for the government in order to issue export authorizations and keep track of quota utilization. There is also, inevitably, some cost to the exporting companies, which must follow a number of steps in order to obtain their permits, and so forth. Some costs also exist for the importer, who must make sure that the quota is not fully taken, must obtain an import license, and so on. Finally, the government of the importing country has also to bear the cost of controlling quotas.

In the United States, where about 830 limits were being applied under the MFA in July 1988, the cost must be large. The same goes for the twelve members of the European Community as well as for the European Commission, in their administration of some 470 quotas being applied under the MFA in July 1988.

For developing countries, the cost of managing quotas is relatively larger in terms of misallocated human resources.

One further cost is represented by the fact that quota management implies bureaucratic discretion, with the possibility of some uncertainty being introduced in the process. Replacing quotas by reasonable tariffs would avoid the cost of managing quotas and practically eliminate the risk of bureaucratic discretion.

J. Political Costs

Besides financial costs, the MFA also exacts political costs. The acceptance of a restraint may become a political burden to the government of the exporting country. The allocation and redistribution of quotas among exporting concerns are other examples of political costs to the government.

The MFA also has effects on importing countries. They are the reverse of some of the effects listed above: limitation of competitive imports, discouragement of investment abroad, costs of quota management, and political costs of requests for restraints.

But there is another effect, of a political nature, affecting both importing and exporting countries: once restraints are introduced on textiles, officially defended and justified, other sectors inevitably ask: "Why not me too?" It is interesting that the negotiators of the MFA deemed it necessary to say in its Article 1, paragraph 7, that "since measures taken under this Arrangement are intended to deal with the special problems of textile products, such measures should be considered as exceptional, and not lending themselves to application in other fields." They knew they were setting down a bad example!

The low cost brand, once imposed with regard to the textile sector, has been extended to other economic activities. If a new safeguard clause were approved in the Uruguay Round of GATT, allowing for selective safeguards, I fear its
application would follow the MFA pattern, and that safeguards always would be applied selectively and only to countries already branded as low cost (that is, developing countries and Eastern Europe).

III. How to Phase Out the MFA

Any approach to the termination of the Multi-Fibre Arrangement must be political, as it is evident that the reasons for keeping the MFA in place owe more to politics than to economics. It does not seem sufficient, therefore, to plead for the mere elimination of the MFA on the basis of its running counter to sound economic theory; after all, much ink has already been spilled by academia, governments, and international organizations denouncing how any form of protectionism results in the misallocation of world resources, and so on. It must be recognized that the international environment has not changed to the point of economic arguments carrying the day. Therefore, a political gesture is necessary, in the form of mutual concessions between importing countries on one side, and exporting countries on the other.

It is useful to recall that a solution, or gesture, may take many different aspects, and that even a political solution should not be offered with disregard for the current environment and for the changes that may be expected in it. Divination is not my subject, but I believe that in reflecting on how to liberalize trade in textiles and on the consequences of such liberalization, one should bear in mind the following important elements (this list is by no means exhaustive):

- the world population growth, the need to allocate more land and capital for food production, and the need for increased textile production;
- a probable improvement in the living standards of some developing countries;
- the large increase in fiber production planned by China until the year 2000;
- whether Japan will accept a role as a large net importer;
- new production methods that stress labor-saving and automatization, robotization, and so on;
- new management and marketing methods (quick response, for instance);
- the fate of nonspontaneous exporting countries; breakthroughs in nonfiber clothing;
- further expansion of the use of textile products for industrial purposes.

The thoughts presented in this section are of a preliminary nature. They do not exclude the possibility of other elements that either side considers essential for the acceptance of the scheme.

But it is my opinion, at this moment, that the political gesture I consider necessary could take the form of an agreement on the part of exporting countries to accept what would be definitively a phaseout of the MFA in the shape of some seven or eight years more of the MFA (or of an MFA-type arrangement), thus extending the period of protection accorded to the textile industries of industrial countries practically to the end of the century. On the importing side, the gesture would be the acceptance of a definitive end to the period of special protection enjoyed by their textile industries since 1961.
For those impatient to do away with the MFA within a little more than two years, a further seven or eight years will seem too much. But it is only by agreeing on a very long period that governments will have an argument to silence the protests from the protectionist lobbies: "Do you seriously argue that after thirty years of protection, an additional seven (or eight) years will still not suffice to put your house in order?"

This phaseout period would not be equally disadvantageous to all exporting countries. One of the realities is that the MFA's existence did encourage the entrance of several countries into the export of textiles and clothing that otherwise would not have become involved; I can mention, both within and without the ranks of the MFA members, Sri Lanka, Indonesia, Mauritius, Maldives, Panama, and Nepal, among others.

The phaseout period would thus grant a breathing space to allow these nonspontaneous exporters to adjust their economies to the quota-free environment that will exist once the MFA finally disappears. Perhaps they will find ways to remain competitive; perhaps they will move to other economic activities where they will be competitive.

A. Mixed Quota Formulas and Auctioning of Quotas

Several distinguished students of the MFA have suggested that a system of concomitant and progressively replacing quotas be used as the way to phase out the MFA quotas; another suggestion is that quotas be auctioned during the phaseout period as part of the liberalization mechanism. Without in any way rejecting, or even criticizing these suggestions, which cannot be considered in isolation from other elements of the phaseout program, I would nevertheless like to flag a few points.

Under the "strengthened GATT rules" mentioned in the Punta del Este Declaration, which presumably means more expeditious ways to deal with dumping and subsidies, tariffs would become much more effective instruments of protection. Extremely high, even if only temporary, tariffs, if applied for any period longer than something like one year, could result in a distortion of textile trade patterns lasting much longer than necessary to just smooth over the phaseout.

The second point is that since governments tend to become addicted to income, the revenue derived from auctioning of quotas might prove too tempting for the treasury of the importing country to give up. We should be careful to not sponsor a marriage of the protectionist lobby to the ministry of finance; the result might be that the phaseout period would be followed, in some countries, by Article XIX actions, which imposed quotas to be auctioned by the importing country. It pays to be pessimistic when it comes to textiles!

The third point is that all schemes for the phaseout period have the same features: (a) a time-frame sufficiently long and which is nonextendable by any country; (b) progressive liberalization, to avoid shocks in both importing and in less-efficient exporting countries; (c) an end to all measures agreed or imposed under the MFA; (d) an effective system of surveillance of the phaseout process; (e) arrival, at a predetermined and unchangeable date, at a situation where trade in textiles and clothing is totally and solely covered by GATT rules. All
these features should be covered by an agreed text that would be mandatory to all the MFA participants.

To achieve this aim, several routes might be offered. However, it seems to me that the route of liberalization in the context of an MFA-like solution has the advantage of being the devil we know.

After all, the experiences of Norway under a global quota and of Australia, which since 1975 has applied a system of tariff quotas and auctioning of quotas, cannot be said to have led to more competitive industries in those countries or to a speedy liberalization of their restrictions. As a matter of fact, Australia has had in force, since July 1, 1987, a plan for restructuring and revitalizing its textile, clothing, and footwear industries that will remain in force until 1996.

What we face in the MFA is a political problem that has been dealt with on the basis of a pseudoeconomic solution; to argue that an economically sound solution is necessary for the phaseout does not impress me, as what we are talking about is politics. Besides, I believe, as said above, that an MFA-based solution can allow for progressive liberalization, minimization of shocks, and an effective surveillance system.

B. Phasing Out the MFA

For all the reasons expounded above, this suggestion is, on purpose, traditional and pedestrian: it is based on the existing system, dominated by the MFA.

It bears in mind, among other things, that the MFA's existence has encouraged many countries to become exporters, and that as a result importing countries (which are directly responsible for the creation of the MFA and indirectly for the appearance of new exporters) are now being supplied by a large number of countries, whether restrained or unrestrained, either developing new entrants, long-established developing suppliers, or developed exporters.

If the basis for restraints continues to be the occurrence of market disruption as now defined in the MFA, then it must be accepted that only the relatively large suppliers can cause market disruption, or in other words, can cause serious damage to the domestic industry of the importing country, since cumulative disruption is not an MFA concept.

Finally, and since the MFA does not reflect in its implementation a balance of interests between importing and exporting countries, this suggestion aims at introducing some balance by improving the treatment accorded to exporting countries.*

* As part of the Uruguay Round of the GATT, which was ratified in April 1994, it was agreed that the MFA will be phased out in three stages over a ten year period. Textile quotas will gradually be increased. In the first phase (the first through third years), quotas will be increased by 16 percent. In the second phase (the fourth through seventh years), these quotas will increase by 25 percent. In the final phase, there will be an increase to 27 percent. By the end of this transition phase, more than half of the global textile trade will be liberalized.
Appendix 3.1

How Barriers Expanded Under the MFA

"The basic objectives shall be to achieve the expansion of trade, the reduction of barriers to such trade and the progressive liberalization of world trade in textile products"; thus goes paragraph 2 of Article 1 of the MFA. Unfortunately, these brave words drafted in 1973 were not followed very closely by importing participants.

The following annexes contain information on restraints agreed under the Multi-Fibre Arrangement (be it under Article 3 or, in the overwhelming majority of cases, under Article 4) since 1980, and refer only to exporting countries participating in the Arrangement on July 31, 1988.

The MFA Restraint Agreements

In the following annexes (annexes 3.2-3.6), "†" indicates that restraints were agreed under an MFA agreement (either Article 3 or 4); restraints imposed by unilateral decision of the importing country do not appear in the annexes. These refer only to exporting countries participating in the Arrangement on July 31, 1988; restraints eventually agreed by the importing country and an exporting country that participated in the MFA I, II, or III, but not in the MFA IV, do not appear in the annexes.

As it can be seen, the number of restraint agreements has increased since 1980, Austria being the only case of a definite drop in their number. If we look back at the initial phase of the MFA, the increase in the number of restraint agreements is even larger: for instance, in 1975 Canada had only six agreements; Norway and Sweden had seven and eight agreements in 1976, respectively; while in 1977 the United States had sixteen restraint agreements.

The European Community (EC) has decreased the number of its restraint agreements under the MFA IV, as those with Bangladesh, Colombia, Mexico, and Uruguay do not contain any restraints; the previous agreements, however, were minor ones, totaling altogether five EC restraints and five regional restraints in 1986. Yugoslavia, previously restrained under the MFA, is now restrained under another instrument.

Finland and Sweden show practically stable numbers; Sweden, as a matter of fact, had at the end of 1987 only twelve restraint agreements, as that with Brazil expired in the course of the year.

Norway seems to have stabilized around fifteen agreements, but up-to-date information on all its MFA IV agreements is currently lacking.

Canada and the United States have steadily increased the number of their MFA agreements: the United States had placed under restraint, at the end of 1987, all the MFA exporting countries, both developing and Eastern European, but one: the sole exception was Argentina. The United States is also the only country applying the MFA restraints to Japan.

By December 31, 1987, therefore, ninety-nine agreements establishing restraints under the MFA were in force. As to the number of restraints in these agreements, a sweeping statement is difficult to make.

Austria and Finland apply very few restraints, as they have done throughout the MFA. At this moment I have little information on Swedish
agreements, but it would seem that the number of restraints has decreased. Norwegian agreements also seem to contain less restraints than before.

The European Community (EC), in accordance with its decision to reduce by around 25 percent the number of restraints negotiated under the MFA III, has diminished the number of restraints in its MFA IV agreements. While this is laudable, it must also be said that: (a) the restraints liberalized were generally superfluous, as they were not being filled and/or did not cover cases of real risk of market disruption; (b) by July 1988 there were still about 470 quotas in force in the EC’s MFA agreements.

Canada has in general increased the number of products under restraint in its MFA IV agreements, and in some cases has also placed under restraint products of non-MFA fibers, that is, those fibers not covered by the original Arrangement but included under the 1986 Protocol.

The United States has increased the number of restraints in practically all its agreements, besides including the new fibers in several restraints. From August 1, 1986 until June 30, 1988 the United States increased the number of its restraints by almost two hundred! This means an increase of about one-third over the number of restraints in force by the end of the MFA III.

But the number of restraints is not the only criterion to evaluate the restrictiveness of agreements. For instance, one should not forget, in fairness to Canada and the United States, that from the MFA I through the MFA III (1974–86) these countries extended, for most restrained products, terms much more advantageous than those extended by other large importing countries. Furthermore, one should examine the participation of the exporting country in the domestic market of the importing country on a product-by-product basis, the annual growth rates and the flexibility provisions negotiated, the occurrence of front-end loading in the initial quota, and, above all, the existence of market disruption or of real risk of market disruption. This would be an exercise largely exceeding the objective of this chapter, and I do not intend to engage in it.

Annex 3.6 shows the changes in import patterns of the MFA importing countries between 1973 and 1986.

Let us start with a look at the cases of Sweden and its neighbor, Norway. I regret to say that these two countries represent the cases of most extreme application of the MFA. As a matter of fact, if the severe restrictions applied by them under the MFA (and by Norway under a GATT safeguard that exempted the European Free Trade Agreement and the EC countries) aimed at preserving minimum viable production (MVP), their result was to preserve or increase the market share of other industrial countries.

The incredibly severe restrictions applied by Sweden to developing members of the MFA resulted in allowing the share of its imports taken by the developed MFA members to increase by 13 percent in the case of textiles and 18 percent in the case of clothing during 1973–86.

The futility of this policy was finally recognized by the Swedish government, which in October 1988 addressed a proposal to parliament including among a set of measures, the end of recourse to the MFA when the MFA IV expires. If only other governments showed the same political courage!

Norway, which since its return to the MFA has applied very strict restrictions only to developing and Eastern European countries, has a very high
and stable share of its textile and clothing imports taken by the developed members of the MFA. One might wonder whether the severe restrictions applied under the MFA III and in the new agreements under the MFA IV are justified in view of the high penetration by unrestrained industrial countries.

A defender of Norway’s and Sweden’s policies will say that the shares mentioned refer to all textiles (textile yarn, fabrics, made-up items, and related products) and to all clothing items, while the MFA restraints are applied to specific products. True, but it is also true that until 1987 most of the clothing categories and several textile categories were under restraint in these two Nordic countries.

Austria, which applies restraints selectively, is predominately a market for industrial countries, whose shares in Austrian imports are very high, comparable to those in Finland, Norway, and Sweden.

In Finland, which also applies restraints on a selective basis, developed members show a well-defined, increasing trend in the shares of both textiles and clothing.

In Japan and Switzerland, which do not apply the MFA restraints, the shares of imports from the developed MFA members are stable. (In 1987 the situation in Japan changed sharply in favor of developing members.)

As to Canada, the EC (excluding intra-EC trade), and the United States, there has been, from 1973–1986, a decrease in the share of clothing imports coming from other developed members; this is more noticeable for the United States and Canada. Their share in textile imports increased in the EC and, while decreasing in Canada and the United States, is still significant (48 percent for the United States and 72 percent for Canada); nonetheless, all three countries apply restrictions to textiles from many developing members of the MFA, be it yarn, fabrics, cotton towels, bed linen, or table linen.
Appendix 3.2

A Look at the Case of Latin American and Caribbean Exporting Countries

In general, Latin American and Caribbean exporting countries are not as restricted in their textile exports as the Asian and Eastern European countries. Mexico, Costa Rica, the Dominican Republic, Haiti, and Jamaica are large exporters to the United States, but this is due to a strong activity of outward processing that originated in the United States. Brazil is a large exporter of semi-manufactured products—that is, cotton yarn and unbleached cotton fabrics—but only a minor exporter of clothing and made-up items (which are nevertheless under restraint in the largest importing countries). Brazil is a good example of the primacy of the domestic market in the Latin American case: in 1986, when demand boomed in Brazil as a result of the Cruzado plan, its shares in imports of both textiles and clothing by every developed MFA participant fell. With the exception of a few genuinely export-minded companies, the Brazilian industry eyes exports as no more than a safety valve.

By far the largest customer of the region’s exports is the United States. This explains why practically only the United States maintains restrictions on the Latin American and Caribbean countries; in July 1988 it had restraints on Brazil, Colombia, Costa Rica, Dominican Republic, Guatemala, Jamaica, Mexico, Peru, and Uruguay. The United States also applied restrictions to Haiti and Panama, which at present are not MFA participants. A total, thus, of eleven developing Latin American and Caribbean countries were under restraint in the United States.

The European Community applied restraints to Argentina, Brazil, and Peru; restraints applied under the MFA III to Colombia, Mexico, and Uruguay were discontinued at the end of 1986.

Table 3.1: Imports by All Developed Participants in the MFA of Textiles and Clothing from All Latin American and Caribbean Countries, 1986

<table>
<thead>
<tr>
<th>Country</th>
<th>Textiles</th>
<th>Clothing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>55.2</td>
<td>5.1</td>
</tr>
<tr>
<td>Brazil</td>
<td>460.9</td>
<td>151.6</td>
</tr>
<tr>
<td>Colombia</td>
<td>63.4</td>
<td>53.3</td>
</tr>
<tr>
<td>Jamaica</td>
<td>0.2</td>
<td>105.0</td>
</tr>
<tr>
<td>Mexico</td>
<td>218.0</td>
<td>306.2</td>
</tr>
<tr>
<td>Peru</td>
<td>112.9</td>
<td>24.5</td>
</tr>
<tr>
<td>Uruguay</td>
<td>66.8</td>
<td>51.2</td>
</tr>
<tr>
<td>Others*</td>
<td>68.8</td>
<td>727.2</td>
</tr>
<tr>
<td>Total</td>
<td>1,046.2</td>
<td>1,424.1</td>
</tr>
</tbody>
</table>

Notes: *Includes nonparticipants in the MFA

Canada had, in July 1988, restraints in force on Brazil and Uruguay; those on Brazil were of a unilateral nature.
Austria and Sweden previously had imposed restraints on Brazil, but in 1987 the restraints expired and were not renewed in either case.

The developing American countries are exporting very little, as Table 3.1 shows.

These numbers are small, if compared to imports by the developed MFA members, from all sources, in the same year: US$21,012.25 million for textiles and US$37,852.75 million for clothing. Participation rates of the developing countries of the Americas in these totals were, therefore, 5 percent and 3.8 percent, respectively. These shares are even less impressive if one considers that textile raw materials are produced in large amounts by several Latin American countries: cotton (Brazil, Colombia, Guatemala, Mexico, Peru), wool (Argentina, Brazil, Uruguay), and man-made fibers (Argentina, Brazil, Mexico, Venezuela).

The low level of exports by the Latin American countries stems from several reasons. The first seems to be a widespread lack of initiative, of push to export. But two caveats are in order: the first is that there are instances of initiative, of efforts to export, which were immediately rewarded by claims of market disruption and a restraint—agreed or unilateral—in the importing country. The second is that in the developing countries of the Americas, especially in the smaller ones, the scarcity of capital renders it difficult to find investors willing to risk it in export-oriented ventures in a very competitive field and in the face of a well-established system of protectionist rules.

For the moment, a great capacity to expand exports is evident in Brazil, an important producer of cotton, wool, and man-made fibers, and where fourteen companies appeared in the list of the world’s 250 top textile companies by turnover.7

Since the setting up of the Caribbean Basin Initiative (CBI) by the United States, companies from the United States and other countries have been active in their use of Caribbean labor for outward processing of fabrics formed and cut in the United States for reexport to the United States, where they enjoy preferential tariff treatment. This has led the U.S. administration to conclude with some of the CBI countries agreements setting up Guaranteed Access Levels (GALs), which are quotas to be used only for products satisfying the conditions described above; the Dominican Republic, Jamaica, and Trinidad and Tobago (the latter a nonparticipant in the MFA) have GALs in the United States. Mexico also obtained a similar treatment, under a special regime; the reason for this nomenclature is that Mexico is not a beneficiary of the CBI.

In several of these cases, the United States, in establishing GALs, has terminated previously existing specific limits. This means that in those cases, the exporting countries in question are free to export without restraints products either totally manufactured there or manufactured there from fabrics imported from third countries. One might wonder to what levels such non-GAL exports would be able to develop before a quota were imposed, but the fact is that the present situation is more favorable to the Caribbean nations than if they had continued under specific limits.

On the other hand, it must be recognized that, with the setting up of a network of vested interests, a situation was created that will make it difficult: (a) for the Caribbean countries to agree to the end of the MFA, as keeping competitive exporters under restraint in the United States works in favor of the
Caribbean countries; and (b) for the United States to decrease its tariffs, as U.S. producers established in the Caribbean would then enjoy a smaller tariff preference.
Annex 3.1: Examples of Quotas that Undoubtedly Hamper the Development of Competitive Exports

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<tr>
<td></td>
<td>Imports</td>
<td>Quotas</td>
<td>Imports</td>
<td>Quotas</td>
<td>Imports</td>
<td>Quotas</td>
</tr>
<tr>
<td>Canada/Hong Kong</td>
<td>sweaters, pullovers, and cardigans (1,000 pieces)</td>
<td>7,036</td>
<td>7,036</td>
<td>100.0</td>
<td>7,142</td>
<td>6,281</td>
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<td>Annual growth rate: 0.5 percent or 1.5 percent (1982-1986), according to whether 90 percent or more of the quota was used; 0.75 percent from 1987</td>
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<td>EC/Brazil-Cat. 1, cotton yarn (tonnes)</td>
<td>27,644</td>
<td>33,205</td>
<td>120.1</td>
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<td>Annual growth rate: 0.1 percent</td>
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<td>EC/Romania-Cat. 13, knitted or crocheted undergarments (1,000 pieces)</td>
<td>9,211</td>
<td>12,495</td>
<td>135.7</td>
<td>9,395</td>
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<td>Annual growth rate: 2 percent</td>
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<td>United States-Cat. 341, woven cotton blouses (dozens)</td>
<td>Hong Kong</td>
<td>2,465,874</td>
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<td>Annual growth rate: Hong Kong 0.5 percent; India 3.0 percent</td>
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Note: Examples chosen at random. Data derived from GATT documents, the World Bank database, or country sources. Shipments above the quota levels were possible due to the application of swing, carryover, and carry-forward provisions.
Annex 3.2: Restraint Agreements Concluded Under the MFA by Austria, Finland, Norway, and Sweden with Participants in MFA IV

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**Notes:**

a. Norway did not participate in the MFA from 1/1/78 to 6/30/84; it had recourse to Article XIX in regard of “various textile items.” All non-MFA quantitative restrictions were brought to an end by 7/1/85.
## Annex 3.3: Restraint Agreements Concluded Under the MFA by Canada with Participants in MFA IV

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### Annex 3.4: Restraint Agreements Concluded Under the MFA by the European Community with Participants in MFA IV

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Notes:
- Under the MFA IV agreements, no restraints were imposed by the EC on Bangladesh, Colombia, Mexico, and Uruguay.
- Yugoslavia, previously restrained by an MFA agreement, is now under restraints agreed in an Additional Protocol to the EC/Yugoslavia Cooperation agreement. Turkey was under restraint throughout the period covered, but the EC justified the restraints under their Association agreement.
### Annex 3.5: Restraint Agreements Concluded Under the MFA by the United States with Participants in MFA IV

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### Annex 3.6: Share of Developed Members of the MFA in Total Imports of Textiles and Clothing of Other Developed Members, Selected Years, 1973–86

(percentage of US$ values)

<table>
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<tr>
<th></th>
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<td>84.3</td>
<td>77.9</td>
<td>79.6</td>
<td>80.5</td>
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</table>

**Notes:**
- Excluding intra-EC trade; if intra-EC trade were included, the shares of developed members would be as high as those in other European countries.
- n.a. indicates not available.

**Source:** GATT documents COM.TEX/W/219, 1989.
Endnotes

1. The author, a Brazilian diplomat, was the head of Brazil’s delegation during the negotiation of the MFA. Since 1982 he has been seconded for service with the GATT, as chairman of the Textiles Surveillance Body (TSB) of the MFA. He wishes to thank Mrs. Tripti Jenkins, Messrs. Sanjoy Bagchi, Carl Hamilton, Nicolas Marian, and Gary P. Sampson for their helpful suggestions and advice, and Ms. Paula Holmes for valuable information provided. The views expressed do not engage in any way the responsibility of the GATT, the TSB, or the Brazilian government.

2. On April 15, 1989 the MFA participants were: exporting countries—Argentina, Bangladesh, Brazil, China, Colombia, Costa Rica, Czechoslovakia, Dominican Republic, Egypt, El Salvador, Guatemala, Hong Kong, Hungary, India, Indonesia, Jamaica, Korea, Macao, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Singapore, Sri Lanka, Thailand, Turkey, Uruguay, and Yugoslavia; importing countries—Austria, Canada, the European Community, Finland, Japan, Norway, Sweden, Switzerland, and the United States.

3. Specific limits covering one or more categories, sublimits, designated consultation levels, aggregate limits, or group limits.

4. EC limits (each subdivided into twelve country quotas), EC sublimits, regional limits.

5. But since the MFA is based on a pseudoeconomic solution, it probably would be useful to invest the suggestion below with an economic facade, to justify why the MFA may be extinguished.

6. Annual growth rates in MFA agreements always relate to the volume unit in which the restraint is described, that is, units of weight, yards, or number of pieces.

7. According to the German publication Textile Wirtschaft, quoted by Comitextil, the following Brazilian textile companies were in 1986 among the world’s top 250, by turnover (converted into DM); their place among the 250 are between brackets: Hering (32); Steinbruch/Rabinowitch (37); Alpargatas (40); Santista (54); Tatuape (97); Teka (152); Ciane (160); Artex (186); Textil Elisabeth (187); Vicunha (224); Linhas Corrente (227); Kenebo (234); Toyobo do Brasil (236); and Dohler (246).
TEXTILES AND CLOTHING IN GLOBAL ECONOMIC DEVELOPMENT: EAST ASIA’S DYNAMIC ROLE

Kym Anderson 1

I. Introduction

The changing patterns of production and international trade in fibers, textiles, and clothing provide a classic case study of the dynamics of our interdependent world economy. Nowhere has that pattern changed more dramatically than in East Asia during the past few decades. For centuries prior to that, Asia supplied the textile factories of Europe with natural fibers, including silk from East Asia along the so-called Silk Road. Today East Asia exports virtually no natural fibers and instead has become the most important region of the world both as an importer of raw cotton and wool and as an exporter of manufactured textile products and clothing.

Will advanced industrial countries continue to make room for further generations of newly industrializing countries seeking to export their way out of poverty? Or will the recent growth in textile exports from countries such as China simply cause high-wage countries to raise their import barriers? To answer that properly requires first addressing questions such as the following: How is the relative importance of fiber, textile, and clothing production and trade in an economy likely to change as that economy and the rest of the world grow? To what extent has the economic growth of first Japan and then East Asia’s advanced developing economies altered the location of production of textile products and the pattern of global trade in fibers, textiles, and clothing? Have China’s and Southeast Asia’s market economies been able to follow a similar development path to their more advanced Northeast Asian neighbors, particularly since the dramatic reforms began in China in the late 1970s? These questions are addressed sequentially before attention is turned to future prospects for further structural adjustments and the policy responses necessary in the advanced and newly industrialized economies to facilitate further export-led growth of developing economies.
II. The Changing Role of Textiles and Clothing with Economic Growth

Standard trade and development theory suggests that a poor country opening up to international trade will tend to specialize in the production and export of primary products, though less so the more densely populated the country. If its domestic incomes and stocks of industrial capital per worker grow more rapidly than the rest of the world’s (for example, because of a high domestic savings ratio or large borrowings from abroad), relative wages increase and labor is attracted to the manufacturing sector. As a result, its export specialization will gradually move away from primary products (in raw or lightly processed form) to manufactures. Labor begins to be attracted to manufacturing at an earlier stage of economic development, and the nonresource based manufactured goods initially exported use unskilled labor relatively more intensively, the lower the country’s stock of natural resources per worker and hence initial real wage rate. This is because the relatively low wage will give the resource-poor country an international comparative advantage initially in labor-intensive, standard technology manufactures.2

Since many (though by no means all) processes in textile and clothing production tend to be intensive in the use of unskilled labor, this theory suggests they would be among the items initially exported by a newly industrializing, densely populated country. And as the demands for textile raw materials by that country’s expanding textile industry grow, the country’s net exports of natural fiber would diminish, or net imports of natural fiber would increase, all other things being equal. On the other hand, since synthetic fiber production is an extremely capital-intensive activity, it will tend to be imported by the newly industrializing country from relatively more capital abundant countries. If this newly industrializing country is growing more rapidly than other countries, it will initially increase its shares of world production and exports of textiles and clothing and of world imports of fibers at the expense of more mature industrial economies.

In time, another generation of newly industrializing countries would duplicate this process, so gradually displacing the former in those world markets but providing a growing export market for more capital-intensive manufactures.3 Those manufactures would gradually change from goods whose production is moderately capital intensive (including yams and fabrics among the textile items) to goods produced with very capital-intensive methods (including synthetic fibers).4 Meanwhile, economies that are slower growing and/or are relatively richly endowed with natural resources per worker will tend to retain an export specialization in natural fibers and/or other primary products and import textiles, clothing, and other labor-intensive manufactures from densely populated, lower wage economies.

This theory has strong empirical support from both cross-sectional and time-series evidence. For example, the theory suggests the share of primary products in total exports (PRI) would be negatively related to both per capita income (Y, a crude index of the endowment of nonnatural capital per worker) and population density (PD, a proxy for the endowment of natural resources per worker), and this is what is obtained in estimating Ordinary Least Square (OLS) regression equations from cross-sectional data. Using World Bank data available for the year 1983 for sixty-nine countries with populations exceeding one million,
Anderson and Tyers (1989) obtained the following regression result (t-values in parentheses):

\[
PRI = 180.4 - 9.75 \ln Y - 11.52 \ln PD \\
\text{R}^2 = -0.54 \\
(5.68) \quad (7.15)
\]

The theory suggests also that the share of labor-intensive goods such as textiles and clothing in total exports of manufactures would be very high at first at low levels of per capita income and industrialization and then would fall, and would tend to be higher the greater the population density of the country. Data from the World Bank (1988) provided 1986 shares of textiles and clothing in manufactured exports (TEX) as well as Y and PD data for 1986 for sixty-three countries, from which the following regression equation was obtained:

\[
TEX = 25.6 + 7.77 \ln Y - 0.523 (\ln Y)^2 + 0.0013 PD \\
\text{R}^2 = 0.52 \\
(5.6) \quad (5.7) \quad (6.3)
\]

These regression equations are clearly consistent with the theory of changing comparative advantage presented above, with the latter equation suggesting the share of textiles and clothing in manufacturing exports declines at an increasing rate as income per capita rises.

The three key conclusions that can be drawn from these statistical relationships are also confirmed in the first two columns of annex 4.1. They are (a) that the shares of primary products in total exports and of textiles and clothing in manufactured exports will be higher in developing economies than in advanced industrial economies, (b) that these shares will tend to decline over time in all economies, and (c) that the declines will be faster in economies that are growing relatively rapidly. The experiences of Japan and Northeast Asia's newly industrialized economies especially illustrate the latter two points since they are very densely populated and have been the world's fastest growing economies.

There are two other indicators of changes in comparative advantage that are useful for present purposes. One is an index of export specialization, or what Balassa (1965) called an index of "revealed" comparative advantage, defined as the share of a product group in an economy's exports as a ratio of that commodity group's share of world exports. Columns 4 to 9 of annex 4.1 show this index over time for all primary products, natural fibers, textiles, clothing, other labor-intensive products (as defined by Balassa [1979]), and synthetic fibers. At least four points can be made from these data. First, export specialization is stronger in textiles than clothing for advanced industrial countries, while the opposite is typically true for developing economies (although China prior to its recent reforms was an exception). Second, the export specialization index for both commodities tends to fall over time in high-wage countries, to rise over time for low-wage countries, and to reach a peak for middle-income economies that are at a later stage for textiles than for clothing. Third, export specialization in other labor-intensive manufactures follows a similar pattern to textiles and clothing, suggesting that textiles and clothing are not unusual but rather just an important example of the process of shifting comparative advantage associated with global economic development. And fourth, synthetic fibers represent one of many capital-intensive activities in which
advanced industrial countries have a high but declining comparative advantage, while capital scarce developing economies have a very low but rising comparative advantage in such products (column 9 of annex 4.1).

Japan, being very densely populated, has a much stronger comparative disadvantage in primary products than the average industrial country. Hence its export specialization index in the 1960s was much lower for primary products including natural fibers and much higher for textiles and clothing than other industrial countries. And, since Japan's economy has grown faster than other industrial economies its comparative advantage in these products has declined faster too, as indicated in annex 4.1.

The newly industrialized economies (NIEs) of Northeast Asia (Hong Kong, the Republic of Korea, and Taiwan [China]) also are endowed with few natural resources per worker and so their rapid economic growth also has resulted in a much lower level of and sharper decline in their index of export specialization in primary products compared with other developing economies, while their indexes of export specialization in textiles and clothing are very high. Note, however, that the latter indexes have been declining since the 1960s for labor-intensive clothing, have begun to decline in the 1970s for textiles, and have been rising rapidly for capital-intensive synthetic fibers. These changes reflect the fact that the comparative advantage of these NIEs is gradually moving away from unskilled labor-intensive manufacturing toward more capital-intensive processing. The Association of Southeast Asian Nations (ASEAN) economies too have been following the same general pattern, though somewhat less rapidly because they are somewhat less densely populated, and have not been growing as fast as Northeast Asia's NIEs.

Notice also from annex 4.1 that in industrial countries textiles have a higher and a less rapidly decreasing index of export specialization than clothing, and in developing economies the opposite, which reflects the fact that clothing production is more intensive in the use of unskilled labor than textile production on average (see endnote 3).

This export specialization index is less than ideal as an indicator of comparative advantage because it ignores what is happening to a country's import pattern. An indicator that better captures both trade patterns is shown on the right hand side of annex 4.1, namely, net exports as a percentage of world trade. The story is much the same, however. Industrial (developing) economies as a group are net importers (net exporters) of natural fibers and net exporters (importers) of clothing, while textiles are in between: They switched in the mid-1980s from being a net export group to a net import group for industrial countries, and conversely for developing economies.

It should be kept in mind that textiles and clothing comprise a heterogeneous set of commodities that not only use a wide range of production techniques in terms of their labor or capital intensity but also face widely varying elasticities of demand. The former explains why France until the 1980s had remained a net exporter of clothes, in terms of value, by exporting high priced fashion clothing, and why Italy still is a net clothes exporter, given the strong demands elsewhere in Northwest Europe for fashionable clothing.

Moreover, as real international transport and communication costs continue to diminish, firms are becoming more specialized in producing intermediate goods. This is reflected in changes that are taking place in the extent of
intraindustry trade, that is, in the extent to which imports fail to dominate exports or vice versa. While all advanced industrial economies are gradually reducing the degree of their intraindustry trade in clothes, some are increasing their intraindustry trade in intermediate textile products as their textile firms specialize more heavily in modern capital-intensive processes and leave the more labor-intensive processes (including the final assembly of clothing) to lower-wage countries. For the industrial countries as a whole, imports as a share of consumption have grown more rapidly than exports as a share of production for both textiles and clothing, but the former increased much faster for clothing than for textiles (table 4.1).

Table 4.1: Trade Specialization in Textiles, Industrial Market Economies, 1970-86

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross imports/consumption</th>
<th>Net imports/consumption</th>
<th>Gross exports/production</th>
<th>Net imports/imports plus exports</th>
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<tr>
<td>Textiles</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1970-73</td>
<td>15</td>
<td>-0</td>
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<td>1974-77</td>
<td>18</td>
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<td>1978-81</td>
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</tr>
<tr>
<td>1982-85</td>
<td>21</td>
<td>2</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>1986</td>
<td>23</td>
<td>3</td>
<td>20</td>
<td>8</td>
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<td>Clothing</td>
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<td></td>
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<tr>
<td>1970-73</td>
<td>14</td>
<td>4</td>
<td>10</td>
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</tr>
<tr>
<td>1974-77</td>
<td>21</td>
<td>9</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>1978-81</td>
<td>28</td>
<td>13</td>
<td>17</td>
<td>30</td>
</tr>
<tr>
<td>1982-85</td>
<td>31</td>
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<td>38</td>
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<tr>
<td>1986</td>
<td>36</td>
<td>20</td>
<td>20</td>
<td>38</td>
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</tbody>
</table>

Notes: Industrial market economies include Australia, Belgium, Canada, Finland, France, the Federal Republic of Germany, Italy, Japan, the Netherlands, Norway, Sweden, the United Kingdom, and the United States only.

