Textile and Garments Industries:
Impact of Trade Policy Reforms
on Performance, Competitiveness and Structure

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Abbreviations

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Asean	Association of Southeast Asian Nations
ANU	Australian National University
BMWs	bonded manufacturing warehouses
BOI	Board of Investments
BOP	balance of payments
COE	Census of Establishments
DRC	domestic resource cost
EPR	effective protection rate
ILP	Import Liberalization Program
NEPR	net effective protection rate
PSCC	Philippine Standard Commodity Classification
PSIC	Philippine Standard Industry Classification
SEC	Securities and Exchange Commission
SER	shadow exchange rate
TCC	tax credit certificate
TMP	Textile Modernization Program
TRP	Tariff Reform Program

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Introduction

THE industry sector of the country has been characterized by high protection. It is often argued that protection reduces efficiency since the absence of foreign competition allows domestic producers to enjoy monopoly/oligopoly power and excess profits, resulting in higher price and lower output level than what would prevail under a more liberal trade regime. Protection also permits firms to operate at sub-optimal scale. This implies that firms can fail to produce the maximum potential output from their given inputs while remaining profitable in the domestic market.

Arguments for trade liberalization are well-documented in recent literature (Dornbusch 1992; Rodrik 1992; Havrylyshyn 1990; Kirkpatrick and Maharaj 1992). The main impact of a more liberal trade stems from competitive pressures which prevent inefficiencies. For example, to remain competitive against foreign rivals, firms are forced to keep costs low. This requires that labor, capital, and foreign exchange markets have to be free from distortions. The increase in competition therefore encourages efficiency in the allocation and use of resources. Keeping costs low in turn enables a country to specialize in industries where it has a comparative advantage.

Several studies have pointed out that high protection contributes to the poor performance of the industry sector in the country, not only in terms of domestic production but also in terms of export performance as shown by the declining share of Philippine exports in world trade (Bautista, Power and Associates 1979). Austria (1992) also found that the country's highly protected industries are the same industries with relatively high oligopoly power, low capacity utilization rates, and poor productivity performance.

In view of the counterproductive effects of protection, the government instituted trade policy reforms, which included the Tariff Reform Program (TRP) and the Import Liberalization Program (ILP), in the 1980s. These reforms were aimed at increasing efficiency and competitiveness of industries by eliminating distortions in the allocation of resources.

An assessment of the effects of the trade reform is therefore very timely and important. The attainment of world competitiveness of the country's products is one of the visions of the government, especially now that other ASEAN countries have gone ahead in terms of performance in the world market. Intensive competition also exists with traditional suppliers from neighboring Asian countries and newcomers from other developing countries. In effect, this calls for a high degree of efficiency in production leading to lower costs and enhanced competitiveness.

This study focuses on the garments and the textile industries. The textile industry, one of the industries developed and sheltered under heavy protection, is also one of the most inefficient industries in the country. On the other hand, the garments industry is one of the less protected industries and yet, has proven to be an efficient foreign exchange earner for the country. The contrasting performance of these industries is an area of policy concern. To mention a few countries, South Korea and China are successful exporters of garments which have efficient domestic textile industries whose products are internationally competitive (World Bank 1987).

This study seeks to analyze the performance, efficiency, competitiveness, and structure of the garments and the textile industries. In particular, it will examine the response of individual firms to the trade reforms and analyze the extent to which the reforms have fostered greater competition and efficiency in the use of resources. To examine the effects, a "before and after comparison" will be made on the performance of the firms. Factors affecting inter-firm differences in efficiency and competitiveness are then identified. Finally, policy recommendations are made to enhance the industries' efficiency and competitiveness.

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Industry Background

In the Philippines, garments and textiles are treated as separate industries. The garments industry started in the late 1950s as a group of cottage-level enterprises that replaced the traditional home sewing, dressmaking, and tailoring. The industry includes all items of clothing, such as men's, women's, children's and infant's wear, and the manufacture of other wearing apparel accessories, such as hats, gloves, handkerchiefs, neckwear, apparel belts, brassieres, stockings and socks, and other related apparel.

On the other hand, the textile industry began in the 1950s as one of the industries established under the rationale of import substitution. The industry covers fiber production and yarn, fabric, and made-up textile manufacture. It is classified into two sectors: (1) the primary processing sector, which basically include spinning, weaving/knitting and finishing; and (2) the secondary processing sector, which covers made-up textile goods manufacture (e.g., rope, carpets, rugs, etc.). The primary processing sector is further classified into integrated or non-integrated, depending on the number of processing stages they undertake. If processing involves three activities, it is labelled as integrated. However, if processing performs only one or two activities, it is classified as non-integrated.

