

PART-I
TEXTILE INDUSTRY

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1. Industry Outline

1-1. The Thai textile industry accounted for 11% of the added value of the manufacturing industries as of 1987. It employed a total of 220,000 workers. Together with the garment industry, the workers engaged in textile related businesses account for over 25% of the workers in the manufacturing industries and therefore have a large influence economically and socially.

The textile industry underwent a [1] period of corporate growth for import substitution and [2] a period of growth and expansion as an export industry and is currently in [3] a period of conversion to a stress on apparel exports.

1-2. A feature of the Thai textile industry is the stress on cotton and polyester as the materials and the large weight of spun and woven products of staple fibers.

The government controls the spindles and looms in the industry and has given permission for expansion of facilities on a case by case basis. As of 1987, there were 2.06 million spindles and 93,687 looms in the industry.

Due to the increase in exports of textile products and the increase in domestic demand, the government received applications for the new installation of about 1.6 million spindles and about 10,000 looms. There are some fears over surplus production in the future due to this rapid increase. Companies are split between those taking positive action and those taking a cautious approach.

The Thai textile industry first grew as a domestic import substitution industry, but in recent years has shown promising growth as an export industry.

Thailand's textile trade had been centered on textiles per se in structure up until 1980, but subsequently the textile trade structure has been shifting to an emphasis on garments. One of the problems facing the Thai textile industry today is how much these garment exports are supported or can be supported by domestic textiles.

Thai's textile industry suffers from weak linkage between the upstream and downstream sectors, with each developing their separate way.

The main destinations for exports of textiles are the U.S., Europe, and Middle and Near East. Exports to Japan are very small. Due to the fact that the exports mostly go to countries with import quotas, however, it will be necessary as future measures to increase the added value and to expand exports to nonquota markets.

The Thai government has taken a policy of promoting exports, but there is a problem in that there are fewer incentives for indirect exports, such as fibers, woven fabrics, and dyeing, than incentives for direct exports.

In Thai's imports of textile products, imports of textiles per se rather than garments account for about 90% of the total. This trend has not changed for the past 10 years. The main items imported are [1] cotton fiber products, [2] manmade fibers, and [3] manmade fiber products. These three items simultaneously are major textile export items. The main origins of these imports are China, Hong Kong, South Korea, Taiwan, and Japan.

Looking at the textile trade, if textile materials alone are counted, Thailand is a net importer of textiles. It becomes a net exporter in the textile trade only when garments are included in export figures.

1-3. Thai's textile industry has undergone rapid growth since the enforcement of the 1962 Industrial Investment Promotion Act.

The global recession of the 1970's led to a withdrawal of Japanese affiliated companies or a conversion to local equity. At the same time, it led to large roles played in the industry by large corporate groups of local capital.

The textile industry may be subdivided into an upstream, midstream, and downstream sector. In Thailand's case, there are fewer companies the further upstream one goes. Further, these companies strongly tend toward vertical, general operations. In particular, there is little manufacture of manmade fiber FY. Most of the spinning machinery is owned by specific groups. Under this system, there is a tendency toward high prices of materials.

1-4. There are various organizations in the industry recognized by the Trade Association Act. The textile related organizations are [1] The Thai Weaving Manufacturing Association, [2] The Thai Textile Manufacturing Association, and [3] The Thai Silk Manufacturing Association, and [4] The Thai Synthetic Manufacturer's Association.

These organizations, according to the previous act, are allowed to engage in numerous types of industrial promotion activities under the cooperation of the government and government related organizations. Some study should be made of this in the future.

2. Production Activities and Technology

2-1. Output of polyester products has increased every year with the exception of 1982, during which time there was a recession. However, the output has consistently remained below consumption.

Production of spun yarn has more than doubled over the past decade. Output per spindle increased sharply to 192 kilograms in 1987 in comparison with the annual average of 140-165 kilograms over the past decade. The exact same situation applies to woven fabric production and knitted fabric output.

As for the volume required for each stage of production in relation to output, consumption of woven fabrics has not recorded a large growth in terms of quantity. This is believed to be proof that demand for fabric for garment production has not permeated the midstream. The same trend applies to knitted fabric. Because downstream consumption of cotton knitted fabric exceeds domestic production, there is an urgent need for increased output.

This trend has continued over the past several years, with the result that the shortage in cotton yarn for knitting has contributed to a sharp rise in its market price. The temporary lifting of controls on equipment by the MOI and BOI in 1987 is therefore seen as a wise measure.

Because production of cotton knitted fabric is less than demand, it is necessary to increase knitting equipment and raise production of cotton yarn for knitting. On the other hand, a system allowing imports of cotton yarn at international prices will also have to be established.

2-2. Applications for new equipment were accepted by the BOI and MOI between December 1986 and May 1987. The result was that an especially large increase was approved for spinning equipment. Considering the balance of supply and demand, such an increase in capacity may put pressure on the domestic market even if an export drive is undertaken. It will be necessary, therefore, to study the problems arising from such a sharp increase in equipment.

At the same time, there is a need to examine how to maintain a balance by increasing weaving and dyeing capacity and also increasing downstream capacity by way of sewing machines, etc., to a level which corresponds to spinning capacity. As for dyeing capacity in particular, plans will have to be drawn up immediately because they will require a long time for implementation.

As for polyester products, plans for the expansion of production facilities will add a total of 9,300 tons a month on top of the existing monthly capacity of 6,300 tons. Since

all of the production increase plans are not aimed at a full assortment of products, they will not eliminate the causes of the shortage in new materials.

No large markets have been developed for polyester filament yarn because Thailand has no international competitiveness in that product field. *

Development of fabrics made from regular filament yarn and lining fabrics for use in garments is something which needs attention. There are, however, the problems of a small number of weaving looms for regular filament yarn fabrics, delays in modernization and low international competitiveness.

Problems with spinning, viewed from various perspectives, are as follows.

- Spinning of standard products: Due to constant surplus production and the resultant pressure on the market price, most of the firms manufacturing standard products have not renewed their equipment for the mass production of 20'S-40'S since their establishment. High tariff rates are one of the factors obstructing the renewal of facilities. There are many instances of importing used equipment. This runs counter to the modernization of facilities and is unsuitable for manufacturing products for export to markets where quality requirements are strict.
- Equipment for the future: While cheap cotton yarn is imported to the Thai domestic market, high count products are being brought in from overseas. As a result, some companies are considering a shift to higher count products in the future.

Others are making efforts to modernize their facilities through the introduction of shuttleless looms. For that purpose, however, an integrated preparation system is needed and consideration must be given to how the whole spinning system should cope with the change.

Modernization of facilities in Thailand should aim at raising quality standards instead of a merely saving in labor costs.

The weaving industry in Thailand uses mainly shuttle looms. The industry lags behind in modernization with very few shuttleless looms in use.

The expected increase in demand from the garment industry is considered to be a problem for the filament weaving industry. To solve it, production of taffeta is encouraged. This, of course, is aimed at water jet looms. But they require an accumulation of equipment and technology, including the sizing and facilities of dyeing and finishing plants, and thus a system for the TID and others to provide technical support needs to be established.

*Note: These figures reflect the situation as of November 1988. New applications for expansion have been accepted since then.

The Thai dyeing industry uses mainly batch dyeing. Padding and continuous dyeing are hardly used so that control systems for them have not been rationalized. Many of the dyers do not have apparatus for checking color fastness because there are no stringent requirements for it. The establishment of in-house inspection systems is an urgent necessity.

From the standpoint of commission dyers, processing charges are so stringent that firms involved in processing standard products have trouble being profitable. As a result, they use many old machines and have no inclination to modernize their equipment.

The problems of water and the environment also pose a question for the future development of the industry.

The dyers of polyester filament fabrics and other special fabric are on a high level in terms of their equipment and technology. In the future, they will be required to cope with materials of higher quality.

2-3. As for standard products for the domestic market, technical levels and quality standards corresponding to these products are maintained.

For the improvement of technical levels and quality, a drastic change in the attitudes of not only business operators and managers, but also of all workers engaged in production and distribution, is required. This will take a long time.

*Spinning industry: Sufficient control is maintained on the opening and blending processes. Labor productivity aside, the quality of yarn is generally good.

*Weaving: Air jet looms are being introduced for the improvement of quality. But the development is slow because there are no domestic supplies of the necessary yarn for the weavers and spinners could not be certain of being able to sell such yarn at sufficiently high prices, even if they introduced expensive equipment. Expectations are placed on the activities of the TID.

The technological development related to special woven fabrics (filament) requires the development of technology at all stages of processing. It requires technological development and guidance of the industry by the TID.

Managers of all enterprises are seriously worried about the means to improve technology and quality. The following measures should be taken or considered:

- [1] Participation in seminars and training courses held by the TID.
- [2] Reliance on information from manufacturers.
- [3] Reliance on cooperation of Japanese technical experts. (Utilization of Japanese technical experts dispatched by the Japanese governmental organizations)
- [4] Improvement of in-house control systems. (The Thai firms generally have no such systems. They should set up their own in-house inspection systems.)

[5] Establishment of in-house training systems.

2-4. Labor wages, energy, import tariffs and raw materials are large cost factors in the textile industry. With the United States' labor cost taken as 100, the Thai wages range between 6 and 7, which places the country in an advantageous position. Nevertheless, cotton yarn is imported from China. Although energy is cheaper than in Japan, air conditioners have to be operated for more than 10 months a year, raising the power costs. Prices of raw materials (polyester fibers) tend to be stabilized at a high level because the suppliers are limited to two companies. Highly dependent on imports, cotton is exposed to international price variations.

In the spinning industry, raw materials account for more than 60 percent of the costs of every firm.

In the weaving industry as well, the percentage of raw material costs in the total costs is relatively large.

In the dyeing industry, the high prices of dyes and auxiliary agents raise the costs. High import tariffs on dyes are responsible for high prices. High tariffs are also levied on dyeing machinery, thus giving Thai dyers a handicap in terms of both dyes and machinery when compared with other countries.