Source: Australian National University, 1990.

By the latter 1980s, developing countries were supplying more than half the world's exports of clothing and a third of global textile exports, double their shares of the late 1960s. This is reflected in the dramatic increase in the penetration of imports into industrial country markets for these products. The self-sufficiency of industrial countries in textiles has declined from just over 100 percent in the early 1970s to less than 97 percent in the mid-1980s, while for clothing the decline in self-sufficiency has been from 96 to 80 percent over the same period (column 2 of table 4.1). As table 4.2 shows, the share of developing country imports of textiles, clothing, and footwear in domestic sales in industrial countries trebled between the early 1970s and the mid-1980s. These import items are now as dominant as all other light manufactures put together, and are far more dominant than other (more capital-intensive) manufactures. It is the inexorable increase in import penetration by developing country producers of textiles and clothing that makes these items important for newly industrializing
countries and at the same time of concern to politicians in high-wage countries who are worried about job losses in their constituencies.

Table 4.2: Import Penetration by East Asia and Other Economies into All Industrial-Country Markets for Manufactures, 1970-86
(percent)

<table>
<thead>
<tr>
<th>Year</th>
<th>Hong Kong</th>
<th>Korea</th>
<th>Other developing countries</th>
<th>All developing countries</th>
<th>All countries</th>
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<tbody>
<tr>
<td>1970-73</td>
<td>0.3</td>
<td>1.7</td>
<td>1.6</td>
<td>3.6</td>
<td>13.8</td>
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<tr>
<td>1974-77</td>
<td>0.4</td>
<td>3.1</td>
<td>2.3</td>
<td>5.8</td>
<td>18.3</td>
</tr>
<tr>
<td>1978-81</td>
<td>0.7</td>
<td>4.2</td>
<td>3.2</td>
<td>8.1</td>
<td>22.6</td>
</tr>
<tr>
<td>1982-85</td>
<td>1.2</td>
<td>5.4</td>
<td>3.8</td>
<td>10.4</td>
<td>24.1</td>
</tr>
<tr>
<td>1986</td>
<td>1.6</td>
<td>5.6</td>
<td>4.3</td>
<td>11.5</td>
<td>26.8</td>
</tr>
</tbody>
</table>

**Textiles, clothing, and footwear**
1970-73  0.2  2.4  1.9  4.5  20.4
1974-77  0.3  2.8  2.9  6.0  25.2
1978-81  0.5  4.1  3.9  8.5  34.1
1982-85  0.7  5.4  4.6  10.7 30.7
1986     0.9  5.5  5.0  11.4 30.7

**Other light manufactures**
1970-73  0.0  0.3  1.2  1.5  12.4
1974-77  0.1  0.5  1.5  2.1  15.1
1978-81  0.1  0.8  1.7  2.6  17.0
1982-85  0.2  1.0  1.9  3.1  17.7
1986     0.2  1.1  1.6  2.9  17.6

**All manufactures**

Notes: Imports from the countries shown as a percentage of apparent consumption in all industrial market economies. Textiles, clothing, and footwear as defined as International Standard Industrial Classification (ISIC) 32, other light manufactures as ISIC 39 and all manufactures as ISIC 3.

Source: Australian National University, 1990.

Brief though this evidence is, it strongly suggests that the theory presented earlier is helpful in explaining the changing pattern of world production and trade in fibers, textiles, and clothing, notwithstanding the prevalence of trade-distorting barriers provided by the Multi-Fibre Arrangement (MFA) and related policies. The experiences of Japan and East Asia's more recently industrializing economies, reflected in annex 4.1, are especially dramatic and are deserving of closer attention. Hence they are examined in a longer historical perspective in the next two sections.
III. The Experience of Japan in Historical and International Perspective

Japan's rapid economic growth began with the Meiji Restoration in 1868. The deregulation and opening up of the largely agrarian economy at that time was followed by a century of growth in Japanese incomes and capital formation at rates that were more than twice as fast as in the more mature economies (Kuznets 1966; Maddison 1982). The share of Japan's GDP that was exported also rose dramatically such that Japan's trade grew almost ten times as fast as world trade between the 1870s and the 1930s. Also, Japan was then and still is one of the most densely populated large economies in the world with a very poor endowment of agricultural land and mineral resources per worker. From the above theory it would therefore be reasonable to expect the following:

- the primary sector's shares of GDP, employment, and exports in Japan to have fallen from a high level around 1870;
- the shares of textiles and clothing in Japan's GDP, employment, and exports to have risen from 1870, but subsequently to have fallen as comparative advantage moved toward more capital-intensive manufactures;
- the share of natural fibers in Japan's exports to have fallen continually and its share of Japan's imports to have grown initially before falling, along with the relative rise and demise of textiles;
- the production and export of the more capital-intensive activities within Japan's textiles/clothing sector to have gradually increased in importance in that sector;
- the shares of world exports of textiles and clothing and world imports of natural fibers by older industrial economies such as the United Kingdom to have fallen as Japan expanded;
- Japan's shares of world exports of textiles and clothing and world imports of natural fibers to have grown until the takeoff of another generation of newly industrializing economies (for example, Hong Kong, Korea, and Taiwan [China] from the 1960s, mainland China from 1978); and
- the subsequent decline in Japan's importance in international markets for textiles and clothing to have occurred first for labor-intensive clothing and last for capital-intensive synthetic fibers.

That is, in addition to the relative importance of textiles and clothing in Japan's domestic economy rising and then falling, the shares of Japan in world exports of textiles and clothing and world imports of natural fibers also would be expected to trace out a hill-shaped path over time, the latter being part of a landscape in which the hill for older economies would be to the left of Japan on this time path and that for more recent industrializers would be to the right.

A. The Domestic Economy

Annex 4.2 provides evidence that clearly supports these expectations concerning the changing importance of various commodities to the Japanese economy. At the time of the Meiji Restoration, the primary sector accounted for about half of Japan's GDP and more than three-quarters of employment and exports (columns
Since that time those shares have declined steadily so that in the late 1980s the primary sector was contributing less than 10 percent of employment and less than 3 percent to GDP and to exports.

Second, the contributions of textiles and clothing to Japan's economy grew steadily from the 1870s to the 1930s (columns 4 to 7 of annex 4.2). Around 1930, these manufacturing industries provided one-tenth of GDP and employment in Japan and one-third of the country's total export earnings. Their importance within the rapidly expanding manufacturing sector peaked a decade or so earlier, when they accounted for 30 percent of manufacturing value added and around 60 percent of both industrial employment and exports of manufactures (columns 8 to 10). Initially, half of all imports expenditure was on manufactured inputs for the textile sector (predominantly yarns and fabrics) but, as domestic production of yarns and fabrics expanded, imports of natural fibers were required instead (compare columns 7 and 11).

As the Japanese economy matured, these labor-intensive manufacturing industries rapidly lost their competitiveness internationally as newly industrializing economies with less capital per worker emerged in the postwar years. As of the late 1980s, the textiles/clothing sector accounted for less than 2 percent of GDP and employment in Japan and contributes less than 3 percent of exports, or about half of what was spent on fiber, textile, and clothing imports.

A corollary to the loss in Japan's comparative advantage in primary products and the growth in demand by textiles manufacturers for natural fibers is the dramatic fall in the contribution of natural fibers to export earnings and initial rise in the share of fibers in import expenditure. In the 1870s raw silk accounted for around 40 percent of exports, but this contribution had fallen to virtually zero by the 1940s (column 3 of annex 4.2). Meanwhile, raw cotton began to be imported in the 1870s, and raw wool imports started at the turn of the century. By about 1920, these fibers accounted for almost one-third of Japan's total import bill (column 11), a share that is comparable to the importance of energy products in Japan's imports around 1980. In the 1950s, when fiber prices were very high, this share was still around one-quarter, but it has since fallen to only 2 percent with the declines in the textile industry and in fiber prices.

The growth and then decline in Japan's comparative advantage in textiles and clothing is summarized in column 12 of annex 4.2, which shows the importance of these products in Japan's exports as a ratio of their importance in world trade. This ratio rose from around unity late last century to a peak of 5.4 in the 1950s, before falling to well below unity again in the 1980s. The peak in this index is later than in the earlier mentioned indicators, because the share of these items in world trade started falling earlier than did the share in Japan's exports, reflecting Japan's late emergence as an advanced industrial economy. The parallel index of import specialization in natural fibers shows a similar, hill-shaped trend from below unity last century to a peak of 3.5 in the 1950s and a subsequent decline to below unity from the 1970s (column 13). 5

This hill-shaped development pattern can be summarized in two additional ways. One is the changing trade dependence of Japan's textile/clothing sector. Table 4.3 shows the clear increase and then decrease in the share of Japan's production of textiles and clothing that are exported, starting from zero prior to 1870, peaking at around 30 percent in the 1930s, and falling to below 10 percent in the latter 1980s (primarily synthetic fibers and yarns, which are extremely
capital intensive). That table also shows that imports accounted for more than a third of domestic textile and clothing consumption in the early years of Japan's industrial development (primarily cotton yarns and fabrics needed as inputs for producing finished textiles and clothing), that this import dependence fell to almost zero in the 1950s and early 1960s with the growth in domestic production, but that it has since grown to more than one-tenth as low-cost imports of labor-intensive items have become available from nearby newly industrializing economies.

Table 4.3: The Trade Dependence of Japan's Textile and Clothing Manufacturing Industries, 1874 to 1988

<table>
<thead>
<tr>
<th>Year</th>
<th>Share of production exported</th>
<th>Share of domestic sales supplied by imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1874-81</td>
<td>2</td>
<td>42</td>
</tr>
<tr>
<td>1882-91</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>1892-01</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>1902-11</td>
<td>26</td>
<td>15</td>
</tr>
<tr>
<td>1912-21</td>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td>1922-31</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>1932-39</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>1951-55</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>1956-60</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>1961-65</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>1966-70</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>1971-75</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>1976-80</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>1981-85</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>1986-88</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Sources: Calculated from production and trade data in the Statistics Bureau, Management and Coordination Agency, Japan Statistical Yearbook, Tokyo, various issues and Yamazawa and Yamamoto (1979).

The other way used here to demonstrate the rise and demise of the competitiveness of Japan's textiles and clothing sector and the gradual decline in Japan's self-sufficiency in natural fibers is to express net exports as a ratio of the sum of exports and imports of these products. This indicator has the advantage of showing the net trade situation rather than just gross exports or imports, and of removing scale effects by being confined to the range -1 to +1. Columns 1 and 2 of table 4.4 show that in the 1870s Japan's trade in textiles and clothing was almost entirely imports (yarn and fabric), and its trade in natural fibers was almost entirely exports (silk). Since then, these two ratios have moved steadily in opposite directions. In recent decades, Japan's trade in natural fibers has been almost all imports, while its exports of textiles and clothing have grown to almost
match its imports: the net export ratio has fallen from 0.96 in the 1950s to less than 0.2 in the latter 1980s.

Table 4.4: Net Exports as a Ratio of Exports Plus Imports in Fibers, Textiles, and Clothing in Japan, 1874 to 1987

<table>
<thead>
<tr>
<th>Year</th>
<th>Natural fibers (1)</th>
<th>Total (2)</th>
<th>Clothing (3)</th>
<th>Natural fiber textiles (4)</th>
<th>Synthetic fibers and textiles (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1874–79</td>
<td>0.88</td>
<td>-0.93</td>
<td>-1.00</td>
<td>-0.88</td>
<td>-0.95</td>
</tr>
<tr>
<td>1880–89</td>
<td>0.84</td>
<td>-0.65</td>
<td>-0.70</td>
<td>-0.65</td>
<td>-0.72</td>
</tr>
<tr>
<td>1890–99</td>
<td>0.10</td>
<td>0.00</td>
<td>-0.48</td>
<td>-0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>1900–09</td>
<td>-0.04</td>
<td>0.38</td>
<td>0.14</td>
<td>0.38</td>
<td>0.15</td>
</tr>
<tr>
<td>1910–19</td>
<td>-0.18</td>
<td>0.63</td>
<td>0.96</td>
<td>0.83</td>
<td>1.00</td>
</tr>
<tr>
<td>1920–29</td>
<td>-0.04</td>
<td>0.67</td>
<td>1.00</td>
<td>0.68</td>
<td>-0.07</td>
</tr>
<tr>
<td>1930–39</td>
<td>-0.32</td>
<td>0.84</td>
<td>1.00</td>
<td>0.86</td>
<td>0.83</td>
</tr>
<tr>
<td>1951–60</td>
<td>-0.85</td>
<td>0.96</td>
<td>0.93</td>
<td>0.96</td>
<td>0.97</td>
</tr>
<tr>
<td>1961–70</td>
<td>-0.89</td>
<td>0.73</td>
<td>0.89</td>
<td>0.81</td>
<td>0.96</td>
</tr>
<tr>
<td>1971–80</td>
<td>-0.95</td>
<td>0.37</td>
<td>-0.21</td>
<td>0.30</td>
<td>0.96</td>
</tr>
<tr>
<td>1981–87</td>
<td>-0.95</td>
<td>0.24</td>
<td>-0.57</td>
<td>0.36</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Notes: The Standard International Trade Classifications for these four commodity groups are as follows: natural fibers, SITC 26 less 266; clothing, SITC 84; natural fiber textiles, SITC 651, 652, and 653 except 6516-8 and 6535-8; and synthetic fibers and textiles, SITC 266, 6516-8, and 6535-8.


Columns 3 to 5 of table 4.4 show the net export ratio for three subgroups of products within the textiles and clothing group. Clothing is the least intensive in the use of capital per worker among these three subgroups, and synthetic fibers and textiles is the most capital intensive (see endnote 3). Thus it is not surprising that the net export ratio rises to near unity first for clothing and last for synthetic fibers and textiles and that the ratio becomes negative first for clothing (in the 1970s), is currently in the mid-range for natural fiber textiles and is still close to unity but falling for capital-intensive synthetic fiber and yarn production.

B. The International Markets

In addition to developments within Japan itself, the country’s changing role in international markets also is as expected from theory. First, Japan’s share of world exports of textiles and clothing rose and then fell. At the turn of the century Japan’s share was only 2 percent, but by the mid-1930s it exceeded 20 percent before falling gradually from the 1950s to less than 3 percent today as newly industrializing countries became more competitive (table 4.5). The emergence of Japan clearly put downward pressure on exports from older
industrial economies. The United Kingdom, for example, was responsible for the majority of the world’s exports of textiles and clothing during most of the nineteenth century. During the first three decades of this century the United Kingdom’s share had fallen to around 40 percent, by the mid-1950s it was down to 20 percent, and by the latter 1980s to only 3 percent. Similar if less spectacular declines occurred in the shares due to the United States and France. The shares of other Western European countries also fell until the 1940s. The latter then rose for a time, due to the reduction in trade barriers within Europe, which stimulated the expansion of exports especially from lower-wage members of the European Community such as Italy; but it has since resumed its decline.

Table 4.5: Major Industrial Countries’ Shares in World Exports of Textiles and Clothing, 1899 to 1987

<table>
<thead>
<tr>
<th>Year</th>
<th>Japan</th>
<th>United Kingdom</th>
<th>France</th>
<th>Other Western Europe</th>
<th>United States</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1899</td>
<td>2</td>
<td>47</td>
<td>15</td>
<td>29</td>
<td>2</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>1913</td>
<td>4</td>
<td>43</td>
<td>15</td>
<td>29</td>
<td>3</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>1929</td>
<td>9</td>
<td>43</td>
<td>14</td>
<td>23</td>
<td>5</td>
<td>6</td>
<td>100</td>
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<tr>
<td>1939</td>
<td>22</td>
<td>37</td>
<td>6</td>
<td>23</td>
<td>3</td>
<td>9</td>
<td>100</td>
</tr>
<tr>
<td>1955</td>
<td>15</td>
<td>21</td>
<td>11</td>
<td>30</td>
<td>12</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>1965</td>
<td>13</td>
<td>8</td>
<td>8</td>
<td>38</td>
<td>6</td>
<td>27</td>
<td>100</td>
</tr>
<tr>
<td>1975</td>
<td>8</td>
<td>5</td>
<td>7</td>
<td>42</td>
<td>5</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>1988</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>39</td>
<td>3</td>
<td>48</td>
<td>100</td>
</tr>
</tbody>
</table>

Notes: Since Canadian and Australasian exports were minimal, and East European exports are not included for the postwar period because of lack of data, this column from 1955 almost entirely refers to developing countries.


This change was accompanied by changes in the importance of fibers, textiles, and clothing in these older economies’ trade, and in their fiber self-sufficiency, in a manner analogous to Japan except that it occurred earlier. The experience for the United Kingdom, for example, is clear from table 4.6. The share of textiles and clothing in total exports peaked a century earlier for the United Kingdom than it did for Japan, reaching more than 70 percent in the 1820s, but after that it declined monotonically and is now less than 5 percent. Likewise, the share of natural fibers in total U.K. imports rose steadily until the mid-nineteenth century, but again is now close to zero.

Meanwhile, in recent years countries with less capital per worker than the United Kingdom, such as Italy and some rapidly industrializing developing countries, have increased dramatically their shares of world exports of these products, in the case of developing countries from less than 10 percent prior to the 1960s to more than 45 percent in the late 1980s (column 6 of table 4.5). Indeed, as the next section explains, the rapidly developing economies of Northeast Asia
(Korea, Taiwan [China], Hong Kong, and mainland China) alone now account for about one-third of world exports of textiles and clothing.

Table 4.6: Importance of Textiles, Clothing, and Fibers in United Kingdom Trade, 1750 to 1988

<table>
<thead>
<tr>
<th>Year</th>
<th>Share of textiles and clothing in total exports</th>
<th>Share of natural fibers in total imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750-99</td>
<td>52</td>
<td>12</td>
</tr>
<tr>
<td>1800-19</td>
<td>64</td>
<td>11</td>
</tr>
<tr>
<td>1820-39</td>
<td>71</td>
<td>21</td>
</tr>
<tr>
<td>1840-59</td>
<td>64</td>
<td>28</td>
</tr>
<tr>
<td>1860-79</td>
<td>61</td>
<td>27</td>
</tr>
<tr>
<td>1880-99</td>
<td>46</td>
<td>20</td>
</tr>
<tr>
<td>1900-19</td>
<td>38</td>
<td>18</td>
</tr>
<tr>
<td>1920-29</td>
<td>34</td>
<td>14</td>
</tr>
<tr>
<td>1930-38</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>1950-59</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>1960-69</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>1970-79</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>1980-88</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>


IV. The Impact of Growth on Asia's Developing Economies

A. Effects on Their Domestic Economies

The newly industrialized economies of Hong Kong, Korea, and Taiwan (China) are, like Japan and China, among the world's most densely populated countries. They also have had the enviable reputation for a long time of enjoying extremely rapid rates of economic growth, as has China since 1978. Thus the above theory suggests that all these economies should lose their comparative advantage in primary products at a relatively early stage of their economic development and have an initial strengthening of comparative advantage in unskilled labor-intensive manufactured products, such as finished textiles and clothing, but that advantage will eventually diminish.

This is indeed what the historical record shows. The NIEs of Korea and Taiwan (China) exported mostly primary products prior to their industrial takeoff in the early 1960s, but in just two decades their primary export shares have fallen to less than 10 percent. And the same pattern has occurred in China and the Association of Southeast Asian Nations (ASEAN): the share of China's exports due to primary products was three-quarters in the mid-1950s, two-thirds in the mid-1960s, and less than one-half in the 1980s, while ASEAN's primary exports accounted for more than 90 percent of all exports up until the mid-1960s,
but now their share is less than two-thirds (annex 4.1). ASEAN's larger share than Northeast Asia's reflects the fact that the former economies are much more resource rich and less densely populated than the latter economies.

It is also clear from annex 4.1 that, consistent with the above theory, the shares of textiles and clothing in the total exports of East Asia's NIEs first increased and then declined as these economies grew and, soon after their industrial takeoffs, the shares of textiles and clothing in their manufacturing exports began to fall. For ASEAN and China also this has been the case, although since 1982 the latter share for China has been rising as the Chinese economy adjusts to the economic reforms of recent years.

Of more importance from the point of view of this chapter is the change in comparative advantage in (rather than just export shares of) textiles and clothing. Even though the share of textiles and clothing in manufactured exports has been falling, those goods' share of total exports from newly industrializing Asian economies, relative to the global export share, kept rising for some time after each economy's industrial takeoff—despite increases in protection in advanced industrial economies aimed at reducing the latter's imports of these goods. This index peaked at 5.5 in the mid-1950s for Japan and at between 5 and 9 in the 1970s for the newly industrialized Northeast Asian economies, in each case having risen from less than half that value. That is, textiles and clothing were five to nine times as important in Northeast Asia’s exports as in world exports at those peak times (Anderson and Park 1989).

If the trade pattern of ASEAN and China were to follow that of the more advanced Northeast Asian economies, it is likely that their export specialization in natural fibers and other primary products will continue to decline steadily as specialization in clothing and other labor-intensive manufactures strengthens, and that the Northeast Asian NIEs will lose comparative advantage in the latter but gain competitiveness in more capital-intensive manufactures such as synthetic fibers—just as the NIEs’ development has affected Japan’s export specialization during the past two or three decades.

B. Effects on International Markets

How are these changes in comparative advantage affecting the international location of production and international trade in textiles and clothing? Textile and clothing output has grown much more rapidly in East Asia than it has in the rest of the world. It grew especially rapidly in Japan in the 1950s and 1960s, in Korea and Taiwan (China) in the 1960s and 1970s, and in ASEAN and China in the 1980s. In Japan and other industrial countries, however, these industries' outputs have declined in recent years from early 1970s levels, as comparative advantage in these nations moved away from labor-intensive manufactures and toward more capital-intensive products (Anderson and Park 1989, table 4.2).

As a consequence of the Asian NIEs' high rates of growth of production and exports, the share of East Asia in world exports of textiles and clothing has grown dramatically. Notwithstanding the decline in Japan's share, Northeast and Southeast Asia now account for almost 40 percent of that trade, double the share of three decades ago and now similar to the combined share of Western Europe and North America (figure 4.1). This has occurred despite the fact that within the textile industry grouping there are some industries that through technological
change have become extremely capital intensive and thereby expanded in some of the advanced industrial countries (Yamazawa 1983).

Figure 4.1: East Asia’s Shares of World Exports of Textiles and Clothing, 1954–88

Notes: Textiles and clothing cover SITC divisions 65 and 84.

The large jump in China’s share since 1978, together with export growth from ASEAN (and South Asia), may well slow the growth in the share of the three newly industrialized Northeast Asian economies during the next decade or so, as happened for Japan from the mid-1960s—although the new capital-intensive technologies being developed by textile firms in advanced industrial countries will no doubt be adopted by Hong Kong, Korean, and Taiwanese (Chinese) firms, which will slow the decline in their market share. But even with a slowdown in the growth of the East Asian NIEs’ share, it is probable, given the likelihood of ASEAN’s and China’s strengthening comparative advantage in labor-intensive manufactures, that East Asia’s total share of world exports of textiles and clothing will continue to expand through the 1990s.

A corollary to the increasing importance of East Asia in world production of textiles and clothing and to the region’s declining comparative advantage in primary products is the growth in the region’s share of world imports of natural fibers. Japan’s share of global imports of natural fibers has declined somewhat since the early 1970s, but this has been more than compensated for by the steady growth in natural fiber imports by the newly industrialized economies of Northeast Asia since the early 1960s and by China and ASEAN since the 1970s (Anderson and Park 1989, figure 2).

Just as the expansion in East Asia’s production of finished textiles and clothing is stimulating its domestic demand for natural fibers, so too is it stimulating a greater demand for synthetic fibers. The question arises as to who will supply that growing demand for man-made fibers. Since their production tends to be much more capital intensive than yarn and fabric production and, even more so, than finished textiles and clothing (see endnote 3), one would expect late-developing economies to find it less costly to import those fibers at early stages of their development than to produce them domestically. This is in fact what Northeast Asia’s NIEs found in the 1960s and early 1970s:
imported them from Japan, so that while Japan lost out in international markets for labor-intensive finished textiles and clothing (and at a later stage for synthetic yarns and fabrics) it gained market share in capital-intensive synthetic fibers. Similarly, the Northeast Asian NIEs became exporters of synthetic yarns and fabrics somewhat later than was the case with clothing and only now are they becoming significant exporters of synthetic fibers, while growth in their share of the international market for more labor-intensive items such as clothing is leveling off as China’s share grows (figure 4.2). Thus by successful structural adjustments both Japan and the Northeast Asian NIEs are making way for China, ASEAN, and other developing economies in world markets for labor-intensive goods. At the same time, Japan and the Northeast Asian NIEs benefit, as Europe also may do, from the growing import demands of these developing nations—even within the textile and clothing group of commodities—for capital-intensive intermediate goods.

V. Lessons, Future Prospects, and Policy Implications

A. Lessons from East Asia’s Experience

The clearest lesson to emerge from the above analysis is that textiles and clothing are industries that tend to first increase and then decrease in relative importance to an economy as it gradually transforms from being largely agrarian to being a modern industrial state. This rise and demise will not occur uniformly across economies as they develop and their comparative advantages change, because the latter changes will depend heavily on changes in a country’s relative factor endowments as compared with average global endowment ratios. Specifically, industrial competitiveness will begin with more labor-intensive products, and will occur at a lower level of industrial capital per worker, the more poorly an economy endowed with natural resources per worker. It is therefore not surprising that the economic growth of densely populated Japan, following the opening up of that economy after 1868, was accompanied by growth in production and exports of labor-intensive manufactures such as textiles and clothing. Nor is it surprising, given the large size and rapid expansion of Japan’s economy, that its textile exports gradually eclipsed those from the United Kingdom and Europe in international markets.

Furthermore, we saw that in the 1950s and early 1960s, the newly emerging economies of Hong Kong, Korea, and Taiwan (China)—which are even more densely populated than Japan—began to duplicate the Japanese development pattern. Following their economic liberalization and opening up, the production and imports of textiles and clothing from those economies grew very rapidly, as did their demand for imports of natural fibers. As a group these newly industrializing economies (NIEs) made substantial inroads into international markets for textiles and clothing. Just as Japan in earlier decades had put competitive pressure on the United Kingdom and continental Europe, which brought about the relative demise of their textile and clothing industries, so these Northeast Asian NIEs began to reduce the competitiveness of these industries in Japan.
Figure 4.2: East Asia's Shares of World Exports of Clothing, Synthetic Yarns and Fabrics, and Synthetic Fibers, 1965-87 (percent)

Notes: Clothing covers SITC division 84; synthetic yarns and fabrics SITC items 6516, 6517, 6518, 6535, 6536, and 6538; and synthetic fibers SITC 266.

Source: Australian National University, 1990.
However, the competitiveness of the Northeast Asian NIEs grew so rapidly, and Japan's response to their growth was so prompt and positive (for example, developing new labor-saving technologies for these industries, specializing in the more capital-intensive processes within these industries, and subcontracting other processes offshore—see Yamawaki 1991) that Northeast Asia's aggregate share of textile and clothing exports and natural fiber imports continued to increase despite some decline in Japan's share. Moreover, this expansion occurred in spite of the increasingly protectionist policies of the more advanced industrial economies, beginning with the barriers to Japan's exports in the 1930s and escalating steadily from the 1950s with the Short-term Cotton Textile Trade Agreement (STA), which became the Long-term Cotton Textile Trade Agreement (LTA), and then four successive Multi-Fibre Arrangements (MFA). 9

Since the late 1970s we have seen a third generation of export-led NIEs emerge, most notably with China but also in Southeast Asia, especially Thailand. They have added further to the relocation of textiles and clothing production to, and exports from, East Asia. And while the competitive pressure on high-income countries from newly emerging exporters such as China will be offset to some extent by reduced pressure from the East Asian NIEs, this offset will occur only at the labor-intensive end of the spectrum. As firms in the Asian NIEs upgrade to more capital-intensive textile processes in response to competitive pressure from ASEAN and China, the NIEs in turn will pressure Japan, the United States, and Western Europe at the more capital-intensive end of the spectrum of textile and clothing activities. Thus total exports of textiles and clothing from the East Asian region are likely to continue to increase through the 1990s. That is, there is a high probability China's and ASEAN's industrial development will ensure East Asia's share of world exports of these manufactures—and the region's share of world imports of fibers—keeps growing.

B. Future Prospects and Policy Implications

Thus, the historical experience of this region does not suggest there is reason to be pessimistic about the export growth prospects for would-be newly emerging exporters of textiles and clothing—particularly when the international relocation of production and trade has occurred despite very high and rising levels of protection against imports of these products into advanced industrial economies. Those protectionist policies have simply slowed the process of adjustment to long-term changes in comparative advantage—but that means they have slowed the rate of growth of incomes in both advanced and emerging industrial economies.

How the rest of the world responds to this competitive pressure from East Asia will have a critical bearing on the future of poor agrarian economies contemplating their development strategy for the 1990s and beyond. For such economies to increase their share of world markets for labor-intensive textiles and clothing in line with their changing comparative advantage, as they accumulate or import capital, it is essential that advanced industrial countries allow the penetration of increasing volumes of imports of these products. Without that market access, export growth prospects for newly emerging economies will be thwarted, which in turn will dampen their overall economic performance.
In the case of China, the current Multi-Fibre Arrangement (MFA-IV) negotiated in 1986 between industrial and developing countries, and related agreements, allow for very little export growth from China relative to China's potential—even though China used its economic and political might to obtain larger quotas than normal MFA restrictions allowed. If China's market access is not revised upward, particularly in the United States where as much as one-third of China's textile and clothing exports are currently destined, one or both of the following outcomes seems likely. First, China could redirect its export production to rely more on other labor-intensive manufactured goods in which it already is a competitive exporter (see table 4.2 and annex 4.1). This would result in (a) a transfer of increasing import competition from one to another group of manufacturing firms in industrial countries, (b) a reduced demand for American, Australasian, and developing country cotton and wool, and (c) a reduced demand for synthetic fibers from Western Europe, Japan, and Korea. So while restrictions on China's textile and clothing exports serve one special interest group in rich countries, they directly harm others, in both manufacturing and agriculture.

The second possibility is that China may become pessimistic about export-led growth prospects based on manufactures and return to a more insular development strategy, which would result in even slower overall economic growth than the first option. A reduction in growth and in the share of production that is traded necessarily would reduce the rest of the world's economic growth. It would affect exporters of primary products not only because it would reduce demand for specific raw materials needed by China's export manufacturing industries, but also because China's own mobile resources (particularly labor) would be attracted less rapidly out of primary production. And it would reduce the sales by Western Europe, the United States, Japan, and gradually Northeast Asia's advanced NIEs of capital-intensive manufactured goods, services, and technologies to China. This second possibility would be especially unfortunate for the world economy, not to mention for China itself.

C. Will China Flood World Markets?

To what extent might industrial country markets be swamped by Chinese exports of textiles and clothing? Having seen China's share of world exports of these products grow from 3 to 7 percent during the past decade, many observers understandably have been concerned at the prospect of widespread unemployment of textile workers in industrial countries as Chinese goods flood in. These concerns are much greater than the evidence would suggest is appropriate, however, for two reasons. One is that China's exports to some extent are simply replacing exports of other, more advanced economies. As is clear from figures 4.1 and 4.2 above, Japan has made way for the Asian NIEs since the 1950s, just as the United Kingdom and other European countries did for Japan earlier this century. These countries can reasonably be expected to do likewise for China, as indeed is predicted by Trela and Whalley's (1988) general equilibrium modeling results. That is, industrial country imports, and those from China's Northeast Asian neighboring economies, would increase by less than the gross expansion in China's exports.
The second reason to discount the expressed fear of a potential flood of textile products from China has to do with the current degree of China’s import penetration. It is true that China’s share of textile, clothing and footwear sales in advanced industrial economies has quadrupled since the mid-1970s, and that its penetration has been uniformly spread across all major regions. But this growth has been from a low base, so the share of Chinese goods is still very small both in absolute terms and relative to other supplies. As of 1986, China supplied only 1.6 percent of domestic sales of textiles and clothing in all industrial market economies, which is similar to the shares held by Northeast Asia’s NICs or all other developing economies in the early 1970s (table 4.2). Even if China’s exports of these products were to grow at the same frenetic pace as those from Hong Kong, Korea, and Taiwan (China) during the 1970s, China by the turn of the century would be supplying barely 5 percent of textile and clothing sales in advanced economies.

On the other hand, if China’s access to textile and clothing markets were to continue to be limited, its desperate need to earn foreign currency would simply force it to expand exports of other light manufactures. As is clear from table 4.2, China’s share of those product markets in industrial countries also has been growing rapidly, trebling since the reforms. Thus trying to prevent any disruption to one group of manufactures in industrial countries will simply transfer the pressure to another group.

In short, a great deal hangs on whether textile trade is liberalized in the early 1990s. Should the opportunity be provided for China to substantially expand its exports during this decade, that may be just what is needed to reaffirm the Chinese government’s resolve to push on with its economic reforms, to open that economy further, and thereby to promote political stability there and hence in the world at large, not to mention the boost it would give to global economic welfare. On the other hand, if current restrictions were to continue, China’s capacity to expand may well be seriously thwarted. Moreover, other densely populated economies that are looking to become more outward-oriented, such as in South Asia or the centrally planned economies of Vietnam or the Democratic People’s Republic of Korea, also would be discouraged from doing so if markets in rich countries are not opened up more.11

D. What Impact Will Developments in Europe Have?

The political changes that began to sweep Eastern Europe in the late 1980s, together with the 1992 program of greater integration of Southern Europe with the economies to its north, will have important implications for East Asia’s prospects in European and indeed global markets for textiles and clothing. Should the European Community accommodate the wish of the three most recent entrants to the European Community (Greece, Portugal, and Spain) in retaining high barriers to external imports of textiles and clothing into that bloc, these low-wage Southern European countries would be more able to supply the rest of Western Europe with such goods, albeit at a higher cost than East Asia. And if Turkey and other Mediterranean suppliers also were to be given greater preferential access to Western European markets by being granted associate membership to the European Community, Asian and other suppliers would be further squeezed out of European markets (Hamilton 1989b).
The recent political developments in Eastern Europe will have a less certain and less immediate impact than the completion of the integration of Southern and Northwestern Europe. But in the longer run they may have a much more profound impact. Eastern Europe and some of the Soviet republics are as densely populated as Western Europe as a bloc (that is, twice as densely populated as the rest of the world). Should Eastern European economies begin to specialize their production in order to exploit their comparative advantages to the full, the likelihood is that the region would use its low-wage levels to compete at the labor-intensive end of the manufacturing spectrum. And if Western Europe provides preferential access for goods from Eastern Europe, as seems likely, this would further reduce European sales prospects for East Asian and other suppliers. On the other hand, if Europe were to open its markets and East European economies were to grow rapidly as a consequence of economic reforms, at least the volume, if not the share of sales in Europe supplied by East Asia and other developing countries, would be likely to continue to rise in the 1990s.

E. How Liberal Will Textile and Clothing Trade Be in the 1990s?

In assessing the prospects for substantial liberalization of industrial country markets for textiles and clothing, several points need to be made. First, the perceived growth during the 1970s and 1980s in import barriers facing developing country exporters may be more apparent than real. Certainly the trade from developing to industrial countries has continued to grow rapidly, as demonstrated by the import penetration data in table 4.2. This supports the contention of Hughes and Waelbroeck (1981), Yoffie (1983), Bhagwati (1988), and others that protection policies are somewhat porous. The porosity results partly from the ingenuity of producers in developing countries in finding ways around barriers by altering their export product mixes, by relocating production in countries with unfilled export quotas, and so on. But it can also be the result of authorities in the importing countries turning a blind eye to the overfilling of trade quotas in situations where to not do so would be against the countries' broader foreign policy interests. The dramatic import penetration by China during the 1980s may be a case in point (Cline 1987). Thus, while it is generally true that quantitative limitations on trade are more inefficient policy instruments than \textit{ad valorem} trade taxes, there are situations where the administrative flexibility offered by import quotas and voluntary export restraints actually lead to more, rather than less, trade.