SIGNIFICANCE TO THE ECONOMY

Through government support in the form of incentives and liberal credit facilities, the garments industry has become the second largest source of non-traditional export of the country, the largest being semiconductors. In the 1980s, garments accounted for about 20

percent of non-traditional exports and about 14 percent of all exports. The industry is also one of the major employers of labor in manufacturing. About 30 percent of total production costs is spent on labor. Between 1972 and 1988, the share of the industry in manufacturing employment increased by almost four times (Table 1). The figures on employment, however, are understated because the Annual Survey of Establishments and the Census of Establishments, which are the official sources of establishment data in the country, covered manufacturing enterprises alone. The industry, in fact, includes homeworkers and small contractors to garment exporters.

In contrast, the textile industry contributes less than 1 percent to the country's exports. The employment generated is also minimal, with the textile-primary category contributing an average of 10 percent during 1972-1988 and the textile-secondary averaging three percent of employment in manufacturing (Table 1). The industry spends only 12 percent of its production cost on labor, making it more capital intensive than garments.

SIZE AND STRUCTURE

The number of firms operating in the garments industry increased by 158 percent between 1972 and 1978, and 257 percent between 1983 and 1988 (Table 1). The industry's share in total manufacturing establishments in 1988 was almost twice that in 1972. The increasing profitability and export potentials of garments has been drawing more firms to join the industry. In addition, the share of the industry to total manufacturing value added has been increasing between 1972 and 1988.

Through the years, the structure of the industry based on employment size has not changed. Majority of the establishments are classified as small (Table 2). Based on the number of establishments, however, the industry has gradually changed from a customs tailoring (32211) dominated industry to women's, girls' and babies' (32222) garment manufacturing industry (Appendix Table 3). As will be discussed later, the situation partly reflects the change in the composition of garments exports.

Table 1

Industry Performance of Garments and Textiles: 1972-1988

	1972	1975	1978	1983	1988
Employment share in total manufacturing (%)					
Garments	4.33	6.43	6.25	10.74	16.59
Textiles-primary	10.82	7.73	12.96	10.36	8.80
Textiles-secondary	3.03	6.43	1.65	1.85	1.64
Value added share in total manufacturing (%)					
Garments	1.01	1.10	2.48	2.78	5.81
Textiles-primary	5.86	3.28	9.43	5.00	4.02
Textiles-secondary	1.45	3.11	1.24	0.82	0.51
Number of establishments					
Garments	316	576	815	436	1556
Textiles-primary	123	135	358	219	323
Textiles-secondary	103	296	225	98	223
Establishments' share in total manufacturing (%)					
Garments	7.06	9.01	9.68	7.61	13.54
Textiles-primary	2.75	2.11	4.25	3.82	2.81
Textiles-secondary	2.30	4.63	2.67	1.71	1.94

See Appendix Tables 1 to 6 for details on the 5-digit PSICs of garments and textiles.

Source: National Census and Statistics Office. *Census of Establishment, Manufacturing*, Manila, censal years.

Table 2

Number of Establishments by Employment Size in the Garments and Textile Industries: 1983 and 1988

Employment size	Garments		Textiles-primary		Textiles-secondary	
	Number	Distribution (%)	Number	Distribution (%)	Number	Distribution (%)
1983						
Small	267	85	97	60	74	79
Medium	13	4	22	14	9	10
Large	34	11	42	26	10	11
Total	314	100	161	100	93	100
1988						
Small	763	82	175	61	151	83
Medium	65	7	40	14	21	12
Large	103	11	72	25	10	5
Total	931	100	287	100	182	100
Change (%)						
Small	186		80		104	
Medium	400		82		133	
Large	203		71		(0)	
Total	196		78		96	

(1) Establishments with 5-99 workers are considered small; 100-199 workers, as medium; and 200 and above, as large;

(2) The number of establishments include only those that have complete data required for the estimation of the domestic resource cost.

The textile industry, on the other hand, experienced a lower growth rate in the number of establishments compared with the garments industry from 1972 to 1988 (Table 1). The share of textiles-secondary in total manufacturing establishments had in fact been decreasing. Majority of the firms are also considered small (Table 2).