Restrictions placed on the use of underground water have forced the dyers to use expensive industrial water, increasing their costs further.

2-5. The shortage of technical experts as well as technical books and manuals is a large problem for the textile industry.

What is sought after in the training of operators and managers of enterprises is technical know-how and this requires the leadership of the TID.

3. Supporting Industries

3-1. Supply of Raw Materials

The Thai textile industry primarily produces cotton fabrics and TC and TR fabrics. In 1987, Thailand consumed 257,000 tons of cotton, the main materials of these - accounting for 62% of all textile materials. Of this, 20,000 tons was produced domestically, for a rate of self-sufficiency rate of just 7.8%. The reasons for the lack of growth of production and consumption of domestic cotton are the lack of business warehouses, the small scale of production per farm, the unevenness in quality, the foreign matter included in it, etc.

Regarding dyes, domestic manufacturers import intermediates and produce threne, reactive, sulfur, disperse, vat, and direct dyes. The prices are 10 to 15% lower than imports, but there are problems in that quality is unstable, there are differences in color with different lots, and dispersibility is poor. Regarding adjuvants, domestic products are used with no problem. As for pastes, corn starch paste is produced domestically and is cheap in price. PVA and acrylic pastes are not produced domestically and the industry relies on high priced imports.

3-2. Supply of Machinery and Parts

Textile machines, including dyeing machinery, are not produced domestically in Thailand and are thus imported from Japan, Europe, and Taiwan. A 40% duty is levied on machinery imports, which hinders replacement and modernization of facilities and promotes conversely the introduction of used, old-style machines.

The majority of machine parts and consumables is produced in Thailand. However, there are some specific grades of items which are not produced domestically. For example, among plastic fine spinning bobbins, fine spinning bobbins made of heat resistant plastic used for spinning yarn requiring steam twist setting are not produced domestically.

3-3. Problems and Countermeasures

The high duties on dyes do not protect the growth of dye manufacturers, but rather squeeze the profits of dyeing businesses. Organic chemical products like dyes are derivatives of petrochemical products, so it is necessary to consider their growth along with the creation of a petrochemical industry. Toward this end, reexamination should be made of the surcharges and tariffs. Regarding pastes and other plastic related items, consideration should be given to their promotion along with the creation of a petrochemical industry.

As for the tariffs on parts, consumables, etc. blanket application by types of items alone places a burden on companies. It would be desirable to apply them based on careful studies of the situation.

4. Marketing

The Thai textile industry is dominated by standard goods, with few firms capable of developing original products. In addition, high tariffs on yarn and woven fabric have

prevented the inflow of foreign products into the domestic market, thereby lessening the need for local firms to promote development capabilities.

Since garments have become the main items of the textile trade, signs of an emerging awareness of product development can be observed. Some Thai manufacturers are conducting independent product development, and it is believed that Thai is capable of developing woven fabrics which cannot be developed profitably in Japan.

Know-how in the form of "sense" is critical to the development of textile products, and the acquisition of related technology is also important. At the same time, consideration of routes that would allow the transmission of market demands to manufacturers is needed.

There are two types of exports: border trade and direct trade. The former, like the domestic market, consists mainly of standard products and forms an important part of the Thai textile market. In the direct trade sector, exports to quota nations must carry higher added value, while exports to non-quota nations should be expanded.

The effective utilization of local materials is also important. In order to achieve this, the current distribution structure, which converges around San Pen and currently functions as a simple agent, must be changed.

On the price front, Thai textiles are not particularly low-priced; export prices fall midway between those of products from the NIEs and developing nations, placing them in an enviable situation. Consequently, competitiveness that takes into consideration a balance between product price and quality should be promoted.

Concerning the problem of linkage between the upstream and downstream sectors, an effective system capable of transmitting information on downstream demand to the mid-stream sector is necessary, and government institutions should play some sort of role in this regard.

Finally, price competitiveness requires that raw materials can be obtained at reasonable prices.

5. Corporate Operations

5-1. Process of Development of Companies

Large sized textile companies began to be established in Thailand in the 1960's. Up until the early 1970's, the textile companies in Thailand could be grouped in local companies performing spinning and weaving of mostly cotton products and Japanese affiliated companies aimed at import substitution of standard products and forming a continuous flow from fiber production to spinning and weaving.

Due to the world recession triggered by the first oil crisis of 1973 and the end of the border trade arising from the termination of the Vietnam War, however, Thai textile companies were forced to operate in a surplus supply situation. Faced with this situation, many Japanese affiliated companies began to pull out of operations in Thailand. Large local corporate groups, such as the Sukree group and Saha Union group, began to expand their shares of the textile industry.

Today, the textile companies in Thailand can be classified generally into two types from the nature of the products they produce: accurately into two types: One type is that of companies principally operating on the basis of mass production of standard products. The other is that of companies operating aiming at the production of higher grades of products such as specialized goods and discriminative goods.

5-2. State of Corporate Operations

The emphasis in Thai production of manmade fibers is on polyester staple fiber. The importance of this is expected to further rise with the implementation of plans for expansion of production capacities. Behind the expansion in the production capacity in this field are the current shortage of supply capacity, the increase of facilities in the midstream sector, and the expectations of a rise in demand in the border trade.

In the field of spinning and weaving, the Japanese affiliated manufacturers are faster than the local manufacturers in their move to increase the sales portions of discriminative products and higher class products. The local manufacturers are superior to Japanese affiliated manufacturers in terms of the volume of production and labor costs, so Japanese affiliated manufacturers have found it essential to set their products apart and to make higher class products to maintain their competitiveness.

With the market being so good in the past two and three years, the performance of the textile manufacturers has been tremendously improved and most textile manufacturers are pushing forward with plans to increase or establish new facilities and improve quality.

At the present time, however, there is a shortage of supply of engineers knowledgeable about textile production and companies often find their engineers lured away to other textile manufacturers by higher salaries.

Dyeing and finishing work in Thailand are handled by dyeing and finishing divisions of spinning and weaving companies or other companies which handle the work for a fee. Businesses in Thailand performing dyeing and finishing work mostly set up with an emphasis on standard products. At the present time, despite the good condition of the textile market and due in part to the frequent cases of exports of grey fabric, there are some dyeing and finishing businesses which cannot secure sufficient work for their

processing capacities. In particular, it is said to be more difficult to secure work the more a business concentrates on processing of standard products. Therefore, not much positive capital investment is seen in this field.

5-3. Problems and Countermeasures

The local small and medium sized manufacturers in the woven fabric field are targeting the large market for standard products and expanding their production capacities through the use of used shuttle looms. However, the market for standard products features fierce international competition, and in such a market, the small and medium sized companies are inferior in competition in sales capabilities and prices compared with the large corporations, which have set up mass production systems. Further, if the export market ever becomes depressed, the large corporations will divert their masses of products to the domestic market. As a result, the small and medium sized companies producing the same types of products may be shut out of the domestic market. Under this situation, the survival of the small and medium sized weaving companies will require the participation in the production of standard products under the control of the large corporations or the raising of the percentage of relatively competition-free discriminating products. The promotion of the environment for this will be necessary for the promotion of small and medium sized manufacturers.

If production capacities are expanded through the implementation of the current expansion plans, there will be a need for considerable numbers of staff and engineers. There is already an imbalance in the supply and demand of engineers, with there being considerable scouting of skilled engineers among companies using high salaries. With continued industrialization and corporate investment from abroad, this is only natural, but should the movement of personnel become too fierce, however, it will hinder stable corporate operations. Therefore, it is important to speed up the training of staff and engineers so as to eliminate this absolute shortage in personnel. However, considering how to train personnel in a short time, as a means for making up for the absolute shortage of staff and engineers, consideration should be given to promotion of computer processing for some portions of the work of staff and engineers so as to raise the productivity of that work.

6. Industrial Water Supplies and Effluent in the Textile Industry

6-1. Industrial Water Supplies

The quality (i.e., components and temperature) of the industrial water used in manufacturing processes in the textile industry has a direct impact on product quality, facility maintenance, and productivity. The textile industry uses large quantities of such water in comparison to other manufacturing industries.

River water contains large amounts of organic substances and hence is very unclean. Recently, too, the problem of ground subsidence has resulted in the contamination of river water with sea water.

Ground water pumped up by the Metropolitan Water Works Authority (MWWA), corporations, and individuals in the Bangkok metropolitan area and neighboring provinces is now estimated at approximately 1.3 million m³/day. With the lowering of the ground water level, the intrusion of saltwater into ground water, and ground subsidence, however, the use of ground water for industrial use is expected to become the target of severe restrictions in the very near future.

Industrial water processed on existing water quality standards can be used as is in the various textile manufacturing and dyeing processes, but removal of dissolved metal salts and metal ions is required to achieve higher product quality and minimize fluctuations in quality.

Due to the geological characteristics of Thailand, ground water is hard water containing large amounts of Fe and Ca and having a high pH. Consequently, use in the production process as is will result in reduced product quality and, over the long term, damage to facilities.

Regarding water treatment in the private sector, firms maintaining facilities for filtering and water softening could be observed, chiefly among the larger corporations, but the great majority of companies have no facilities other than storage tanks.

6-2. Industrial Effluent

Measures for the prevention of water contamination are based on the Factory Act of 1969 and are supervised by the Department of Industrial Works (DIW). Although the DIW sends on-site inspectors to plants across the country for the inspection of industrial effluent, there are only about 70 such inspectors and 10 analysis technicians, which cannot said to be sufficient when the number of factories in the country is taken into consideration.

Effluent from the various processes of textile manufacture varies greatly depending on the materials used, manufacturing method, and product. Consequently, even within the same manufacturing process the physical and chemical properties of the discharged effluent will differ greatly as the result of only slight variations in the treatment conditions.