This is not to downplay the harm done by the MFA and related barriers to textile and clothing trade. As modeling results show (for example, Trela and Whalley 1988, Suphachalasai 1989, Goto 1990), the MFA does cause wasteful trade restrictions and diversions, and its removal would benefit virtually all developing countries—not to mention the boost it would give to incomes in the liberalizing advanced industrial economies themselves. Moreover, the covert nature of quantitative trade restrictions used under the MFA are such that consumers and other would-be opponents in high-income countries are less informed about the extent and hence cost of these trade barriers than they would be with, say, a tariff, and hence are less active lobbyists against the MFA. Rather, the point is that newly and would-be emerging economies should not be
discouraged by the MFA from adopting an export-led, open-economy industrialization strategy because, as China and Thailand in the 1980s and East Asia's more advanced NIEs in earlier decades have demonstrated, rapid and equitable economic growth based on such a strategy is clearly possible.

F. Ways to Enhance the Prospects for Trade Liberalization

An important way in which the prospects for reforming the MFA can and indeed have been recently improved is through the dissemination of more information on the costs and distributional consequences of existing policies. The global, general equilibrium modeling work of Trela and Whalley's, for example, is able to add greatly to the quantitative information on the costs of these policies. More such work is needed, however, particularly on the distributional consequences within countries. Such models can demonstrate clearly that volume dominated quotas under the MFA hurt poorer consumers in importing countries disproportionately by raising most the prices of low-value standard clothing items, and cause job losses elsewhere in their country that may more than offset the jobs saved in declining textile and clothing firms, and reduce the foreign exchange earnings of those other industries. Disseminating more widely the results of such studies, as the World Bank has been doing recently, for example, (Hamilton 1990), can add significantly to the political pressure for reform from within protected economies.

There are also ways of adding external pressures for reform. China has unilaterally been able to successfully seek greater access for its textile goods by threatening to otherwise reduce its grain and other imports from those protecting countries. While most other developing economies are too small individually to be able to so threaten, they would have some prospect of doing so if they were to become more active and cohesive participants in the General Agreement on Tariffs and Trade (GATT) negotiation process. Moreover, the exporters of fibers, both natural and synthetic, have a common interest in an expanding, less restricted trade in textiles and clothing. As tolerance of high protectionist barriers weakens in high-income economies, it may pay fiber exporters to act together to lobby in multilateral and national fora for such liberalization in a manner similar to that adopted by the so-called Cairns group of nonsubsidizing, food-exporting countries.

Efforts might also be intensified to disseminate in Southern and Eastern Europe the results of analyses that show the virtues of an export-led industrial development strategy that is based on an open economy approach rather than being dependent on discriminatory preferential access to a protected European Community. While the latter preferential approach may seem attractive in the short run, its effects in the longer run will not be as great as an approach based on exploiting their global, as distinct from protected regional, comparative advantage. Now is a particularly opportune time to intensify the dissemination of such liberal ideas with the expiration of MFA-IV, with the completion of the integration of the European Community, and with the reconstruction of Eastern Europe's economies getting under way at long last.

To conclude, further research is still required to improve our understanding of the reasons for the persistence of protection against textile and clothing imports. Like the agricultural sector, textiles and clothing are classic declining
industries in advanced industrial countries. In fact they are typically the first significant manufacturing industries to come under pressure to decline in a growing economy. Being reasonably concentrated geographically and being major employers, firms in these industries have found it worthwhile investing in lobbying for the raising and maintaining of high trade barriers. While this may continue to be the case for a while yet, the time may well come when the benefits to politicians in these countries from protecting these producers is more than offset by the political benefits foregone from other constituents harmed by the protection (Cassing and Hillman 1986; Hillman 1982, 1989). In fact such a collapse of protection has already occurred in the case of footwear protection in some countries (Hamilton 1989a). A better understanding of the reasons for existing policies and their changes can only help in identifying ways to facilitate reform.
### Annex 4.1: Export Specialization and Net Exports as a Share of World Trade in Primary Products, Fibers, Textiles, and Clothing, Industrial and Developing Economies, 1965-87

<table>
<thead>
<tr>
<th>Economy</th>
<th>Primary products' share (%) of total exports</th>
<th>Textiles and clothing's share (percent) of total exports</th>
<th>Index of export specialization(^a) in:</th>
<th>Net exports as percentage of world trade in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total manufactured exports</td>
<td>All primary products</td>
<td>Natural fibers</td>
</tr>
<tr>
<td>All advanced industrial economies</td>
<td>29</td>
<td>6</td>
<td>9</td>
<td>0.70</td>
</tr>
<tr>
<td>1970-79</td>
<td>27</td>
<td>5</td>
<td>7</td>
<td>0.64</td>
</tr>
<tr>
<td>1980-87</td>
<td>25</td>
<td>4</td>
<td>6</td>
<td>0.66</td>
</tr>
<tr>
<td>All developing economies</td>
<td>84</td>
<td>6</td>
<td>38</td>
<td>2.02</td>
</tr>
<tr>
<td>1970-79</td>
<td>80</td>
<td>6</td>
<td>32</td>
<td>1.98</td>
</tr>
<tr>
<td>1980-87</td>
<td>68</td>
<td>9</td>
<td>27</td>
<td>1.76</td>
</tr>
<tr>
<td>Japan</td>
<td>7</td>
<td>15</td>
<td>16</td>
<td>0.17</td>
</tr>
<tr>
<td>1970-79</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>0.13</td>
</tr>
<tr>
<td>1980-87</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>0.12</td>
</tr>
<tr>
<td>Northeast Asian NIEs(^c)</td>
<td>20</td>
<td>38</td>
<td>47</td>
<td>0.48</td>
</tr>
<tr>
<td>1970-79</td>
<td>11</td>
<td>35</td>
<td>39</td>
<td>0.29</td>
</tr>
<tr>
<td>1980-87</td>
<td>8</td>
<td>26</td>
<td>29</td>
<td>0.21</td>
</tr>
<tr>
<td>ASEAN(^d)</td>
<td>89</td>
<td>2</td>
<td>18</td>
<td>2.19</td>
</tr>
<tr>
<td>1970-79</td>
<td>80</td>
<td>3</td>
<td>17</td>
<td>2.03</td>
</tr>
<tr>
<td>1980-87</td>
<td>64</td>
<td>5</td>
<td>15</td>
<td>1.75</td>
</tr>
<tr>
<td>China</td>
<td>56</td>
<td>20</td>
<td>47</td>
<td>1.40</td>
</tr>
<tr>
<td>1970-79</td>
<td>52</td>
<td>21</td>
<td>44</td>
<td>1.32</td>
</tr>
<tr>
<td>1980-87</td>
<td>45</td>
<td>28</td>
<td>51</td>
<td>1.22</td>
</tr>
</tbody>
</table>

**Notes:**
- \(^{-}\) denotes negligible.
- All primary products are SITC 0 to 4 plus 68 less 266; natural fibers are SITC 26 less 266; textiles are SITC 65; clothing is SITC 84, and synthetic fibers are SITC 266.
- \(^a\) The index of export specialization is the share of a commodity group in an economy's exports as a ratio of that commodity group's share of world exports, following Balassa (1965).
- \(^b\) Other labor-intensive manufactures are SITC 632, 633, 664, 665, 666, 722, 735, 821, 831, 894, 895, and 899.
- \(^c\) Hong Kong, Korea, and Taiwan (China).
- \(^d\) Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

**Source:** Australian National University, 1990.
### Annex 4.2: Importance of Textiles, Clothing and Fibers in Production, Employment and Trade, Japan, 1874 to 1987

**Percentage shares**

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary products' share of total</th>
<th>Textiles and clothing's share of manufacturing</th>
<th>Natural fibers' share of total</th>
<th>Index of export specialization in textiles and clothing&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Index of import specialization in natural fibers&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Employment</td>
<td>Exports&lt;sup&gt;a&lt;/sup&gt;</td>
<td>GDP&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Employment</td>
</tr>
<tr>
<td>1874-79</td>
<td>45</td>
<td>73</td>
<td>83 (38)</td>
<td>4</td>
<td>54</td>
</tr>
<tr>
<td>1880-89</td>
<td>44</td>
<td>71</td>
<td>77 (37)</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>1890-99</td>
<td>43</td>
<td>67</td>
<td>55 (29)</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>1900-09</td>
<td>35</td>
<td>65</td>
<td>45 (26)</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>1910-19</td>
<td>34</td>
<td>59</td>
<td>34 (23)</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>1920-29</td>
<td>30</td>
<td>50</td>
<td>38 (32)</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>1930-39</td>
<td>18</td>
<td>45</td>
<td>20 (13)</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>1950-59</td>
<td>18</td>
<td>39</td>
<td>12 (1)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1960-69</td>
<td>10</td>
<td>24</td>
<td>7 (0)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1970-79</td>
<td>5</td>
<td>13</td>
<td>3 (0)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1980-85</td>
<td>3</td>
<td>9</td>
<td>2 (0)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1985-87</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes:**
- a Numbers in parentheses ( ) are for raw silk (the only natural fiber exported).
- b Gross domestic product shares in the prewar period are at constant 1934-36 prices, thereafter at current prices.
- c Indexes of import and export specialization are the share of these items in Japan's trade as a ratio of the share of those items in world trade. Textiles and clothing are SITC items 65 and 84; natural fibers are SITC items 26 less 266. Over the pre-1950 period, these indexes are those for the single years 1899, 1913, 1929, and 1935, global data for which are from Maizels (1963).

**Sources:**
Endnotes

1. The research for this chapter was funded by the Australia-Japan Research Center and the Economic Development Institute of the World Bank. Parts of the chapter draw on the author's earlier work with Young-Il Park on China and Japan (Anderson and Park 1990).

2. A clear exposition of this theory can be found in Krueger (1977). The theory combines modifications to the standard Heckscher-Ohlin trade model, synthesized by Johnson (1968) in his Wicksell Lectures to explain the intercountry pattern of manufacturing trade specialization, with the Ricardo-Viner model popularized by Jones (1971). The latter is necessary to explain the differences between countries in their comparative advantages in primary products relative to manufactures. For further elaboration of the theory see, for example, Deardorff (1984), Eaton (1981), and Leamer (1987). On the usefulness and limitations of population density as a proxy for the stock of agricultural land and minerals per worker, see Bowen (1983).

3. For more on these changes in manufacturing comparative advantage that accompany economic growth and their effects on global patterns of production and trade, see Akamatsu (1961), Balassa (1979), Leamer (1984), and Balassa and Bawwens (1988).

4. Perhaps the best single indicator of (physical and human) capital intensity of production is value added per worker (Johnson 1968; Lary 1968). According to Japan's 1980 data for industry value added, from the input-output table published by the Bank of Japan in its Economic Statistics Yearbook (Tokyo 1984), and for number of employees, published by the Ministry of International Trade and Industry in its Textile Statistics Yearbook (Tokyo 1981), the value added per worker in 1980 in Japan's clothing industries averaged 4.0 million yen, while in the natural fiber spinning and weaving industries it averaged 4.8 million yen, and in the synthetic fiber and spinning industries it was 24.1 million yen. Similar data for Korea from the Bank of Korea's 1985 Input-Output Table (Seoul 1986) also show value added per worker to be highest in synthetic fiber production (12.8 million won), intermediate for yarns and fabrics (4.6 million won), and lowest for finished textiles (3.9 million won) and clothing (2.4 million won).

5. This is not to say the volume of Japan's exports of textiles and clothing declined in the postwar period. In fact the volume kept growing, but at a slower rate than Japan's other exports, whereas the reverse was true prior to World War II. During the six decades to the 1930s, the volume of Japan's total exports grew at an average annual rate of 7 percent while its textile and clothing exports grew at more than 9 percent, whereas in the three decades from the early 1950s the total export volume grew at more than 13 percent while textile and clothing export volumes grew at 5 percent per year on average, according to data in Yamazawa and Yamamoto (1979).
6. This high peak share of textiles and clothing in total exports of 70 percent for the United Kingdom compares with subsequent peaks of less than 50 percent for Japan and its newly industrialized neighbors. Lower peaks are to be expected given the increasing array of labor-intensive manufacturing possibilities that face newly industrializing economies as new products come onto the market and their production processes become standardized.

7. In some cases the share of these goods in just manufactured exports increased initially, but then declined as per capita incomes rose. The initial increase in this latter share reflects the fact that in the preindustrialization phase exports may include some lightly processed primary products that are classified as manufactures, in which case it takes a little time for labor-intensive goods to dominate manufactured exports.

8. This process of international technology transfer was first discussed in detail by Vernon (1966). A more explicit explanation for this phenomenon is provided by Grossman and Helpman (1989).


10. Cline (1987). China also benefited before the 1986 renegotiation of the MFA from a loophole in the import-restrictive arrangements that allowed Chinese firms to export clothing based on ramie (Cable 1987).

11. South Asia began moving in this direction recently: the value of clothing exports from Bangladesh, India, Pakistan, and Sri Lanka grew at a very impressive 18 percent per year in nominal U.S. dollar terms during the 1980s, increasing the region's share of global clothing exports from 1.9 percent in 1979 to 3.6 percent in 1988.

12. For a review of earlier studies of the political economy of manufacturing protection in industrial countries, see, for example, Baldwin (1989).
I. Introduction

The Indian textile industry offers excellent clinical material for those who wish to study the problems of designing and implementing restructuring programs for an industry. At the dawn of independence (August 15, 1947) it was the only industry worth the name in the manufacturing sector. The socio-economic programs initiated by the government of India since independence have left an imprint on the fortunes of this industry and its standing in the international arena.

The industry serves the interest of many segments of the society. To the government of India, it is a source of revenue and a means to earn foreign exchange. To the members of unionized labor, it provides secured jobs with wage rates significantly higher than those prevailing in the unorganized sector of the industry. To the members of the civil service, it provides an opportunity to shape the fortunes of an industry. It is through the civil service that the government of India exercises its owners' control on the units that have been nationalized and that account for approximately 20 percent of the capacity in the organized sector. It is again the civil service that exercises an all-pervasive control on the functioning of the industry: from the stamping and packing of finished products to the decisions concerning the capacity to install and the type of equipment to acquire. To design and implement a restructuring program for such an industry is therefore a Herculean task. How should this task be made more manageable is the central theme of this case study.

The term restructuring implies that an industry has a structure and needs to be changed. How should the structure of an industry be defined is the first question that needs to be answered. What forces acting on the industry make it imperative for the industry to undergo a structural change is the second question
Managing Restructuring in the Textile and Garment Subsector: Examples from Asia

that needs to be explored. Is the intervention of the government required to bring about a structural change, and if the answer is yes, then in what form should the government intervene is the third set of questions that needs to be addressed. Finally, for the restructuring program to succeed, the desired actions must be taken at the enterprise level. How is this to be achieved is another vexing question that needs an answer that is well thought out and yet practical. Providing answers to these questions is the subject matter of this case study. We propose to discuss these questions in the context of the textile industry, so that the conceptual and practical problems inherent in these questions can both be kept in perspective.

II. Organization of the Case Study

In section III of this case study we present the methodology that we have followed in discussing the problems of restructuring the industry. More specifically, we define the term structure of the industry as it will be used in this case study. Having defined the term structure, we then specify the forces that affect the structure of the industry. We conclude this section by pointing out the manner in which an understanding of these forces help the government in formulating a policy that will bring about a harmony between the policies at the macro level and actions at the micro level.

In section IV we focus our attention on the problems of bringing about a structural change. The success of any program designed to bring about a structural change in an industry, in the ultimate analysis, depends upon the actions taken at the enterprise level. How quickly and efficiently enterprises will reformulate and implement their strategic plans in response to the programs for structural change will determine the success of the restructuring program. On the Indian scene, however, there are other players whose actions are equally important for the success of the restructuring program. No restructuring strategies at the enterprise level are likely to succeed without active support from the financial institutions, commercial banks, labor unions, several ministries of the government of India, and the state governments. How should these players understand and prepare themselves for the structural changes, and who should play the leadership role in bringing about the structural change are some of the questions discussed in section VI.

III. Methodology

The first task in this section is to define the term structure of the industry as it will be used in this case study. We shall accomplish this task in two steps. In the first step we define the term Indian cotton textile industry, which forms the
main subject matter of discussion in this case study. Having done this, in the second step we define the term structure of the Indian cotton textile industry as we will use it in this case study. This approach will help us not only in defining the terms that have been used, but will also help in defining the scope of this case study.

The term industry is normally used to mean a group of enterprises producing products that are close substitutes of each other. By this definition, however, it will be very difficult to identify the constituents of the textile industry. All units producing yarn and fabric cannot be said to constitute the textile industry for the simple reason that the products these units produce are not homogeneous and therefore cannot be close substitutes of each other. Ideally, the textile industry should be defined as a group of enterprise producing products falling in relatively nonoverlapping and homogeneous product market segments. Thus all the units producing products in a specified product market segment will, by our earlier definition, constitute an industry. Collection of all such units can then be defined as the textile industry.

The above approach, although conceptually sound, cannot be translated into practice without some modifications. Clearly to identify all the possible product market segments in which different enterprises operate will be an impossible task. To apply this concept in practice we define the product market segments in very broad terms. We define the product market segments in terms of the fiber used in producing the product and the possible end use, though not completely specified as implied. For instance, the yarn could be used in weaving cloth, producing knitwear, or as sewing thread in producing garments.

Thus by this definition the textile industry will be defined as units producing:

1. yarn from jute, silk, wool, cotton, synthetic fibers, and synthetic filaments,
2. fabrics from jute, silk, wool, cotton, synthetic fibers, and filaments, and
3. garments from any of the fabrics made from jute, silk, wool, synthetic fibers, filaments, cotton, and leather.

In this case study we will confine our attention only to a subclass of these units. We will focus our attention on units producing yarn and fabrics from cotton, synthetic fibers, and filaments. Such units, in India, collectively form the Indian cotton textile industry. The units producing garments will not be discussed in any detail. These will be included in our discussion only to the extent that these units constitute a major market for the cotton textile industry.

A. Structure of the Indian Cotton Textile Industry

We have segmented the units in the cotton textile industry according to the technology used and the degree of integration achieved. We use the term structure of the industry to mean the number of units in each segment, the geographical location of the units in each segment, and the installed capacity in each of the segments. The details of these segments are presented in table 5.1.
Table 5.1: Segments of the Indian Cotton Textile Industry

<table>
<thead>
<tr>
<th>Segment number</th>
<th>Degree of integration</th>
<th>Type of technology</th>
<th>Segment referred to as</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Only spinning</td>
<td>Ring spinning or</td>
<td>Spinning sector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rotor spinning</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Only spinning</td>
<td>Hand spun without</td>
<td>Khadi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>use of power</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Only weaving</td>
<td>Using a loom driven</td>
<td>Power loom sector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>by power</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Only weaving</td>
<td>Hand weaving by</td>
<td>Hand loom sector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hand loom</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Only wet processing</td>
<td>Using power</td>
<td>Process house</td>
</tr>
<tr>
<td></td>
<td>of woven fabrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Only wet processing</td>
<td>Without use of</td>
<td>Hand process house</td>
</tr>
<tr>
<td></td>
<td>of woven fabrics</td>
<td>power</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Spinning, weaving,</td>
<td>Using power in all</td>
<td>Composite mills</td>
</tr>
<tr>
<td></td>
<td>and processing</td>
<td>operations</td>
<td></td>
</tr>
</tbody>
</table>

Source: India Cotton Mills Federation, Bombay.

In this case study we will not discuss the problems of restructuring pertaining to segment numbers 2, 4, and 6. Our main focus will be on segment numbers 1 and 7. We shall refer to segment numbers 3 and 5 only to the extent that it competes with segment number 7 and leads to a problem of restructuring in that segment. Segment numbers 2, 3, and 4 together are referred to as decentralized sector. The details pertaining to the number of units in the spinning and composite sectors, their location, and the installed capacities are presented in section IV of this case study.

Having defined the term structure we now turn our attention to a discussion of forces that will change the industry structure. We use the term change in the industry structure to mean the changes that will take place in number of units operating in each of the segments stated in section III/B, the changes in the installed capacities in the segments, and the changes in the locations of the units operating in each of the segments.

B. Forces Shaping Structure of Industry

The forces that shape the structure of an industry are:

1. The government policies influencing the functioning of this industry;
2. Consumer demand;
3. New entrants in the industry;
4. Suppliers and the influence they exercise over the industry. Suppliers cover various inputs such as raw materials, technology, labor, finance, and so forth; and

5. Emerging substitutes for the products produced by an industry.

Although the forces are separately listed they are interactive in their character.

For want of space we will not discuss how these forces shape the structure of an industry. We will remain content by making a few observations concerning the need to understand these forces for designing and implementing a restructuring program.

The government, by adopting suitable policies, can alter any of the forces listed above and thus alter the industry structure. For instance, if it is perceived by the government that the industry should enter into newer product market segments to meet newer types of consumer demand and improve its profitability, then the government can enable the industry to do so by taking a number of actions. It can give tax rebates on products designed to meet the needs of the new customer, and it can lower the costs of inputs required in manufacturing these products.

As an example we cite the steps taken by the government of India to encourage the Indian cotton textile industry to participate more actively in the international trade, which is large and profitable. The government reimburses the industry a part of the indirect taxes paid by the industry on the inputs used in production. This is known as the cash compensatory support, wherein the industry gets a compensation ranging between 8 to 15 percent of the free on board price realized for a product to compensate for the indirect taxes, such as sales tax, paid by the industry. The government has lowered the import duty on machines imported for producing yarn and fabrics for export. Similarly the government permits import, without duty, of raw materials required to produce fabrics for which firm contracts have been entered with the overseas buyer.

Many examples can be cited to show how the government (by understanding these forces) can suitably alter these forces and bring about a restructuring of the industry. We shall discuss in section IV the manner in which the new textile policy formulated by the government of India in 1985 is designed to restructure the Indian cotton textile industry.

IV. Industry Structure: A Historical Perspective 1947–85

To understand the present structure of the industry and the directions in which restructuring is being attempted or is likely to be attempted, there is a need to provide a historical sketch. This is being done in terms of the particular environment in which the industry operated and the changing structure of the industry. All of the forces mentioned earlier will be discussed except (5) listed above, as there are no emerging substitutes for this product.

This part of the case study presents this sketch up to 1985 when a new integrated textile policy was announced based on the report of an expert committee constituted by the government.
A. Government Policies—Dominant Areas of Concern

1. Domestic Use Versus Exports

The government had a general economic policy with emphasis on import substitution and self-reliance. The same policy was extended to the textile field. Throughout this period the emphasis was on fulfillment of the domestic demand, and exports were considered to be a marginal outlet for surpluses. A classic example of this is the export restriction on yarn, as we shall see later. From table 5.2, it would be noted that in the mid-1980s Pakistan's exports were nearly 75 percent more than Indian exports, and China was doing about eight times more.

Table 5.2: Balance of Trade in Cotton and Synthetic Manufactures, 1984
(fiber equivalent, 1000 tonnes)

<table>
<thead>
<tr>
<th>Region</th>
<th>Cotton</th>
<th>Man-made</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial countries</td>
<td>1,811.0</td>
<td>461.0</td>
<td>2,272.0</td>
</tr>
<tr>
<td>Developing countries</td>
<td>-2,208.0</td>
<td>-933.0</td>
<td>-2,941.0</td>
</tr>
<tr>
<td>India</td>
<td>-205.2</td>
<td>-6.2</td>
<td>-211.4</td>
</tr>
<tr>
<td>Republic Of Korea</td>
<td>-186.2</td>
<td>-448.3</td>
<td>-634.5</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>-116.8</td>
<td>-20.9</td>
<td>-137.7</td>
</tr>
<tr>
<td>Pakistan</td>
<td>-355.1</td>
<td>-5.9</td>
<td>-361.0</td>
</tr>
<tr>
<td>China (Still rapidly increasing)</td>
<td>(Including Taiwan)</td>
<td>-835.9</td>
<td>-818.6</td>
</tr>
</tbody>
</table>

Note: - means exports exceed imports.

2. Protection of Employment Versus Movement of Capital and Labor

Employment has been a major concern of the government. With the increased bargaining strength of organized labor, there began to be a certain rigidity in regard to reduction in employment. Redundancy, retrenchment, and rationalization became taboo even in the face of changing technology, markets, and competitive advantages. Strong exit barriers were created even for unviable activities. This led to high cost operation, loss of competitiveness, and sickness sustenance syndrome. Free movement of labor and capital from a
declining to a growing activity or area was severely curtailed. In a bid to
protect present jobs, future jobs (many times more) were sacrificed. A weak and
sickly industrial structure was the outcome. Textiles, being the oldest organized
industry, suffered the most from this approach.

3. Cotton Versus Synthetics

Cotton has been grown for years in large areas of the country. Consequently, the
interest of the cotton farmers has been a matter of concern to the government.
When synthetic fibers, such as polyester, came on the scene, the government
considered it to be a fiber of the rich people. This bias against the synthetics
had its root in the fact that cotton had been grown indigenously for centuries,
while synthetics were invented and manufactured in the advanced countries.

In the initial years, synthetics had to be imported. There was an
apprehension that synthetics would somehow disrupt the cotton economy in
many states. Indeed, there was and still is a consumer preference for synthetics
and its blends with cotton. The fact is that the consumer interest remained
secondary to the concern for the cotton growers. This is reflected in the data
given in table 5.3, where in the late 1980s the share of the synthetics in the
total fiber consumption was less than 15 percent, while the share of synthetics
for most other countries was around 50 percent.

Table 5.3: Cotton Consumption as a Percentage of Total Fibers Consumed
('000 bales of 170 kgs. each)

<table>
<thead>
<tr>
<th>Year</th>
<th>Cotton (2)</th>
<th>Total consumption of all fibers (3)</th>
<th>Percent of cotton in (3) (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1971</td>
<td>6,228</td>
<td>6,724</td>
<td>92.62</td>
</tr>
<tr>
<td>1972</td>
<td>6,993</td>
<td>7,385</td>
<td>94.70</td>
</tr>
<tr>
<td>1973</td>
<td>7,055</td>
<td>7,522</td>
<td>93.80</td>
</tr>
<tr>
<td>1974</td>
<td>7,193</td>
<td>7,635</td>
<td>94.21</td>
</tr>
<tr>
<td>1975</td>
<td>7,161</td>
<td>7,626</td>
<td>93.90</td>
</tr>
<tr>
<td>1976</td>
<td>7,313</td>
<td>7,897</td>
<td>92.60</td>
</tr>
<tr>
<td>1977</td>
<td>6,600</td>
<td>7,607</td>
<td>86.76</td>
</tr>
<tr>
<td>1978</td>
<td>6,878</td>
<td>8,059</td>
<td>85.34</td>
</tr>
<tr>
<td>1979</td>
<td>7,038</td>
<td>8,216</td>
<td>85.66</td>
</tr>
<tr>
<td>1980</td>
<td>7,655</td>
<td>8,655</td>
<td>88.44</td>
</tr>
<tr>
<td>1981</td>
<td>7,414</td>
<td>8,624</td>
<td>85.97</td>
</tr>
<tr>
<td>1982</td>
<td>7,072</td>
<td>8,128</td>
<td>87.00</td>
</tr>
<tr>
<td>1983</td>
<td>7,887</td>
<td>8,935</td>
<td>88.27</td>
</tr>
<tr>
<td>1984</td>
<td>8,444</td>
<td>9,471</td>
<td>89.15</td>
</tr>
<tr>
<td>1985</td>
<td>9,206</td>
<td>10,274</td>
<td>89.60</td>
</tr>
<tr>
<td>1986</td>
<td>9,242</td>
<td>10,297</td>
<td>89.75</td>
</tr>
<tr>
<td>1987</td>
<td>9,887</td>
<td>11,121</td>
<td>88.90</td>
</tr>
<tr>
<td>1988</td>
<td>7,906</td>
<td>9,091</td>
<td>86.96</td>
</tr>
</tbody>
</table>

*Note:* The above figures do not include the consumption of filament yarns.

*Source:* India Cotton Mills Federation, Bombay.

The age-old Indian handloom industry has survived the onslaught of the modern textile industry. Hand looming is a source of livelihood for about 1.5 million families. The craftsmanship has been handed over for generations and has become a part of the cultural tradition. Looking to the cultural, social, and economic aspects, the government has accorded special status to this segment and has thrown a protective net around it. Certain products are reserved for manufacture only by handloom. Special fiscal subsidies are extended to handlooms. Yarn availability to handlooms has been assured mostly by hank yarn obligation on the mill sector, and various institutional mechanisms have been developed to support availability and procurement of raw material for this sector.

B. Government Policy—Main Areas

Government policies that shaped the industry environment would fall under the following broad areas:

1. Government's Policy in Earlier Years

The policies pursued by the government in the earlier years of the Indian textile industry could be classified under the following heads:

  Freeze on Capacity. In the postwar period, right up until the New Textile Policy of 1985, a freeze on looms was imposed on the composite mills. The total number of looms installed has remained constant at around 200,000 over this period (1947–85), and no increase in total width was allowed until 1978. This measure was instituted with a view to protecting and encouraging the decentralized sector.

  Restrictions on Automation. Restrictions were also imposed on installation of automatic looms, purely to protect employment. It was only in 1977 that these restrictions were relaxed. As a result, India today has by far the lowest percentage of automatic looms, let alone the modern shuttleless looms.

  Artificial Compartmentalization. The government had divided the textile industry into neat compartments. It established five categories of textile production, as follows:
  
a. Made wholly or in part of cotton, including cotton yarn, hosiery, and rope;

b. Made wholly or in part of jute, including jute, twine, and rope;

c. Made wholly or in part of wool, including wool tops, woolen yarn, hosiery, carpets, and druggets;

d. Made wholly or in part of silk, including silk yarn and hosiery; and

e. Made wholly or in part of synthetic, artificial (man-made) fibers, including yarn and hosiery of such fibers.

No one was allowed to move from one to the other. The so-called star performers belonged to the art silk sector. What this meant was that continuous filament yarn could be used by art silk units falling under (e) above and not by the erstwhile textile units falling under (a) above. As the consumer preference
was strongly shifting toward synthetics, these art silk units were in a highly favorable position.

Restrictions on Export of Yarn. Because yarn is a commodity item, it can be sold basically on cost competitiveness given a minimum threshold of quality. With weaving modernization closed to the mills, they had concentrated on spinning modernization. Yarn of acceptable quality could, therefore, be produced. The Indian industry had been able to export yarn in substantial quantities in earlier years, but now the government, with the objective of ensuring adequate yarn for hand looms, put quota restrictions on the export of yarn. While Pakistan expanded its spinning capacity and penetrated the yarn export market, India chose not to export yarn as a matter of deliberate policy, although it was equally well placed. As a result, while Pakistan's yarn export went up to 150 million kilograms, India only did 6 million kilograms in 1985. This is shown by the subsequent years' performance, when in 1987 India exported about 80 million kilograms. Even this was done in a halting manner. In 1989 the export quota was 40 million kilograms, excluding exports against advance licensing scheme.

Sector Protection—Fiscal and Nonfiscal. Right until the 1985 Textile Policy, power looms and independent power processing units were given favorable fiscal treatment, as against the composite mill sector. Excise duties were lower for power loom cloth processed by independent power processors. As for the hand loom sector, there was no excise duty at the yarn for fabric stage. Instead there was a subsidy. Moreover, power looms were allowed to grow unfettered. There was little monitoring of fiber usage. Being small and scattered, there was no unionization. Wages and overheads were low, and they enjoyed the advantage of lower power tariff and lenient power restrictions compared to mills. In short, until 1985 the inherent advantages of power looms were further reinforced by regulatory and fiscal favors.

2. High Incidence of Indirect Taxes

Textiles was the first organized industry that came up in the country. Being the first industry, it came up in clusters in some of the states. The contribution of textiles in manufacturing value added was very high. Despite its being a basic item of mass consumption, it became an easy target for generating revenues for the government at all levels. (For details, see tables 5.4 and 5.5.)

Table 5.4: Incidence of Excise Duty

<table>
<thead>
<tr>
<th>Year</th>
<th>Duty Rs./Mtr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1955–56</td>
<td>0.55</td>
</tr>
<tr>
<td>1961–62</td>
<td>0.10</td>
</tr>
<tr>
<td>1971–72</td>
<td>0.30</td>
</tr>
<tr>
<td>1981–82</td>
<td>0.90</td>
</tr>
<tr>
<td>1987–88</td>
<td>1.81</td>
</tr>
</tbody>
</table>

Source: India Cotton Mills Federation, Bombay.
Table 5.5: Share of Indirect Taxes (Excise, State, & Local) Incidence

<table>
<thead>
<tr>
<th>Category</th>
<th>1956–57 (Rs. in crores)</th>
<th>1987 (Rs. in crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total indirect tax paid</td>
<td>55</td>
<td>3,750</td>
</tr>
<tr>
<td>2. Estimated sales of textiles (ex-mill fabrics)</td>
<td>600</td>
<td>13,000</td>
</tr>
<tr>
<td>3. Indirect taxes percent of sales</td>
<td>9.2</td>
<td>29</td>
</tr>
</tbody>
</table>

Source: India Cotton Mills Federation, Bombay.

If we consider all the indirect taxes of the central, state, and local governments, the following picture emerges. For an item of basic consumption, a tax burden of about 29 percent is unconscionably high. When one considers that all indirect taxes are paid only on three-quarters production, as the hand loom is totally exempt from tax, it really works out to about 39 percent (29 x 34) indirect taxes. This has reduced the potential demand for fabrics and adversely affected the economic working of the industry.

3. Price Controls and Dual Pricing

On the one hand, the government imposed heavy controls; on the other hand, the cost of inputs of the textile industry gyrated due to the inflationary economic environment. The government, therefore, felt that being a basic necessity, the weaker section of the consumers are somehow to be protected against the inevitable price increase of the fabrics. For a number of years, this was done by applying price controls on textile products and later on through dual pricing by directing the organized industry to produce certain varieties of cloth at statutory prices. Inevitably, these prices never kept pace with the rise in costs and taxes. It was recognized by the government by 1978 that many mills had difficulties because of the production of controlled cloth at uneconomic prices. Subsequently, the government reserved this for production in the public organized sector and the decentralized sector and gave subsidies for this production.

4. Exit Barrier and Expansion of Public Sector

The government, for most of the period, followed a planned economy model. Plant and machinery of any vintage was considered a productive asset. This view, when combined with the clout of organized labor, led to a situation where no unit, however inefficient or unviable for any reason, was allowed to stop or shrink operations. Whenever a unit closed down, the government, under the pressure of organized labor, restarted the same by absorbing it in the public sector.

The state governments in many cases also followed the same compulsive course in spite of its drain on the state finances due to uneconomic working.
Despite the restructuring of liabilities (that is, the write off of the dues of suppliers and reduction in outstanding bank dues), these units continue to lose heavily. Units in the public sector increased from 24 in 1967 to 176 in 1985, and the cost of such support has assumed astronomic proportions. It is estimated to be around Rs500 crores per year.

C. Change in Pattern of Demand

A shift in the pattern of demand makes it necessary for the management of the enterprises in the industry to change their product market strategies. Those enterprises that cannot change, in the absence of exit barriers will, in the extreme case, be forced out of the industry. The new entrants will either fill the vacuum created by the exit of unviable units or will compete with the existing units in the new product market segments.

To appreciate the structural change that has taken place and will take place, it is necessary to grasp the shifts in the demand pattern that have already occurred. In this section, we focus our attention on the shift in the demand pattern that has taken place both in the domestic and the international markets. First, we provide a sketch of the changing pattern in the domestic market and then outline the changing pattern in the international market.

1. Pattern of Demand in the Domestic Market

The main domestic consumers of the industry are:

- The garment industry
- Institutions such as hospitals, hotels, and enterprises in the corporate sector, and
- The household sector.