For textiles-primary, majority of the firms in the 1980s are knitting mills (32121 and 32122) (Appendix Table 4). As will be illustrated later in the paper, this structure has some bearing on the increase of exports of knitted/crocheted garments during the period.

MARKET ORIENTATION

The garments industry produces both for the domestic and export markets. However, production for the domestic market is largely dissociated from production for exports. Such dual structure hampers the dynamic development of the industry. The situation is further aggravated by the heavy dependence of manufacturers on imported raw materials because of price and quality problems with locally-produced fabrics, reflecting a loosely integrated textile and garments industry, to which this discussion returns.

Production (about 80 percent) in the textile industry is geared principally towards the domestic market. It was only after 1985 that indirect exports of textiles through garment exporters started to gain prominence. Direct export of textiles is still minimal, however. Like garments, the industry is heavily dependent on imported raw materials.

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Problems and Policy Issues

APPREHENSION has been expressed over the future of the garments and the textile industries. Problems in the industries include frequent power outages, rising cost of labor and raw materials, shortage of manpower in particular skills, bureaucratic procedures in the allocation of quotas for garment exports, and the dearth in foreign exchange. All these have hampered production schedules, which consequently stymied the growth of the industry.

The major obstacle to growth in 1992 and 1993, however, was the power outages. The production setback and shipment delays forced exporters to bargain for adjustment of export schedules. The situation became aggravated by the sharp increase in cost overruns in the form of late-delivery penalties and overtime payments. Most affected were the small firms, especially those which operate on consignment basis and who have no resources or some type of financial safety net to purchase generators so as to meet production schedules. In 1992, about US$600 million was lost in cancelled orders for garments, while another US$100 million in potential orders was lost to competing suppliers in Sri Lanka, Indonesia, Vietnam, and China.

Another major area of concern is the heavy dependence of manufacturers on imported raw materials. The development of a strong forward and backward linkage between the garments and the textile industries is apparently lacking. Government policies and incentives on foreign investment has encouraged the growth of the garments industry as a foreign-dominated enclave intended essentially to exploit the country's cheap labor. This has dampened the interest and lowered the incentive among manufacturers to make investments in developing a strong textile industry.

The experiences of successful garment exporters like South Korea and China show that these countries have a domestic fabric producing sector which is internationally competitive (World Bank 1987). In the Philippines, however, the garments industry relies on imports for about 95 percent of its raw material requirements because the price of local textiles is relatively higher than the prevailing world price. This in turn was the result of the high cost of raw materials of the textile industry. Restrictions on the importation of both synthetic and cotton fibers have raised the cost of textile mills to uncompetitive levels, preventing local plants to compete with foreign fabrics which have been imported duty-free under consignment arrangements.

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Evolution of Government Policies

GOVERNMENT policies and programs geared towards the growth and development of the garments and the textile industries have changed through the decades in response to the changing domestic and international environments which have been affecting the performance of the industries. In general, the garments and the textile industries developed under a complex system of import restrictions, foreign exchange controls, tariffs, subsidies, and investment incentives.

IMPORT SUBSTITUTION AND PROTECTION POLICY: 1950-1979

The textile industry developed earlier than the garments industry. The industry evolved in the early 1950s as one of the leading industries identified for promotion under the import substitution strategy adopted by the government. This strategy was developed in response to a severe balance-of-payments (BOP) crisis brought about by the huge expenditure on imports for reconstruction and rehabilitation after the war (Baldwin 1975; Bautista, Power and Associates 1979). Import and foreign exchange controls were then used as protective walls to encourage private investments into the identified pioneer industries. The textile industry was given liberal access to dollar allocations for the importation of machineries and raw materials. Government incentives in terms of tax concessions and easy access to loans from government financial institutions were also granted for capacity build-up and expansion.

During the initial stages of import substitution, the textile industry registered a rapid growth rate, but such a remarkable performance was

not sustained. Since the industry's development had been constricted to serving the domestic market with no regard for the export market, overcapacity developed. The situation worsened in the early 1960s with the implementation of the decontrol program wherein the limits on the importation of textiles were removed. The period also saw rampant smuggling which put the industry at a price disadvantage because of the cheaper price of smuggled fabrics.