Treatment of dyeing effluent, discharged during the fiber scouring, bleaching, dyeing, and finishing processes, is made particularly difficult by the extreme variations in these processes and the strong tendency for treatment methods to differ from plant to plant.

The basic pattern of effluent treatment in the Thai textile industry through the various textile manufacturing and dyeing processes for natural textiles is as follows: screening/sedimentation pond, aeration, neutralization, precipitation, and discharge. In the case of synthetic textiles, the pattern is as follows: storage, neutralization, dilution, mixing, aeration, precipitation, and discharge. Facilities for secondary treatment by spray filtration beds, coagulation and pressurized flotation treatment, biochemical treatment, and other methods commonly used in countries with strict environmental controls remain scarce. Nor has the removal of toxic substances by ion exchange or the recycling of effective components in chemicals gained common acceptance. Moreover, most small and medium-sized firms either omit portions of the basic treatment process described above or combine several of the steps into one.

6-3. Problems and Countermeasures

(1) Problems associated with industrial water are as shown below.

- Lack of knowledge concerning industrial water quality requirements

There is a lack of knowledge concerning the relationship between the physical and chemical properties of process water and chemicals, dyes, and assistants as well as the impact of the former on product quality.

- Fear over securing stable industrial water supplies

The development of new and abundant supplies of high-quality, inexpensive industrial water commensurate with the controls on the pumping up of underground water and the strides being made in industrialization will be the key to increased volume and improved quality for Thai industrial products.

- Promotion of effective water treatment facilities

The capital investment and operating costs required by such facilities have a major impact on manufacturing costs.

(2) Problems concerning industrial effluent are as shown below.

- Awareness of industrial effluent discharge

There is little general awareness of the need for treatment of discharged effluent.

- Knowledge concerning properties and treatment of industrial effluent

Effluent treatment and management, suitable sampling methods, and the ability to conduct accurate chemical and physical analysis are required.

In addition, there are few engineers who have received advanced training in the fields of chemical treatment, analysis, etc.

- Public monitoring of water quality and capabilities of guiding organizations

When the current number of factories in Thailand and expected future increases in this figure are taken into consideration, the number of inspectors and analysis technicians employed by the DIW is insufficient.

- Capital investment and operating, maintenance, and management costs for effluent treatment facilities

Effluent treatment facilities require large funds initially as capital investment, and operation, maintenance, and management are also relatively costly. As a result, it is difficult to obtain the active cooperation of private corporations, which stress profit margins.

(3) Countermeasures

- Dissemination of practical knowledge concerning industrial water quality control

Seminars and touring instructors should be used to spread practical knowledge concerning industrial water treatment and control methods, inspection and analysis techniques, and water reclamation and treatment methods, chiefly to management and senior engineers. At the same time, public research institutes should be enhanced so as to arrange seminars, train supervisors, and secure necessary staff.

- Promotion of development of inexpensive industrial water through treatment of surface water and reinforcement of supply systems

Significant restrictions, or, in certain regions, bans on the pumping of ground water are needed. Consequently, a policy to supply approximately 1 million m³/day with surface water should be developed. Promotion of the utilization of surface water for industrial uses will require strong measures such as major repairs in existing pipelines, cuts in the price of water for industrial uses, government subsidies to certain industries, and gradual increases in the tax on pumping of ground water in certain regions.

- Government aid to private corporations for installation of water treatment facilities

For the time being, the most realistic course for the government to take is to improve product quality while minimizing the impact on manufacturing costs by

extending special low-interest financing for the purchase and installation of treatment facilities, major reductions in the import duties levied on imports of related equipment, and other tax incentives chiefly to those industries using large amounts of industrial water and those requiring industrial water of particularly high quality.

- Promotion and reinforcement of activities to raise social awareness of responsibility for water contamination

A first step in the prevention of water contamination by industrial effluent would be to raise the awareness of businessmen themselves and obtain their cooperation in observing the legal restrictions. In this respect, numerous seminars covering the many instances of pollution due to water contamination in the industrialized nations, examples of countermeasures, the problem of compensation, and administrative action should be held for top management having responsibility over company operations.

- The spread of technological knowledge concerning industrial effluent treatment

Since ordinary seminars seldom provide concrete results, direct guidance in the factory by government instructors would be most practical. In the long term, university departments (e.g., environmental engineering departments) specializing in research on industrial pollution and other forms of pollution should be established in an attempt to ensure sufficient human resources for future environmental measures.

- Reinforcement of water quality monitoring and supervision systems in the Ministry of Industry, Department of Industrial Works

The water quality monitoring and guidance systems of the DIW should be reinforced by increasing the number of personnel and modernizing equipment for inspection and analysis. In addition, the submission of EIA (Environmental Impact Assessment) reports, currently required of some industries, should be made mandatory for the textile and dyeing industries as well.

- Government assistance in taxation and financing

Government policies of the same type as the "government assistance for water treatment facilities" for industrial water described above should be promoted while maintaining linkage with environmental policies.

- Industrial parks for the dyeing industry developed around joint effluent treatment facilities

The dyeing industry in particular contains a large proportion of small and medium-sized firms, and in most cases it would be difficult in practice for these firms to equip themselves with facilities for effective effluent treatment. Consequently, there is a need for industrial parks for dyeing firms in which each plant is required to have only a simplified primary effluent treatment facility, thereby reducing capital investment significantly, and secondary treatment facilities are shared. Construction of the secondary

treatment facilities and the surrounding industrial park should be carried out with public funds, while facility operating costs could be divided up among user firms.

7. State of Industries of Competing Countries

7-1. Textile Industry of Hong Kong

Hong Kong's textile industry has benefited from a complete "hands off" policy by the government. Hong Kong is one of the leading textile product exporters in the world and simultaneously is one of the leading textile importers. The "hands off" policy enables free procurement of materials. The downstream sector of the industry has developed using this, making Hong Kong different from the industries of South Korea and Taiwan, which have developed basically around the upstream sectors.

In the textile sector, there has been considerable rationalization of facilities. In spun yarn, the sector is specializing in thick count yarns. In looms, there is a high rate of introduction of shuttleless looms.

In trade, textile exports account for about 11% of all of Hong Kong's exports.

7-2. Textile Industry of Taiwan

Taiwan's textile and garment industry is a key strategic industry of the island. At the present time, however, the industry is declining in importance, with its position as the main producer of exports being taken away by electronic components.

The biggest feature of the Taiwanese textile industry is, in contrast to Hong Kong, the dominance of the textile sector over the apparel sector. Particularly noteworthy is the good state of the manmade fiber producing facilities. As of 1987, Taiwan's manmade fiber producing facilities had a capacity greater than South Korea and in third place in the world after the U.S. and Japan.

The main destinations of the exports are the U.S., Hong Kong, and Japan. Further dispersion of the markets is one of the future tasks for Taiwan.

7-3. Textile Industry of South Korea

The position of the textile industry in South Korea's manufacturing industries has been increasingly falling. The South Korean textile companies tend to set up vertical production systems. The spinning sector is characterized by an average large size of the companies.

Textile exports account for one-fourth of all exports. Of this, garments account for 70%. The main textile exported is woven fabrics, accounting for 30% of exports. The high percentage of manmade fiber fabrics is a feature of the South Korean industry.

The South Korean textile industry has as a major feature the achievement of rapid growth through the strong protection of the government. Since 1986, however, the industry has been promoted under the same laws as general industry and thus may be said to have entered a period of readjustment.

7-4. Textile Industry of Indonesia

In Indonesia, the textile industry represents an important industry, accounting for 28% of manufacturing industry production, and is continuing to grow.

Due to the abundant labor force, the emphasis on investment is less on labor saving and more on increased production and improved quality.

Almost all the looms are shuttle types.

The ratio of production of polyester staple fibers and filament is about 1:1.

Indonesia is extremely competitive from the standpoint of labor.

The devaluation of the rupia and the introduction of export incentives have resulted in a trend of expansion of exports.

Under these conditions, the high ratio of textiles is a characteristic feature of the industry.

7-5. Textile Industry of China

One of the features of China's textile industry is its self-sufficiency in various textile materials. China has about 25 million spindles - 10 times that of Thailand, making it possible for it to become the largest textile supplier in the world.

At the present time, there are problems such as the outdatedness of the facilities, so productivity is about 10 to 15% that of the U.S.

China is targeting for production of 3.51 million tons (2.93 million tons in 1980) of yarn, 14.27 billion meters (13.5 billion meters) of fabric, and 940,000 tons (450,000 tons) of manmade fiber by the year 2000.

At the present time, the textile industry is one of the important developing industries of China and the government is strengthening policies to promote its exports.

8. Trends in Key Markets

8-1. The Japanese Textile Market

The Japanese textile industry's share of all manufacturing industry shipments has fallen sharply, from approximately 19% in 1955 to 12% in 1965 and 5% in 1985. Its share of total manufactured exports has seen an even steeper decline, from 37% in 1955 to about 4% in 1985.

The Japanese textile industry is characterized by a fine division of labor in all of the processes from yarn manufacture to final consumption.

On the international front, development of the textile industries in newly industrializing countries like Korea and Taiwan and developing countries such as China and Pakistan has meant not only the cessation of Japanese exports to third-country markets but also increased imports from these nations.

Regarding textile trade, imports now account for more than 30% of domestic demand. Recent years have been characterized by Japan's change in status from net exporter to net importer when imports of raw materials are included, a situation that has existed since 1984. Even when the matter is limited to textile products including garments, Japan is seen to have become a net importer in 1987. Although the nation remains a net exporter of yarn and woven fabrics, rising garment imports have resulted in a net overall deficit.

Imports of textile products amounted to 9,500 million dollars in 1987, the highest figure ever. Cotton yarn accounts for roughly 70% of all imported yarn. Pakistan, China, and Korea are the major suppliers. In the woven fabric sector, cotton and synthetic fiber products are the main imports, and China, Korea, and India are the leading suppliers.