The garment industry is growing very rapidly. Initially, the growth in the demand for children's garments and the growth in the demand for a class of women's garments, namely salwar kameez, contributed to the growth of this industry. These new enterprises have started marketing brand name jeans on a national scale. It is now anticipated that these new enterprises will start marketing quality shirts. Thus, the garment industry will grow very rapidly, though at present, the household sector, which purchases its requirements directly from the retailers, constitutes the largest market for the textile industry.

The institutions, such as hospitals, hotels, and enterprises in the corporate sector, also contribute a large market for the industry. The size of this market, however, is about 20 percent of the size of the market constituted by the household sector. In this case study, therefore, we concentrate our attention on the demand pattern of the household sector.

The main conclusions that can be drawn from this analysis are:

- In the case of cotton fabrics, the per capita consumption (measured in meters) declined during 1972 until 1981 and increased during 1981–86, indicating that the consumer preference once again shifted to cotton fabrics. The average price paid by the consumer increased throughout
the period. The increase in average price paid by the consumers, accompanied by the decrease in the quantity purchased by the customer, shows that the customers were buying less, but buying better.\(^2\)

- The shift in the consumer preference toward blended and non-cotton fabrics can be seen from the increase in per capita consumption measured in meters as well as from the increase in the average price paid by the consumers for the fabrics in these groups.\(^3\) During 1981–86, the growth rate in per capita purchases (measured in meters) for fabrics in these groups was maintained. The growth rate in the average price paid by the consumers in this period, however, slowed down. The flattening of this growth rate is probably the result of reduction in duties coupled with greater availability of synthetic raw material.

- These shifts in the demand pattern had a profound impact on the fortunes of the composite mills. Those mills that could not change their product portfolio in accordance with the shifts in consumer preferences, either because of inadequate modernization of the plant or because of the inability to enter the newer market segments, were forced to compete with the new entrants, namely the power looms, in the traditional product market segments. The power looms, as pointed out earlier, had a competitive advantage over the composite mills, and as a result many composite mills had to down their shutters because of non-profitable operations.

2. Changes in International Trade in Textiles

There are three major changes taking place in the international trade in textiles. These are:

- The trade in clothing is increasing at a rapid rate;
- The share of woven cotton fabrics in the international trade is regaining lost ground; and
- The balance of trade is shifting in favor of developing countries.

In value terms the trade in clothing (apparel) is more than double the trade in yarn and fabrics. The size of the international trade in textiles should be of considerable interest to all those who are involved in planning the future of the Indian textile industry. The world trade in textiles alone is approximately six times the value of total Indian exports.

Finally, it is worth noting that in the international trade in textiles, the developing countries are emerging as net exporters and the industrial countries as net importers. How the Indian textile industry should respond to these changes in domestic and international markets is a question that will have to be answered by those who are responsible for designing and implementing a restructuring program for the industry. This question will be discussed in section V.

D. New Entrants in the Industry

Entry in this industry was generally restricted by the government. Integrated composite mills were more or less frozen in number, and expansion of looms was
India's Textile Industry: A Case Study of Subsectoral Restructuring

not allowed. New entrants in the area of weaving were allowed in the decentralized sector, that is, hand loom as well as the small power loom units. Spinning capacity was allowed to be tailored to the needs of the growing decentralized sector. The power loom units have achieved a phenomenal growth, increasing from 1.46 lakhs [1 lakh = 100,000 rupees] in the year 1960 to 10.34 lakhs in the year 1989. This growth became possible as these units did not have an entry or exit barrier. There were no restrictions in establishing new power loom units regarding either the area or size or the type of loom. It also did not have exit barriers, because the units could be worked with flexible production hours or even closed down if found uneconomic. This gave them considerable strength.

Further, they also enjoyed substantial advantages in terms of cost. Wages were lower, overheads were lower, and the power tariff also was lower. They had to bear a little higher raw material cost because of sales tax and distribution charges. However, the net effect was that their costs were lowered by about 8 to 10 percent. An Atira study (proceedings of the Rehabilitation of the Textile Industry—26th Technological Conference held in February 1985) made the following observation:

The combination of power loom weaving and power processing will be more cost effective than composite mills to the tune of about 10 percent even if the excise duties were equalized.

Besides this, they enjoyed fiscal favors from the government.

In 1982 in the Bombay textile industry there was a major strike lasting twelve to fifteen months. This upheaval triggered a deep structural change. The sudden vacuum in the supply of fabrics on account of the strike created a new and far-reaching market access for the decentralized sector. The technicians who were on long layoff assisted the decentralized weaving and processing sectors in a major internal technology transfer. The marketing and technical capabilities of the decentralized sector achieved a quantum leap. Since then they have never looked back.

Loom capacity in the decentralized sector came up rapidly, and when the Bombay industry resumed operation, there was suddenly excess capacity. For various reasons the more cost efficient and flexible decentralized sector began to give a tough time to the composite sector, and its decline began. The growth and the clout of the decentralized sector, which was somewhat latent, exploded with the Bombay strike.

E. Suppliers and Their Power Over Industry—Raw Material

Cotton has been accepted as the dominant raw material for the industry. Synthetics were discouraged despite consumer preference for the same. This was done through fiscal and regulatory mechanisms. The raw material scenario over the years has been characterized by the following:

1. Slow Increase/High Fluctuations in Cotton Crop; Highly Fluctuating Prices of Cotton

The growth in the cotton crop during 1961–85 has been on the order of 3.77 percent per year. Besides, as a large part of the cotton is cultivated in rainfed areas, the crop fluctuated heavily from season to season.
Free trade by way of import/export of cotton was not allowed. As a result, cotton prices fluctuated heavily both between seasons as well as within season. A price stabilization program based either on buffer stock operation or through an import/export program did not exist.

2. Changing Staple Categories of Cotton Crops

The production of different staple categories of cotton crops has undergone a big change. Production of long and extra long staple varieties has gone up considerably. Now India has cottons that can produce from 10's to 100's count. India has emerged as one of the largest producers of extra long staple cotton, second only to Egypt. This could give the Indian industry a major competitive advantage in fine count yarn and fabrics in the international market.

3. High Cost of Synthetics and Compartmentalization in the Use of Fibers

There was a bias against synthetics like there was against polyester. Since synthetics was viewed by the government as a rich man's fiber, it was really turned into such a commodity with heavy taxes imposed on it. Besides the duties, the local cost of manufacturing synthetic fiber and filament yarn has remained high because of uneconomic plant sizes and duty imposed on intermediates in the production of synthetic fiber and yarn.

There was a strong consumer preference for synthetic fiber and yarn, despite their high price. Consumption of blended and synthetic fabrics has been going up. In the late 1970s and early 1980s, the government, responding to this consumer preference, licensed some more polyester capacity. Nevertheless, this fell short of the repressed demand until 1987. An ironic situation arose wherein smuggling of synthetics became rampant, and the manufacturers of synthetic fabrics, despite their high costs, had a buoyant market on the one hand while the cotton textile industry faced sluggish demand on the other.

F. Technology

The technology scene is characterized by the following:

1. Limited Exposure to Modern International Technology

At the end of World War II, the textile industry all over the world needed large machinery replacement programs. During the war, machine building capacity in most advanced countries was diverted for military production. This created a backlog of machinery replacement. Modern machinery was not easily available. There was no indigenous machine building industry in the country at that time. After the mid-1950s, the foreign exchange situation became very tight for India and severe restrictions were imposed on the import of machinery. The Indian machine building industry gradually began to develop.

As a result of a general environment of import restrictions, even this machine building industry could not keep pace with the latest technology in the world. Besides, there was little incentive to continuously develop technology as the
market was insulated against competition (both internal and external). As a result, the technological capability between Indian industry and the world industry kept on widening. Backlog of modernization as estimated at the end of 1979 by the High Powered Committee to assess long-term demand for textile machinery was Rs2,257 crores at 1950 prices (1 crore = 10 million rupees). Subsequently, both the value as well as backlog have piled up as technological advancements have taken place.

2. Slow Absorption of Modern Technology Because of Response from Labor

Availability of machines was restricted as we saw earlier. Automation was discouraged and whatever modern technology was introduced, its adoption was slowed down as a result of the attitude of labor. The principle of rationalization without tears was adopted. In other words, rationalization as a result of technology changes could be implemented only on the basis of voluntary resignation from the workers and after an agreement with the union. This slowed down the process of adoption of such technology and increased the cost of such adoption.

3. Barrier Against Import of Process Know-How

Technology was viewed mainly in terms of modernization of machines. It was assumed that industry had acquired enough process know-how to exploit the potential of the new generation machines. The government therefore did not allow import of process know-how, generally, barring a few exceptions. In advanced countries, free flow of such process know-how leads to a multiplier effect in upgrading technology. India has, however, relied only on machine modernization (even this to a limited extent) and the limited process know-how that goes with it.

4. Inadequacies of Indigenous Research and Development

As we saw earlier, it was assumed that process know-how would develop indigenously either with the industrial units or through the efforts of the technology institutions. Research associations, promoted in a cooperative manner and supported by the government, were supposed to fill in the gaps in this regard. However, in an insular environment the priorities of technology development were topsy-turvy, interaction opportunities were limited, and the motivation for improvement was not strong. As a result, Indian efforts in this direction have remained inadequate, and a large gap has emerged in the area of technology used by the Indian industry compared to other textile countries.

G. Labor Scenario

The main features of the labor scenario have been as follows:

1. Declining Employment in the Composite Sector

The number of composite mills has remained constant in this period. However, the employment has declined considerably from 679,000 in 1960 to 561,000 in
Managing Restructuring in the Textile and Garment Subsector: Examples from Asia

1983 (daily average number of workers employed in composite mills). This reflects the lack of growth in this segment due to government restrictive policies and shrinkage of activity in the post-Bombay strike period. It also reflects, to some extent, some shrinkage of work force due to rationalization.

2. **Large Disparity in Wages Between Organized and Decentralized Sectors**

Wide disparity in wages exists between the organized and the decentralized sectors. Over the years this has tended to widen more, thereby undermining the competitive capacity of the organized sector. The difference in the wages for the two sectors has been of the order of 50 to 60 percent.

3. **Stagnant Productivity of Labor**

Productivity of labor has remained more or less stagnant except where modern high speed machines were installed or technological improvements were brought about. As a result, the productivity in the spinning department has improved with modernization, while weaving productivity has stagnated. A study of the interfirm comparison of productivity reports by the research association brings this out.

4. **Exit Barrier and Immobility of Labor**

The point about exit barrier has been made earlier.

5. **No Link Between Wages and Productivity**

Wages in the textile industry have three major components: basic wage, dearness allowance, and fringe benefits. Basic wage has gone up on the basis of wage accords concluded by the unions and the industry. However, dearness allowance has gone up considerably, reflecting the increase in the consumer price index. Fringe benefits have also gone up as a result of the statutory enactments from time to time. None of this is linked to an increase in productivity.

6. **The Bombay Strike of 1982**

Textiles was the first organized industry in the country. It also had the benefit of mature leadership for a number of years. In both the centers of Ahmedabad and Bombay this fostered a tradition of conciliatory approach and peaceful negotiation. Direct action was eschewed except under extreme circumstances. As a result, the number of man-days lost in the textile industry has been the lowest among all the organized industries.

The sole exception to this was the Bombay strike of 1982 led by Dr. Datta Samant. The strike was effective for about twelve to fifteen months before it fizzled out without any gain for the workers. It was a major upheaval in the textile industry and triggered major structural changes, as seen earlier.
H. Enterprise Management

It must also be noted that the management of the textile industry has largely suffered from static perceptions. In other words, it was widely assumed by managements that the industry would be in a static state and the changes taking place would be temporary or cyclical. These perceptions related to material (that is, cotton prices, technology, products) as well as markets. When raw material prices rose, it was expected that they would come back to their original levels. Technology was perceived through a mindset of marginal changes, for example, from looms running at 200 revolutions per minute against looms running at 180 revolutions per minute or from a 4-roller drafting system to a top arm drafting system. The rate at which new products were brought out also was very low. Market demand was perceived as remaining the same both in terms of quantity as well as in terms of the type of products required. The distribution structure was also assumed to be static. It is also possible to explain such perceptions in terms of several environmental factors.

Because of the freeze or expansion and related slow growth of the decentralized sector in the first two decades after independence, the industry enjoyed a seller’s market. Further, because of the foreign exchange problem as well as the concern about protecting employment, new technology was not allowed. Synthetic raw material was discouraged and cotton was considered to be the only raw material appropriate for the country. All these factors also contributed to the static perceptions of the industry. Industry became more inward-looking and quite insensitive to global market opportunities. This happened to a number of old established industries in the country. It was in the early 1980s that the damage done by the closed economy model to our industries was realized, and the government started gradually opening up the system and emphasizing the need for modernization. In the textile industry, such static perceptions led to slow response to market changes. While it can be said that in a large measure the overall atmosphere of an inward-looking closed economy led to such perceptions and attitudes, the management must share blame for complacency.

I. Structural Changes During 1947–85

We have examined the various environmental (policy and non-policy) factors that generated pressures on the textile industry. The most important of these have been:

1. Stagnation in per capita consumption and slow upgrading of quality fabrics.
2. Tremendous surge in the new entrants—the decentralized power loom sector.
3. The clout of the suppliers to this industry, namely, the cotton lobby, the fiber producers’ lobby, and organized labor.
4. Restrictive government policies for expansion, fiber use, exports, and so on, reinforcing the power of the suppliers and the new entrants.

The combination of these factors has led to pressure on the finances of the textile industry. The industry suffered poor profitability and could not renew or upgrade its capital assets. With the deteriorating finances, sickness became
more endemic. The financial requirements of the industry went up because of increase in the prices of its inputs resulting in higher working capital finance and increasing modernization needs. Because the profitability of the industry was poor, it could not generate enough internal resources to meet both these needs. The debt of the industry has considerably increased, and the profitability has remained very poor (see annex 5.1).

Whatever industry could generate, a large part of it was plowed back and invested in equipment. However, it still fell short of modernization needs, let alone increased working capital requirements. The industry was unable to recover from such damage and deterioration to its financial structure and became increasingly afflicted by sickness.

This is the scenario of the composite sector of the organized sector of the industry. On the other hand, the spinning sector of the industry has been doing well and growing, as can be seen from the number of units as well as the increase in spindleage. New spinning mills are coming up in areas where there were very few mills earlier. Thus a locational redistribution of the textile industry is slowly taking place. Hand in hand with this, one finds the explosive growth in the power loom sector, that is, the decentralized weaving sector.

These are the kinds of major structural changes taking place in response to the environmental factors we have seen earlier. As this scenario was unfolding, the government naturally was concerned about the increasing sickness of the organized sector industry, stagnation in per capita consumption of textiles, huge backlog of modernization, poor productivity levels, and poor export performance compared to the Indian industry's potential. The government therefore constituted an Expert Committee to go into various aspects of these problems and come up with recommendations for an integrated textile policy.


The Expert Committee produced a comprehensive report with specific recommendations to be implemented as a package. In June 1985 the government announced the textile policy based on the recommendations of the Expert Committee. Among the important observations of the policy are the fluctuations the textile industry has experienced in its fortunes in the past. According to an analysis of the current difficulties faced by the industry, the present crisis of the industry is neither cyclical nor temporary, but suggests deeper structural weaknesses. Therefore, the government reviewed the textile policy and after careful consideration, formulated its new policy for the restructuring of the textile industry in India with longer-term perspective.

The existing textile policy sets out a number of objectives. While each of these objectives is important, the multiplicity of objectives has inhibited the achievements of the main task of the textile industry, that is, to increase the production of cloth of acceptable quality at reasonable prices to meet the clothing requirements of a growing population. Henceforth, the approach to the textile industry would be guided by these main objectives.

The main elements of the new policy are:

- Dismantling the sectoral approach to the industry, retaining a special role only for nonpower technology;
- Adopting a multi-fiber orientation and fiber flexibility;
• Providing adequate raw material at reasonable and stable prices;
• Reducing levels of duties on synthetic raw material;
• Removing entry and exit barriers;
• Emphasizing modernization and technology and machinery imports at international prices; and
• Making Indian textiles more competitive in the world market.

This policy removed the constraints and restrictive policies of the earlier years. It brought into sharper focus the objectives of the policy with respect to the consumer, labor, employment, exports, and so on, in the comprehensive framework, which laid greater emphasis on cost efficiency and freer play of market forces. The whole edifice of the restrictive policies, which created a suffocating atmosphere over the previous four decades, was dismantled.

In terms of structural changes, this policy does the following:

1. It tries to redress the balance of power between the suppliers of inputs and the industry. As seen earlier, the cotton and fiber lobbies had so much clout that they were able to keep raw material prices high and favorable to the suppliers. Organized labor remained highly paid and highly protected. With the recommendation of the price stabilization scheme for cotton, the industry would be able to operate in a more suitable environment. As far as fibers are concerned, progressive reduction in duty would help stimulate demand. Liberal and adequate financing of synthetic fiber capacity and the promise to keep the import window open to redress the power balance between the fiber manufacturers and the industry would be useful. As far as labor is concerned, the removal of the exit barrier, although conditional, meant a new equation between labor and the industry.

2. It has removed the entry barrier for all segments of the industry, that is, the organized spinning, the organized composite sector, the decentralized power loom sector, and the independent process houses. This, coupled with the removal of the barrier through an endorsement of closure of the uneconomic activity, meant that production would now be carried on in the most cost-efficient segment. Even spatially, the same logic would apply. The policy did recognize that this would mean freer movement of labor and capital and that there would be problems of adjustment, especially with respect to labor. That is why the Textile Rehabilitation Fund Scheme was devised.

3. It has very emphatically talked about a multi-fiber approach and providing fuller fiber flexibility to the textile industry. Many steps in this direction have been enunciated. An important aspect of this new flexibility involves the progressive reduction of fiscal levies on man-made fibers and yarns, and also on the intermediates used as inputs for their production. This step is being taken to facilitate the absorption of increased domestic production so that the benefit flows to the consumer in the form of lower prices on synthetic and blended fabrics.

This reflects the concern of the government relating to stagnation in demand and the strong consumer preference for synthetic fibers and its blends. This policy is a major breakaway point from some of the policies followed in the past. It alters basically the environment in which the enterprises function.
New decision choices have emerged with the enterprises. It has now become necessary and possible to evaluate the viability of each of the operations in each of the sections and question whether the same should be carried on. In other words, a composite mill will have now to question whether it should carry on with the weaving activity, given the competitive strength of the power loom; and, similarly, the processing activity vis-à-vis the competition of the independent process houses.

These choices will also have to be related to the kind of markets in which each unit would compete and the kind of products with which it will compete. If the unit chooses to cater to the high-priced, high quality products required by the ready-made garments for the domestic market or for high value added items for exports, it will come to a different answer in terms of what activity it should carry on. As against this, the unit that considers the domestic market as its battleground may decide to phase out its weaving activity. Such major strategic questions will now come into sharper focus at the enterprise level. It has now become possible for the integrated mills to look at spinning, weaving, and processing as separate activities. Thus the structure of the organization at the unit level also would undergo a major metamorphosis.

V. Designing and Implementing Programs of Structural Change

A. Prerequisites for Designing Programs for Structural Change

In section III.B, we highlighted the forces that shape the structure of an industry and pointed out that the policymakers can alter these forces and thus set the course for a structural change. How these forces should be altered is therefore the key question that needs to be answered in designing a program for a structural change.

At least in principle, the answer to the question posed above depends on the objectives that the policymakers have set for the industry. The articulation of these objectives in a manner that will give a direction to policy is not an easy task. We illustrate the process of setting objectives and the difficulties in this process with the example of the textile industry. In this industry, the objective set by the government of India in the new policy is to increase the production of cloth of acceptable quality at reasonable prices to meet the clothing requirements of a growing population.

The objective, though clearly stated, is not clear enough to provide a direction for policy. For instance, it is not clear as to what these clothing requirements are and who should decide what these requirements should be. Is it to be assumed that the clothing requirements prevalent in the pre-independence period would continue to obtain today? Is this question to be decided by the government or the consumer? The purpose in raising these questions is not to engage in an exercise of hair splitting, but to point out the difficulties and the importance of laying out a set of well-designed objectives for an industry before embarking upon a program of structural change.

We continue with the Indian textile industry to illustrate how an interpretation of the objective will influence the policy measures that the government might adopt for the industry. If we do interpret the objectives to mean that the clothing requirements are the same today as they were before
independence and that the government will ensure that any other pattern of requirement will either not be permitted or strongly discouraged, then the policy directions are clear. The policy will then be:

- Either to ban or strongly discourage, through fiscal measures, the use of man-made fibers and filaments, since these fibers and filaments did not exist then; or
- To provide no stimulus to the enterprise to participate actively in the international trade.

Thus the past policies of the government of India prior to 1985, as stated in section IV.B, were perhaps a result of the objectives that the government had set for the industry. Should we, however, interpret the stated objective to mean that the government wants the industry to meet the needs and wants, for clothing, of both the Indian and overseas consumers without any subsidies from the government, then the policies we recommend here, particularly those pertaining to providing stimulus to exports, are the appropriate policies.

The change in objective from “meeting the clothing requirements of the growing population” to “meeting the needs and wants of both the Indian and overseas consumers” will have a profound impact on the enterprises in the industry. The enterprises, given the objective, will have to:

- assess the needs and wants of the domestic and the overseas customers;
- decide which needs and wants they can meet effectively and efficiently;
- accept the existence of the new entrants, the power looms, and understand their competitive strengths; and
- accept the fact that the exit from the industry will be inevitable if they cannot formulate and implement an effective competitive strategy.

The government, if it wants the enterprises to take the above actions, must, by appropriate policies, so alter the forces affecting the industry that enterprises wanting to take these actions must be able to do so without any impediments. The foregoing discussion would make it clear that the design of a restructuring program is heavily dependent on the objectives that the government sets for the industry. A clarity of such objectives is thus an important prerequisite for the designing of a restructuring program.

We have discussed the possible interpretations of the objective set for the industry in the new textile policy. Which of the two possible interpretations should we accept? Considering the preamble of the policy document and the policies stated in the document, we would interpret the objective to mean meeting the needs and wants of both the Indian and overseas customers without any subsidy from the government. Are the policies designed to help the industry achieve this objective? We answer the question unhesitatingly in the affirmative.

Designing a program for achieving the objective is the first important step. Alone, however, it is not sufficient. The implementation of a program, particularly for a radically new program, is not easy. We now turn our attention to the problems of implementing the new textile policy to illustrate the problems of implementation.
B. Problems of Implementation

The implementation of a policy, designed to achieve a set of objectives that are radically different from those in the past, is unlikely to be smooth. All the parties involved with the industry have to make major changes in their strategies, which is not easy. Impediments in the implementation are therefore to be expected from all the parties—the enterprises, suppliers, the financial institutions, and the different arms of the government. The type of problems each of these parties will pose in the implementation of the new policy is the central focus of this section.

1. Problems at the Enterprise Level

In this section, we confine our attention only to the composite mills for the reason that this is the sector of the industry that has the greatest need for restructuring. The problems at the enterprise level are twofold. The first concerns the group of enterprises that are not even able to formulate viable strategy in the changed circumstances. The second concerns the group of enterprises that can formulate viable strategy but cannot implement it because of the problems posed by other parties involved in the industry.

As pointed out in section IV, the management of the textile industry has suffered from static perceptions. This weakness will be the single largest obstacle in the way of implementing the new textile policy. The new textile policy makes it imperative for the management of the composite sector to map out a competitive strategy in relation to the power looms. The composite mills have to enter product market segments in which the power loom cannot enter, either because of technological barrier or because of the barriers created by the requirement of large amounts of capital for entry into the market segment.

The changing demand pattern presented earlier offers many opportunities to the management of mills in the composite sector to identify such product market segments. The composite mill, for instance, could become suppliers of quality fabrics to the domestic as well as the overseas garment producers, thus achieving a synergy between the domestic and the international markets. It is in these segments that the composite mill will have a competitive advantage not only over the power looms, but also over many other producers in the world.

The quality fabrics required by the discerning garment producers have to be produced on expensive machines, which a large segment of the power looms do not have. The production of these fabrics requires a culture for quality that is yet to take root in the power loom sector. The composite mills thus can gain a competitive edge over the power looms.

The new textile policy makes it possible for the mills to import machines at a concessional rate of duty and raw materials at international prices. The recent policies of the government of India, supplying diesel at international prices to manufacturers exporting more than 25 percent of their production, providing them long-term loans at reduced rate of interest, and the availability of extra long staple cotton and the depreciation of the Indian currency in relation to the major currencies of the world, give the Indian mills a competitive advantage over other competitors in the market for quality fabrics. These opportunities, however, have to be actively searched and pursued, a skill that many managers of the mills have not sharpened. Enterprises under the stewardship
of management lacking the requisite skills of strategic management should either be allowed to close or have their management changed. Both these options are difficult to implement, particularly in the mills that have been nationalized. There are certain ideological difficulties in decentralization and closure of mills.

Management of those enterprises that can plan and implement bold strategies faces another set of problems. First and foremost, these enterprises will find it extremely difficult to retrench the labor force that will be rendered surplus because of introduction of modern machines for production of quality fabrics. Similarly these enterprises will find it difficult to cease production of those fabrics that can be produced more efficiently by the power looms. Once again, this is due to the difficulty of retrenching labor force rendered surplus because of divestment from product groups where the power looms have a competitive edge.

The second difficulty that these enterprises will encounter is to attract long-term capital from the capital market and short-term funds from the money market. The requirements of capital for entering into the newer product market segments are substantial, and the returns from such investments, though attractive, are not risk free. Our estimate is that for undertaking even a program of moderate size for entering the new product market segments, the investment required is of the order of Rs300 millions (Rs30 crores). For enterprises in the private sector, even those that have a good record of profitable operations, raising capital of this order is not easy. The capital market does view the textile industry as a high-risk industry.

The problem of raising short-term funds is perhaps a more difficult one. In spite of the liberalization that has taken place recently in the money market, the commercial banks constitute the major source for raising short-term funds. The guidelines followed by the commercial banks for assessing the working capital needs are quite rigid and do not take into account the special problems of mills trying to enter a new product market segment. In the initial phases, the working capital requirements are high. The quality of the product has to be established, for technical reasons larger lots have to be produced even though the buyer orders only smaller lots, and defective lots have to be carried in inventory for a longer time either because they need to be reprocessed or because markets for such defective lots are not easy to find. For these reasons, in the initial phases, the working capital requirements are higher than those permissible under the guidelines of the commercial banks.

2. Problems at the Suppliers’ Level

The labor market, which supplies an important input to the industry, is a major stumbling block for the new textile policy. The labor market, which supplies labor to the composite mills, is highly organized and politically powerful. These powerful suppliers will not permit closure of mills, particularly mills in the nationalized sector. They will also resist technological changes on the grounds that it will lead to unemployment, and also resist, on similar ground, divestment of activities that have become unviable because of competition from power looms. This is in spite of the fact that the new textile policy provides a safety net for unemployed workers in the form of a rehabilitation fund. This
fund is intended to provide relief to workers left jobless by divestiture or new
technology, albeit for a limited period. The constraints imposed by the labor
market on the ability of the industry to make a strategic shift is a perfect
example of the labor market imperfections referred to by Alan Roe (1984) and
others.

Suppliers of cotton, synthetic fibers, and filaments constitute another
powerful group. The farmers who supply cotton are now well organized and
have resisted attempts to stabilize prices of cotton by participation in
international trade. Farmers would want to export cotton when the supply
exceeds demand, but would resist imports when the reverse holds true. The
suppliers of synthetic fibers and filament yarn are large chemical companies
that, being new enterprises, enjoy protection from imports by way of high
import duties. As a result of the power of the suppliers, the government has not
yet been able to restore the balance in favor of the textile industry.

3. Problems at the Level of Financial Institutions

In a simplified sense, it could be said that the financial institutions were
created to correct the failure of the capital market. Either the capital market
in India was not large enough to provide the capital required for the rapid
development of the Indian industry, or the capital market was not willing to
finance risky and long-gestation projects that were vital from the national
viewpoint.

Undoubtedly, the financial institutions have played an effective role in
meeting the requirement of the capital needed by the Indian industry. These
institutions have developed skills in project appraisals and developed deep
insights into the problems of the Indian industry. The financial institutions are
in a unique position to influence strategies at the enterprise level. They can
nominate members on the boards of directors of enterprises they finance, and
they can insist on the formation of management committees to supervise more
closely the management of the operations of the enterprise.

4. Problems with Various Arms of the Government and the State
Governments

There are at least three ministries of the government of India concerned with
the textile industry. These are the Ministry of Textiles, the Ministry of
Finance, and the Ministry of Commerce. In addition, the state governments are
also involved with the textile industry.

The Ministry of Textiles shoulders the responsibility for the
implementation of the textile policy and also for the functioning of the mills in
the nationalized sector. It is from this ministry, therefore, that one expects a
leadership role. We would expect this ministry to disseminate among the
enterprises complete information about the changing patterns of demand and
changing trends in technology and to work actively with the industry in forging
a viable strategy. Working with a holding company that manages a large
number of textile mills in the nationalized sector, the ministry has an intimate
knowledge of the industry. It should be able to set an example for the rest of the
industry in matters of strategic planning.
The success of the new policy to provide to the exporters raw materials at international prices depends a good deal on the Ministry of Commerce. All the procedural matters of imports and exports are under the supervision of this ministry. The math relating to duty concessions/remissions falls under the domain of the Ministry of Finance. Such concessions/reliefs have wider implications on the overall budgetary situation and, as such, implications of program for reliefs/concessions have, necessarily, to be gradual.

Finally, the actions of the state government affect the industry in many ways. The state governments are responsible for the implementation of the labor laws. The imperfections in labor markets can be removed if the state governments want to do so. The sales tax levied by the state governments on inputs used by the textile industry, the octroi charged by the municipal corporations and the power tariffs charged by the state electricity boards differ so widely from state to state that the industries in some states, like Gujarat and Maharashtra, are at a competitive disadvantage in comparison to industries in other states. If the states cannot change their policies, then they should allow the industries to relocate their production centers.

As a result of all these impediments created by the parties who have to implement the policy, the objectives of the policy have not been fully achieved. The industry continues to focus its attention on the domestic markets, and many of the units that should have been closed continue to function at a great cost to the economy. The purpose of pointing out the impediments is not to find faults but to identify the problem areas and suggest remedial measures. We now discuss these remedial measures.

C. Actions for Implementation

For the resolution of the problems listed in section V.B, what is needed, stated in simple terms, is effective leadership. This leadership, in our judgment, can be and should be provided by the Ministry of Textiles and the financial institutions.

The Ministry of Textiles must provide leadership in:

- galvanizing into action the mills under the control of the National Textile Corporation for achieving the objectives set for the corporation in the new textile policy;
- helping the industry in overcoming the obstacles created by the imperfections in the labor market; and
- assisting the industry in seeking solutions to the problems listed earlier by working with the ministries of the government of India and the state governments.

A survey of the installed looms in the composite mills, conducted by the Indian Cotton Mills Federation (ICMF), shows that in 1988 approximately 35 percent of the looms installed in working units were installed in the mills owned by the National Textile Corporation. The size of the corporation, coupled with the financial support it receives from the government of India, makes it a formidable force in the industry. Considering the special position that the N.T.C. enjoys in the industry, it was given an important role in the new textile policy. The new textile policy expects that N.T.C. would provide a stabilizing influence and healthy competition in the textile industry.
In fulfilling the role, the N.T.C. has a long way to go. A surrogate measure that we use to assess the ability of the N.T.C. to compete in the industry is the proportion of its loom capacity contributed by the installation of the non-automatic looms. The ICMF survey referred to above shows that the proportion of non-automatic looms in the installed capacity of the N.T.C. is approximately 91 percent. In the mills in the private sector, the proportion is approximately 50 percent. The severe competition from the power looms will therefore affect the N.T.C. far more than it will affect the mills in the private sector.

The Ministry of Textiles will have to set an example for the rest of the industry by demonstrating that the top management can compete by devising an appropriate strategic response to the changing environment. It will have to goad the N.T.C., which is responsible to the Ministry of Textiles, into preparing strategic rather than operational plans. It is the strategic plans that will help the organization in moving into newer product market segments as is desired in the new textile policy. The mechanism that can be used for making the N.T.C. take a new look at its strategic plans is that of the memorandum of understanding (MOU), signed jointly by the public sector undertaking and the Ministry to which the undertaking is responsible.

Having to manage such large capacity in the industry, the Ministry of Textiles has firsthand knowledge of the difficulties caused by the imperfections in the labor market. In addition, the ministry is aware of the cost the nation is paying for not removing these imperfections. In section V, we pointed out the substantial subsidies provided from the public funds to support the uneconomic operations of the N.T.C. The moral responsibility of diverting capital of this magnitude for supporting the uneconomic operations rests with the Ministry of Textiles. It is therefore in a unique position to take a lead in seeking the removal of these imperfections. What the impediments could be to the removal of these imperfections, if they are so detrimental to the long-term interests of an important industry, is an obvious question that needs an answer. We are in no position to provide an unequivocal answer to the question. At best we can state our conjecture and suggest a plan of action based on these conjectures.

In our judgment, the major impediment in the removal of this imperfection is the strong public reaction against any move that will result in a large-scale retrenchment of the unionized labor force. The difficulties are compounded if the retrenchment is likely to affect employment in large urban centers, as in the textile industry. No government, and particularly no democratically elected government, can ignore a strong public protest against its action. As a government cannot ignore a strong public opinion, neither can it stop taking actions that are in the long-term interest of the society simply because of an adverse public reaction. It has to take steps to inform the public and mold the public opinion in favor of the actions, which are likely to cause hardships in the short run.

The Ministry of Textiles is in a unique position to shoulder the responsibility of informing and educating the nation for the need to accept unemployment in the short run. As an arm of the government, it has an access to the most powerful medium of communication, namely, television. It is through this medium that the nation can be convinced that no society, much less the Indian society, can afford to preserve jobs. The policy of closures and partial closures,
supplemented with the commitment to protect the interest of the workers, as stated in the new textile policy, therefore, needs to be supported.

In a similar manner, the ministry will have to persuade the state governments to strike a balance between the long-term interest of the textile industry located in the states and the short-term revenue considerations of the states. It must also point out to the governments of those states whose tax structure and power tariff are out of line with those prevalent in other states that they should permit industries within their states to relocate their production centers in other states.

Just as the Ministry of Textiles is in a commanding position to influence actions at a macroeconomic level, the financial institutions are in a strong position to influence actions at the microeconomic level. The financial institutions must use the provision of nominating directors on the board of directors to influence actions at the enterprise level. The nominee director must start demanding the preparation of strategic plans, introducing more formal methods for monitoring of short-term results, assessing the competitive moves, and preparing concerted plans for development of human resources within the enterprise. The fact that the Bombay strike did take place is a sad reflection on the management's lack of ability to meld the employees into a strong team. The financial institutions can take the lead in persuading the enterprises to learn from the Japanese the art and science of motivating the employees for accomplishment of the organizational purpose.