During the early 1960s, the garments industry started to grow through the Embroidery Act (RA 3137) introduced in 1961. Firms registered under the Act were allowed to import raw materials free of duties and taxes. Together with the relatively low labor cost, foreign companies, especially from the U.S., were encouraged to invest in the country.

Together with the implementation of the decontrol program in the 1960s was the granting of fiscal incentives to the favored industries. Such incentives, embodied in Basic Industries Act (RA 3127) and Investment Incentives Act (RA 5186), included tax exemptions, tax credits, and tax deductions. Both the garments and the textile industries have been recipients of these incentives.

Nonetheless, the decontrol and the fiscal incentives were accompanied by tariffs, which actually became the main instrument of protection during the 1960s. Soon, there were lower imports due to high tariffs, resulting in a decline in the demand for foreign exchange. Consequently, this low demand led to the appreciation of the peso and hence, a severe tax levied on the country's exports. The textile industry enjoyed lower tariffs for its machineries and raw materials, and the rates escalated as more value was added from raw materials to finished products. This resulted to a high effective protection for the industry. The garments industry, however, was one of those industries penalized as a result of the negative protection accorded them.

In the 1970s, the government opted for an outward-oriented industrial strategy in response to yet another BOP crisis in the late 1960s. This was made explicit with the passing of Export Incentives Act (RA 6135) and the Export Processing Act (PD 1966). The former granted exporters more fiscal incentives in addition to those specified

in RA 5186 (Bautista and Power 1979; Gregorio 1979; Alburo and Shepherd 1986). For the garments industry, the outward-oriented strategy resulted in an increase in exports and more foreign investments (DTI 1987). Mercado (1987) found that in 1976 and 1978, 5 and 2 percent, respectively, of total approved investments under RA 5186, and 4 and 10 percent, respectively, under RA 6135, went to the textile industry. Likewise, there was entry of new companies with specialized functions and these proved to be more enduring than the old integrated mills during the 1950s.

On top of all the export incentives, however, was the distorted tariff structure. No attempt was made to eliminate or improve the tariff system (Bautista 1989). In 1974, for example, effective protection rate (EPR) for textile milling products and carpets, rugs, and mats were 78 and 43 percent, respectively, while ready-made clothing and manufacture of embroidered products received negative protection — i.e., -26 and -41 percent, respectively (Bautista and Power 1979). Furthermore, quantitative restrictions on imports were introduced and were further increased in the 1970s (Power and Medalla 1986). Most of the raw materials in the textile industry, for example, were included in the list of regulated commodities and hence, required prior approval from the government before importation.

While the country was able to participate in the growth of the apparel trade in the 1970s, the country was unable to take as much advantage of the growth possibilities as the major exporters like Hong Kong, Taiwan, and South Korea. Having lost the opportunity of becoming a major garment exporter, the country is now confronted with a more protectionist environment with increased protectionism in the U.S. (the country's major export market) and the European communities. On the other hand, the textile industry lacked the incentive to produce innovative designs or create new textures as a result of the high protection, thereby lessening the industry's competitiveness. The industry was therefore appraised in the late 1970s as needing a well-defined rehabilitation program.

TRADE POLICY REFORM AND SPECIAL PROGRAMS: 1980-1989

Tariff Reform and Import Liberalization Policy

The Tariff Reform Program (TRP) and the Import Liberalization Program (ILP) were the central elements of the trade policy reforms implemented in the 1980s. These programs were intended to improve the competitiveness of domestic industries and the allocation of resources. The TRP, which began in 1981, aimed to reduce tariff rates and establish more uniform tariff levels over the period 1981-1985 (Power and Medalla 1986; Fabella 1989). For textiles, the implicit tariff rate, which takes into account nominal tariff and sales taxes, declined from an average of 54 percent in 1983 to 27 percent in 1988 for outputs; for inputs, the rate was reduced from 48 to 21 percent. For garments, the implicit tariff rate went down from 10 percent in 1983 to 0 percent in 1988 for outputs, while for inputs the decrease was from 52 to 38 percent.

The ILP, on the other hand, was designed to gradually remove import restrictions on regulated commodities and on banned nonessential or unclassified consumer goods. As shown in Table 3, most of the product lines for garments were liberalized in 1982. On the other hand, removal of import restrictions in textiles started after 1985; most of the product lines have yet to be liberalized (Table 4).