8-2. The U.S. Textile Market

The U.S. is the world's largest importer of textiles and garments. It is also a leading textile producer with access to a plentiful supply of raw materials, but little attention is paid to exports.

The majority of textile consumption is destined for general industrial and household use, which accounts for the nation's heavy consumption of synthetic fiber.

Most imports are increasing. Although imported woven fabrics account for nearly 10% of total domestic shipments, however, the share held by most products is less than 5%, and imports do not appear to have a major impact on the domestic market. The

limited growth of imports is believed to be due to the numerous bilateral textile agreements the U.S. maintains with its trade partners.

Currently, the industry is working on a project which will streamline the links between the upstream and downstream sectors and artificially tie them together.

9. Setting of Export Targets and Requirements for Achievement of Targets

Per-capita textile consumption in Thailand was 2.6 kg in 1982. Based on its relationship with per-capita income, future textile consumption was predicted based on expected income figures. Domestic consumption was estimated at 150,000 tons for 1987 and predicted to grow to 180,000 tons by 1990 and 280,000 tons by the year 2000.

The 1987 elimination of restrictions on facility investment made possible major expansion of spinning facilities. As a result, annual production is expected to reach 600,000 tons by 1990 and 720,000 tons by the year 2000.

Based on these calculations, it will be necessary for Thailand to increase its exports of yarn in one form or the other to 420,000 tons by 1990 and 440,000 tons by the year 2000. When current imports of yarn, woven products, and knit products are taken into consideration, exports of approximately 500,000 tons will be required by 1990. Considering the change in yarn imports, 60,000 tons of yarn, 80,000 tons of woven fabric, and 310,000 tons of garments should be the export targets.

Under the above mentioned conditions, 388,400 tons of cotton and 124,000 tons of polyester will be required. Regarding polyester, there may be a need to import 7,600 tons of it. In the spun goods sector, exports to Japan will require the installation of spinning machines capable of processing new materials. In the weaving sector, 29,000 weaving machines will be necessary, and this in turn will require government measures.

In the dyeing sector, there are no signs of a trend toward facility expansion for the dyeing of standard products, and it is feared that capacity and space may be insufficient. The government must determine the necessary dyeing capacity and hammer out a plan for the establishment of industrial estates, the supply of water for industrial use, and the integrated treatment of effluent. Since realization of such a plan will require several years, appropriate measures should be devised as soon as possible.

10. Policies and Regulations

———— This is dealt with collectively, including textiles, in section II-9. Policies and Regulations in Part II: Garments. ————

Chart 13. Thailand's Textile Industry - Features and Problems

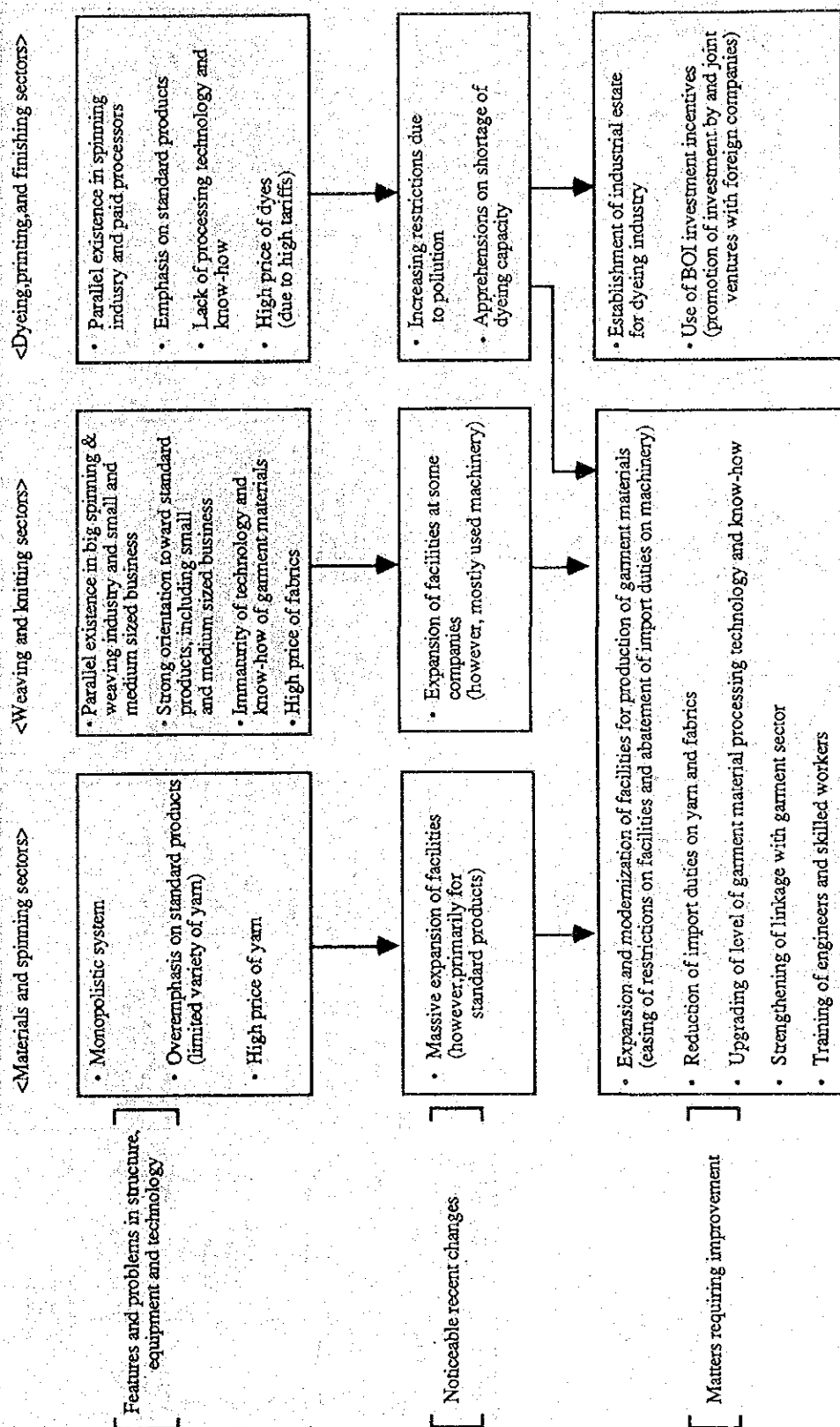
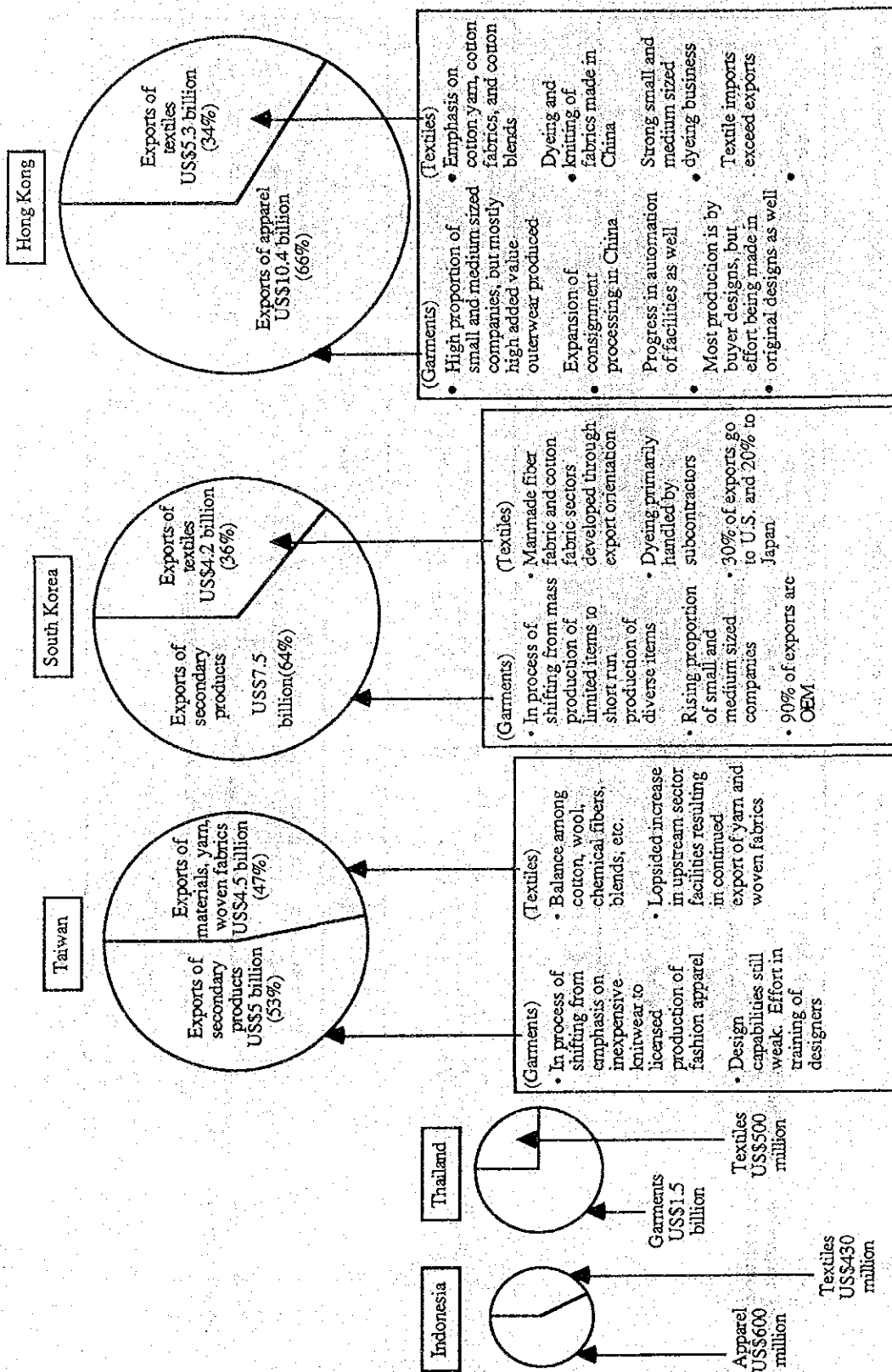


Chart 14. Exports of Textiles and Garments by Asian Economies (1987)



PART-II

GARMENT INDUSTRY

PART-II. GARMENT INDUSTRY

1. Industry Outline

For a long period of time the Thai textile industry was a cottage industry which centered on the hand weaving of cotton and silk. Then later, in the 1950s, the textile industry suddenly rose to power with the establishment of manufacturers which concentrated on cotton knit and woven cloth.