VI. Concluding Remarks

In this case study we have outlined the opportunities that the environment offers to the industry, the supportive policies adopted by the government of India for enabling the industry to exploit these opportunities, and the difficulties that will be encountered in changing to strategies and operations that take full advantage of the new opportunities the environment offers. We realize how difficult the task is. In such situations, when the enormity of the task overwhelms us, we need a source of inspiration that will give us the strength to overcome the impediments in our path.
### Annex 5.1: Impact on the Finances of Textile Mills, Selected Years
(In Rs.'000 per equivalent loom)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>15.01</td>
<td>23.12</td>
<td>88.41</td>
<td>95.34</td>
<td>87.89</td>
<td>94.61</td>
<td>102.18</td>
<td>105.05</td>
<td>112.92</td>
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<tr>
<td>Less: current liability</td>
<td>10.96</td>
<td>7.72</td>
<td>33.31</td>
<td>44.14</td>
<td>48.89</td>
<td>51.98</td>
<td>57.40</td>
<td>57.12</td>
<td>61.84</td>
</tr>
<tr>
<td>Net working capital</td>
<td>4.05</td>
<td>15.39</td>
<td>55.10</td>
<td>51.20</td>
<td>39.00</td>
<td>42.63</td>
<td>44.78</td>
<td>47.93</td>
<td>51.08</td>
</tr>
<tr>
<td>Net fixed assets</td>
<td>10.19</td>
<td>15.65</td>
<td>42.18</td>
<td>53.36</td>
<td>48.34</td>
<td>53.54</td>
<td>67.73</td>
<td>78.79</td>
<td>86.70</td>
</tr>
<tr>
<td>Total capital employed</td>
<td>14.24</td>
<td>31.04</td>
<td>97.28</td>
<td>104.56</td>
<td>87.34</td>
<td>96.17</td>
<td>112.51</td>
<td>126.72</td>
<td>137.78</td>
</tr>
<tr>
<td>Sales</td>
<td>33.79</td>
<td>52.14</td>
<td>210.80</td>
<td>218.10</td>
<td>200.85</td>
<td>198.45</td>
<td>209.94</td>
<td>243.94</td>
<td>247.71</td>
</tr>
<tr>
<td>Turnover ratio</td>
<td>2.37</td>
<td>1.68</td>
<td>2.17</td>
<td>2.08</td>
<td>2.30</td>
<td>2.06</td>
<td>-1.87</td>
<td>1.92</td>
<td>1.80</td>
</tr>
<tr>
<td>Borrowings:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term</td>
<td>2.21</td>
<td>19.18</td>
<td>60.22</td>
<td>72.63</td>
<td>90.42</td>
<td>95.86</td>
<td>115.72</td>
<td>118.45</td>
<td>133.20</td>
</tr>
<tr>
<td>Interest paid</td>
<td>0.45</td>
<td>1.76</td>
<td>10.44</td>
<td>11.81</td>
<td>10.74</td>
<td>10.74</td>
<td>12.56</td>
<td>12.35</td>
<td>13.51</td>
</tr>
<tr>
<td>Index</td>
<td>(100)</td>
<td>(391)</td>
<td>(2,320)</td>
<td>(2,624)</td>
<td>(2,387)</td>
<td>(2,387)</td>
<td>(2,791)</td>
<td>(2,744)</td>
<td>(3,002)</td>
</tr>
</tbody>
</table>

Source: India Cotton Mills Federation, Bombay.
Endnotes

1. In 1987–88 man-made filament yarn and man-made fibers, which are important raw materials used by the textile industry, ranked third in terms of the contribution these items made to the total central excise duty levied by the central government. In 1988–89, the exports of the Indian textile industry were 22 percent of the total Indian exports.

2. The Textile Committee has also come to a similar conclusion, observing that aside from the shift in fiber preference from cottons to non-cottons and blends, the technical quality of the cotton cloth itself has considerably improved over the years, especially in terms of wear life, appearance, and other relevant factors, resulting in improved per capita consumption.

3. Non-cotton fabrics include fabrics made from pure silk, art silk, wool, acrylic, nylon, and polyester. A substantial portion of this group will, however, be comprised of fabrics made from polyester.

4. Anil Sood and Harinder Kohli (1985) make similar observations. They point out, “Industries involving a large number of segments, by contrast are marked by differences in products, geographical location and customer base, and in most cases a much larger number of plants and enterprises. The requirements for competitiveness and success vary substantially in different segments. The analytical work and the formulation of restructuring strategy must be different between these segments, and are thus more complex than for commodity industries. Government efforts are best concentrated on developing an overall industry strategy, general policy actions and provisions of infrastructure.” (pp. 46-49.)

5. It is assumed that the term population refers only to the Indian population and that no imports will be allowed to meet these clothing needs.

6. It should be noted that the phrase used is “clothing requirement” and not “wants for clothing.”

7. The empathy the Indian society has for the problems of unionized labor is difficult to fathom. In India the problems of the unemployed, the non-unionized work force, and child labor are staggering. Yet these do not seem to strike the same chord in society as the problems of unionized labor.

8. It is of course assumed that this powerful medium will be used correctly to put across a message that is difficult to comprehend. Pedantic discussions between industrial leaders, academicians, and union leaders on the screen, such as those commonly used to put across an important message in television, will be scrupulously avoided.
I. Introduction

Textiles is a most important industry in Indonesia and in practically all of the developing countries.\textsuperscript{1} After food processing, it is one of the largest manufacturing activities in the early stages of industrialization. It supplies one of the most basic commodities and is a significant source of employment generation. It has also been one of the spearheads of developing countries' export thrusts, especially—but not only—in East Asia. The prominence of the industry is easily explained: it occupies a substantial proportion of nonfood budgets in low income countries; the production technology is fairly standard and mostly labor-intensive; scale economies are not very significant; and knowledge of technology and products is disseminated rapidly across borders.\textsuperscript{2}

The industry assumes special significance in Indonesia. Although resource-based manufactures constitute a larger proportion of exports in Indonesia than in any other East Asian developing country, textiles is by far the largest of the country's "footloose" manufactures. It is no exaggeration to state that the industry will be the litmus test in Indonesia's efforts to diversify the economy away from its earlier heavy reliance on oil and gas. If textile exports founder, it is unlikely that Indonesia will be able to engineer a strategy of rapidly growing and broad-based non-oil exports, including other manufactures and services such as tourism and cash crops.

A distinctive feature of the industry is its intense international regulation. Much of the world trade in textiles is governed by the Multi-Fibre Arrangement (MFA), aptly described by Cline (1987) as the most trade-restraining international agreement for manufactured products in existence. It is possible that the MFA has provided an initial stimulus to countries in the very early stages of export orientation, but it very quickly becomes an important obstacle to growth. Consequently, to sustain rapid export growth, developing countries not only have to achieve international competitiveness in the industry, but also to develop a capacity to manage and respond flexibly to an ever more restrictive and
complex international commercial environment. Another important feature of the industry is its rapid technological evolution (Bowring 1989), including the much debated assertion that textiles is rapidly shedding its labor-intensive status. This trend, it is argued, may undermine the competitive advantage of developing countries in the industry and lead to its renewal in industrial countries (Yamazawa 1983).

The purpose of this chapter is to examine the evolution of the Indonesian textile industry, including its abrupt transformation since 1967 (section II), the rapid growth of exports beginning in the early 1980s (section III), some international comparisons (section IV), an explanation of the export success (section V), and an identification of key policy and strategy issues for the industry in the 1990s (section VI).

II. Growth and Structural Change

The textile and garments industry in Indonesia, as elsewhere, comprises three fairly distinct subsectors, ranging from the capital-intensive spinning and synthetic fiber subsector, through to weaving and fabric production (including such minor products as carpet and twine), and the highly labor-intensive garments industry. The first and third of these are latecomers to Indonesia, being essentially New Order phenomena; weaving is the longest established industry among the three, and the largest in terms of both output and employment.

The factory weaving sector emerged in the 1920s following the introduction of upright hand looms (ATBM alat tenun bukan mesin), and their numbers rose rapidly, from about 257 in 1930 to some 44,000 in 1940. Power looms followed shortly after, rising in number from 44 to 8,000 over the same period (Boeke 1946). More than half the country's output at this time originated from West Java, mainly Bandung Majalaya, a choice dictated initially by access to markets, by government policy (including the establishment of the Institut Teknologi Tekstil in Bandung), by the role of several key entrepreneurs early in the industry, and by climate (Hardjono 1990). After a decade of stagnation and possible decline in the 1940s, the industry then grew quite rapidly, output expanding by about 150 percent from 1950 to 1955. Much of this reflected recovery and a return to normal economic conditions; however, industry capacity expanded little. It is more difficult to track the industry's development in the following decade: the quality of statistical reporting deteriorated, the large foreign mills were nationalized, and weavers were at the mercy of unpredictable supplies of yarn imports, much of them channeled through the Koperasi (cooperatives) to hand loom weavers. For what the estimates are worth, output may have risen by about 20 percent over the decade 1956–66, but with very considerable annual fluctuations. According to the 1964 industrial census, power loom employment was about 87,000 persons, approximately half in Jakarta-West Java, while those engaged in hand looms numbered some 160,000, almost half of whom were in Central Java-Yogyakarta. Large hand loom factories were not uncommon then, as illustrated by the fact that about one-fifth of the recorded hand loom employment (and in reality probably more) was in firms with a work force of at least fifty persons. The state and cooperative firms dominated the large loom sector (and the few spinning mills in existence), absorbing just 17 and 4 percent of the power loom work force,
respectively, but possessing on average 11 and 4.5 times, respectively, the installed capacity per firm of the industry as a whole. The New Order regime dismantled the elaborate yarn allocation system, removed the extensive trade and regulatory barriers, and ushered in a virtual technological revolution. The handloom sector began to shrink rapidly, the number of such looms in use falling from about 125,000 in 1968 (Boucherie 1969) to some 66,000 in 1975, and output probably declining even faster. By the late 1970s, their role was confined essentially to the provision of residual capacity in peak demand periods, and to the production of small volume-intricate design goods not of commercial interest to the mill sector. The explanation for their demise is straightforward: even at very low wage levels, the productivity gap between hand and mechanized techniques is so large that the former are unable to compete. A range of capital-cheapening distortions introduced by the government after 1967 may have hastened the disappearance of hand looms, but the fundamental determinant was an economic one. The switch in consumer preferences away from traditional clothing such as sarung, selendang, and stagen, and from cotton to synthetics, also favored power looms. Handloom weavers experience difficulty in achieving uniform cloth density in the case of synthetic fibers, while their operations are better suited to the more intricate narrow-width traditional cloth.

In spite of the demise of hand looms, the textiles industry has expanded extremely rapidly since the late 1960s, under the impetus of strong demand growth, a large consumer backlog, and high import protection: output expanded more than sevenfold during 1969-88, while it doubled in each of the first two Repelita. Even these figures understate the pace of expansion, since there were vast improvements in quality and product range over the two decades. The industry did experience a slump during 1980-85, due to weak domestic demand, because the industry exhausted the scope for easy import substitution, but rapid export growth provided a boost after 1985.

The spinning, fiber, and garment industries are much more recent in origin. Hand spinning of indigenous and imported fibers has long existed as an occasional household activity in Indonesia, but a small factory sector did not develop until the 1930s. The industry progressed little for the next thirty years, and much of it was state owned by the early 1960s. Thereafter, output expanded even more quickly than weaving, by some fifteenfold from 1969 to 1988. The factors explaining this rapid growth were similar to those of weaving, except that spinning started from a smaller initial base and, since the industry did not possess an antiquated labor-intensive sector, it did not experience such a fundamental technological transformation. Polyester fiber production emerged on a significant scale in the early 1980s, promoted by the government as a means of strengthening downstream utilization of energy resources. Garment production, which up to the 1970s had been the preserve of Indonesia’s ubiquitous tailor shops, first emerged as a factory activity in the late 1970s, in response to growing export opportunities and to cater to the country’s expanding urban middle classes. Output almost doubled from 1983 to 1988.

Textiles and garments are industries of national significance; textiles, the larger of the two, accounted for 10 and 18 percent of output and employment, respectively, in large and medium firms in 1987 (annex 6.1). Within textiles, spinning and weaving dominate, generating over 80 percent of output and
almost 75 percent of employment. Knitting is of some significance, as are finishing, batik, bags, and made-up textiles. Among small firms the picture is quite different: the garment industry is more important and, within weaving, batik and made-up textiles are by far the largest subsectors. No information is available on cottage industry activity, but it is possible that it consists primarily of irregular household garment and batik production.

Both industries are labor-intensive and low-skill activities. Value added per employee in the factory sector, the most common proxy for labor intensity, is just a little over half the national manufacturing average in textiles, and about one-third in the case of garments. Wage levels, an indicator of skill intensity, are also well below the average. The only exceptions are the two most capital-intensive subsectors, spinning and finishing; parts of the fiber manufacture process in particular are very capital intensive. The industries' universal labor-intensive status is confirmed by the U.S. rankings, which show both value added and wage levels per employee to be well below average (annex 6.1). These observations concerning factor proportions require elaboration in at least three respects. First, Indonesian wage levels are among the lowest in the world among significant textile exporters, being 4 to 6 percent of the rates prevailing in the United States, in contrast to 5 to 8 percent in the Philippines, 6 to 7 percent for India, 16 percent in Malaysia, 19 to 23 percent in the Republic of Korea, and 37 percent in Singapore. Clearly, abstracting from labor productivity and management quality, Indonesia has a strong potential competitive advantage in the industry.

Second, the average wage statistics conceal large interfirm variations, particularly in weaving, where a wide range of production technologies and firm size is still evident. The rich data set, assembled for Indonesia by Manning (1979), revealed the large interfirm wage differentials existing in the mid-1970s: the wages of operators in large mechanized and foreign-owned firms were about five times those of hand loom weavers, while large, mechanized domestic firms paid almost three times as much. Although interfirm differences are likely to have narrowed since, as most of the small hand loom operations have closed down and factor and product markets have become better integrated, significant variations remain, reflecting continued segmentations in product markets and labor force attributes.

Thirdly, the crucial role of textiles and garments is underlined by the fact that these are the largest and most labor intensive of Indonesia's newly emerging manufactured exports. Indeed Paauw (1986) (cited in Thee et al. 1989), who calculated the direct and indirect employment effects of the growth of exports during 1980–86, concluded that the greatest increase was generated by textiles, garments, and leather products. These inputs had a larger impact than plywood, in spite of the latter's larger exporters, presumably because of plywood's greater capital intensity and somewhat weaker indirect employment effects.

The principal contribution of the industry's growth has been in the provision of secure, albeit modestly paid, employment. Real wages per employee rose significantly in all three major segments from 1975 to 1978—in spinning by about 25 percent, in weaving by over 50 percent, and in garments by almost threefold. Indonesia may still be characterized as a labor surplus economy, so these increases probably reflect increasing mechanization, the employment of more skilled workers, and the disappearance of smaller firms. While some may view the demise of these most labor-intensive segments of the industry with dismay,
the fact remains that employment conditions—among hand looms in particular—were very poor.

Indonesia's labor market is essentially unregulated and well integrated. Although in principle the government's labor regulations are comprehensive, in practice implementation is weak and minimum wage requirements can hardly be set at above market rates without endangering employment. Similarly, trade unions play a relatively minor role in the New Order's political structures, and wages are essentially market determined. There have been no serious labor disputes within the industry, although labor relations vary considerably among different firm sizes. The larger, integrated mills offer secure, well-paid employment, often with fringe benefits; by contrast, employment in the smaller enterprises is insecure and labor turnover is much higher.

Although the three major sectors—spinning, weaving, and garments—display above average labor intensity, none has been technologically stagnant. In all three, real value added per employee rose faster than that of total non-oil manufacturing, considerably so in the case of spinning and garments. The very rapid increase in spinning is probably due primarily to the emergence of the highly capital-intensive synthetic fiber subsector; shedding of older capacity was also significant, as indicated by the fact that real productivity doubled between 1975 and 1982, before the fiber production came on stream. In the case of garments, since there has been no significant shift toward mechanization, the increase is most likely the result simply of improved efficiencies from the early days of factory production, together with a trend toward higher quality output, particularly for export (see next section). For weaving the change reflects the disappearance of much of the hand loom and very old mechanized capacity. The pace of technical change is illustrated by the fact that employment growth was very much slower than that of the other two sectors or manufacturing as a whole; most of the increase in output is attributable to productivity growth, in sharp contrast to the case of garments where employment expansion has been the driving force.

Important differences among the three industries are evident also in the size distribution of firms, again excluding cottage industry. Although there are many large garment factories, particularly among the exporters, the industry remains very much the preserve of small and medium firms, since almost half the work force is employed in firms with five to nineteen employees (table 6.1). The next biggest size group is 200–999 employees, indicative of a significant middle-sized component. By contrast, spinning is almost wholly the preserve of larger firms, with firms having a work force of at least 1,000 employees absorbing half the work force. Weaving occupies an intermediate position between spinning and garments on this and other attributes, although small firms (5–19 employees) have now virtually disappeared. Apart from the unimportance of the latter group, the size distribution of weaving most closely resembles that of manufacturing as a whole. These differences reflect fundamentally the industrial economics of the three industries. Scale economies in the production process dictate large capital investments in spinning and, increasingly, in weaving, whereas garment enterprises can be run on the basis of a few (frequently secondhand) sewing machines. The major factor explaining the existence of large garment factories is pecuniary economies of scale, particularly the need to
respond quickly to large export orders; economies in transactions costs and information acquisition may also be a factor.

Table 6.1: Size Distribution of Firms, 1985

<table>
<thead>
<tr>
<th>Firm size (number of persons employed)</th>
<th>Spinning (32111)</th>
<th>Weaving (32112)</th>
<th>Garments (32210)</th>
<th>All manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>N</td>
<td>V</td>
<td>N</td>
</tr>
<tr>
<td>&gt;1,000</td>
<td>36.6</td>
<td>50.1</td>
<td>48.6</td>
<td>31.5</td>
</tr>
<tr>
<td>200–999</td>
<td>54.5</td>
<td>46.6</td>
<td>36.8</td>
<td>39.0</td>
</tr>
<tr>
<td>50–199</td>
<td>8.4</td>
<td>1.5</td>
<td>10.2</td>
<td>18.8</td>
</tr>
<tr>
<td>20–49</td>
<td>0.2</td>
<td>0.7</td>
<td>4.3</td>
<td>10.7</td>
</tr>
<tr>
<td>5–19</td>
<td>0.2</td>
<td>1.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: V = value added, N = employment.

Data for small firms have been deflated back to 1985 by the relevant wholesale price index.

Ownership patterns in the industry reflect the interplay of industrial economic factors, history, and government intervention. As with size and factor proportions, the three industries reveal a quite distinct picture. At one extreme, garments are almost entirely in domestic private hands—the government has no strategic interest in the industry that would dictate investment, and foreign investors rarely possess sufficiently powerful firm specific advantages that would justify investment in productive capacity, as distinct from involvement in the industry's export trade (table 6.2). The very small foreign share may also be explained in part by earlier BKPM (Capital Investment Coordinating Board) discouragement of foreign investment in the industry; although this is unlikely to be a significant factor, ownership in the industry is such a fuzzy concept, and ownership regulations for export-oriented concerns have in any case been relaxed substantially since 1985. In weaving, government and foreign ownership is somewhat more significant. The government's involvement in weaving is explained largely by the large mills inherited from nationalizations before 1965. Direct equity investment in the industry has not been a high priority of the government, but some of these mills have been modernized and extended, often as part of the foreign aid program.9

Table 6.2: Ownership in the Textiles and Garments Industries, 1985

<table>
<thead>
<tr>
<th>Industry</th>
<th>Private</th>
<th></th>
<th>Foreign</th>
<th></th>
<th>Government</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>N</td>
<td>V</td>
<td>N</td>
<td>V</td>
<td>N</td>
<td>V</td>
<td>N</td>
</tr>
<tr>
<td>All (non-oil)</td>
<td>55.8</td>
<td>74.9</td>
<td>18.3</td>
<td>8.7</td>
<td>25.9</td>
<td>16.4</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Textiles (321)</td>
<td>58.7</td>
<td>79.1</td>
<td>29.8</td>
<td>12.1</td>
<td>11.5</td>
<td>8.8</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Yarn and fiber (32111)</td>
<td>46.3</td>
<td>52.5</td>
<td>46.2</td>
<td>31.4</td>
<td>7.5</td>
<td>16.1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Weaving (32112)</td>
<td>56.7</td>
<td>84.6</td>
<td>25.3</td>
<td>7.4</td>
<td>18.0</td>
<td>8.0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Garments (322)</td>
<td>96.4</td>
<td>94.9</td>
<td>1.7</td>
<td>2.5</td>
<td>1.9</td>
<td>2.6</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: Foreign includes foreign-private joint ventures; government includes government joint venture firms. Data refer only to large and medium firms.
Foreign investment in the industry has also been quite significant, particularly among the large fully integrated mills. That domestic private firms are much smaller and employ more labor-intensive technologies is evident from their far smaller share of output as compared to employment. Spinning differs from both weaving and garments in its much higher foreign ownership, partly because of more liberal BKPM entry provisions, but principally owing to the capital and technology-intensive nature of the production process—particularly for fibers—and the necessity to import foreign technology. The role of foreign investors is even more prominent in the larger spinning mills (with a workforce in excess of 200), where these firms generate more than half the industry output. The spatial concentration of foreign spinning firms is also striking; they are located especially in West Java, where they produce over 62 percent of the industry’s provincial output, significantly above the national average.

It is important to emphasize several features of these ownership data. First, not only is foreign ownership modest, but seller concentration is generally low. This applies especially to the competitive garments and weaving industries, the four-firm seller concentration ratios for which among large and medium firms were just 17.2 and 26.2 percent, respectively. In batik (43.9 percent), knitting (41.8 percent), and even spinning (37.8 percent), the ratios were also quite low. Thus, apart from a few specialized segments, few firms possess significant market power in the industries. Second, while the industries remain predominantly domestically owned, important ownership changes have nevertheless occurred. Whereas the textile industry was once the stronghold of santri business groups, cooperatives, and the state (Palmer 1972), non-pribumi investors have dominated the industry since 1966. Over 90 percent of the garment export quotas are estimated to be in non-pribumi hands, while an examination of unpublished BKPM investment approvals for the weaving industry from 1967 to 1978 found that of the 71 percent of productive capacity in domestic hands, 83 percent was owned by non-pribumi (68 percent) or mixed (15 percent) business interests. Pribumi, cooperative, and state-owned firms thus accounted for only 17 percent of the domestic total, or 13 percent of the overall total (Hill 1979).

The strong non-pribumi role in the industry may in part explain the industry’s modest foreign ownership levels. Many of these factory owners had a commercial trading interest (often as importers) in the industry before 1966 and, combined with family links through Southeast Asian Chinese business networks, which tend to blur the distinction between foreign and domestic ownership, this has resulted in intense regional business connections. It has therefore been much easier to absorb foreign business and technological know-how under the guise of domestic ownership in Indonesia than, for example, in Bangladesh, where the wholesale importation of Korean plants and personnel has been a major catalyst in that country’s garment exports (Rhee 1990).

Foreign investment in the industries has emanated almost entirely from Northeast Asia. According to unpublished Bank Indonesia data, Japan was the source of 77 percent of realized foreign investment up to the end of 1977, falling somewhat to 64 percent by the end of 1988. The only other groups of significance have been Hong Kong (12 percent by the end of 1988) and the “multi-country” group (20 percent). Although no breakdowns are provided, much of the latter is thought to originate from Taiwanese (Chinese)-Hong Kong sources. Recent approvals data show a sharp upswing in Taiwanese involvement in the
industries. The explanation for this intense concentration on Northeast Asian sources is straightforward. The early liberal foreign investment phase (approximately from 1967 to 1972) coincided with Japan losing its comparative advantage in labor-intensive industries (Yoshihara 1978), while some of the early newly industrializing economies’ (NIEs’) investments were motivated primarily by export quota-hopping (Chen 1983; Warr 1983). More recent NIE investment has been motivated by a genuine loss of comparative advantage, while Japan’s prominence in the synthetic fiber subsector is based on that country’s technological superiority. These production-based data, it needs to be emphasized, greatly understate the extent of foreign investment in the industry, principally because of the role of foreign buyers. Large export-oriented factories maintain very close relations with international purchasing groups, often to the extent of receiving very detailed and precise manufacturing instructions.

The industries have always been located overwhelmingly in Java, and in particular West Java and Jakarta (table 6.3). About 90 percent of output and employment in small firms is on Java, while for large and medium textiles firms the figure is over 98 percent. Comparatively minor centers of activity outside Java are concentrated mainly in Bali, fueled by the tourism boom, in Riau, around the duty free island of Batam, and in North Sumatra, with its sizable local market. Java’s—especially West Java’s—factories are also appreciably larger than those outside Java.

Table 6.3: The Spatial Structure of Textiles and Garments Output

<table>
<thead>
<tr>
<th>Region/province</th>
<th>Large and medium firms, 1985</th>
<th>Small firms, 1986&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Percent of total)</td>
<td>(Percent of total)</td>
</tr>
<tr>
<td></td>
<td>Textiles&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Garments</td>
</tr>
<tr>
<td>Java</td>
<td>98.6</td>
<td>89.8</td>
</tr>
<tr>
<td>Jakarta</td>
<td>16.4</td>
<td>49.1</td>
</tr>
<tr>
<td>West Java</td>
<td>51.4</td>
<td>31.5</td>
</tr>
<tr>
<td>Central Java/Yogya</td>
<td>22.2</td>
<td>3.6</td>
</tr>
<tr>
<td>East Java</td>
<td>8.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Outer Islands</td>
<td>1.4</td>
<td>10.2</td>
</tr>
<tr>
<td>of which:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Sumatra</td>
<td>0.3</td>
<td>1.2</td>
</tr>
<tr>
<td>West Sumatra</td>
<td>0.1</td>
<td>0.4</td>
</tr>
<tr>
<td>Riau</td>
<td>0</td>
<td>3.9</td>
</tr>
<tr>
<td>South Sumatra</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>South Sulawesi</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Bali</td>
<td>0.6</td>
<td>4.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>(Rp billion)</td>
<td>(762.5)</td>
<td>(117.4)</td>
</tr>
</tbody>
</table>

Notes: Data refer to percentages of national value added.
— denotes negligible.
n.a. denotes not available.

Source: Biro Pusat Statistik, unpublished data.
A combination of factors explain Java's dominance. One is history. Bandung Majalaya was the major center before 1966 and, although the industry has discarded its handloom sector and shifted somewhat toward the surrounds of the city of Bandung and to Botabek (that is, the three kabupaten adjacent to Jakarta), this region possesses the country's foremost textile infrastructure— investors with a knowledge of the industry, skilled personnel, and factory operatives. In addition, during the import substitution era there was a strong incentive to locate near the center of bureaucratic power, while in the recent export phase Jakarta's port and transport infrastructure is a major attraction. Moreover, wages in Java for factory employees remain competitive with those elsewhere in the country, and Java's higher land prices are not a significant drawback. That small textile and garment firms are equally Java based indicates that the benefits of any natural protection these operations might derive from their more remote locations in the Outer Islands are minimal; this is to be expected since the major markets are in any case urban or fringe-urban areas, which, with the nation's greatly improved transport system, are generally accessible to the factories of Java. Cottage-based enterprise, much of it located in eastern Indonesia, is excluded in these data.

Within Java, garments exhibit a much more pronounced concentration around Jakarta and West Java. The share for Jakarta, in particular—almost half of national output, irrespective of size—is very high, and this new export industry seems to have bypassed the central and eastern provinces. The dominance of Jakarta is at first sight puzzling, but can probably be explained by the attraction of export infrastructure and by the fact that garments production requires even less land per worker than does textiles. It is possible, also, that some Jakarta-based factories with subcontracting networks extending across the provincial border were recorded as entirely Jakarta operations in the census.

Within Java's textile industry, West Java's firms produce about two-thirds of the island's spinning and fiber output and almost one-half of its cloth. Central Java's output of these products is only about one-third that of West Java, but the former remains the country's foremost batik center, based around the cities of Solo and Pekalongan, and also Yogyakarta. This industry also explains the much larger share of the two central provinces in small industry output. At the sub-provincial level, kabupaten Bandung stands out as by far the largest textile center, its output being double that of the next largest center, Purwakarta, north of Bandung, where several very large textile mills have been attracted by the large Jatiluhur dam. The output of firms in kabupaten Bandung is marginally greater than the combined output of the next three major centers, forming a geographic unit as South Jakarta, Tanggerang, and kabupaten Bogor. The dominance of the western part of the island is further illustrated by the fact that it contains three of five regions in the second zone of textiles activity, the exceptions being Sukoharjo, adjacent to the Central Javanese city of Solo, and Pasuruan in East Java. It is only at much lower output levels that Central Java's traditional base of medium-scale textile firms becomes evident with concentrations around the north-central zone (the city of Solo, Karanganyar, Boyolali, Salatiga, and nearby centers), and the northeast (principally Batang and Pekalongan). In East Java, only kabupaten Malang and Surabaya-Gresik are in this category. It is significant how unimportant West Java is in these minor textile centers, indicating the
dominance of larger firms in the industry and its heavy concentration in Bandung and the surrounding area, and Botabek.

III. The Export Phase

Until the early 1980s Indonesia's manufacturing sector, unlike those of its neighbors, was almost wholly inward oriented. This was nowhere better illustrated than in the case of textiles and garments, exports of which remained very small over this period (annex 6.2). Thereafter, an amazing transformation occurred. Exports had increased quite sharply after the November devaluation, but the mini-boom ran out of steam as the beneficial effects of the devaluation were quickly eroded by the real effective appreciation of the *rupiah* during the second oil boom. However, any fears that Indonesia was about to follow the "Colombian route" (see Morawetz 1981) were quickly dispelled by the rapid and sustained growth that occurred after 1982. While the high growth of yarn and fiber exports reflects the small initial base levels, impressive growth rates for the more sizable fabric and garment exports were sustained throughout the decade. By the late 1980s, Indonesia appeared at last to be following the East Asian pattern of rapid growth in labor-intensive manufactured exports.

Two dimensions of the export boom underline its significance. First, the exports began to absorb an increasing proportion of output, from the comparatively minor levels for yarn and fiber, to modest proportions for fabrics, and very high amounts for garments (table 6.4). Second, and related, exports became the major engine of growth in the industries during the 1980s (annex 6.3).10 The effect has been particularly dramatic in the case of garments: exports have generated about 90 percent of output growth during the 1980s, and absorbed all the output during the reform phase, 1985-88.11 Import substitution provided a negligible stimulus because, owing to consumer preferences and to Indonesia's trade regime, imports have always been negligible.

Exports have also been very significant in the case of weaving, accounting for about half the industry's expansion since 1975 and a considerably higher share in the 1980s. Domestic demand growth has been equally important, a factor explained by buoyant consumer demand until the early 1980s and by rapid growth of the downstream garments industry thereafter. The negative impact of the import substitution factor during a period when real exports expanded is somewhat paradoxical. The explanation is that imports were hitherto constrained by high protection for the industry (see below), so the scope for substantial growth through import substitution was limited. Moreover, the large negative figure for 1985-88 simply reflects the impact of liberalized import procedures for exporting firms, to be discussed below. Garment exporters increasingly resorted to imported cloth for a variety of reasons—cost in some cases, as a means of establishing product reputation in international markets for other firms, while some exporters responded to the specific requirements of global brand name garment outlets, which began to source from Indonesia for the first time.

Direct exports have been the least important source of growth in the case of yarn and fiber, although their contribution has been rising sharply, and the domestic demand factor incorporates the impact of growing fabric and garment exports. Here also the negative influence of import substitution reflects liberalized import procedures for downstream export-oriented users after 1985.
Indonesia's export experience therefore strongly reinforces the basic neoclassical factor proportions theory of international trade. The most labor-intensive component, garments, led the way in exports, its exports are by far the largest, and exports have been the major source of growth. By contrast, for yarn and fiber, the most capital-intensive activity, exports have been minimal until recently, nor have they been the most important source of growth. The fabrics industry adopts an intermediate position in all respects.

Table 6.4: Sources of Growth in Textiles and Garments, 1975-88
(percent of total output expansion)

<table>
<thead>
<tr>
<th>Period</th>
<th>Total</th>
<th>Exports</th>
<th>Import substitution</th>
<th>Domestic demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Yarn and fibers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975–88</td>
<td>100</td>
<td>11</td>
<td>neg</td>
<td>89</td>
</tr>
<tr>
<td>1975–80</td>
<td>100</td>
<td>1</td>
<td>-7</td>
<td>106</td>
</tr>
<tr>
<td>1980–85</td>
<td>100</td>
<td>7</td>
<td>83</td>
<td>10</td>
</tr>
<tr>
<td>1985–88</td>
<td>100</td>
<td>25</td>
<td>-22</td>
<td>97</td>
</tr>
<tr>
<td>(2) Fabrics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975–88</td>
<td>100</td>
<td>50</td>
<td>-5</td>
<td>55</td>
</tr>
<tr>
<td>1975–80</td>
<td>100</td>
<td>14</td>
<td>-13</td>
<td>99</td>
</tr>
<tr>
<td>1980–85</td>
<td>100</td>
<td>99</td>
<td>39</td>
<td>-38</td>
</tr>
<tr>
<td>1985–88</td>
<td>100</td>
<td>57</td>
<td>-15</td>
<td>59</td>
</tr>
<tr>
<td>(3) Garments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975–88</td>
<td>100</td>
<td>94</td>
<td>neg</td>
<td>6</td>
</tr>
<tr>
<td>1975–80</td>
<td>100</td>
<td>74</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>1980–85</td>
<td>100</td>
<td>83</td>
<td>neg</td>
<td>17</td>
</tr>
<tr>
<td>1985–88</td>
<td>100</td>
<td>110</td>
<td>neg</td>
<td>-10</td>
</tr>
</tbody>
</table>

Note: neg denotes negligible.
Source: Calculated by the author.

How does Indonesia's recent export performance compare in regional perspective, both in the Association of Southeast Asian Nations (ASEAN) and with the more advanced NIEs? It is useful to undertake such comparisons, to emphasize Indonesia's latecomer status to the ranks of international exporters, to contrast its path to export-oriented industrialization with that of its resource poor neighbors, and to provide clues regarding future trends.

The first and dominant feature of Indonesian textile and garments exports is how small they are in international perspective, reflecting Indonesia's latecomer status. This applies to all products and markets. Focusing on the three big markets—United States, Japan, and the European Community—and the three major product groups, in no instance does Indonesia's share exceed 4 percent of imports, while in a majority it is less than 1 percent (annex 6.3).

It ranks as one of the top ten suppliers in only the relatively unimportant case of Japanese fabric imports. Its rankings are much improved if only developing country exporters are included in the comparison (using as developing country the 1989 World Development Report cutoff), especially in the European Community where much of the trade is intraregional. But even here, the best Indonesia can
manage is one "4" ranking and four "9" rankings. It remains far behind Taiwan (China), an established NIE exporter, and China, another giant latecomer. Exports from Thailand, a country which began its strong export promotion efforts a decade before Indonesia, are generally larger, although the gap is not as great.

Indonesia differs from its East Asian neighbors in the key role that textiles and garments have played in most of these countries' exports. These differences are pronounced, especially for exports as a whole, and also for manufactures to a lesser extent. Despite the recent rapid growth, for example, the share of textiles and garments in Indonesia's total exports is only one-fifth that of China, one-eighth the Hong Kong figure, and one-third of Taiwan (China) and Thailand. It more nearly resembles the share for Malaysia and Philippines, however. These differences reflect both Indonesia's latecomer status and its stronger natural resource endowment—the latter until the mid-1980s squeezing non-oil tradables in their shares of exports and in their international competitiveness. It is noteworthy that Indonesia's shares are similar to those of Malaysia, the other East Asian resource-rich country, which has also promoted electronics very effectively, and the Philippines, which failed to capitalize on its early momentum in manufactured exports. Within manufactures, Indonesia's shares are generally lower also, again reflecting the country's natural resource endowments (manifested in exports of plywood, fertilizer, paper, and cement), but the differences are smaller.

These differences are evident also in the indices of revealed comparative advantage (RCA) for textiles and garments. The index, which is a measure of a country's export specialization in a particular commodity, assumes a value of unity when a commodity's share in a country's exports equals that in world exports. The data show clearly the recent rapid transformation in Indonesia: the indices were very small up to the mid-1980s, but then rose steeply, to exceed unity for garments by 1986, and nearly so in the case of fabrics; only for the capital-intensive yarn and fiber segment do they remain low. Nevertheless, Indonesia's export specialization in these products remains well below that of the Asian NIEs, China, and Thailand, although it is comparable to both Malaysia and the Philippines.

Standard neoclassical trade theory, in its simplest two-factor formulation, would predict that for low-wage countries such as Indonesia, garments would supply a higher proportion of textiles and garments exports and yarn and fibers a lower proportion, as compared to Japan and the NIEs. A modification, introducing energy as a third, partially traded input (a relevant assumption where, for example, natural gas is a by-product of petroleum output), would posit a higher share for the energy-intensive fiber subsector in resource-rich countries such as Indonesia. The East Asian experience supports these theoretical predictions at a general level, but there are exceptions. Indonesia has a fairly high share of exports from garments, much higher than that of Japan and Taiwan (China). Energy intensity does not appear to be a particularly important factor in the case of yarn and fiber, but capital intensity is, as revealed by the higher share of these products for Japan especially. Nevertheless, the simple 2- or 3-factor model is much more successful in explaining the rise of textiles and garments exports in general than it is in illuminating the composition of these exports. Other factors are obviously important—skill in design and fashion is an example,
probably explaining the very high shares of garments for the Philippines and for high wage in Hong Kong.