Textile Modernization Program (TMP)

This program was formulated after several studies (which were conducted in the late 1970s) revealed severe operating and structural problems in the textile industry. Such problems were attributed to obsolete machineries and equipment, lack of specialization, poor technical performance, and high cost of production. The TMP, scheduled to be carried out in 1982-1985, was intended to rehabilitate the ailing industry. The program was financed by a World Bank (WB) loan amounting to US$157.4 million. A provision for up to US$300 million of suppliers credit was also made available.

Table 3

Removal of Import Restrictions on Garments by PSCC: 1980-1991

PSCC*	Description	Number of product lines	Number of product lines liberalized											
			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
84	Articles of apparel and clothing accessories													
842	Outergarments, men's and boys' of textile fibers	31	-	-	31	-	-	-	-	-	-	-	-	-
843	Outergarments, women's, girls' and infants' of textile fabrics	37	-	-	37	-	-	-	-	-	-	-	-	-
844	Undergarments of textile fabrics (other than knitted or crocheted)	32	-	-	30	-	-	-	-	-	-	-	-	-
845	Outergarments and other articles, knitted or crocheted, not elastic nor rubberized	15	-	-	15	-	-	-	-	-	-	-	-	-
846	Undergarments, knitted or crocheted	43	-	-	44	-	-	-	-	-	-	-	-	-
847	Clothing accessories, of textile fabrics	36	-	-	35	-	-	1	-	-	-	-	-	-
848	Articles of apparel and clothing accessories other than textile fabrics	45	-	-	19	-	-	11	11	-	-	-	-	-

–* Philippine Standard Commodity Classification

Source: De Dios, L. "Review of the Remaining Import Restrictions." PIDS Research Paper Series No. 94-08, Makati, 1994.

Table 4

Removal of Import Restrictions on Textiles, by PSCC: 1980-1991

PSCC	Description	Number of product lines	Number of product lines liberalized											
			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
26	Textile fibers (other than wool tops) and their wastes (not manufactured)													
261	Silk	3	-	-	-	-	-	-	-	-	-	-	-	-
263	Cotton	5	-	-	-	-	-	-	1	-	-	-	-	-
264	Jute and other textile bast fibers	7	-	-	-	-	-	-	-	-	-	-	-	-
265	Vegetable fibers, textile fibers	85	-	-	-	-	-	-	-	-	-	-	-	-
266	Synthetic fibers suitable for spinning	14	-	-	-	-	-	-	7	3	-	-	-	-
267	Other man-made fibers suitable for spinning	5	-	-	-	-	-	-	2	-	-	-	-	-
268	Wool and other animal hair	11	-	-	-	-	-	-	1	-	-	-	-	-
269	Old clothing and other old textile articles; rags	6	-	-	-	-	-	4	2	-	-	-	-	-
65	Textile yarns, fabrics, made-up articles, n.e.s. and other related products													
651	Textile yarn	136	-	-	-	-	-	-	10	69	-	-	-	-
652	Other fabric, woven	31	-	-	-	-	-	-	1	-	19	-	-	-
653	Fabrics, woven, of man-made fibers	49	-	-	-	-	-	-	2	-	24	-	-	-

Table 4 *continued*

PSCC	Description	Number of product lines	Number of product lines liberalized											
			1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
654	Textile fabrics, woven, other than cotton or man-made fibers	31	-	-	-	-	-	-	3	-	27	-	-	-
655	Knitted or crocheted fabrics	9	-	-	-	-	-	-	2	-	7	-	-	-
656	Tulle, lace, embroidery, ribbons, trimmings	48	-	-	-	-	-	-	35	-	-	-	-	-
657	Special textile fabrics and related products	70	-	-	-	-	1	4	16	-	-	-	-	-
658	Made-up articles, wholly or chiefly of textile materials	33	-	-	3	14	-	-	18	-	-	-	-	-
659	Floor coverings	28	-	-	8	6	-	-	11	-	-	-	-	-

Source: See Table 3.

Participating mills were required to implement manpower training programs, energy conservation, and environmental pollution control.

The program, however, did not even get a chance to succeed. There were few (11 textile mills) who availed of the loan because of the depressed domestic and export markets in 1982 and 1983. Thus, the loan was returned back to the WB in 1984.

Nevertheless, some positive developments have been achieved from the TMP. Energy conservation measures were introduced to offset the rising energy cost at that time. Likewise, manpower training programs were improved. More importantly, the incentive to strengthen the linkage between the garments and the textile producers became established, the extent of which is discussed below.