The government at that time did not follow a policy of forming joint ventures with foreign capital as a means of industrialization, and instead promoted policies involving national capital and local capital. It was not until the early 1960s that the Thai textile industry started to achieve real growth. The Industry Investment Promotion Act of 1962 promoted a flow of foreign capital into Thailand which mainly comprised of Japanese textile capital.

With the completion of production bases both upstream and midstream, in 1967 the BOI made the export-oriented garment industry a promotion industry, and set out to foster the industry as an export-oriented industry. In 1971 Thailand changed its course abruptly when it ceased being an importing country, and instead became an exporting nation. Since then garment exports have increased rapidly due to a greater capacity to supply materials for export garments and government policies aimed at providing assistance (in particular the tax refund system).

However, more and more controls were placed on importing textiles on the world market. These included the 1961-62 STA (Short-term Arrangement Regarding International Trade in Textiles), the LTA from 1962 to 1973, and the MFA (Multi-fiber Arrangement) which covered blended fiber and wool products.

Before Thailand joined the MFA in 1976, it signed a bilateral agreement with the United States in 1971. According to the agreement, controls on volume were relatively moderate for Thailand compared to other Asian NIES. It could be said that this guaranteed Thailand's subsequent stable increase in exports.

Nevertheless, while garment exports were increasing Thailand began to face difficulties in supplying the materials for garments and meeting the quality standards which were demanded by overseas markets. Material imports grew rapidly as a result of two main factors: (1) there was a lack of variety in garment materials which could be supplied domestically because domestic supply consisted mainly of standard products; and (2) improvements in technology and quality in the midstream sector, especially in the dyeing and finishing stages, lagged behind.

Coupled with the tax refunds for business taxes and tariffs imposed on imported materials for use in export production, consigned production and processing for exports by overseas buyers took root within the export garment industry. As a result, garment exports grew while the reciprocal linkage connecting the upstream and downstream remained inadequate. Building a base on which to improve quality and engage in product development in order to meet export demand has subsequently become an urgent task requiring attention.

2. Production Activities and Technology

2-1. State of Facilities

1) The following may be said upon viewing the state of facilities of the Thai garment industry:

- There has been a strong upward trend in the installation of production facilities, mostly sewing machines, since around 1984.
- Thailand basically relies on imports for its facilities, with most of these being old style models from Taiwan, South Korea, and Japan. In particular, there has recently been an increase in imports of used machinery of Taiwan make.
- In this way, there are many companies whose main facilities are comprised of used, old style equipment, and due perhaps to this, there are strong calls in the industry for replacement of facilities.
- While still only partial, the large sized corporations and the factories engaged in the production of high quality garments are taking the lead in introducing computers for drafting, marking, and office work, such as inventory control. There are signs of this spreading in the future.
- There is a shortage of maintenance engineers and securing of the same is difficult. Further, fierce scouting is spreading.

2) State of Modernization

It will not be until the future that companies employ sophisticated machines and specialized machines in search of rationalization and streamlining of product or advanced function, high performance machines for supplementing the skills of individuals and leveling out differences in skills so as to enable a qualitative conversion of the products.

2-2. Technical Level and Quality

In general, all the companies strongly complained about the overwhelming shortage of engineers for handling pattern making in product design.

In relation to this, there were strong complaints made on the shortage of cutting chiefs. Due to the lack of instructors having advanced, specialized knowledge, companies are not sufficiently able to perform training in practice.

The mode of production is primarily one of production on order using customer designs. Large scale factories produce vast amounts of diverse products using large numbers of sewing machines and workers.

Production lines are basically organized using the progressive bundle system. Few companies are organizing their processes according to the synchronized system, which is spreading in South Korea, Taiwan, and the other NIE's.

Even the large corporations have at the most only a handful of subcontractors to which they let out part of their processes. Not much headway has been made in a division of labor in the field of production.

With regard to production control, mention may be made of such fundamental matters as the absence of engineers who have mastered the technology for garment production through all processes from product development to design and the production processes, the absence of engineers capable of process analysis for each product and motion control based on the same, and the absence of control data for performing production control.

The quality control personnel in most cases are more inspection personnel by nature and are not engaged in quality control in its pure sense. Quality control in the Thai garment industry in general is based more on inspection. There are few factories which are inspecting received shipments of purchased materials, primarily fabric and yarn, or inspecting bolts before processing.

The productivity of the Thai garment industry is, depending on the item, from 1/2 to 1/10 that of Japan.

The low productivity is due in large part to the low operating rate of modernized facilities, but is more due to the undeveloped management system for promoting the preparation of basic materials such as time and motion studies on production, a prerequisite for modernization of facilities, and action on the same.

2-3. Problems and Countermeasures

- Modernization of facilities

The introduction of automated facilities or multifunctional machines for raising productivity is unavoidable if the industry is to maintain and raise its future competitiveness. Attachments and other jigs are highly effective in improving productivity and quality, so should be fully studied and put to use along with production facilities.

- Improvement of working environment

Apparel products must be both functional and beautiful. In the future, seminars and other activities to bring the matter of the working environment to the attention of the industry will be necessary in view of the nature of the products.

- Product planning and production design

The majority of the Thai garment exporters depend on the designs and brand names of their customers.

In the long term, however, it would be desirable for the companies to reach a level where they can produce export garments based on their own plans. A fundamental condition for this is obtaining an accurate grasp of the product trends in the international market. Toward this end, it will be important to have an organization which can collect overseas information and provide information services to the industry.

On the other hand, regarding the training of personnel interested in product planning, consideration may be given to augmentation of universities and technical colleges. Further, in-depth, special education could be provided. Since there is a tremendous shortage of educators, for the time being the most realistic method would be to engage foreign experts as lecturers and expand the system for tapping the private sector for teachers.

Production design engineers have the right of early decision when it comes to the productivity and production quality of garments. The same means of training as for the product planning personnel would be possible, but in this case the fastest way to deal with the situation would be to place emphasis on such training in the short-term course of universities and technical colleges. Further, augmentation of the training course as part of the functions of the TID would be effective both for the public and private sectors.

- Production system and production control

At the present time, production systems which stress just expansion of the volume of production are prevalent. Due to the increased diversity of production items, many places end up ignoring the improvement of quality and production efficiency in their production.

Experts able to organize processes to adapt to the circumstances are in extreme short supply in Thailand, so training of such experts is an urgent task along with the training of general production controllers.

These specialized jobs require a certain degree of experience in production and it is judged that the establishment of a separate place for retraining people with practical experience in factories and providing organized, practical education would be the most effective.

- Improvement of quality and control

Due to the nature of the products, private companies should study about quality on their own and decide on elements on which to base their own judgements. It would be desirable for some government organization to provide guidance on the standards and methods of judgement for the physical and chemical properties of garment products so as to make them conform to the requirements of the overseas markets.

- Technology for production

Among the various technologies have a direct bearing on production, the problem ones may be roughly classified as technologies relating to production control engineering and engineering technologies related to manufacture.

Thailand is weak in practical implementation of production plans, design control, procurement and inventory control, equipment plans, establishment and coordination of process, schedule, and personnel plans, quality control, shipment control, maintenance and safety, and other control elements.

In particular, there is a noticeable shortage of capable control engineers for the design of production lines and process settings. It would be desirable to reorganize the curriculum at places of higher learning aimed at supplying medium level production control experts to shift the stress to control engineering for mass production.

The weak point in manufacturing-related engineering technology is the underdevelopment of bleaching, dyeing, printing, and other treatment technologies.

The dyeing sector requires considerable capital investment, so one method of transferring dyeing technology could be to establish a guidance service by a foreign expert in the joint management organization of an industrial dyeing estate and to guide and train companies in the estate by on-the-job training.

A garment producing company was observed to be incorporating a CAD system into its production. The same sort of thinking is expected to spread throughout the Thai garment industry in the very near future, so it would be desirable to start research into technology for utilization of such systems to allow the industry to handle them as part of the modernization of their facilities.

Basically, each company should proceed in accordance with its own market, but for the time being it is thought best that the industrial organizations and TID join together for research.

3. Supporting Industries

3-1. Procurement of Materials

The Thai garment producing industry is in the middle of a period of rapid growth thanks to its abundant labor force, but the higher the export ratios of the garment products produced, the higher the import ratio of the materials used.

The technically related problems relate to the variety and quality of the fabrics and can be summarized as follows:

- Domestic producers cannot supply the types of materials required for orders from customers.
- In particular, it is becoming difficult to produce export oriented garments using large count fabrics.
- Thai materials suffer from defects in the weave such as uneven weaves.
- The dyeing technology is insufficient.
- Lot sizes of garments for the export market have recently been becoming smaller as a general trend, so production is becoming out-of-touch with the actual situation on the international market.
- Putting together the above, recently the life cycle of garment products has become shorter and a greater variety of types, colors, and patterns of materials has become necessary, but the materials supplied by Thailand are mass produced items of limited variety and thus the gap in the corporate strategies of the supply side and the user side, including strategies on technical adaptivity, is growing.
- However, Thai fabric, irregardless of the state of the dyeing, is presently usable for medium class garment products on the international market, as both the supply side and the garment producing side will admit.