A final feature of this international comparison relates to total trade in these products. Exports are a preferred indicator of the evolution of comparative advantage because they are less distorted by countries' trade policy interventions. Yet the inclusion of import data does complement the comparative advantage picture and is a better overall measure of trade openness. Here also, Indonesia differs from the NIEs but has more in common with the ASEAN states. It was a net exporter of garments as early as 1978, and of fabrics beginning in 1983, but it remains a large net importer of yarn and fiber. Indonesia differs from the NIEs both in its lower net trade ratios (that is, net exports as a proportion of exports plus imports) and its smaller trade volumes—the former explained mainly by its latecomer status, the latter by its (until recently) restrictive trade regime. The two larger NIEs are net exporters of all three product groups, the two city NIEs only of garments, while Japan has been a net importer of garments since 1973 and will shortly assume such a position for fabrics and yarn and fiber.

An important indicator of Indonesia's export growth and its performance in international perspective is unit values of major export items, over time and across countries. For finely disaggregated product groups, these volumes are a proxy for output quality. Unit values of established exporting nations would be expected to be higher than those of newly emerging exporters, and real unit values for countries should increase over time as their technological and marketing competence improves; the increase should accelerate as countries reach quota ceilings, when the major source of export growth to MFA markets is from higher prices.

The Indonesian unit value data confirm these hypotheses. The country's latecomer status is confirmed by the fact that, for a representative sample of fabric and garment exports to the United States, its unit values are almost without exception lower than those of other East Asian exporters (table 6.5). The contrasts are especially pronounced in the case of the Asian NIEs, but even among the second tier ASEAN group of nations, Indonesia is well behind. Thus, as would be expected, Indonesian firms are well down the learning curve compared to their regional competitors, and they encountered export quota ceilings—and hence the need for upgrading—more recently. Nevertheless, these firms appear to be catching up quickly, as illustrated by a variety of data sources. U.S. import data, for example, show a reasonably consistent picture of higher real unit values. Moreover, the trend toward higher values appeared to accelerate in 1985–86 as quotas became binding. Unit value data provided by the Indonesian Department of Trade support this conclusion (annex 6.4): between 1985–86 and 1987–88, the real unit values of “Group I” and “Group II” export items to the United States rose by 34 and 76 percent, respectively, while those for the European Community increased by 39 percent from 1984 to 1987.

Quality upgrading takes a variety of forms. In some cases it simply reflects general improvements in productivity and efficiency as entrepreneurs acquire more knowledge of technology and international markets, often from overseas buyers or from Japan or the NIEs. In other cases it results from explicit product changes, such as the use of better quality denim fabric in jeans, or more elaborate stitching and embroidery in fashion items. More rigorous supervision of quality control procedures, which results in fewer rejects, is yet another example. The
operation of the duty drawback scheme, to be discussed shortly, has also resulted in higher values, as garment exporters now have access to higher quality imported fabrics. All these factors were identified in the author's firm interviews with progressive firms at the forefront of the upgrading process.\textsuperscript{14}

Table 6.5: Unit Values of Selected East Asian Exports to the United States, 1988

(Indonesia = 100)

<table>
<thead>
<tr>
<th>Economy</th>
<th>Woven synthetic fabric (6535)</th>
<th>Men's outerwear (84111)</th>
<th>Men's underwear (84113)</th>
<th>Underwear, knitted (84143)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>NIEs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong</td>
<td>168</td>
<td>169</td>
<td>117</td>
<td>179</td>
</tr>
<tr>
<td>Korea</td>
<td>227</td>
<td>210</td>
<td>263</td>
<td>123</td>
</tr>
<tr>
<td>Singapore</td>
<td>na</td>
<td>129</td>
<td>261</td>
<td>115</td>
</tr>
<tr>
<td>Taiwan (China)</td>
<td>141</td>
<td>116</td>
<td>139</td>
<td>131</td>
</tr>
<tr>
<td>Other ASEAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>158</td>
<td>135</td>
<td>121</td>
<td>119</td>
</tr>
<tr>
<td>Philippines</td>
<td>na</td>
<td>106</td>
<td>na</td>
<td>131</td>
</tr>
<tr>
<td>Thailand</td>
<td>93</td>
<td>138</td>
<td>220</td>
<td>135</td>
</tr>
</tbody>
</table>

Note: n.a. denotes not available.
The data are based on U.S. imports, and are expressed as indices with the Indonesian unit values equal to 100. Figures in parentheses for each product refer to SITC codes.

Source: International Economic Data Bank (IEDB), Australian National University, 1990.

It needs to be emphasized that the unit value data are only a crude proxy for quality, in that even for very finely disaggregated product categories, changing values could merely reflect different product specifications (for example, more buttons, more cuffs, different stitching). Also, these values display considerable year-to-year fluctuations for a variety of reasons not associated with quality changes, so longer-term series are required before definitive trends can be identified. Nevertheless, the major conclusion remains undeniable: Indonesia's export quality is below that of its neighbors, but catching up quickly.

For Indonesia, like all developing country exporters, the United States, the European Community, and Japan are by far the largest markets, the United States particularly so in the case of garments. Similarly, countries that are signatories to the MFA absorb the lion's share of each country's exports, Japan, the Middle East, and Australia being the only export markets of any size to which the current MFA does not extend. In recent years some 90 percent of Indonesia's garment exports have been destined for MFA markets, while for fabrics the figure has been in the range 75–85 percent. These figures are comparable to East Asian averages, except that Thailand in recent years has been recording appreciably lower MFA shares (around 70 percent). As one of the most aggressive and successful latecomers, its exporters have been forced to seek out non-MFA markets, in contrast to the more comfortable position of the NIEs, which possess long-established quotas and where in recent years there has even
been some difficulty filling quotas for labor-intensive products owing to loss of comparative advantage. Unless there is radical reform of the MFA, Indonesia’s recent export momentum will be maintained only by increased resort to the Thai route.

Throughout the export boom of the 1980s, the United States has been the dominant market for Indonesian garment exports, absorbing on average about 60 percent of the total. No other market has been of such significance—the European Community share has fluctuated considerably around an average of 15 percent, and ASEAN and the NIEs (mainly Singapore, much of it for reexport and sale to tourists) smaller still; Japan’s share has been miniscule. Market shares for fabrics, yarn, and fibers have been more evenly spread, with the European Community and ASEAN/NIEs generally being the major markets. Data for major export items for 1988 further illustrate these broad generalizations (annex 6.5); in particular, the United States is the largest market for all significant garment exports, whereas fabric and fiber and yarn markets are much more diverse.

A number of factors explain these export patterns. In the case of the United States, it is the world’s largest importer of garments; its import barriers are low (within the context of the restrictive MFA, which nevertheless at least gives exporters some guarantee of market share) and its distribution channels open; U.S. buyers are now acquainted with the Indonesian market, an externality deriving partly from the latter’s proximity to countries losing market share because of quota ceilings or loss of comparative advantage in labor-intensive industries; and the U.S. market is sufficiently heterogeneous to offer mass consumption opportunities at the lower end of the market for early stage exporters such as Indonesia.

The second market for all six major garment items is either the United Kingdom or the Federal Republic of Germany. Indonesian exports to Europe have been considerably smaller than those to the United States, partly because overall import demand is less, but also for other reasons: markets are more fragmented and distribution channels more complex, and lower income European countries (both the south of the European Community and Eastern Europe) provide more competition.

The data in annex 6.3 underline the unimportance of Japan as a market for Indonesian garment exports. Japan is not a signatory to the MFA, so Indonesia must compete against all countries in this market. The principal reasons for the low export volumes are, first, that Japan has only recently become a major garment importer and, second, that the Asian NIEs have been better placed to take advantage of the much more quality conscious Japanese market, with its intricate marketing networks. This situation is about to change, however. Several Indonesian firms have active plans to penetrate the Japanese market, drawing on their commercial contacts with major Japanese trading houses. Consequently, rapid growth in exports can be expected in the early 1990s.

Markets for fabric and yarn and fiber exports are more diverse, and export quotas not such a handicap. In the case of fabrics, Singapore is a major market, reflecting its continuing role as the entrepôt center for Southeast Asia, together with its tourist demand. Industry sources suggest other markets are often determined by periodic supply shortages necessitating fabric imports; this probably explains the sales to Malaysia and some of those to Singapore. There is
no evidence that preferential trading arrangements within ASEAN have been a factor in these sales. Sales to the United Arab Emirates are indicative of that country’s large expatriate Asian work force. A similar set of factors explains the smaller exports of yarn and fiber.

A final aspect of Indonesia’s export performance concerns quotas imposed by importing countries. Indonesia first experienced export quotas on textiles and garments in 1976 when Australia imposed global quotas on its garment imports. Indonesia became a signatory to the Multi-Fibre Arrangement in 1979, but quotas became a serious issue only in the mid-1980s. Prior to this, quotas on the country’s exports took the form of an aggregate volume limit without product specifications, and these quotas were rarely filled. Thus, until about 1986 Indonesia could not reasonably complain about the effects of the MFA—its exports remained basically unconstrained, while the annual quota agreements provided a measure of protection against established exporters such as the Asian NIEs. However, by the end of the decade the MFA had become an important constraint on export growth, as Indonesia had become internationally competitive in a wide range of products—principally lower priced garments—and as quota ceilings had become binding (annex 6.4 and annex 6.6). Quotas now also apply to fabrics and yarn and fibers, but thus far these are less restrictive.

The MFA is a particularly serious constraint in the case of garment sales to the United States (annex 6.5), which have been such a crucial component of Indonesia’s export thrust. By 1986–87 quota ceilings had been effectively reached for the large “Group I” items, while for the smaller “Group II” items there were instances of overshipment. Quota utilization rates are somewhat lower in the case of the European Community, but they are rising rapidly and are approaching—or even exceeding—100 percent for major items in the two largest markets, the United Kingdom and the Federal Republic of Germany (annex 6.6). Quota utilization rates are still quite low in the poorer European countries and after 1992 the European Community will be considered one market for the purposes of the MFA, thus enabling exporters to swing underutilized entitlements within the Community. However, it would be unwise to be too sanguine about growth prospects in the immediate future, as the markets with lower quota rates are quite small, and the swing provisions will be open to all exporters. Moreover, Indonesia’s export interests will be harmed should an enlarged Economic Community eventuate, which would offer preferential access to new low-wage producers in Eastern Europe.

In sum, Indonesia’s export prospects, on which industry growth is so dependent, are inextricably linked to the future of the MFA. The MFA, first established in 1974, has become ever more restrictive (Cline 1987; Hamilton 1990). If discussions aimed at reincorporating textiles and garments trade within the provisions of the General Agreement on Tariffs and Trade (GATT) and removing the harsh provisions of the MFA succeed, Indonesia will be a beneficiary. However, in the absence of major reform, Indonesia’s textile and garment exports will be determined by five broad sets of factors:

- *Quota growth in MFA markets*, particularly U.S. garments; this will depend in turn on the general parameters of the MFA framework, and on Indonesia’s multilateral and bilateral negotiating skills.
- *The effective utilization of existing quotas*. The key factors here will be an efficient domestic quota allocation system—which many allege Indonesia...
does not yet possess—and an efficient local industry able to fill all quotas. Particular attention in this context will have to be paid to the unfilled European Community quotas, and to fabric and yarn and fiber exports, notwithstanding the distortions arising from a premature upgrading toward the more capital-intensive segments of the industry. There is some scope for more effective utilization of swing provisions between product items for a given market, but much less than was the case previously owing to the increasingly restrictive provisions of successive MFAs.

- **Growth of non-MFA markets.** Indonesia will have to reduce its heavy reliance on MFA markets and follow the successful precedent of diversifying toward non-MFA markets, principally Japan, but also the Middle East, with its large expatriate Asian work force, and the Asian NIEs, where rising exchange and wage rates are resulting in loss of comparative advantage in labor-intensive industries such as garments. Since Indonesia enjoys no special privileges in these markets, its share will depend essentially on its firms' international competitiveness.

- **Growth of non-quota items.** This is likely to be a negligible source of export growth. The MFA now extends to virtually all major product lines; in any case, earlier exemptions for products of indigenous fibers (for example, silk) were of little benefit to Indonesia. There will be some scope for synthetic fiber exports, however.

- **Upgrading,** that is, shifting to higher value items to circumvent the volume based quotas imposed under the MFA. This factor will depend almost entirely on the local industry's efficiency and flexibility.

While all five factors may contribute to future growth, the second, third, and fifth are likely to be most significant. Contrary to the prevailing wisdom of export pessimism, these depend critically on supply-side factors, in particular a supportive macro- and microeconomic policy environment, and an efficient industry. These policy issues are addressed in Sections V and VI below.

### IV. Some International Comparisons

Before attempting an explanation of Indonesia's recent export success, it will be useful to extend briefly the international comparisons, which in the previous section focused primarily on export patterns, to examine in a little more depth the strategies and structure of textile and garment industries in other developing Asian countries.\(^\text{15}\)

The developing country with the oldest commercial textile industry, India, presents an interesting contrast with its intensely regulated and sluggish textiles activities alongside an unregulated but thriving garments sector. Once a larger exporter of cotton textiles (yarn and cloth) than the combined total of the four Asian NIEs, it has now been overtaken by all of them except Singapore. Per capita availability of textiles since the late 1950s has remained virtually unchanged, there has been very little growth in employment, and much of the domestic discussion of the industry concerns the so-called "sick mills" problem [see Anubhai and Mote (chapter 5, this volume) and Mazumdar 1984, on which this paragraph draws]. These problems have emerged fundamentally because of perverse government intervention which, seeking to protect hand loom and small power loom operations, has frustrated the emergence of an efficient larger-
Managing Restructuring in the Textile and Garment Subsector: Examples from Asia

scale mill sector. Successive Indian governments have imposed restrictions on capacity, automation, yarn exports, and the use of synthetic fibers, the latter denying Indian firms a stake in the rapidly growing international fiber industry. The industry has been divided artificially into three sectors, a strategy reinforced by preferential taxation treatment for the smaller units and other forms of protection. There have even been exit barriers in the industry, including government takeovers of ailing mills. As a result of these measures, the larger mill sector, which might have provided the basis for an efficient, export-oriented drive, has shrunk from 79 percent of industry output in 1951 to 23 percent in 1987–88 (Anubhai and Mote, chapter 5, this volume). Responding to the crisis in the industry, the government introduced a reform package in 1985, dismantling much, but not all, of the general regulatory framework, while maintaining special protection for small enterprise.

In contrast, the Indian garment industry, which has received very little government attention and support, has been a striking success (see Kumar and Khanna 1990, on which this paragraph draws). Organized factory production emerged only in the 1960s around Bombay and Delhi, but exports have grown extremely rapidly, trebling in volume during 1980–88. In 1966 garments constituted less than 1 percent of India’s exports and were less than one-tenth the value of textile exports; by 1987–88, however, garments rivaled jewelry as the nation’s leading export, accounting for 13 percent of the total, and more than double that of textiles. Much of the industry’s output comes from subcontractors, and garment manufactures are linked closely to the decentralized power loom sector that, owing to government concessions, is able to supply cloth more cheaply. By the mid-1980s, quotas in the two major export markets, the United States and European Community, became binding, although export values have continued to rise significantly. The imposition of quotas has resulted in the familiar upgrading phenomenon, together with greater attention to non-MFA markets and the relocation of production to countries as yet unconstrained by quotas, notably Nepal. Export quotas are allocated by a statutory authority, 80 percent being awarded on the basis of past export performance and the remaining 20 percent on an open system. The latter complicated arrangement (Kumar and Khanna 1990) was designed to award quotas to firms with the highest export unit values, but in fact led to cross-subsidies among exporters. Quota exchanges occurred, prior to 1988, on an illegal basis, but now occur on an open tender basis.

The Korean textile and garment industries are in transition, having lost comparative advantage in the labor-intensive segments and commonly regarded as “sunset industries” (World Bank 1987; Hamilton and Kim 1990). Export growth has slowed appreciably since 1979, the share in its largest overseas market (the United States) has been stagnant, its equipment aging, and the industry’s contribution to value added, employment, and exports has been declining in proportional terms. Quota utilization rates are uniformly high, and unit values are rising. The MFA, which undoubtedly constrained the industry’s growth a decade ago, may even be now exerting a beneficial influence, locking the country into guaranteed high export shares in the face of declining comparative advantage. The government’s adjustment strategy has focused on a variety of measures, including industry upgrading (through encouraging automation, research and development, and exit of less efficient firms, and the
establishment of a textiles modernization fund), which has resulted in sharply increased labor productivity and changes in the product mix. Market diversification is being emphasized, including a provision that firms' export quotas depend in part on sales to non-MFA markets. Import barriers and the foreign investment regime are being liberalized, and increasing numbers of Korean firms have relocated abroad, many to the Caribbean in order to facilitate access to the U.S. market. Providing the process of trade liberalization and rapid structural change continues, Korea should emerge as a significant regional market for lower value garment and textile exports by the end of the century.

The experience of Thailand, as a dynamic "second-tier" NIE, may be most relevant to Indonesia. Thai exports of textiles and garments began to grow very rapidly in the late 1970s (Supachalasai 1989 on which this paragraph draws), about five years ahead of the Indonesian takeoff. The industry, centered mainly around Bangkok and comprising many small enterprises in garments, has grown quickly in a liberal economic environment: effective rates of assistance have been close to zero (but favor exports slightly over domestic sales), with some credit assistance and a few largely ineffective government controls; foreign investment, mostly from Japan, Taiwan (China), and Hong Kong, has been significant in the more capital-intensive segments such as spinning. A significant feature of the industry is its large border trade (Burma, Indochina, and Malaysia), sales to which are estimated to be about 20 percent of domestic consumption.

Export quota utilization rates are now uniformly high, having approached 100 percent in the case of the United States in 1984, and the European Community shortly after. However, exports have continued to grow rapidly as a result of upgrading and of a flexible marketing strategy in which firms were able to switch to non-MFA markets (principaliy the Middle East and Japan). However, Thai unit values remain below those of established exporters such as Hong Kong, although these differences are disappearing for standardized products. The export quota allocation system favors established large firms: 70-80 percent of quotas are based on past performance, and in practice most of the residual also goes to these large enterprises. Officially quotas cannot be transferred, and there are heavy penalties for nonperformance. Newcomers are in effect forced to seek out non-MFA export markets that, with the exception of Japan, generally feature lower unit values.

V. Explaining the Export Success

Many factors have contributed to the rapid growth in Indonesian textiles and garments output since 1966. Throughout the period there have been general improvements in productivity and efficiency, especially as the industries started from such a low base: a technological revolution occurred in weaving, the labor force in all sectors has become more skilled, new and more efficient management practices have been imported, and new products introduced. Real labor productivity growth in the three major subsectors was faster than that of non-oil manufacturing as a whole during 1975-87, reflecting the effects not only of mechanization but of firms moving up the learning curve.

An additional factor contributing to the rapid growth—but not efficiency—in the 1970s was high protection, especially for yarn, fiber, and cloth. All studies of effective protection have found very high rates of effective protection, often in
excess of 100 percent and almost always more than 50 percent. This factor, together with the general improvements in efficiency referred to above, explains the otherwise puzzling result that output grew rapidly in spite of the squeeze on non-oil tradables induced by the oil boom of the 1970s. The trade regime converted many highly protected products into nontradables; and rapid economic growth virtually guaranteed the industry's expansion, as illustrated by the key role of domestic demand growth in the 1970s (see table 6.4). An immediate cost of this protection was its impact on the downstream garment industry, which, according to most studies, received low or even negative effective protection. Consequently, the trade regime frustrated the emergence of garments as an export-oriented activity.

During the 1980s exports were the primary engine of growth (table 6.4), and so a different set of factors propelled the industries forward. Two in particular were crucial—exchange rate management and trade reform.

The Indonesian government has responded decisively to the declining terms of trade since 1982 by devaluing the rupiah and ensuring that inflationary pressures were contained. As a result, tradable goods industries have benefited significantly, just as they were squeezed a decade earlier. There is some debate concerning the magnitude of these real effective devaluations (Warr 1984), but there can be little doubt that they have been large and significant. For example, among the sixteen developing countries reported in the Morgan Guaranty Trust Company series, from 1982 to first quarter 1989, Indonesia had the lowest index, below that of several other developing country primary commodity exporters, which also experienced sharply declining terms of trade. The net effects of the exchange rate regime on costs vary among firms. But even for the most import-intensive operation (such as a garment manufacturer using only imported cloth), local costs still constitute 30 to 40 percent of the total (UNIDO 1989b), thus conferring significant competitive advantage.

The second key policy area has been trade reform. While there have been some general modifications to the trade regime, including reduced reliance on nontariff barriers (NTBs) and a more unified tariff structure, by far the most important reform has been the introduction of a duty exemption and drawback facility, as part of the May 1986 policy package and subsequent amendments. Administered efficiently and liberally by BAPEKSTA (the duty exemption agency) from within the Department of Finance, the scheme enables exporting firms to source their inputs at international prices with little bureaucratic complication. In effect, virtually regardless of their operation, export firms have been able to operate as though they were part of an export processing zone. That firms have responded enthusiastically to the measure is illustrated in table 6.6: through to 1988, almost one-quarter of manufactured exports have come under the facility's umbrella; for textiles the proportion has been even higher. The data suggest that there may have been some plateauing in the resort to BAPEKSTA, a healthy trend indicating that upstream suppliers are becoming increasingly internationally competitive. However, this in no way obviates the importance of maintaining the facility. Indeed, its importance is actually understated by the data in table 6.6, because exporting firms frequently use world prices (that is, those obtainable through BAPEKSTA) as a reference point in negotiating their purchases from domestic suppliers.
Table 6.6: Exports Under BAPEKSTA, 1986-88
(percentage of each group's exports)

<table>
<thead>
<tr>
<th>Category</th>
<th>1986</th>
<th>1987</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>All manufacturing</td>
<td>5</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Textiles, garments, leather, footwear</td>
<td>9</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Textiles</td>
<td>10</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Garments</td>
<td>9</td>
<td>22</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: BAPEKSTA.

Three other factors contributing to the export drive deserve mention, all less significant than these key policy reforms and in their impact all less amenable to direct assessment. First, it is possible that Indonesia benefited from the MFA in the early export phase, when its firms would not have been able to compete internationally with established exporters such as the Asian NIEs, whose sales were constrained by the Arrangement. That the MFA provides such market guarantees is attested by the generally very high proportion of exports directed to MFA markets in most countries' initial export drive. However, as these constraints become binding, as they did for Indonesia in about 1987, the MFA ceases to offer such export protection, and firms face the more challenging task of increasing sales by quality upgrading and penetration of non-MFA markets. It is arguable that Indonesia has crossed the threshold, and its exporters could probably compete in an open and unconstrained international market, particularly in lower value added items where the NIEs have lost competitiveness owing to exchange rate and wage increases. Once a boon, the MFA is now a bane for Indonesia.\(^7\)

Other aspects of the reform packages have undoubtedly enhanced Indonesian exporters' competitiveness: customs procedures are quicker, financial services are more efficient and flexible (although most subsidized credit facilities have been abolished), licensing requirements are less onerous, and there are fewer restrictions on foreign investment. Moreover, there are general positive externalities from the country's successful export drive since 1985: business and government alike have become more internationally minded, the commercial support infrastructure required for a knowledge of international markets and export channels is vastly improved, and Indonesia—once viewed as simply a primary commodity exporter—is now slowly developing a reputation in international markets as a low-cost supplier of manufactures.

Finally, the transition from import orientation to exports was hastened, at least during the recession of the mid-1980s, by sluggish domestic demand growth. Textile producers had little incentive to seek markets abroad during the boom conditions that prevailed until 1982. Many report the sharp downturn in domestic demand in 1983-84 as the initial stimulus to look outward, often exporting on a marginal cost basis to maintain capacity utilization. These forays abroad were, of course, quickly reinforced by the other factors mentioned above.
VI. Policy Issues for Future Growth

Future growth in the industry will depend fundamentally on supply-side factors, that is, continuous improvements in efficiency. However, since exports will be the major source of growth, and these exports will be in the context of a managed international environment, increasing attention will have to be paid to that environment and to maximizing the domestic benefits from it. Three general sets of policy factors therefore appear to be of prime importance.

A. The Allocation of Export Quotas

An efficient quota allocation mechanism is absolutely essential to ensure full utilization of Indonesia's MFA quotas. Ideally, too, the allocation system should incorporate some notion of fairness. Indonesia's export quotas are allocated by the Department of Trade according to an 80:10:10 formula, representing respectively, past export performance, newcomers, and golongan ekonomi lemah (weak economic groups). The emphasis on past performance as an allocative criterion is thus consistent with practice in neighboring countries. Export quotas can be revoked in the case of nonperformance, while further flexibility was incorporated in 1987 with the introduction of an open auction system.

That the quota allocation system is operationally adequate is illustrated by Indonesia's high quota utilization rates to the United States and European Community. However, certain aspects of the system are unsatisfactory and have been the subject of trenchant criticism by producer groups in Jakarta's business press. One problem is that administrative processes are slow. Quotas generally are not allocated until after the commencement of the quota year (which is the calendar year for the European Community and July to June for the United States); in some cases the delay can be as much as three to four months. Without a quota allocation, exporters often miss out on lucrative contracts at the beginning of the year, when much business is transacted. Denying exporters maximum flexibility can be especially costly because the market can be quite unpredictable, with the prices of "hot" items fluctuating considerably. Delays in allocations instead force exporters to fill their quotas with less profitable end-of-period sales, thus contributing to Indonesia's low export unit values.

Second, the administration is opaque and lacks transparency. The Department of Trade rarely publishes a complete list of quota holders, nor are its grounds for quota allocation clearly established. This applies even to the 80 percent performance component, and there are widespread allegations of firms with a satisfactory export performance in the past having their quotas cut back sharply. Clear guidelines concerning the 10+10 components have never been established. The absence of published information on quotas serves to reinforce suspicion and mistrust in sections of the business community and to force exporters to spend excessive amounts of time lobbying key government officials. A related problem is that the lack of fully maintained records occasionally leads to problems of overshipment and sometimes acrimonious disputes with trading partners.

Third, there are frequent criticisms that the system is plagued by administrative irregularities. An export quota is a license to print money, and there are powerful incentives for malpractice. The absence of clear guidelines and transparent allocation procedures, therefore, adds to suspicion that there are
many bogus quota holders who possess little, if any, productive capacity and operate simply by subcontracting quotas while exporting under their own name. Reform of the system is therefore highly desirable, to ensure that Indonesia fills its export quotas and on the most profitable terms, that detailed and accurate records are available for domestic producers and trading partners alike, and that allocative mechanisms meet some test of "fairness." The minimum requirement would be to make the present system work more effectively. That is, quotas would be allocated quickly; detailed and accurate quota lists would be published frequently, together with data on export performance and quota holders' business address and productive capacity; and guidelines for quota distribution, especially of the 10+10 components, would be clear, unambiguous, and available to the public.

These reforms would contribute to improved export performance and deflect business criticism, especially from among the non-favored groups. But there is also a case, on both efficiency and equity grounds, for the introduction of a quota auction system. Under such a system, which would involve frequent product and market-specific auctions, quotas would be allocated to the most efficient firms (that is, those able to use them profitably for export), while the rents would accrue to the public purse rather than private individuals. Nevertheless, such an innovation would put a premium on administrative capacity and, in order not to jeopardize Indonesia's current export quota performance, there may be a case for undertaking the basic reforms outlined above before embarking on more radical measures.

**B. Industry Promotion**

Since exports are likely to be the major stimulus to growth in the 1990s, it is imperative that industry efficiency be increased. This in turn imposes two requirements on public policy. The first is that the general economic environment be conducive to growth. This involves the maintenance of a competitive real exchange rate, stable macroeconomic conditions, greater investments in physical infrastructure support (ports, roads, telecommunications, and so on), and a continuation of the reform process. The latter includes not only the trade regime and the banking sector, but also the complex regulatory system that—from land titles to labor legislation—continues to impose unreasonable exactions on exporting firms. In the case of trade policy, the liberal import provisions under BAPEKSTA need to be maintained and extended. Indeed, the industry's international competitiveness is such that all trade protection could probably be dismantled progressively, providing also that other efficiency-retarding business constraints are removed.

**C. Changes in Regulatory Policies**

There can be little doubt that the government's microeconomic reforms adopted from 1985 have contributed to the export success story. The heretofore corrupt and inefficient customs service has been completely overhauled; the trend toward extensive reliance on nontariff barriers has been halted and now reversed decisively; competitive pressures have been introduced into the once-inefficient financial sector, and the stock exchange reactivated; the Capital Investment
Coordinating Board (BKPM) has introduced a progressively more liberal code toward foreign investment and the process of issuing business licenses has been simplified; the large and generally inefficient state enterprise sector has been tackled and improvements introduced; and the transport, utilities, and communications sectors have been restructured, with stronger private sector interest now permitted. While much remains to be done, a hallmark of the regime has been its willingness to respond flexibly and decisively to new challenges. Moreover, as the export drive has met with such evident success, the political economy balance sheet has altered: a new and powerful export lobby has emerged with a stake in a continuation of the reforms.

There is also much scope for more vigorous government promotion of the industry to enhance firms' international competitiveness, especially as upgrading will be a major source of export growth. The government has a number of industry promotion programs, such as those centered around the Institut Teknologi Tekstil (the Institute for the Research and Development of Textile Industry and the College of Textile Technology) (see appendix 6.1). Yet these are sporadic in nature, being shaped in many cases by foreign donors' strategies, and they have a strong welfare orientation, eschewing the large firms in favor of small enterprise. To encourage Indonesian firms to move toward the frontiers of product design, product quality, management standards, and technological processes, there is a strong case for government-funded but commercially oriented research institutes, possibly funded from the revenue accruing to the government under an auction scheme.  

D. International Initiatives

Maintaining and increasing Indonesia's market shares in these industries require not only greater domestic efficiency, but an ever more vigorous range of international initiatives. Notwithstanding past reservations (Mangkusuwondo et al. 1988), Indonesia has an immense stake in the current round of international trade negotiations. There is thus a case for trade liberalization in Indonesia not only for the immediate domestic economic benefits it confers, but also to extract concessions from the major MFA signatories. In addition, high-level negotiating skills, buttressed by political clout, are required for the bilateral negotiating rounds, particularly with the United States and the European Community.

Press reports (for example, Bisnis Indonesia, June 10, 1990) have highlighted a serious shortage of skilled labor in the industry. Owing to past under-investments in vocational education, the export boom caught firms (and the government) by surprise. Firms are reported to be frequently "hijacking" skilled personnel, such as accountants, technicians, managers, and marketing experts. These shortages need to be tackled in two ways. First, in the short term, immigration procedures need to be liberalized to allow firms to recruit skilled labor, particularly from Northeast Asia, where there has been a general loss of comparative advantage. In the interests of continued export growth, the government needs to overcome past reluctance, deriving from the fact that most of the personnel would be ethnic Chinese. The second, longer-term strategy is a big investment in training and research and development, especially now that Indonesia has export quota ceilings and must now achieve more exports through higher unit values. The challenge now is to strengthen these bodies, to infuse
them with a stronger entrepreneurial spirit, and to encourage more extensive, mutually beneficial private sector linkages.

More generally, greatly strengthened economic intelligence networks are required, which deliver accurate and timely information on market and product trends to exporters. Japan is likely to be the major source of export growth in the 1990s, owing to the fact that it is not a party to the MFA, it has now lost all comparative advantage in these industries, and Indonesia-Japan ties are close. The government can facilitate export expansion to this market by forging stronger links with major importers and retailers, and by providing detailed economic and commercial assessments. Such an approach requires the establishment of small but high-level think tanks located strategically in the key departments in Jakarta, in addition to effective commercial representation in the world’s principal trading centers.
Appendix 6.1

Institute for Research and Development of Textile Industry and the College of Textile Technology, Bandung.

In 1922 the Dutch government established a weaving experimental station in Bandung to provide information and technical services for the benefit of the traditional textile industry by promoting new textile technology. The Institute's name was changed several times over the years, and in 1966 it was inaugurated as the Institute of Textile Technology (ITT) entrusted with research, development, and education. Another change took place in 1979 when the ITT was split into two institutions, namely the Institute for Research and Development of Textile Technology (IRDTI) and the other, the College of Textile Technology (CTT), located in the same place and in some cases sharing the same facilities. Both are state institutes under the Minister of Industry.

The IRDTI provides the industry with information, consultancy, testing and product improvement facilities, technical and managerial assistance, and training services. It also conducts applied research and development on raw materials, processes, equipment, textile products, and pollution control. It, moreover, designs equipment for the improvement of quality and productivity of small-scale industry. The CTT, on the other hand, trains textile technologists as part of a four year program in textile technology majoring in yarn and fabric manufacturing and textile chemistry. The fourth year includes practical training at a textile mill. More than 2,000 technologists have been trained thus far, with most of them finding employment with the private sector. The state covers 70 percent of the training cost, while the rest is paid by students.

A number of external agencies have provided grants for research and development to IRDTI, and more recently it has received fees for services rendered to the industry. The Institute carries out testing, quality assurance services, and certification of all kinds of textile, dyestuff, and so on, according to the Indonesian Industrial Standards (SII). By 1989 it had tested over 3,000 samples. The IRDTI has a professional staff of about eighty, while the College has a staff of forty.
### Annex 6.1: Output and Employment in Textiles and Garments

<table>
<thead>
<tr>
<th>Industry</th>
<th>Textiles</th>
<th>Yarn and Fiber</th>
<th>Weaving</th>
<th>Finishing</th>
<th>Batik</th>
<th>Bags</th>
<th>Made-up textiles, excluding garments</th>
<th>Knitting</th>
<th>Carpets and rugs</th>
<th>Cordage and twine</th>
<th>Kapok</th>
<th>Other</th>
<th>Garments</th>
<th>Total manufacturing (excluding oil and gas)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V (%)</td>
<td>N (%)</td>
<td>V (%)</td>
<td>N (%)</td>
<td>V (%)</td>
<td>N (%)</td>
<td>V (%)</td>
<td>N (%)</td>
<td>V (%)</td>
<td>N (%)</td>
<td>V (%)</td>
<td>N (%)</td>
<td>V (%)</td>
<td>(Rp billion, or '000)</td>
</tr>
<tr>
<td></td>
<td>% of total a</td>
<td>of all manufacturing</td>
<td>% of total a</td>
<td>of all manufacturing</td>
<td>% of total a</td>
<td>of all manufacturing</td>
<td>% of total a</td>
<td>of all manufacturing</td>
<td>% of total a</td>
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<td>% of total a</td>
<td>of all manufacturing</td>
<td>% of total a</td>
<td>of all manufacturing</td>
</tr>
<tr>
<td>Textiles</td>
<td>10.4</td>
<td>18.2</td>
<td>57</td>
<td>66</td>
<td>4.2</td>
<td>6.0</td>
<td>6.0</td>
<td>63</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td>9.2</td>
<td>100 (13,415)</td>
</tr>
<tr>
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<td>4.9</td>
<td>34</td>
<td>51</td>
<td>0.6</td>
<td>0.3</td>
<td>0.3</td>
<td>n.a.</td>
<td>n.a</td>
<td></td>
<td></td>
<td></td>
<td>2.2</td>
<td>100 (1969)</td>
</tr>
<tr>
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<td>8.5</td>
<td>47</td>
<td>76</td>
<td>9.7</td>
<td>8.3</td>
<td>8.3</td>
<td>55</td>
<td>58</td>
<td></td>
<td></td>
<td></td>
<td>9.2</td>
<td>100 (775)</td>
</tr>
<tr>
<td>Finishing</td>
<td>0.1</td>
<td>0.2</td>
<td>51</td>
<td>81</td>
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<td>0.6</td>
<td>0.6</td>
<td>101</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
<td>2.2</td>
<td>n.a.</td>
</tr>
<tr>
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<td>4.8</td>
<td>30</td>
<td>40</td>
<td>6.9</td>
<td>4.8</td>
<td>4.8</td>
<td>n.a.</td>
<td>n.a</td>
<td></td>
<td></td>
<td></td>
<td>2.2</td>
<td>n.a.</td>
</tr>
<tr>
<td>Bags</td>
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<td>36</td>
<td>73</td>
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<td>2.6</td>
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<td>49</td>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td>2.2</td>
<td>n.a.</td>
</tr>
<tr>
<td>Made-up textiles, excluding garments</td>
<td>1.0</td>
<td>4.9</td>
<td>36</td>
<td>73</td>
<td>2.2</td>
<td>2.6</td>
<td>2.6</td>
<td>49</td>
<td>51</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

**Notes:**
- n.a. denotes not available
- Percentage data refer to percent of total manufacturing output and employment for textiles and garments. Within textiles, the figures refer to the percentage of the textiles total. V is value added, N is employment, W is the total wage bill. Large and medium firms are those with a work force of at least twenty persons; small firms have a work force of five to nineteen.

**Sources:**
### Annex 6.2: Exports of Textiles and Garments, 1975-88

($ million)

<table>
<thead>
<tr>
<th>Year</th>
<th>Yarns and fibers</th>
<th></th>
<th>Fabrics</th>
<th></th>
<th>Garments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current prices</td>
<td>Constant '82 prices</td>
<td>X/P</td>
<td>Current prices</td>
<td>Constant '82 prices</td>
</tr>
<tr>
<td>1975</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>2.0</td>
<td>3.0</td>
</tr>
<tr>
<td>1976</td>
<td>0.8</td>
<td>1.1</td>
<td>n</td>
<td>2.1</td>
<td>2.9</td>
</tr>
<tr>
<td>1977</td>
<td>0.4</td>
<td>0.5</td>
<td>n</td>
<td>2.7</td>
<td>3.6</td>
</tr>
<tr>
<td>1978</td>
<td>1.8</td>
<td>2.3</td>
<td>n</td>
<td>4.2</td>
<td>5.4</td>
</tr>
<tr>
<td>1979</td>
<td>3.9</td>
<td>4.7</td>
<td>1</td>
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<td>57.9</td>
</tr>
<tr>
<td>1980</td>
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<td>n</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>1.5</td>
<td>n</td>
<td>42.7</td>
<td>42.7</td>
</tr>
<tr>
<td>1983</td>
<td>13.7</td>
<td>13.7</td>
<td>2</td>
<td>106.8</td>
<td>106.5</td>
</tr>
<tr>
<td>1984</td>
<td>17.0</td>
<td>16.6</td>
<td>2</td>
<td>183.5</td>
<td>178.7</td>
</tr>
<tr>
<td>1985</td>
<td>12.6</td>
<td>12.2</td>
<td>2</td>
<td>227.1</td>
<td>220.7</td>
</tr>
<tr>
<td>1986</td>
<td>19.9</td>
<td>19.3</td>
<td>2</td>
<td>286.8</td>
<td>277.9</td>
</tr>
<tr>
<td>1987</td>
<td>85.2</td>
<td>81.0</td>
<td>9</td>
<td>384.6</td>
<td>365.6</td>
</tr>
<tr>
<td>1988</td>
<td>119.6</td>
<td>109.6</td>
<td>9</td>
<td>571.1</td>
<td>523.5</td>
</tr>
</tbody>
</table>

**Real annual growth (%)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>47.2</td>
<td>10.1</td>
<td>101.1</td>
<td>107.9</td>
</tr>
<tr>
<td>Constant '82</td>
<td>58.0</td>
<td>67.7</td>
<td>72.9</td>
<td>33.4</td>
</tr>
<tr>
<td>X/P</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Yarn and fibers refer to SITC 651 and 266; fabrics to SITC 65 (less SITC 651); and garments to SITC 84. Data are free on board. "n" indicates negligible (less than $1 million). Current price data are deflated by the relevant U.S. wholesale price index series. "X/P" refers to the percentage of the gross value of output that is exported.

**Sources:** Biro Pusat Statistik, Ekspor, and Statistik Industri, various issues.
Annex 6.3: The Ranking of Indonesian Exports, 1988

($ million)

<table>
<thead>
<tr>
<th>Export and economy</th>
<th>USA</th>
<th>Japan</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(a) Yarn and fibers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>902</td>
<td>1,310</td>
<td>8,454</td>
</tr>
<tr>
<td>China</td>
<td>25</td>
<td>194</td>
<td>15</td>
</tr>
<tr>
<td>Taiwan (China)</td>
<td>18</td>
<td>143</td>
<td>93</td>
</tr>
<tr>
<td>Thailand</td>
<td>33</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(43, 20)</td>
<td>(14, 9)</td>
<td>(40, 17)</td>
</tr>
<tr>
<td><strong>(b) Fabrics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>5,640</td>
<td>2,810</td>
<td>16,992</td>
</tr>
<tr>
<td>China</td>
<td>580</td>
<td>833</td>
<td>327</td>
</tr>
<tr>
<td>Taiwan (China)</td>
<td>434</td>
<td>210</td>
<td>241</td>
</tr>
<tr>
<td>Thailand</td>
<td>84</td>
<td>36</td>
<td>55</td>
</tr>
<tr>
<td>Indonesia</td>
<td>59</td>
<td>86</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>(20, 9)</td>
<td>(7, 4)</td>
<td>(33, 14)</td>
</tr>
<tr>
<td><strong>(c) Garments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23,080</td>
<td>6,749</td>
<td>26,557</td>
</tr>
<tr>
<td>China</td>
<td>2,216</td>
<td>1,461</td>
<td>892</td>
</tr>
<tr>
<td>Taiwan (China)</td>
<td>3,060</td>
<td>717</td>
<td>620</td>
</tr>
<tr>
<td>Thailand</td>
<td>337</td>
<td>113</td>
<td>302</td>
</tr>
<tr>
<td>Indonesia</td>
<td>433</td>
<td>12</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>(12, 9)</td>
<td>(16, 9)</td>
<td>(32, 14)</td>
</tr>
</tbody>
</table>

**Note:** Data are on an import basis. The figures in parentheses refer to Indonesia’s ranking as a source of imports among all suppliers and developing countries. Thus, for example, Indonesia is the seventh largest source of Japanese fabric imports, and the fourth largest among developing countries.

**Source:** International Economic Data Bank (IEDB), Research School of Pacific Studies, Australian National University.
### Annex 6.4: Unit Values of Indonesian Exports, 1984-88

#### (1) To US (1985-86 = 100)

<table>
<thead>
<tr>
<th>Year</th>
<th>Group I* items</th>
<th>Group II** items</th>
<th>Major items***</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>100</td>
<td>100</td>
<td>100 100 100</td>
</tr>
<tr>
<td>1986-87</td>
<td>117</td>
<td>115</td>
<td>94 125 129</td>
</tr>
<tr>
<td>1987-88</td>
<td>134</td>
<td>176</td>
<td>102 166 146</td>
</tr>
</tbody>
</table>

#### (2) To EC (1984 = 100)

<table>
<thead>
<tr>
<th>Year</th>
<th>UK</th>
<th>Major items***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>100 100 100</td>
</tr>
<tr>
<td>98</td>
<td>91</td>
<td>96 96 n.a.</td>
</tr>
<tr>
<td>110</td>
<td>96</td>
<td>97 82 n.a.</td>
</tr>
<tr>
<td>139</td>
<td>91</td>
<td>129 111 n.a.</td>
</tr>
</tbody>
</table>

**Note:** The data are Department of Trade estimates of unit values, deflated by the relevant wholesale price series, and expressed as an index with the base year as shown equal to 100.

* Group I: Large export value items

** Group II: Smaller export value items

*** Major items: 1) Yarn and fibers; 2) fabrics; and 3) garments

**Source:** Department of Trade, Jakarta.

<table>
<thead>
<tr>
<th>CCCN Code</th>
<th>Item Description</th>
<th>Value (US$millions)</th>
<th>Major markets (% of total)</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>56054</td>
<td>Synthetic fiber</td>
<td>22.7</td>
<td>Belgium (38.7)</td>
<td>Korea (21.1)</td>
<td></td>
</tr>
<tr>
<td>560551</td>
<td>Rayon fiber</td>
<td>16.6</td>
<td>Belgium (44.0)</td>
<td>Korea (29.3)</td>
<td></td>
</tr>
<tr>
<td>56052</td>
<td>Synthetic fiber</td>
<td>15.7</td>
<td>Singapore (44.6)</td>
<td>Australia (10.9)</td>
<td></td>
</tr>
<tr>
<td>56051</td>
<td>Man-made fiber</td>
<td>15.2</td>
<td>Korea (34.6)</td>
<td>Australia (11.0)</td>
<td></td>
</tr>
<tr>
<td>5104124</td>
<td>Woven fabric—synthetic</td>
<td>51.1</td>
<td>Singapore (42.4)</td>
<td>U.A.E. (16.3)</td>
<td></td>
</tr>
<tr>
<td>5509159</td>
<td>Shirting</td>
<td>42.3</td>
<td>Japan (34.9)</td>
<td>Italy (26.5)</td>
<td></td>
</tr>
<tr>
<td>5607211</td>
<td>Woven fabric—cotton</td>
<td>37.7</td>
<td>USA (22.2)</td>
<td>Malaysia (15.1)</td>
<td></td>
</tr>
<tr>
<td>5607214</td>
<td>Woven fabric—cotton</td>
<td>37.3</td>
<td>Singapore (15.9)</td>
<td>Australia (12.7)</td>
<td></td>
</tr>
<tr>
<td>5104123</td>
<td>Woven fabric—synthetic</td>
<td>37.2</td>
<td>Singapore (33.6)</td>
<td>UK (14.7)</td>
<td></td>
</tr>
<tr>
<td>5607212</td>
<td>Woven fabric—cotton</td>
<td>36.5</td>
<td>U.A.E. (12.8)</td>
<td>Ireland (12.5)</td>
<td></td>
</tr>
<tr>
<td>6102629</td>
<td>Ladies’ blouses—synthetic</td>
<td>58.0</td>
<td>USA (84.8)</td>
<td>UK (4.0)</td>
<td></td>
</tr>
<tr>
<td>6101429</td>
<td>Men’s trousers—cotton</td>
<td>48.1</td>
<td>USA (62.2)</td>
<td>FRG* (9.8)</td>
<td></td>
</tr>
<tr>
<td>6005131</td>
<td>Synthetic sweaters</td>
<td>43.8</td>
<td>USA (41.7)</td>
<td>FRG* (17.3)</td>
<td></td>
</tr>
<tr>
<td>6102929</td>
<td>Ladies’ outer garments—cotton</td>
<td>43.5</td>
<td>USA (64.7)</td>
<td>FRG* (7.6)</td>
<td></td>
</tr>
<tr>
<td>6103110</td>
<td>Men’s shins—cotton</td>
<td>32.3</td>
<td>USA (77.4)</td>
<td>UK (5.1)</td>
<td></td>
</tr>
<tr>
<td>6103120</td>
<td>Men’s shins—synthetic</td>
<td>30.1</td>
<td>USA (35.6)</td>
<td>FRG* (21.0)</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* Includes CCCN items with export value in excess of US$30 million in the case of fabric and garments, and US$10 million in the case of yarn and fibers.

*FRG denotes former Federal Republic of Germany.

### Annex 6.6. Quota Utilization Ratios: Garment Exports to the European Community

*(percent of quota volumes)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EEC (average, all items)</td>
<td>76</td>
<td>68</td>
<td>74</td>
<td>85</td>
</tr>
<tr>
<td>UK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>range</td>
<td>70-100</td>
<td>24-101</td>
<td>32-94</td>
<td>76-112</td>
</tr>
<tr>
<td>major items:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>100</td>
<td>101</td>
<td>94</td>
<td>112</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>85</td>
<td>69</td>
<td>105</td>
</tr>
<tr>
<td>3</td>
<td>100</td>
<td>74</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Federal Republic of Germany</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>range</td>
<td>60-99</td>
<td>61-90</td>
<td>69-103</td>
<td>18-110</td>
</tr>
<tr>
<td>major items:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>99</td>
<td>61</td>
<td>83</td>
<td>110</td>
</tr>
<tr>
<td>2</td>
<td>92</td>
<td>90</td>
<td>103</td>
<td>94</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>64</td>
<td>69</td>
<td>18</td>
</tr>
<tr>
<td>Benelux (range)</td>
<td>70-100</td>
<td>67-100</td>
<td>94-100</td>
<td>93-104</td>
</tr>
<tr>
<td>France (range)</td>
<td>9-96</td>
<td>0-118</td>
<td>69-103</td>
<td>55-100</td>
</tr>
<tr>
<td>Italy (range)</td>
<td>0-99</td>
<td>0-109</td>
<td>1-102</td>
<td>6-127</td>
</tr>
<tr>
<td>Denmark (range)</td>
<td>3-79</td>
<td>5-75</td>
<td>3-106</td>
<td>23-101</td>
</tr>
<tr>
<td>Ireland (range)</td>
<td>0-91</td>
<td>0-52</td>
<td>20-96</td>
<td>0-96</td>
</tr>
<tr>
<td>Greece (range)</td>
<td>0</td>
<td>0-64</td>
<td>0</td>
<td>0-7</td>
</tr>
<tr>
<td>Spain (range)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0-5</td>
<td>1-57</td>
</tr>
<tr>
<td>Portugal (range)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source: Department of Trade, Jakarta.*
Endnotes

1. For simplification, and unless otherwise indicated, the word textiles shall be used throughout this chapter as a shorthand expression for yarn and fiber (SITC 266 + 651, ISIC 32111), fabrics and other textiles (SITC 65 excluding 651, ISIC 321 excluding 32111), and garments (SITC 84, ISIC 322). A major difficulty for empirical researchers in the area of trade and industry is that the trade and industrial statistics adopt different concepts and measures. The above approximate concordance (SITC codes for trade, ISIC for production) will be used.

2. As an illustration, according to SUSENAS data (social) clothing and footwear accounted for about 14 percent of average nonfood household expenditure in the 1980s, and about 5 percent of the total.

3. The 1964 census data, which actually refers to 1963, covered mechanized firms with at least five workers and nonmechanized firms with at least 10 persons. The data are very approximate. The most detailed studies of textiles before 1966 are Palmer (1972), who provides a detailed account of developments in the first half of the 1960s based on extensive firsthand experience, and Hiroshi (1970). Hill (1979, chapter 3) surveys the data sources.

4. Developments in the industry after 1966 and the economics of alternative weaving technologies are examined in Hill (1979, chapters 4 and 9). As an illustration of the range of technologies in the industry, output per worker in firms using automatic power looms is 25 to 40 times that of the handloom weavers.

5. These data are from UNIDO, Handbook of Industrial Statistics, 1988, Vienna, and refer to textiles and garments. Being converted at official exchange rates, they are at best a crude measure of international differences, but they are indicative of broad orders of magnitude and are consistent with alternative estimates cited in Thee et al. (1989, p. 59) and Bowring (1989, p. 60).

6. A more recent study of earnings in the weaving industry is that of Hardjono (1990, pp. 34 to 37). Conducting surveys over the period 1981–82 and 1988, she found that wages in Majalaya’s mechanized mills were approximately double those of handloom operators. But earnings in the mechanized mills were still considerably below the male agricultural wage.

7. The data in Table 2 may overstate the importance of small firms in garments, for two reasons. First, the small firm data refers to 1986 (deflated back to 1985), and so predates the latest export surge in the industry, much of it from newly formed large plants. Second, the data refer to establishments and, for garments more than most industries, may underestimate the presence of “multi-establishment” enterprises effectively operating as one corporate unit. Moreover, many of the small garment firms operate as subcontracting appendages to the larger factories.

8. The size distribution data for weaving underlines the far-reaching technological revolution that has occurred in the industry. According to
the 1964 Industrial Census, 43 percent of the textiles work force was in firms employing 5 to 24 persons, and 59 percent in firms with 5 to 99 workers. (These data exclude hand loom operations with five to nine workers.) Even in mechanised firms, 19 percent of the work force was in firms with a work force of five to forty-nine persons, almost double the share in 1985.

9. By the 1970s, some of the looms in these factories were forty years old (Hill 1979, chapter 5), installed by Dutch investors during Indonesia's first period of sustained industrial growth. Faced with a choice of closure or modernization, and flushed with oil revenue and aid funds, the government chose the latter option.

10. A note of explanation is required in the case of table 6.4. Using the approximate concordance developed in endnote 1, gross value of output of large, medium, and small firms was combined with the trade data to generate estimates of apparent consumption for each year, that is, production plus imports minus exports. (Small industry output was available only for the two census years, 1975 and 1986, and it was interpolated for the remainder.) These data were then adjusted to a constant price series, and the change in production over the relevant period was disaggregated into that due to changing exports, imports (generating the "import substitution" estimates), and apparent consumption (the "domestic demand" factor). Owing to exchange rate fluctuations and the exclusion of small but unknown quantities of cottage output, the estimates should be regarded as at best approximate. Also, they are much less rigorous than the accounting for growth measures calculated using input-output tables (see for example, Poot 1989). The shorthand approach is adopted here because the most recent input-output table is for 1985, before the latest and most significant export boom. Even so, the figures are broadly comparable with those of Poot, who decomposed growth into final and intermediate demand, import substitution, exports, and a technology coefficient for the period 1980–85. He found that while exports contributed just 13 percent of the total for all manufactures, that for textiles, clothing, footwear, and leather was the highest of all industries (47 percent), marginally higher than wood products. Within textiles and garments, the export contribution was higher for garments (124 percent), followed by knitting (77), weaving (36), spinning (31), and made-up textiles (24).

11. The figure of 110 percent for exports presumably reflects stock changes, as well as the fact that garments may not necessarily be traded in the same year as production is recorded.

12. Two points of caution should be mentioned in discussing these ratios. First, a deterioration in the ratio for a country like Indonesia, which has recently liberalized its trade regime, is not necessarily undesirable. The ratio for fabrics showed very little change between 1985 and 1987, for example, simply because imports rose quite rapidly in line with exports to service the fast growing garment sector. Second, Indonesia's garment trade data up to the early 1980s were distorted by unrecorded but large
tourist purchases in Singapore by many wealthy urban residents. Improvements in the quality of local products and the imposition of a hefty departure tax (the *fiskal*) have undoubtedly had a significant expenditure-switching effect since then.

13. The exception is Singapore, for which, unlike Hong Kong, separate estimates of reexport data are not available. It is likely that the Singapore figures include a substantial volume of *entrepôt* trade originating from the rest of ASEAN, especially Indonesia. During the early stages of Indonesia's export drive, several large Singaporean trading companies acted as commercial intermediaries between Indonesian garment producers and overseas buyers (Hill and Pang 1991).

14. In some firm interviews it was revealed that real unit values had doubled between 1986 and 1989 for certain items. Such an occurrence, while still comparatively rare, reflects the particular entrepreneurial talents of the owner, and is evident especially in firms not favored by large quotas and who therefore have to sell in the more demanding non-MFA markets, particularly Japan.

15. In addition to the three countries examined in this section, see also the useful material on China by Anderson (Chapter 4, this volume), who examines that country's trade patterns in an East Asian perspective, drawing on the standard theory of comparative advantage, and Douglas (1989) on Malaysia.

16. See, for example, Fane and Phillips (1991), Wymenga (1991), and many earlier studies.

17. The literature on the effects of the MFA on developing countries has yet to examine systematically this crossover phenomenon, although several studies refer to it. See, for example, Goto (1989) Dean (1990), and Erzan et al. (1990).

18. For example, quotas for profitable items such as jeans are sold (illegally—a sale through the bourse implies a cut in the following year's quota) for up to US$12 to US$15 per dozen. Thus, the acquisition of a substantial quota (say 50,000 dozen) is very profitable.

19. See Pack (1987) for a detailed discussion of measures to increase efficiency in developing country textile industries.
I. Introduction

From the early stages of the Republic of Korea's economic growth, the textile and clothing industry has been a strategic export sector stimulated by both strong overseas demand and the government's export drive policy. In the early 1980s, however, the industry experienced a slowdown resulting from rising import barriers in advanced countries and stiffening competition in world textile and clothing markets. At home, increased labor costs and lower productivity also hampered the industry's performance.

In late 1985, the industry recovered from its long-term recession, aided by the so-called three lows: low oil prices, low interest rate, and a weak U.S. dollar. These three factors sharpened the industry's price competitiveness, raising both exports and profitability until 1988. Recently, the textile and clothing industry's profitability has been deteriorating sharply, due to the Korean won's continuing appreciation, rising labor costs, and raw material price instability.

In the last decade, the textile and clothing industry's share in manufacturing value added and employment has declined steadily from 18.7 percent and 24.0 percent in 1976, to 11.3 percent and 15.7 percent in 1988, respectively, and the industry's share of total exports has decreased from 37.8 percent in 1976 to 23.3 percent in 1988. The industry's relative decline, however, does not mean an absolute decline. Despite this recent decline, the industry contributes almost a ninth of value added in manufacturing and close to one-fourth of total exports. The industry still provides employment for 734,000 persons out of a manufacturing work force of 4.7 million (1988), making it the largest single sector for nonagricultural employment in the country. The industry also has significant linkages with other sectors, especially the machinery and chemical sectors.

The purpose of this chapter is to review the current status of the textile and clothing industry in Korea and to explain private and public sector efforts toward industry restructuring. The following sections will discuss: (a) the
restructuring of the textile and garment industry; (b) the factors affecting the recent evolution of the industry; (c) the adjustment by the private sector; (d) the public sector's role; and (e) concluding remarks and prospects.

II. Restructuring of the Textile and Garment Industry

A. Textile Exports

The textile industry in Korea has continually been one of the leading export industries, with exports accounting for 23.3 percent of total exports in 1988. The export dependence ratio, which is the export share of total demand in the Korean textile industry, increased from 46.7 percent in 1972 to 67.5 percent in 1987, illustrating the leading role of export demand in the Korean textile industry for the past two decades. As a result, Korea's textile industry, as measured by exports, has rendered Korea one of the major textile countries in the world.

Since 1973, Korea's market structure of textile exports has changed little. The United States, Japan, and the European Community absorbed as much as 80 percent of Korean textile exports in 1973, but in 1988, the individual shares of these three countries dropped considerably to a level of about 65 percent. Textile exports under Multi-Fibre Agreement (MFA) restrictions accounted for 50 percent of total textile exports, and since 1985, the non-quota export share increased to 59 percent in 1988 from 54 percent in 1985. This indicates that although the Korean government has tried to diversify its overseas markets, Korean textile exports are still vulnerable to demand fluctuations in the three countries.

Breaking down textile exports by material, natural fiber accounted for about 23 percent, and man-made fiber for about 71 percent in 1988. In the period of 1970–88, the annual growth rate of man-made fiber exports was 17.2 percent, while that of natural fiber was 12.4 percent, implying that Korea's textile exports have been led by man-made fibers (annex 7.1).

B. Textile Subsectors in Korea

The textile industry in Korea consists of four major subsectors: spinning (yarns); weaving and knitting (fabrics); artificial or chemical fibers; and apparel. Since these subsectors are considerably heterogeneous with respect to product and process characteristics, subsectors have evolved differently and face different prospects (annex 7.2). For example, the apparel subsector, is characterized by a large number of small firms operating with relatively simple and labor-intensive technology. At the other extreme are spinning, weaving, and knitting mills. These tend to be large-scale and generally capital-intensive operations. For example, the average mill size in cotton spinning in Korea is over 2,000 workers, which is larger than the average U.S. or European mill. Variations in recent growth performance, however, can be seen by examining the behavior of the output and the employment at the subsector level in annex 7.3 and table 7.1.

COTTON YARN AND FABRICS SUBSECTOR. In 1988, the cotton textile industry had 3,583,028 spindles, of which most were accounted for by large oligopolistic
firms. The average number of spindles per plant stood at 112,600, surpassing the 50,000 recognized as being the approximate optimum.

Table 7.1: Textile Employment by Sector, 1980–88, Selected Years
(unit: persons)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>731,963</td>
<td>741,800</td>
<td>721,119</td>
<td>767,684</td>
<td>784,096</td>
<td>743,008</td>
</tr>
<tr>
<td>Garment</td>
<td>368,013</td>
<td>383,355</td>
<td>383,936</td>
<td>397,102</td>
<td>392,936</td>
<td>359,318</td>
</tr>
<tr>
<td>Spinning</td>
<td>118,905</td>
<td>111,583</td>
<td>109,294</td>
<td>105,858</td>
<td>108,879</td>
<td>110,601</td>
</tr>
<tr>
<td>Weaving</td>
<td>97,840</td>
<td>94,901</td>
<td>80,664</td>
<td>100,235</td>
<td>115,602</td>
<td>110,601</td>
</tr>
<tr>
<td>Knitting</td>
<td>60,030</td>
<td>51,910</td>
<td>59,520</td>
<td>76,580</td>
<td>79,064</td>
<td>75,251</td>
</tr>
<tr>
<td>Others</td>
<td>87,175</td>
<td>104,263</td>
<td>87,705</td>
<td>87,909</td>
<td>87,815</td>
<td>9,0346</td>
</tr>
</tbody>
</table>


Cotton yarn production grew by 4.5 percent annually during 1983–88. The growth of cotton yarn production is attributable to strong demand in overseas markets. Nearly 62 percent of total cotton yarn production in 1987 went to overseas markets. The ratio of cotton-blended yarn to total cotton yarn production rose from 44.8 in 1983 to 48.8 percent in 1987 (declining to 45.0 in 1988). Meanwhile, that of pure cotton yarn to total cotton yarn fell from 48.5 percent to 43.9 percent (rising to 47.5 in 1988—see annex 7.4). This trend is largely attributable to increased demand from other textile and apparel industries following improvements in cotton yarn and chemical fiber blending by local industries.

On the other hand, cotton weaving facilities have decreased substantially since 1983. Low overseas demand for cotton textiles has forced Korean firms to scrap obsolete weaving facilities. Instead, firms installed newly developed shuttleless looms. The proportion of new looms to total looms increased from 3.6 percent in 1983 to 8.5 percent in 1987, but the proportion is still low compared with major competitors such as Taiwan (China) and Hong Kong. Exports account for 86 percent of total cotton fabric production. Japan and Hong Kong were the major customers, together claiming 35.0 percent of total cotton textile exports in 1987, followed by Europe with 14.3 percent, and the United States with 10.6 percent.

Cotton fabric production growth slumped to 2.4 percent on average per year during 1983–87. The main reason was sluggish exports of cotton fabrics, given keen competition from newly exporting countries. Korea's comparative advantage in cotton fabrics came chiefly from the mass production of low-priced products. But, since the early 1980s, the advantage has been eroded by the emergence of producers in China and Pakistan, who have price advantages given their local abundance of raw materials and low wages.

Wool Yarns and the Fabrics Subsector. In the woolen textile sector (annex 7.5), spinning facilities increased by 2.1 percent annually during 1983–88. Meanwhile, weaving loom facilities decreased by 2.7 percent. Woolen spinning
companies have steadily been installing new spindles to meet increased export
demand for woolen yarn from countries such as Hong Kong and Japan.

The wool textile subsector shows a concentrated market structure with Cheil
Wool (a member of the Samsung Group) commanding 40 percent of the domestic
market and Kyung Nam Wool 25 percent in 1987. The average number of
spindles per plant in Korea’s worsted textile sector amounted to 30,550.
However, only one-third of the total spindles are for pure worsted and wool-
blended yarn production, with the rest for synthetic fiber yarn.

Worsted weaving facilities have shrunk since 1983, with the replacement of
obsolete plant and equipment. The woolen weaving sector has actively pursued
facility modernization by installing newly developed shuttleless looms,
including water jets and rapier looms. The ratio of shuttleless looms to the total
increased to 21.4 percent in 1987 from 9.3 percent in 1983. As a result in 1986, the
ratio of obsolete facilities to total facilities was 27.9 percent for wool weaving.
The comparable ratio for wool spinning was 40.8 percent.

In 1987, exports amounted to 57.5 percent of total wool fabric production.
That compares with a 49.9 percent rate in 1983. The United States was the
biggest customer with a 24.8 percent share of total wool textile exports, mostly
in pure worsted and wool-blended fabrics. Hong Kong was Korea’s second
largest export market, with a 20.6 percent share. Over 90 percent of shipments
to Hong Kong were pure worsted and woolen yarn. The export portion going to
Japan was 19.5 percent, while other major importers were Canada and France.

CHEMICAL FIBER SUBSECTOR. The chemical fiber industry (synthetic or
man-made fiber industry) concentrates on upstream products such as fibers and
yarns later used downstream in the textile industry. The industry is divided
between two kinds of fibers: cellulose and noncellulose. Noncellulose fibers
(including polyester, nylon, and acrylic) are petroleum-based; while cellulose
fibers (including acetate and rayon, also called regenerated fibers) are
synthesized from organic substances such as wood pulp.

Chemical fiber demand, which totaled 605,888 tons in 1980, has steadily
increased to 751,273 tons in 1983 and to 1,255,763 tons in 1988 (annex 7.6). The
main impetus has been the increase in textile and apparel exports, for which
large quantities of chemical fiber are needed as raw materials. Polyester’s
share of total demand has been more than 50 percent, while nylon and acrylic
have accounted for about 20 percent each since 1980. The share of regenerated
fibers, such as acetate and viscose rayon, have continuously decreased, not
exceeding 5 percent since 1980 because of decreasing demand associated with the
development of petroleum-based chemical fibers, including polyester, nylon,
and acrylic.

The Korean chemical fiber industry has grown steadily during the last two
decades, with facility expansion and new product development in line with the
growth of the country’s textile industry. Its production facilities have
expanded continuously, especially by polyester manufacturers, to achieve
economies of scale and to satisfy demand increases in the textile and apparel
sectors. As of the end of 1987, production capacity stood at 2,922 tons per day,
making the Korean chemical fiber industry the seventh largest in the world.
Thus, the industry has reached international standards of production
capability.
The chemical fiber industry is concentrated as far as specific products are concerned. Thus, according to 1987 data, Hanil Synthetic with 17,500 workers provides almost 60 percent of domestically produced acrylic yarn and 70 percent of acrylic fiber. Tongyang, the largest nylon filament and cord maker in the world, provides 51 percent of Korea's output of these items, while Kolon makes 30 percent, and Kohap, 25 percent of total nylon fiber. The average plant capacity in Korea increased to 159 tons per day in 1987. Compared with the average plant capacity internationally, the average plant capacity of all chemical fibers in Korea surpassed the average world level.

Since the early 1980s, however, the chemical fiber industry's shares of total manufacturing value added and production have declined gradually. Among those factors inhibiting the growth of the chemical fiber industry were protectionism in industrial countries and the emergence of new competitors such as China and other Asian countries.

A shift in consumption patterns from chemical to natural fibers was another factor responsible for the chemical fiber industry's reduced importance. Between 1980 and 1988, the share of chemical fiber consumption out of total textile fiber consumption in Korea decreased from 58 percent to 53 percent, while that of natural fibers increased from 42 percent to 47 percent. This is largely due to consumers' preference for natural fiber products in line with improving living standards.

Currently major fiber producers are also concentrating on the renovation of their facilities rather than on facility expansion to heighten their productivity. The new investments are mainly focused on upgrading production facilities, including factory automation, to simplify production processes and to improve quality.

In addition to the modernization of old and obsolete facilities, Korea's major chemical fiber producers have actively pursued product differentiation and new material development using heavy research and development (R&D) investment. Reflecting the consumers' preference for natural fibers, new materials such as silk-like yarn and cotton-like synthetic fiber have been developed. As a medium-term strategy to secure its future prosperity, the industry is shifting its business emphasis from traditional to industrial synthetics. The industry is currently pushing ahead with aramid pulp, carbon fiber, artificial lawn, polyester tire cord, conductive fiber, and ultra-fine denier development.

**APPAREL SUBSECTOR.** Apparel manufacturing as a major subsector of the textile industry has contributed greatly to the nation's exports, employment, and improved balance of payments during the last two decades. The industry is characterized by its labor intensity and export orientation, unlike such upstream sectors as staple fibers and yarns, which are basically process industries. The garment industry was composed of 3,270 companies employing 417,000 persons in 1986. The industry accounts for nearly 60 percent of Korea's textile exports and half of textile sector employment. But the apparel industry's share of gross output by all manufacturing industries has declined continuously from 5.5 percent in 1981 to 3.7 percent in 1986 because it has grown less rapidly than manufacturing as a whole.
Since exports account for about 70 percent of total production, the industry is sensitive to fluctuations in overseas markets and to global business conditions. By category, sweaters and shirts led apparel industry exports in 1987, accounting for about 44 percent of the total. Moreover, apparel exports are heavily dependent on a small number of markets. Exports to the United States and Japan, for example, account for more than 65 percent of the total. But there has been a move to diversify away from such heavy dependence on a single, even more protectionist market. As a result, Korean firms have penetrated non-quota areas such as the Middle East, Africa, and Southeast Asia.

Apparel production facilities are comprised of knitting machines, sewing machines, and incidental facilities including dyeing machines and cutting devices. While technological change has been relatively rapid in cutting and pressing, it has been slow in sewing, the labor-intensive nucleus of the garment industry. Knitwear, however, is not labor intensive; knitting garments is more like spinning yarn and weaving fabric, which is one reason it is included in the same major industrial group as these activities, rather than in the apparel group. In particular, computer-controlled knitting machines for gloves, socks, and sweaters have been actively introduced as have computer-aided design systems (particularly for socks and jacquards).

Despite recent technological changes, the apparel industry still relies heavily on obsolete facilities, leading to production bottlenecks. In addition, the industry's factory automation ratio stands at only 30 percent, compared with a 50 percent ratio for industrial countries. Further modernization of production facilities is required as the best way to improve productivity and thus to mitigate rising wages.

III. Factors Affecting the Textile and Garment Industry

Competitiveness and protectionism in export markets confront the Korean textile and apparel industries. There is concern over how successfully these problems can be dealt with, problems that have led to the application of the "declining" label to textiles and apparel. Competitiveness is an issue on two fronts: wage-based competition from developing countries and technology-based competition from industrial countries.

A. Protectionism

Restrictions on apparel and textile trade are based on the Multi-Fibre Agreement (MFA), and Korean apparel exports were severely hit by this arrangement, as it was used by major customers, including the United States, the European Community, and Canada, to restrict imports. Korea agreed to bilateral agreements with the United States and the European Community in July and August 1986. The United States put the brakes on Korea's growing shipments of textiles and apparel to its markets by means of a new bilateral agreement limiting exports to the United States to an average annual growth of 0.825 percent for 1986-89 (compared to over 2 percent under an earlier agreement). In August 1986, Korea and the European Community reached an agreement limiting Korea's textile and apparel exports to an annual growth of 2.5 percent for 1987-91. In particular, the new pact limits the export growth rate
for certain textile and apparel products such as shirts, cotton cloth, and cotton thread.

A further blow came in 1988 when the European Community announced the removal of a number of Korean products from its GSP (Generalized System of Preferences, which consists of special tariff concessions to developing countries). The trade situation continued to deteriorate during 1988 because of industrial country protectionism. In November, the European Community authorized four members to ban temporarily a range of newly industrializing economy (NIE) textiles. Japan also provided its own protectionist shock, when its government filed a claim against Korean knitwear, claiming that imports were damaging local industries and threatening jobs. In response, Korean companies agreed to "voluntary export restraints" (de facto quotas).

B. Aging Machinery and Changing Technology

Significant technical innovation continues to take place in textile machinery. The new technologies have been primarily intended to compensate for Korea's loss of advantage in the area of cheap labor. The technologies combine precision machinery with computerized controls to achieve speeds thought impossible even ten years ago. And the new equipment often does more than just enhance labor productivity: for example, computerized knitting machines can now make many garments in their final shapes or in fewer pieces. This method uses less than 90 percent of the fabric required for conventional cutting and sewing.