In general, the domestic supply system for secondary parts such as buttons, hooks, linings, cores, and pocket fabrics is underdeveloped and garment makers basically rely on imports. Regarding other accessories and parts too, with the exception of zippers, when the lots are small in size or special specifications are called for, companies have to import almost without exception.

3-2. Procurement of Machinery and Its Parts

The production facilities used for garment production in Thailand basically come from abroad. Regarding the acquisition of key facilities through imports, none of the companies seemed to feel there were any particular problems. However, the frequent complaint was raised that port procedures, including customs clearance of imports, took too much time.

There are no after sales service centers in Thailand, making response to emergencies difficult, and this is becoming a problem. All factories have difficulties securing the personnel for securing the personnel for maintenance and safety. With the new installation of facilities continuing today, the problem of the shortage of engineers becomes even more serious.

Further, there is no parts industry, which makes the problem bigger. It would be difficult in reality to form a parts industry quickly, so for the time being, it would be effective for the industry to make some arrangement enabling joint purchases of parts, consumables, jigs, attachments, etc. by groups of companies and joint management.

4. Marketing

The majority of the Thai garment exporters depend on the designs and brand names of their customers. While having their own designs and brands would bring the firms in Thailand a higher added value, it would also bring a greater risk. There would also be two conditions necessary for the development of design in Thailand. One condition would be the abundant availability of raw material and the other would be highly developed skills in the area of sewing techniques. Under the current circumstances, it would be more beneficial for them to strengthen their abilities to absorb the specifications and designs which fitting to the export markets and which are demanded by the buyers of their products. In the long term, however, it would be desirable for the companies to reach a level where they can produce export garments based on their own plans.

Judging from TSI indices and RCA indices, the international competitiveness of the garment industry in Thailand has been steadily strengthening. Any judgement on the actual status of each item cannot be made unless the actual conditions are compared with the conditions in competing countries. However, we can guess that at present the increase of exports is led by the expansion of production capacity for standard products using TC and TR as raw material. In light of this, price competition is very important in strengthening international competitiveness. The devaluation of the Thai Baht in December 1984 and the appreciation of the Taiwanese dollar and the South Korean Won after September 1985 have greatly contributed to the recent expansion of exports and the strengthening of the price competitiveness of the garment export industry in Thailand. However, when the foreign exchange rates of the countries directly competing with Thailand in international trade stabilize, it will be an urgent task for the garment industry to reduce its production costs.

The "tax refund" system has been contributing to the enhancement of price competitiveness. However, when the system is applied in reality, the interest burden, the tariff on material not utilized for exports and the imposition of business tax have resulted in an addition to the costs of the garment exporting firms which must rely on imported raw materials.

5. Corporate Operations

5-1. Process of Development of Companies

The garment manufacturers of Thailand began tackling exports in the early 1970's. Their main customers were the U.S. and the EC. Soon after that, quotas were placed on the quantity of some garment products exported from Thailand to these regions. The restrictions, however, were more easygoing than those set by the U.S. and Western Europe on Japan and the NIE's. Therefore, Thai garment export manufacturers have been able to expand their export volumes stably.

Contributing to the growth of Thai garment manufacturers were, in addition to the increase in exports, the expansion of the domestic market for readymade garments. Up until the early 1970's, the majority of garments in Thailand was order-made. Readymade garments began making their way into Thailand with the popularity of jeans among students in early 1970. Since then, readymade T-shirts, pants, and women's wear have spread. Companies set up mass production systems and upgraded themselves to garment manufacturers around that time.

5-2. State of Corporate Management

Most of the production by Thai's export garment manufacturers is production on order based on product plans and designs of the customers.

The manufacturers which import materials gave as their reasons the fact that the materials designated by customer specifications are not produced domestically or that the price of domestic materials is higher than imports. In many manufacturers, the ratio of the cost of materials is a high 60% or more, so if the price of procurement of materials is high, it would have a major impact on price competitiveness. Wages in Thailand are low, about one-fifth those of South Korea, but the cost of materials is 10 to 15% higher than those of South Korea. According to some manufacturers, this weakens Thailand's price competitiveness.

The small and medium sized manufacturers tend strongly to purchases of domestic materials. The reasons for this are that when there are defects in materials or differences from the specifications ordered, imports take more trouble to deal with than domestic materials, that buyers tend to place orders for products based on materials procurable in Thailand when dealing with small and medium sized manufacturers, etc.

Regarding use of workers, the large and medium sized manufacturers reported they had an easy time assembling sewers and other general workers. On the other hand, some of the small manufacturers indicated there were difficulties for them. Further, while the medium and large sized manufacturers speak of the ease of employment of general workers, they point to difficulties in employment of production engineers, mechanics, chief class workers for cutting processes, patterners, etc. Reportedly, with manufacturers all currently expanding their production capacities, there is considerable scouting of manpower going on in these occupations.

Many of the companies visited adopted the system of piece rates for wages to their sewers and knitters, which constitute a large block of their workers. Some of the manufacturers used a basic rate with elements of a piece rate incorporated therein so as to maintain the quality of the products above a certain level.

The larger scale factories did not to use subcontractors that much. The reason given for not using subcontractors were that the small sized factories serving as subcontractors are difficult to control and therefore it is difficult to meet the demands for high quality of the buyers when using them. On the other hand, most of the manufacturers using subcontractors as part of their production capacities had less than 300 sewing machines.

5-3. Problems and Countermeasures

Most export garment manufacturers have set up supply systems for low price items of large lot sizes. In the future, however, to further increase exports, it will not be sufficient to merely expand production like in the past: management will have to be able to handle the following market environment:

- a) To stimulate the purchasing desire of consumers in key export markets, importers will be increasingly placing orders for smaller lots of a greater variety of products than ever before.
- b) It will be important to tackle the Japanese market, which has no quota restrictions and is large in size. Orders from Japan, however, are generally small in lot size and severe in demands on quality.
- c) At the present time, the export garment manufacturers of Thailand are competing with manufacturers in countries like China and Indonesia which can make use of even cheaper labor. Therefore, they will find it important to strengthen their nonprice competitiveness in areas such as delivery, quality, and the ability to handle small lot sizes and diverse types of products so as to set themselves apart from companies of competing countries.

The introduction of production systems suited to the above market environment and the expansion of production capacities of export manufacturers may well lead to quantitative and qualitative shortages in production control staff, patterners, machinery maintenance personnel, and other human resources and in machinery and equipment. Therefore, it will be essential to devise measures to accelerate the training of personnel and to promote the introduction of production systems suited to the future market environment. These measures should focus on the following:

- a) Promotion of the introduction of CAD so as to raise the productivity of pattern production and marking. This will enable an increase in the number of production items and impart adaptiveness to short delivery orders despite shortages of patterners and small lot sizes.
- b) Promotion of techniques of formation of production processes able to deal with changes in the market environment, quality control, setting of suitable types and input amounts of machinery and equipment, labor management, etc.
- c) Promotion of a higher level of knowledge about machinery and equipment and promotion of the introduction of machinery and equipment contributing to the establishment of production systems suited to the market environment.

- d) Promotion of the introduction of computers for part of the management work, e.g., production and sales. This will impart flexibility in management to increases in the number of orders and the diversification of the content of orders.
- e) Promotion of the dissemination of maintenance techniques for machinery and equipment and of the increase of maintenance personnel in accordance with the increase in the amount and types of future machinery and equipment.

6. The Current State of the Industries of Competing Nations

6-1. The Apparel Industry in South Korea

In the course of Korea's industrialization the textile industry has helped sustain the country's economic growth in its role as a major export industry. The textile industry began to expand rapidly when it was classified as an import substitution industry under the first Five-year Economic Development Plan which was implemented in 1962. Since the implementation of the second Five-year Plan the apparel industry has expanded rapidly as a strategic export industry due to various policies providing assistance to the industry, such as tax refunds and export finance subsidies granted by the government.

During this period the apparel industry has aimed at achieving growth through expansion, and exports to large markets overseas have replaced the production of goods for the domestic market as the industry's main strategy. Companies are selecting growth, and therefore exports, as their main targets instead of profits, and special emphasis has been placed on the export of mass-produced goods.

However, the further tightening of quotas by textile importing countries and gains made by other developing countries since the early 1980s have forced certain changes to be made to apparel exports which had up until that time relied upon their price competitiveness.

These measures have consisted of: 1- opening up markets in countries which do not impose import quotas, and developing items which are not subject to quotas for export to countries imposing quotas; 2- transforming the industry into a capital and technology intensive industry by raising automation ratios etc, as a means of countering the export offensives of other countries which are hard on Korea's heels; and 3- establishing a diversified small lot production system and developing design and fashion in order to meet trends in demand in advanced countries. In addition, although the appreciation of the won since September 1986 has raised export prices, increases passed on to prices have been kept to about 50%. The financial situation of small and medium

apparel companies has deteriorated as manufacturers have had to absorb the balance of the increase in costs.

As a strategic export industry and also as an industry which has a high capacity to absorb employment, the apparel industry has played a leading role in the country's economic growth. But the rapid progress which has been made in heavy and chemical industries in recent years has been accompanied by a gradual decline in the importance of the apparel industry in the manufacturing sector.

6-2. The Apparel Industry in Taiwan

The development of the textile industry in Taiwan started in earnest in 1953 with the implementation of the first Four-year Plan. The administration authority at that time designated the textile industry as a priority development industry in a bid to stabilize the people's livelihood and to decrease the drain on foreign currency. It took steps to encourage imports of spindles and raw materials etc. Textile production continued to expand from this time through the 1960s, and by making use of a cheap and plentiful work force the apparel manufacturing sector increased its exports of mainly knitted sweaters and fabric garments.

However, the worsening labor shortage and the sharp increase in wages which have taken place since the 1970s have led to a gradual decrease in price competitiveness. This prompted the apparel industry to introduce high grade industrial sewing machines and automated machinery in order to raise its technical capacity and to make production more efficient.