The new technologies have been implemented primarily in the industrial countries, so Korea's cost advantage in textile mill products is no longer as great as it once was. Firms in these countries can make yarn and fabric at home, then ship it overseas to be made up as garments. Germany and Italy are the largest textile makers in the world, and it is no coincidence that Germany is also the leading maker of textile machines.

Table 7.2: Age of Machinery, 1987

<table>
<thead>
<tr>
<th>Function</th>
<th>Over 20</th>
<th>19-15</th>
<th>14-10</th>
<th>5-0</th>
<th>Amortization period (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td>4.2</td>
<td>16.2</td>
<td>52.9</td>
<td>19.7</td>
<td>7</td>
</tr>
<tr>
<td>Spinning</td>
<td>14.7</td>
<td>24.3</td>
<td>65.9</td>
<td>9.5</td>
<td>9</td>
</tr>
<tr>
<td>Weaving</td>
<td>3.7</td>
<td>11.5</td>
<td>38.2</td>
<td>30.3</td>
<td>9</td>
</tr>
<tr>
<td>Knitting</td>
<td>9.2</td>
<td>12.6</td>
<td>31.6</td>
<td>45.9</td>
<td>9</td>
</tr>
<tr>
<td>Dyeing</td>
<td>3.1</td>
<td>7.6</td>
<td>18.5</td>
<td>53.4</td>
<td>6</td>
</tr>
<tr>
<td>Sewing</td>
<td>14.9</td>
<td>16.9</td>
<td>24.9</td>
<td>55.8</td>
<td>6</td>
</tr>
<tr>
<td>Cutting</td>
<td>7.8</td>
<td>16.1</td>
<td>39.4</td>
<td>27.5</td>
<td>6</td>
</tr>
</tbody>
</table>


At one time, Korea stayed abreast of new technologies by buying new machines. But Korea began to fall behind as the pace of expansion slowed with
the industries’ changing situation in the late 1970s and early 1980s (annex 7.7). This has been termed the “machine vintage” problem, and has been a concern since at least the mid-1980s when a large and rising part of Korea’s machinery stock started becoming older than its life expectancy for tax purposes (typically six to nine years—see annex 7.8). Thus, a survey in late 1988 suggested that 80 percent of Korea’s cotton industry machinery was superannuated (table 7.2).

C. Competition from Developing Countries

China and the Association of Southeast Asian Nations (ASEAN) countries are posing a strong challenge to Korea, especially in apparel, and this has eroded Korea’s share of the world market. China, exploiting low wages and abundant cotton, is the world’s largest clothing and apparel producer and has begun to make its presence felt in world trade. China has increased its share in the world trade of textiles and became the fifteenth largest clothing exporter in 1973; ten years later it had risen to sixth place. The developing countries possess two advantages over Korea: (a) they have much lower labor costs and can crowd Korea out of markets for low quality textile goods and garments; and (b) they have not yet been subjected to very restrictive quotas since they are new participants. While the latter source of advantage will undoubtedly be reduced by protectionism in the Organization for Economic Cooperation and Development (OECD) markets, the former source will continue to threaten Korea’s position (table 7.3).

Table 7.3: Comparison of Wages for Textile and Apparel Workers, 1987

<table>
<thead>
<tr>
<th>Wage</th>
<th>Taiwan (China)</th>
<th>Hong Kong</th>
<th>Korea</th>
<th>Thailand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dollars/month</td>
<td>598 (113)</td>
<td>538 (101)</td>
<td>531 (100)</td>
<td>146 (27)</td>
</tr>
</tbody>
</table>

Source: Ministry of Trade and Industry.

D. Rising Wage Costs

The impact of rising wages depends on the share of labor costs in total costs and the extent to which real wages rise faster than productivity (annex 7.9). The apparel industry as a whole is more labor-intensive than textiles, but there are wide variations within each category. The production of yarns and fabrics from natural and artificial fibers, on the other hand, involve relatively capital-intensive processes (annex 7.10).

Monthly earnings of the textile and apparel industries have been lower than those of manufacturing sectors. This is true in most countries and reflects the age, gender, and skill of the labor force. From 1976 through 1988, wages increased at about the same rate in clothing and in manufacturing, but grew more slowly in textiles (table 7.4). For most of the 1976–88 period, wages grew faster than productivity for textiles. The same is true of clothing for the years 1976–85, but productivity growth exceeded wage increases during 1985–87.
Table 7.4: Monthly Earning of Regular Employees, 1984-89
(unit: won)

<table>
<thead>
<tr>
<th>Year</th>
<th>All industry</th>
<th>Manufacturing &amp; apparel</th>
<th>Textiles</th>
<th>Apparel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>296,907</td>
<td>245,261</td>
<td>184,600</td>
<td>195,558</td>
</tr>
<tr>
<td>1985</td>
<td>324,283</td>
<td>269,652</td>
<td>201,158</td>
<td>213,235</td>
</tr>
<tr>
<td>1986</td>
<td>350,965</td>
<td>294,485</td>
<td>220,868</td>
<td>235,669</td>
</tr>
<tr>
<td>1987</td>
<td>386,536</td>
<td>328,696</td>
<td>252,272</td>
<td>272,756</td>
</tr>
<tr>
<td>1988</td>
<td>446,370</td>
<td>393,056</td>
<td>298,865</td>
<td>319,869</td>
</tr>
<tr>
<td>1989</td>
<td>540,611</td>
<td>491,632</td>
<td>365,483</td>
<td>389,310</td>
</tr>
</tbody>
</table>


E. Raw Materials

Cotton and wool are entirely imported because of Korea's unsuitable climate and land. Of course, the petroleum used to make relevant chemicals in Korea is also all imported. Because about half the cotton is from the United States, the industry is quite vulnerable to U.S. yields. Australia provides about 80 percent of the wool, with the rest coming from New Zealand and Great Britain. Some 80 percent of raw silk comes from China, and when the Chinese restricted exports in 1988, Korean silk companies were able to operate at only about half capacity. Most synthetic fibers are domestically supplied with the expansion of local production facilities for chemical fiber and synthetic fiber imports have been restricted to help development of the local industry, but shortages in 1987 led to liberalization.

IV. Private Sector Adjustment Strategy

The growth of textiles and apparel is expected to be slow due to unfavorable circumstances. But even slow growth can be profitable, and industry trade associations and individual firms have taken steps to adjust. The main thrust has been to improve profit margins through factory automation and move to higher value products. Elements of the strategy include changing the product mix, the technology, and the cost structure. There has also been a move by some firms to produce offshore and to sell more apparel in the domestic market.

A. Product Mix Considerations

Not until the late 1980s did Korean firms require sophisticated marketing skills or the ability to handle design changes on their own. Korean producers remain dependent on buyer-provided instructions or on standard or traditional designs.

"Up market" is becoming the catch phrase of industries in many countries, and thus the road is as crowded and competitive as the low-wage path of the past. The shift to higher value added, higher quality items has so far been a successful strategy for maximizing the value of quotas placed on Korean exports to the United States and European Community, and it has thus softened the
consequences of increasing competition from Asian textile producers at the low end of the market. Moving up market required investments in new machinery, in design facilities, and in marketing arrangements. However, due to the continued efforts of private companies for quality improvement and the development of their own designs, the export price per unit of Korean firms has increased especially since 1985.

B. Technology Considerations

Up-market demand is fickle, with frequent shifts. This has reduced the size of the average demand in many product segments, which can work to the advantage of a small firm. Product differentiation in even such seemingly mundane markets as men’s and women’s briefs (the number of colors and shapes has proliferated as brands jostle for retail shelf space) has meant more reliance on small, flexible production technology as opposed to simple high-volume machines. Because so much of Korean firms’ present equipment is of the basic high-volume kind, to some extent this puts them at a disadvantage across a broad spectrum of spinning, weaving, and knitting activities.

The high demand for labor outside textiles and apparel, as well as the relatively poor working conditions within the industry, have raised labor costs, and encouraged the industry to substitute capital for labor. The bulk of this substitution has been in spinning and weaving. Annex 7.10 shows that the capital/labor ratio has risen rapidly. The weaving and knitting sector in particular showed most remarkable growth in the second half of the 1980s.

C. Market Diversification

Through most of the 1960s and early 1970s, Korean textile exports went mainly to Japan and the United States, with these two countries absorbing as much as two-thirds of total exports. The more restrictive MFAs and bilateral quota agreements provided a spur to diversification through the 1970s as Korea sought new markets in the European Economic Community, Middle East, Hong Kong, Africa, Latin America, and the Eastern block countries. Nevertheless, Korea’s vulnerability to demand fluctuations in Japan and the United States remains high.

The domestic market also offers opportunities. Rising incomes, increasing leisure time, and a desire (particularly among the young) to express individuality, all contribute to people becoming more fashion conscious. For example, Benetton opened a store in Seoul in October 1987. At the end of 1988, there were twenty-seven Benetton outlets in Korea operated by a Korean franchise. Many of the garments Benetton sells are at least partially made in Korea.

D. Offshore Production

Faced with mounting protectionism in industrial countries and rising labor costs in the 1980s, Korean textile (mostly apparel) companies have rushed to establish factories overseas (table 7.5). They are now speeding up investments
abroad while reducing domestic facility expansion to cope with toughening import restrictions, the rising won, and higher wages.

Table 7.5: Offshore Production in the Textile and Apparel Industry

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central America</td>
<td>23</td>
<td>31</td>
<td>38</td>
</tr>
<tr>
<td>North America</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Asia</td>
<td>9</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Oceania</td>
<td>10</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Europe</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total cases</td>
<td>51</td>
<td>58</td>
<td>75</td>
</tr>
<tr>
<td>Total investment (US$ thousands)</td>
<td>26,658</td>
<td>30,907</td>
<td>47,531</td>
</tr>
</tbody>
</table>

Source: Korea Federation of Textile Industries.

The companies initially focused on Central American and Caribbean countries, such as Jamaica and the Dominican Republic, as these countries offer a route through U.S. import restrictions, given their tariff preference under Reagan's Caribbean Basin Initiative. Most of the countries have designated free-trade zones, which promote foreign investment by reducing or waiving taxes and other financial burdens. These countries' geographical proximity to North America also has encouraged Korean apparel companies to invest in the area.

Korean overseas investment has since spread to Southeast and Southwest Asia. Moreover, a growing number of companies are heading to the United States to build their apparel plants. According to the Korea Federation of Textile Industries (KOFOTI), Korean apparel and textile companies are pushing ahead with the construction of a large-scale integrated textile facility in the United States. It will accommodate a variety of processes including knitting, sewing, and dyeing, under a joint venture with a U.S. company.

V. The Role of the Public Sector

The government showered textile and apparel with cheap credit and bestowed preferential tax and depreciation treatment in the 1960s and early 1970s, successfully following an established path of economic development whereby these groups became important foreign exchange earners and industrial employers. In the mid-1970s, the government began an HCI (heavy and chemical industry) development plan. The assumptions were that Korea would lose competitiveness in labor-intensive industries soon, that consumer goods (which is most of what is usually meant by light industry), including textiles, are inherently labor-intensive, and that such industries did not have enough steam left in them to power the country's future growth needs. The government was thus attempting to anticipate the need for structural change, and the inevitability of dislocations for textile industries.

In any event, by the early 1980s the HCI drive was being scaled back as high technology became the next turnpike. Textiles and apparel have again been
accepted as an important sector, and was predicted to continue to be Korea's biggest foreign exchange earner well into the 1990s.

The government's renewed interest has several manifestations. These include subsidized loans, support of a domestic textiles machinery industry, capacity controls, and import protection, each of which, along with miscellaneous programs, is discussed below.


In 1981 the government set up the Textile Modernization Fund (TMF) to provide low-interest loans (6 to 8 percent per year at a time the market rate was over 15 percent) with medium-term maturity (five to eight years) to modernize factories. The main beneficiaries intended were small- and medium-size companies.

The government and the industry were each supposed to put up 60 billion won, but this was not forthcoming. By mid-1985 only about 27 billion had been collected and lent. At almost the same time the TMF was established, the government adopted a tight fiscal policy and also began to realize the benefits of backing off from a too-micro industrial policy. Thus the Fund was one of many programs considered less important than macroeconomic stability, the tight fiscal policy sought to achieve. For its part, the industry's low profits discouraged contributions.

In 1986, the Industrial Development Law (IDL) was enacted, replacing industry-specific promotion laws. The textile and dyeing industries are among the industries included for rationalization under the IDL. One part of this was 180 billion won at 5 percent (seven year payback period with three year grace period) loans so that equipment over nine years old could be scrapped, and mills could shift to higher value added items. In the first year of the IDL loan program, some 86 billion won was spent, virtually all by the weaving industry, to replace over 14,000 machines with new, automated ones (table 7.6).

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of scrapped machines</th>
<th>Number of imported machines</th>
<th>Fund (billions of won)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaving</td>
<td>13,932</td>
<td>8,280</td>
<td>82.1</td>
</tr>
<tr>
<td>Dyeing</td>
<td>32</td>
<td>32</td>
<td>1.1</td>
</tr>
<tr>
<td>Knitting</td>
<td>54</td>
<td>54</td>
<td>0.8</td>
</tr>
<tr>
<td>Sewing</td>
<td>502</td>
<td>502</td>
<td>0.9</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>25</td>
<td>0.7</td>
</tr>
<tr>
<td>Total</td>
<td>14,545</td>
<td>8,893</td>
<td>85.6</td>
</tr>
</tbody>
</table>

Source: Korea Federation of Textile Industries.

During 1986–89, 29,100 old machines were scrapped and 17,400 new machines were installed. It resulted in increases in the operating ratio productivity (table 7.7).
Table 7.7: The Results of the Industrial Development Law on the Textile Industry

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Automation ratio (percent)</td>
<td>24.9</td>
<td>38.8</td>
<td>41.3</td>
<td>45.0</td>
</tr>
<tr>
<td>Share of old machine (percent)</td>
<td>68.0</td>
<td>60.0</td>
<td>53.0</td>
<td>49.0</td>
</tr>
<tr>
<td>Operating ratio (percent)</td>
<td>73.0</td>
<td>78.0</td>
<td>80.0</td>
<td>83.0</td>
</tr>
<tr>
<td>Output/man (yard/man)</td>
<td>335.0</td>
<td>n.a.</td>
<td>405.0</td>
<td>n.a.</td>
</tr>
<tr>
<td>Value added/man (mil. Won)</td>
<td>8.5</td>
<td>10.5</td>
<td>10.2</td>
<td>10.1</td>
</tr>
</tbody>
</table>

Note: n.a. denotes not available.
Source: Korea Ministry of Trade and Industry, personal communication.

As a downstream industry, dyeing was operating at 62 percent of capacity in 1985. The government believes the industry is essential for the production of high-priced textiles. Encouraged by subsidized loans of 3 billion won, old equipment was scrapped and new machines brought in. With the increase in textile exports, the operating ratio had increased to 78 percent in 1987.

B. Domestic Textile Machinery Industry

Most textile and apparel equipment is imported. In 1986, the industry imported US$271 million worth of equipment, 60 percent of it from Japan. However, a local industry has developed, and in 1987 the Ministry of Trade and Industry put together a policy package to boost domestic textile machinery industry. The plan calls for an increase in self-sufficiency from 36 percent in 1986 to 55 percent by 1991. This will allow part of the funds made available to the industry for new machines to be spent locally. In 1990, modernization of equipment was geared toward the ability to manufacture diverse products in small quantities, which contrasts with past emphasis on basic volume expansion.

C. Capacity Control

Under the Textile Modernization Law enacted in 1979, the government adopted a permit (licensing) system to control investment in all segments of the textile industry, though not in apparel. Capacity control can be exercised in a way that promotes orderly expansion of capacity to take advantage of scale economies or allows inefficient firms to exit with as little disruption as possible. Control under the 1979 law did not achieve this potential, and it was abolished by the enactment of the IDL.

Under the IDL, new entrants into textiles and dyeing industries were prohibited for three years during the rationalization period (1986–89). This was intended to promote capacity reduction and encourage incumbent firms to upgrade their production facilities.

D. Import Protection

Domestic producers have been protected by tariffs, quotas, and nontariff barriers. But there has been significant liberalization. In the early 1980s there were 1,089 textile and apparel-related items on the restricted import list. By
the end of 1984, the number was down to 105, and by 1987 there were just 18 textile items still on the list. In 1988, 98 percent of product imports in these industries were free of quotas or restrictions, though tariff protection persisted. Tariffs on textile inputs tend to be lower (and were reduced during the 1980s) than tariffs on finished goods. Thus fibers face a 10 percent duty; yarns, 15 to 20 percent. For fabrics, the range is 30 to 35 percent; and for clothing and made-up articles, it is 35 to 50 percent.

E. Other Programs

The government pursues an active research and development policy at a general level, through support for the budget of the Korea Advanced Institute for Science and Technology (KAIST), and at firm-specific level, with loans and tax credits for research and development expenses. The government has also aggressively helped companies import advanced dyeing technologies and equipment. A Textile Technology Promotion Center was established in Taegu, Korea’s textile heartland, with a 1 billion won fund. The Center’s purpose is to provide the training needed to operate newer, more automated equipment. Support is also provided by Korea Federation of Textile Industries, the principal trade organization.

Encouraged by these efforts, the research and development investment has increased rapidly. For example, the chemical fiber industry’s investment in research and development increased fourfold during 1984–88 (table 7.8). Due to research and development efforts, over twenty new textile materials have been developed (for example, flexible polyester fabric, porous polyester fiber, and so on).

Table 7.8: R&D Investment by Chemical Fiber Industry

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>7.8 (100)</td>
</tr>
<tr>
<td>1985</td>
<td>19.2 (246)</td>
</tr>
<tr>
<td>1986</td>
<td>31.0 (397)</td>
</tr>
<tr>
<td>1988</td>
<td>50.9 (653)</td>
</tr>
</tbody>
</table>


To upgrade the quality of garments, the development of design has been emphasized. A Textile Week, including an International Designer’s Fair, was held in Seoul under the sponsorship of the government in October 1987.

VI. Prospects and Conclusions

The textile and garment industry in Korea experienced dramatic expansions both in production facilities and export volumes during the last decade. Thus, the industry contributed greatly to the nation’s economic development through large foreign exchange earnings and employment creation.

However, it is anticipated that industry problems will be aggravated in the foreseeable future, and the industry’s relative share of GNP will decline. Therefore, efforts of both the private and public sectors are required to restructure the industry so that it can adjust to the changing environment at
minimal social costs. The Korean government and the industry made great efforts at facility modernization by installing newly developed jet spinners and shuttleless looms and by scrapping old and obsolete facilities. Production facility modernization greatly contributed to the quality upgrading of products and to the industry's productivity improvement in the 1980s.

The industry's future growth will largely depend on how it reacts to market changes that affect its competitiveness. It must restructure itself to become less labor intensive and more technology intensive in order to ensure continuing growth.

Improvement in product quality and the diversification of products are of primary importance. To this end, obsolete production facilities should be replaced with the most modern equipment. Also, the current production system based on large-scale production of a small number of items needs to be replaced by small-scale production of many items. Likewise, the weak design and fashion techniques common in Korea should be improved through the training of promising designers and the creation of generic brand images. Other developments necessary to the continuing growth of the industry include the stable procurement of raw materials, diversification of import markets, and domestic supply of raw materials.
Annex 7.1: Textile Exports by Material Items, 1970-88, Selected Years
(unit: tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Natural fiber</th>
<th>Man-made fiber</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>32,139</td>
<td>49,098</td>
<td>1,025</td>
<td>82,262</td>
</tr>
<tr>
<td>1975</td>
<td>88,793</td>
<td>205,443</td>
<td>13,832</td>
<td>308,068</td>
</tr>
<tr>
<td>1980</td>
<td>174,806</td>
<td>412,985</td>
<td>18,772</td>
<td>606,563</td>
</tr>
<tr>
<td>1985</td>
<td>196,097</td>
<td>607,814</td>
<td>11,838</td>
<td>815,749</td>
</tr>
<tr>
<td>1988</td>
<td>262,608</td>
<td>848,990</td>
<td>14,920</td>
<td>1,126,518</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
<th>%</th>
<th>Amount</th>
<th>%</th>
<th>Amount</th>
<th>%</th>
<th>Amount</th>
<th>%</th>
<th>% avg annual rate of increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>100.0</td>
<td></td>
<td>1975</td>
<td>100.0</td>
<td>1980</td>
<td>100.0</td>
<td>1985</td>
<td>100.0</td>
<td>1988</td>
</tr>
<tr>
<td></td>
<td>12.4</td>
<td></td>
<td>23.3</td>
<td></td>
<td>24.0</td>
<td></td>
<td>23.3</td>
<td></td>
<td>28.8</td>
</tr>
<tr>
<td>Natural fiber</td>
<td>39.1</td>
<td>28.8</td>
<td>24.0</td>
<td>23.3</td>
<td>12.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man-made fiber</td>
<td>59.7</td>
<td>67.0</td>
<td>74.5</td>
<td>71.4</td>
<td>17.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1.2</td>
<td>3.1</td>
<td>1.5</td>
<td>1.3</td>
<td>16.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Breaking down textile exports by process, apparel, and garments accounted for 60 percent, fabrics for about 25 percent, and yarn for about 6 to 9 percent. It is worthwhile to mention that the share of yarn had gradually decreased to 5.9 percent in 1988 from 9.3 percent in 1985.

Source: KOFOTI.

(unit: thousands of dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Yarn</th>
<th>Fabrics</th>
<th>Apparel</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>692,147</td>
<td>1,798,992</td>
<td>4,176,121</td>
<td>397,081</td>
<td>7,004,336</td>
</tr>
<tr>
<td>1986</td>
<td>697,324</td>
<td>2,342,601</td>
<td>5,152,491</td>
<td>541,966</td>
<td>8,734,365</td>
</tr>
<tr>
<td>1987</td>
<td>807,831</td>
<td>3,059,088</td>
<td>7,079,591</td>
<td>771,307</td>
<td>11,717,819</td>
</tr>
<tr>
<td>1988</td>
<td>829,579</td>
<td>3,053,006</td>
<td>8,448,511</td>
<td>1,812,610</td>
<td>14,143,436</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent</th>
<th>Percent</th>
<th>Percent</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>9.9</td>
<td>25.7</td>
<td>59.6</td>
<td>5.7</td>
</tr>
<tr>
<td>1986</td>
<td>8.0</td>
<td>26.8</td>
<td>59.0</td>
<td>6.2</td>
</tr>
<tr>
<td>1987</td>
<td>6.9</td>
<td>26.1</td>
<td>60.4</td>
<td>7.6</td>
</tr>
<tr>
<td>1988</td>
<td>5.9</td>
<td>21.6</td>
<td>59.7</td>
<td>12.8</td>
</tr>
</tbody>
</table>

Source: KOFOTI.
### Annex 7.3: Production of Textile Yarns, Fabrics and Chemical Fibers, 1979-88, Selected Years

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yarns (tons)</td>
<td>318,145</td>
<td>398,363</td>
<td>428,659</td>
<td>453,772</td>
<td>472,760</td>
</tr>
<tr>
<td>Cotton yarn</td>
<td>19,275</td>
<td>25,453</td>
<td>28,657</td>
<td>31,631</td>
<td>35,084</td>
</tr>
<tr>
<td>Worsted yarn</td>
<td>13,914</td>
<td>20,808</td>
<td>20,942</td>
<td>24,689</td>
<td>24,274</td>
</tr>
<tr>
<td>Woolen yarn</td>
<td>940,386</td>
<td>1,315,139</td>
<td>1,424,292</td>
<td>1,737,170</td>
<td>1,715,817</td>
</tr>
<tr>
<td>Worsted fabrics</td>
<td>34,428</td>
<td>40,175</td>
<td>38,118</td>
<td>42,984</td>
<td>45,495</td>
</tr>
<tr>
<td>Woolen fabrics</td>
<td>15,222</td>
<td>12,634</td>
<td>12,329</td>
<td>14,658</td>
<td>14,038</td>
</tr>
<tr>
<td>Silk fabrics</td>
<td>49,828</td>
<td>41,007</td>
<td>60,934</td>
<td>58,067</td>
<td>59,124</td>
</tr>
<tr>
<td>Rayon fabrics</td>
<td>109,466</td>
<td>18,371</td>
<td>27,298</td>
<td>26,013</td>
<td>26,099</td>
</tr>
<tr>
<td>Synthetic fabrics</td>
<td>680,470</td>
<td>959,046</td>
<td>425,120</td>
<td>1,447,175</td>
<td>1,430,165</td>
</tr>
</tbody>
</table>

**Note:** Cotton yarn and fabrics include cotton blended yarn and fabrics worsted yarn, and fabrics include wool blended yarn and fabrics.

**Source:** Organizational Members of KOFOTI.

### Annex 7.4: Production of Cotton Textile, 1984-88

#### (yarn in thousands of tons; fabrics in thousands of km²)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton yarn</td>
<td>464.7</td>
<td>(100.0)</td>
<td>5</td>
</tr>
<tr>
<td>Pure cotton yarn</td>
<td>228.3</td>
<td>(49.1)</td>
<td>223.7</td>
</tr>
<tr>
<td>Cotton-blended yarn</td>
<td>209.5</td>
<td>(45.1)</td>
<td>46.9</td>
</tr>
<tr>
<td>Others</td>
<td>26.9</td>
<td>(5.8)</td>
<td>35.9</td>
</tr>
<tr>
<td>Cotton fabrics</td>
<td>1,029.9</td>
<td>(100.0)</td>
<td>1,049.4</td>
</tr>
<tr>
<td>Pure cotton fabrics</td>
<td>280.5</td>
<td>(27.2)</td>
<td>364.9</td>
</tr>
<tr>
<td>Cotton-blended fabrics</td>
<td>733.3</td>
<td>(71.2)</td>
<td>634.0</td>
</tr>
<tr>
<td>Others</td>
<td>16.1</td>
<td>(1.6)</td>
<td>50.5</td>
</tr>
</tbody>
</table>

**Source:** The Spinners and Weavers Association of Korea.
Annex 7.5: Production of Wool Textiles, 1983-88
(Yarn in thousands of tons; fabrics in square kilometers; capacity in thousands of spindles; unit of looms)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity spindles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worsted looms</td>
<td>895</td>
<td>810</td>
<td>870</td>
<td>886</td>
<td>961</td>
</tr>
<tr>
<td>Capacity spindles</td>
<td>1,905</td>
<td>1,767</td>
<td>1,329</td>
<td>1,239</td>
<td>1,313</td>
</tr>
<tr>
<td>Wool looms</td>
<td>131</td>
<td>152</td>
<td>161</td>
<td>171</td>
<td>179</td>
</tr>
<tr>
<td>Capacity spindles</td>
<td>740</td>
<td>692</td>
<td>684</td>
<td>666</td>
<td>693</td>
</tr>
<tr>
<td>Wool yarn</td>
<td>190,673</td>
<td>197,821</td>
<td>212,103</td>
<td>224,561</td>
<td>228,148</td>
</tr>
<tr>
<td>Pure worsted yarn</td>
<td>7,766</td>
<td>7,964</td>
<td>10,138</td>
<td>11,148</td>
<td>13,462</td>
</tr>
<tr>
<td>Woolen yarn</td>
<td>22,563</td>
<td>21,396</td>
<td>23,012</td>
<td>27,131</td>
<td>26,975</td>
</tr>
<tr>
<td>Wool-blended yarn</td>
<td>18,068</td>
<td>20,812</td>
<td>21,319</td>
<td>23,613</td>
<td>25,094</td>
</tr>
<tr>
<td>Synthetic fabrics</td>
<td>137,932</td>
<td>140,531</td>
<td>151,119</td>
<td>156,121</td>
<td>156,800</td>
</tr>
<tr>
<td>Others</td>
<td>4,344</td>
<td>7,218</td>
<td>6,515</td>
<td>6,518</td>
<td>5,817</td>
</tr>
<tr>
<td>Wool fabrics</td>
<td>48,934</td>
<td>48,343</td>
<td>51,123</td>
<td>58,394</td>
<td>60,430</td>
</tr>
<tr>
<td>Pure worsted fabrics</td>
<td>12,503</td>
<td>12,461</td>
<td>14,293</td>
<td>15,726</td>
<td>13,891</td>
</tr>
<tr>
<td>Woolen fabrics</td>
<td>11,450</td>
<td>10,736</td>
<td>12,329</td>
<td>14,658</td>
<td>14,038</td>
</tr>
<tr>
<td>Wool-blended fabrics</td>
<td>23,987</td>
<td>24,635</td>
<td>23,825</td>
<td>27,258</td>
<td>31,604</td>
</tr>
<tr>
<td>Synthetic fabrics</td>
<td>218</td>
<td>23</td>
<td>–</td>
<td>35</td>
<td>111</td>
</tr>
<tr>
<td>Others</td>
<td>776</td>
<td>488</td>
<td>676</td>
<td>717</td>
<td>786</td>
</tr>
</tbody>
</table>

Sources: The Korean Worsted Spinners and Weavers Association; the Woolen Spinners and Weavers Corporation of Korea.
### Annex 7.2: Supply and Demand of Chemical Fibers, Selected Years (in tons)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon</td>
<td>118,558</td>
<td>5,981</td>
<td>126,451</td>
<td>4,844</td>
<td>167,906</td>
<td>19,493</td>
</tr>
<tr>
<td>Polyester</td>
<td>282,267</td>
<td>9,246</td>
<td>391,946</td>
<td>22,456</td>
<td>751,429</td>
<td>24,659</td>
</tr>
<tr>
<td>Acrylic</td>
<td>134,625</td>
<td>2,724</td>
<td>147,575</td>
<td>7,991</td>
<td>190,917</td>
<td>31,128</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>3,897</td>
<td>3,711</td>
<td>—</td>
<td>632</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Viscose</td>
<td>23,505</td>
<td>6,030</td>
<td>9,915</td>
<td>18,857</td>
<td>11,924</td>
<td>22,802</td>
</tr>
<tr>
<td>Acetate</td>
<td>7,599</td>
<td>7,745</td>
<td>8,180</td>
<td>13,426</td>
<td>9,732</td>
<td>26,793</td>
</tr>
<tr>
<td>Total</td>
<td>570,451</td>
<td>35,437</td>
<td>683,067</td>
<td>68,206</td>
<td>1,130,908</td>
<td>124,855</td>
</tr>
</tbody>
</table>

#### Demand

<table>
<thead>
<tr>
<th></th>
<th>Domestic demand</th>
<th>Exports</th>
<th>Domestic demand</th>
<th>Exports</th>
<th>Domestic demand</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon</td>
<td>35,643</td>
<td>88,896</td>
<td>35,328</td>
<td>95,967</td>
<td>60,862</td>
<td>126,537</td>
</tr>
<tr>
<td>Polyester</td>
<td>61,079</td>
<td>230,434</td>
<td>85,497</td>
<td>327,905</td>
<td>130,518</td>
<td>644,550</td>
</tr>
<tr>
<td>Acrylic</td>
<td>25,939</td>
<td>111,410</td>
<td>39,097</td>
<td>116,469</td>
<td>74,694</td>
<td>147,351</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>5,687</td>
<td>1,921</td>
<td>177</td>
<td>455</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Viscose</td>
<td>13,624</td>
<td>15,911</td>
<td>23,957</td>
<td>4,815</td>
<td>29,546</td>
<td>5,180</td>
</tr>
<tr>
<td>Acetate</td>
<td>14,623</td>
<td>721</td>
<td>21,149</td>
<td>457</td>
<td>35,270</td>
<td>1,255</td>
</tr>
<tr>
<td>Total</td>
<td>156,595</td>
<td>449,293</td>
<td>205,205</td>
<td>546,068</td>
<td>330,890</td>
<td>927,873</td>
</tr>
</tbody>
</table>

*Source: The Korea Chemical Fibers Association.*
Annex 7.7: Classification of Major Apparel Facilities, 1983–86

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Knitting machines</td>
<td>43,036</td>
<td>42,649</td>
<td>37,028</td>
<td>39,005</td>
<td>37,705</td>
</tr>
<tr>
<td>Circular knitting</td>
<td>12,939</td>
<td>12,580</td>
<td>13,046</td>
<td>12,573</td>
<td>11,892</td>
</tr>
<tr>
<td>machines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat knitting machines</td>
<td>16,088</td>
<td>15,872</td>
<td>8,064</td>
<td>9,059</td>
<td>8,274</td>
</tr>
<tr>
<td>Hosiery knitting</td>
<td>9,706</td>
<td>9,414</td>
<td>9,935</td>
<td>10,527</td>
<td>10,374</td>
</tr>
<tr>
<td>machines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glove knitting machines</td>
<td>3,866</td>
<td>4,138</td>
<td>5,220</td>
<td>6,201</td>
<td>6,408</td>
</tr>
<tr>
<td>Tricot and reshell wrap</td>
<td>447</td>
<td>645</td>
<td>763</td>
<td>825</td>
<td>847</td>
</tr>
<tr>
<td>Sewing machines</td>
<td>253,910</td>
<td>256,530</td>
<td>256,850</td>
<td>280,000</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Note: Knitwear in thousands of pieces. Sewn goods in billions of won.
Sources: Korea Knitting Association.; Korean Apparel Association.


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement (%)</td>
<td>16.7</td>
<td>38.5</td>
<td>37.1</td>
<td>12.3</td>
</tr>
<tr>
<td>Modernization (%)</td>
<td>20.8</td>
<td>26.8</td>
<td>37.9</td>
<td>22.0</td>
</tr>
<tr>
<td>Expansion (%)</td>
<td>62.5</td>
<td>34.7</td>
<td>25.0</td>
<td>65.7</td>
</tr>
<tr>
<td>Total (billions of won)</td>
<td>100 (717.6)</td>
<td>100 (395.1)</td>
<td>100 (743.6)</td>
<td>100 (874.5)</td>
</tr>
</tbody>
</table>

Source: Ministry of Trade and Industry, Yearbook of MTI.
(annual percent change)

<table>
<thead>
<tr>
<th>Year</th>
<th>Increase in nominal wages</th>
<th>Productivity growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Textiles</td>
<td>Clothing</td>
</tr>
<tr>
<td>1976</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>1977</td>
<td>24</td>
<td>28</td>
</tr>
<tr>
<td>1978</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>1979</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>1980</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>1981</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>1982</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>1983</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>1984</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>1985</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>1986</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>1987</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>1988</td>
<td>17</td>
<td>21</td>
</tr>
</tbody>
</table>

Source: Wage data are from the Economic Planning Board. Productivity data are from the Korea Productivity Center.

Annex 7.10: Capital/Labor Ratio
(unit: thousands of Won)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>7,629</td>
<td>9,984</td>
<td>11,395</td>
<td>14,331</td>
</tr>
<tr>
<td>Textile</td>
<td>6,173</td>
<td>6,558</td>
<td>8,121</td>
<td>9,859</td>
</tr>
<tr>
<td>Cotton spinning</td>
<td>9,245</td>
<td>12,202</td>
<td>11,722</td>
<td>13,013</td>
</tr>
<tr>
<td>Chemical fiber</td>
<td>21,072</td>
<td>17,993</td>
<td>16,096</td>
<td>29,242</td>
</tr>
<tr>
<td>Wool spinning</td>
<td>6,179</td>
<td>6,123</td>
<td>7,415</td>
<td>7,995</td>
</tr>
<tr>
<td>Weaving</td>
<td>3,278</td>
<td>4,235</td>
<td>10,576</td>
<td>9,022</td>
</tr>
<tr>
<td>Knitting</td>
<td>2,480</td>
<td>3,886</td>
<td>4,767</td>
<td>5,645</td>
</tr>
<tr>
<td>Silk</td>
<td>4,026</td>
<td>5,301</td>
<td>6,573</td>
<td>6,636</td>
</tr>
<tr>
<td>Dyeing</td>
<td>3,755</td>
<td>4,600</td>
<td>7,622</td>
<td>6,744</td>
</tr>
<tr>
<td>Garment</td>
<td>1,632</td>
<td>1,992</td>
<td>2,800</td>
<td>2,628</td>
</tr>
<tr>
<td>Other</td>
<td>6,262</td>
<td>7,387</td>
<td>5,061</td>
<td>4,226</td>
</tr>
</tbody>
</table>

Note: The capital/labor ratio is net fixed assets/number of employees.
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