Steps by importers of Taiwanese-made apparel to impose stricter import quotas and the changes in the demand structure in those countries also forced the industry to act quickly in strengthening its non-price competitiveness by using a higher grade and also a wider range of materials, and by improving its product planning capacity. The appreciation of the Taiwanese currency has accelerated such moves. Furthermore, the Taiwanese yuan has appreciated at a higher rate than the currencies of its competitors Hong Kong and South Korea, and this has resulted in a large decline in Taiwan's export competitiveness. In addition, quotas on overseas markets, trends towards a wide range of products in small lots and a shortening of delivery time have had the effect of decreasing the production efficiency of existing production systems and have also raised production costs. This has prompted some apparel manufacturers to shift their production bases to other countries.

6-3. The Apparel Industry in Hong Kong

The modern textile industry first began to grow in Hong Kong in the early 1950s. Spinning manufacturers from the mainland sought exile in Hong Kong as a result of the Chinese revolution of 1949, and this was the first step towards the development of the Hong Kong textile industry. Large numbers of refugees from the mainland at this time guaranteed a cheap labor force. For some time the industry developed with the main emphasis on spinning and weaving products. Hong Kong's share of exports to the United States expanded in the early 1960s due to Japan's voluntary restrictions on textile exports to the US, and import restrictions imposed by Great Britain, mainly on cotton cloth. From the early 1960s efforts were made to shift over to middle and high grade export products from Hong Kong's traditional middle to lower grade products in response to import restrictions imposed by textile importing nations as a result of the STA and LTA, and the emergence of Taiwan and South Korea as textile producers. As a result, rapid growth within the textile industry was seen in the apparel industry with its high added value products.

Productivity rose substantially with the introduction of automatic knitting machines in place of manually operated horizontal knitting machines. Owing to this increase in productivity Hong Kong replaced Italy as the largest apparel exporter in the world in 1973.

However, the labor shortage and the sharp increase in wages which occurred in the early 1980s hindered the growth of the apparel industry. This brought about a change whereby Hong Kong apparel capital which was funnelled through a network of Chinese merchants began to be used for direct investment in Southeast Asia. In addition to this, moves were taken to set up operations in mainland China. Even when direct investment of Hong Kong apparel capital in Guangdong Province alone is taken as an example, it has resulted in employment for roughly 300,000 Chinese workers, which is comparable to the 320,000 workers employed in the spinning and apparel industries in Hong Kong itself.

However, when at the end of 1984 the United States, the largest importer of Hong Kong/Chinese-made apparel, imposed regulations concerning proof of the country of origin the method of carrying out the sewing and knitting processes in China and then carrying out the finishing process in Hong Kong which was being used for Hong Kong-made products became illegal. As a result, Hong Kong apparel manufacturers embarked upon the following three courses of action: 1- they stepped up efforts to automate the production process; 2- increased their exports of items not subject to quotas; and 3- began to shift production plants to other countries.

6-4. Textile Industry Policies in Asian NIEs and Japan

In Hong Kong no measures have been taken for providing assistance to specific industries. However, the Garment Training Center has been established through joint public-private sector cooperation in order to foster staff for the industry. The Center provides training in cutting and other types of production technology. Export promotion activities are carried out by the Trade Development Center.

In South Korea the government has adopted generous measures of support in relation to investment in plant and equipment and export promotion in a bid to protect and develop the industry. A considerable number of textile industry estates are being established, and dye processing estates are also proving effective. Today, emphasis is being placed on making a dual production structure whereby the former mass production for producing medium and low grade products is being replaced by the production of high-priced goods in small lots, and the competitiveness of mass produced goods is being improved.

In Taiwan industrial policies have centered on putting in place a base for industrial development, and the textile industry has been included in general policies aimed at industry. Today, measures are being taken to promote overseas investment.

Policies relating to the Japanese textile industry have moved away from development policies aimed at developing the industry as an export industry, and diversified policies and measures are being adopted in their place to meet the changes in the internal and external environments. These include making adjustments to production, structural improvement policies, and formulating guidelines for the industry to follow.

7. Trends in Key Markets

7-1. Japanese Garment Market

The overall structure of the imports of Japan has been changing tremendously. A comparison of imports in 1977 and 1987 shows the share of manufactured products doubled from 20% to 40%, approaching the 50% line in 1988. The ratio of imports of manufactured goods is expected to break through the 50% line in the next one or two years.

One of the leading manufactured items imported is textile products, primarily garments. Such imports are also expected to rapidly expand in the future.

The first reason is that the per capita GNP of Japan stands at the top in the world and the current account balance is reaching US\$80 billion and thus demands upon Japan to increase its imports of manufactured goods are expected to become stronger.

Another reason, one unique to the garment industry, is that the share of imports in the domestic market is still low overall and there is considered to be much room for expansion.

Next, even judging by the international level, Japan's imports of garments are still low in level. A comparison of the per capita value of imports of garments in Japan and the U.S. as of 1987 shows the U.S. at US\$90 and Japan at just US\$38, i.e., the American level is 2.4 times as high as Japan's.

Further, Japan represents the only open market among the markets of the advanced nations, establishing no restrictions on imports in principle. This point is also important.

In the shares of different countries in Japan's apparel imports, the share of the Asian countries have of course been rising. Among these, the rise in the share of South Korea has been remarkable. The share of the four largest exporters to Japan in all of Japan's garment imports was 81.3% in 1987 (South Korea 40%, China 20.5%, Taiwan 16.4%, and Hong Kong 4.5%), breaking through the 80% line for the first time ever. The share of South Korea grew from the 37.8% of the previous year to 40%, while that of China fell from 21% to 20.5%, with South Korea's vigorous entry and China's sluggishness being in sharp contrast.

Noteworthy after the four largest exporters was Thailand, imports from which rose three-fold all at once, placing that country at ninth place among countries of origin (the four largest Asian exporters and the advanced western nations holding the top eight places).

South Korea and Taiwan, which have recently had to raise wages by a very high percentage, face uncertain futures as China and the ASEAN countries may assume a more advantageous position. Note that high quality apparel from Italy, France, the U.S., etc. should continue to main a stable 15% share of the market, all together, for the time being.

7-2. U.S. Garment Market

The U.S. is a giant textile consumer. A look at the per capita textile consumption of the U.S. shows it stood at about 60.1 pounds in 1985 (one point equaling about 0.454 kg), about twice that of the EC and about 4 times that of the world average.

A look at the U.S. apparel market in 1987 by consumption expenditures shows consumers spent US\$69 billion for domestic apparel and US\$68 billion for imported apparel, with the ratio of imported apparel to domestic apparel in consumption expenditure being about 1:1. At the end of the 1970's, domestic apparel accounted for 80% of consumption expenditure and imported apparel for 20% and in 1984 60% and 40%, respectively. This shows the rapid rise in the importance of apparel imports in the 1980's. One of the factors behind this was, it may be mentioned, the move by U.S. apparel manufacturers to secure and build up sewing centers overseas, particularly in Southeast Asia, due to the high value of the U.S. dollar in the 1980's, so as to obtain inexpensive products there. Basically, however, the international competitiveness of the U.S. apparel industry has significantly fallen. The plummeting of the dollar exchange rate since September 1985, the toughening of application of textile import agreements, and the expansion of the countries covered by the same gradually began to take effect in 1988 and have been suppressing the rapid growth of imports.

On the other hand, looking at the state of production, the leading U.S. apparel manufacturers have direct outlets in the retail field or else are combining with retailers and thus are evolving into manufacturing retailers in an increasing number of cases. Behind this is the movement toward "QR" (quick response) wherein manufacturers plan and produce products with an accurate grasp of consumer needs and supply the products to the market with a minimum lead time. As a result, there has been a marked shift of procurement sources from overseas countries to domestic factories or factories in neighboring countries, i.e., a reevaluation of the sourcing strategy.

7-3. West German Garment Market

West Germany's exports and imports of textiles (yarn, fabrics, and garments) both rank second in the world in value. Exports and imports of garments are number two in the world after the U.S. In other words, West Germany is a major producer of textiles and at the same time a major importer. A look at this by the stage of processing, however, shows that while there is a surplus in the trade balance of yarn, there is a deficit in the trade of fabrics and garments. This shows a pattern of a vertical division of labor.

Looking just at the trade in the garment sector, the following features may be seen: imports have been increasing remarkably in recent years, further enlarging the deficit in the garment sector; trade in Europe accounts for the major part of both imports and exports; there has been high growth in imports from the Mediterranean countries and Eastern Europe; and there has been slow growth in imports from the three large Far Eastern suppliers.

On the other hand, in production, domestic production fell noticeably in volume in both 1987 and 1988. The number of workers in the industry and the number of companies have both been declining with each year. In particular, the decline in the number of workers has been decisive. Garment manufacturers have been pressing forward with automation and mechanization of production, introducing the QR (quick response) system, and quickly going forward with other structural improvements.

7-4. U.K. Garment Market

According to UN statistics (1986), the U.K. stands in fourth place in the world in terms of the value of garment imports and eighth place after China in terms of the value of exports. Imports have been continuing to increase in recent years, however, and the imbalance in the garment trade is thus growing. Transactions within the EC region account for most of the imports and exports. The ratio of imports in the domestic market was 23.8% for garments as a whole in 1976, but rose to 40% or more for almost all items in 1986.

Further, unlike in West Germany, production of textiles (yarn and fabric) has been remarkably stagnant, so the production and trade structure does not favor active consignment processing trade with developing countries.

This stagnation of domestic production and expansion of imports were in part due to the development of sources of import by the large retailers due to the high value of the pound in 1979 and 1980.

Features of the U.K. garment market include a broad bottom of the purchasing strata of the population and dominance by demand for medium and low class goods, due to the lack of much difference in the disposable incomes of the middle class and workers; the marked stagnation of the midstream sector of the textile industry and the lack of progress in commercialization of results of product development and technical development in the upstream sector; similarly, the failure of the midstream sector to respond to the planning of the retailers and distributors, forcing the latter to look overseas for commercialization; conversely, the very good setup of the distribution channels for imports and the strong planning abilities of both the retailers and traders, resulting in orders placed overseas.

8. Setting of Export Targets and Requirements for Achievement of Targets

If the growth in textile exports during the years from 1980, when Thai garment exports took on full proportion, to 1986 is repeated during the ten years starting in 1987, exports in 1996 should be on a par with those of Taiwan in 1986 (based on 1986 prices). This will require that the Thai garment industry achieve the following two objectives as part of its export strategy: 1) to catch up with the export volume, production capacity, and technological level of 1986 Taiwan and Korea; and 2) to develop the ability to respond to the problems currently being faced by the garment industries in these two nations.

9. Policies and Regulations

9-1. Outline of Textile Industry Policy Changes

Thailand's textile industry policies have been very successful. They began with the promotion of the cotton industry using public capital, shifted to import substitution using private capital, and then moved to investment promotion by the BOI etc. throughout the 1960's.

Starting from the end of the 1960's, exports of textile products began to be seen and the policies changed in focus from import substitution to an export orientation.

Along with the recession in the textile industry in the mid-1970's, measures were taken to restrict new installation of facilities, but facilities exclusively for export production were exempted.

This government promotion of exports was further strengthened in the 1980's with the devaluation of the currency etc., and exports grew by leaps and bounds. A structural change has also been seen in the composition of the export products from textile products to garments.

9-2. Present Textile Industry Policies and Problems

(1) Mechanism for Drafting Policies

Problems in the textile industry are handled by the Textile Industry Development Committee (TIDC). In May 1987, the committee decided to temporarily lift the restrictions on spinning and weaving facilities.

(2) Restrictions on facilities

In 1987, the government gave permission for a massive expansion of facilities in the spinning and weaving sectors, both covered by BOI incentives and non-encouraged. The present expansion of facilities, however, is oriented toward production of standard products and will not lead to diversification of the supply of materials. Further, the problem is left of the gap of supply and demand between the upstream sector and downstream sector. Further, augmentation of the dyeing sector, which is falling behind the woven fabric sector, will also become necessary.

(3) Modernization of facilities

Both the spinning and weaving sectors have been slow to introduce modernized facilities.

(4) BOI investment incentives

With some exceptions, BOI incentives have been held off from the spinning, weaving, and export-oriented garment manufacturing sectors.

(5) Tariff policy

Modernization of facilities is important for expansion of exports of textile products. The high tariffs placed on imports of machinery and machine parts, however, have been blocking replacement of facilities. The refunds and other incentives are not available except for specific companies promoted by the BOI.

A high duty is also levied on dyes for the protection of domestic production, but problems in quality have led to use of imported dyes irregardless of this in many cases. The high tariff measure is therefore not working to protect the domestic dyeing sector. Further, the dyes are used at the distribution market stage, so export certifications often cannot be obtained and the tariff refund system does not work much at all.

The import duties levied on woven fabrics for export-oriented garments are also high. Interest costs pile up until the refund of the tariff, so this acts as a minus factor in the competitiveness of garment exports.

(6) Human resource development

Mention was made of shortages of management for production processes in the textile sector and of process management and designers in the garment sector.

(7) Functions of TID

The TID (Textile Industry Division) engages in a wide range of activities with respect to the textile industry, but cannot be said to have sufficient facilities, funds, or staff for that range of activities. The facilities in the test service sector are remarkably outdated.

(8) Raw cotton

Domestically produced cotton is considered to be defective in quality.

(9) Restrictions on unfair trade

There are presently no legal means available to counter what are seen as unfair trade practices in the monopolistic textile material sector.

9-3. Measures

The government should come out with a long term "vision" of the textile industry so as also to maintain and strengthen international competitiveness.

The measures to restrict facilities must be tailored so as to lead to diversification of the supply of materials to the garment sector or to increase the supply of special materials.

To promote modernization of facilities, examination should be made of the introduction of a special depreciation and accelerated depreciation system and a leasing system for facilities.

To augment the dyeing sector, it would be worthwhile to consider formation of an industrial estate for dyeing companies making use of BOI investment incentives.

Import tariffs must be examined with due consideration given to the necessity of promotion of the export textile industry and a balance in the fiscal structure and the tax and tariff system.

To make the import tariff refund system work properly for dyes, measures must be taken in its implementation and the conditions must be eased.

As for development of human resources, it will be necessary to devise long term measures to train engineers, designers, etc.

Regarding measures on raw cotton and unfair trade, specialized surveys and studies will be necessary.

9-4. A Comparison of the Development Phases of Textile Industries

A look at the stage of development and degree of maturity of the textile industries with relation to the specialization coefficient of trade (TSI indices) and the scale of exports shows that Thailand is catching up with China, Taiwan, South Korea, etc. in the stage of development of both the textile and garment sectors. In terms of competitiveness, it has rather outstripped these countries. The scale of exports, however, is one-fourth to one-half of those of these countries in textiles and one-seventh and one-third of those in garments. The expansion in scale is still to come. There are very large possibilities for an expansion of the volume of exports.

The expansion of the volume of exports in the future, however, will depend on how far Thailand can move in on the market shares of its forerunners: China, South Korea, and Taiwan.

Chart 15. Structural Comparison of Garment Industries

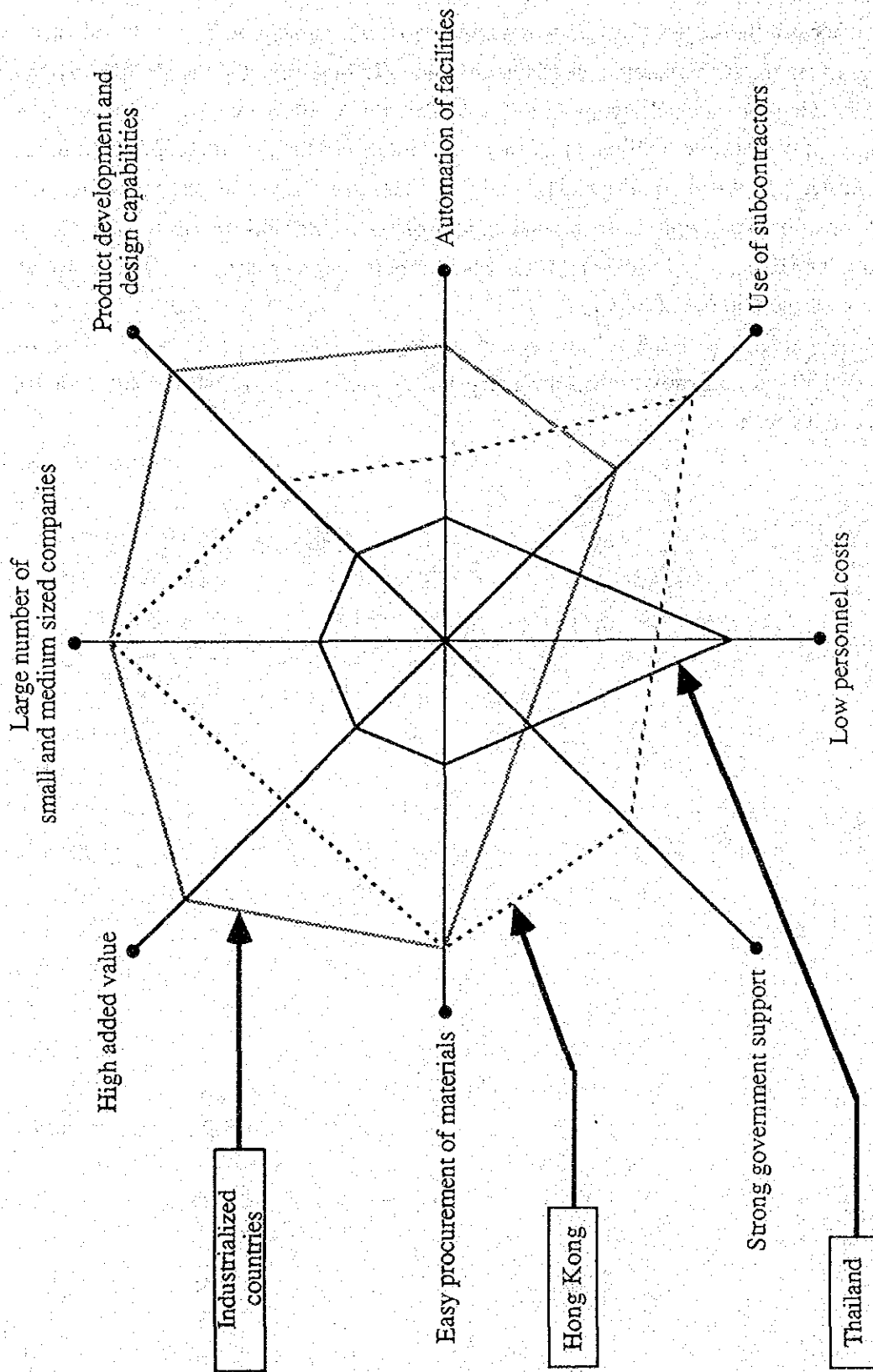


Chart 16. Major Policy Measures for Textile / Garment Industries

	50's	60's	70's	80's
Basic Policy	Self-supply led by the Public Sector		Import Substitution	Export-oriented Development
Supportive Measures		60	65 68	85 88
	(1)	Promotion by BOI		
	(2)	Tax Refund / Rebate Scheme		
	(3)	Promotion through TID Activities		
	(4)	Foreign Exchange Policy		82* 84* (Depreciation of Baht)
Protective Measures	Protection by Customs Tariff (With Minus-effects accumulated)			
	(1)	75		Production Control (Except for production for export)