Advance Tax Credit Scheme

Until 1985, no formal efforts have been made to interface the local textile millers and the garment exporters. As discussed earlier, the textile industry has been primarily directed towards the domestic market, while the garment industry has been largely dependent on imported fabrics on a consignment basis.

With the unsuccessful TMP, the government approved the advance tax credit scheme in 1985 to reduce the production costs of garment manufacturers. Under the scheme, local millers can offer tax and duty-free textiles to garment exporters with bonded manufacturing warehouses (BMWs). The Board of Investments (BOI) will then issue local millers with tax credit certificates (TCC) equivalent to the tax and duty garment exporters would have paid had they bought imported raw materials. Thus, the scheme allowed local textiles to be priced competitively with imported textiles. The TCC may be used as payment of advance sales taxes on imports, payment of duty at the time of opening a Letter of Credit, or payment of any and all taxes owing to the national government, e.g., income tax.

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Measures of Competitiveness, Efficiency and Protection

THIS study used different measures to evaluate the effects of the trade reform. Discussed below are the equations and model used.

The domestic resource cost (DRC) was employed as a measure of allocative efficiency in the use of domestic resources. DRC indicates the amount of domestic resource used per unit of foreign exchange earned or saved from the production of a tradable good. Hence, the higher the DRC estimate, the more unfavorable domestic production is in using resources to generate or save foreign exchange.

DRC is estimated as:

$$DRC = \frac{Domestic\ cost\ in\ shadow\ prices}{Border\ value\ of\ output - Foreign\ cost\ in\ border\ prices}$$

An analysis of DRC estimates can be used to indicate relative efficiency of industry investments. When compared with the shadow exchange rate (SER), it can serve as a measure of comparative advantage or international competitiveness of domestic industries if the ratio DRC/SER is less than one or of comparative disadvantage if the ratio is greater than one.

TECHNICAL EFFICIENCY

The economic theory of cost and production function has provided a suitable framework for most empirical work on technical efficiency. It started with the pioneering work of Farrell (1957) who introduced the concept of frontier production function, which defines the ability of a firm to produce the maximum potential output given a specified mix of inputs and technology. Technical inefficiency is defined as the amount by which the actual output falls short of the potential output.

The most widely used methods in the estimation of frontier production function are the deterministic and stochastic estimation techniques (Aigner, Lovell, and Schmidt 1977). The stochastic approach attempts to reduce the sensitivity of the estimated frontier to random errors by including both efficiency distribution and pure random variations in the specification of the error structure of the frontier (Aigner et al. 1977; Meeusen and van der Broeck 1977; van der Broeck et al. 1980).

The deterministic approach, on the other hand, involves the determination of the sum of the deviations from the frontier, subject to the constraints that all observations lie on or below the frontier. The approach attributes the difference between actual and potential output to symmetric random disturbances. This means that the proportion of the difference between actual and potential output which is due from other random disturbances is also included. Hence, all variations from the predicted best output are considered as technical inefficiency.

While the stochastic approach is more accurate than the deterministic approach in that it can isolate efficiency factors from pure random disturbances, the study used the deterministic approach since the available statistical package for estimating the former could not be run on available data.

The study used the translog production function in the frontier estimation. Unlike the Cobb-Douglas production function, which is more restrictive in its ability to approximate the nature of factor substitution, the translog production function is more flexible in the

sense that it imposes relatively fewer *a priori* restrictions on the structure of production.

The function was estimated by linear programming using the SAS package. The model minimizes the deviations of the actual output from the maximum potential output, subject to a number of constraints. That is:

Minimize $Y_e - Y$,

where

$$Y_e = a_o + \alpha_L \ln L + \alpha_K \ln K + \alpha_M \ln M + \alpha_{LK} \ln L \ln K$$
$$+ \alpha_{LM} \ln L \ln M + \alpha_{KM} \ln K \ln M + 1/2 \, \alpha_{LL} \, (\ln L)^2$$
$$+ 1/2 \, \alpha_{KK} \, (\ln K)^2 + 1/2 \, \alpha_{MM} \, (\ln M)^2$$

subject to the following constraints:

(1) $\alpha_L + \alpha_K + \alpha_M = 1$
(2) $\alpha_{LK} + \alpha_{LM} + \alpha_{LL} = 0$
(3) $\alpha_{KL} + \alpha_{KM} + \alpha_{KK} = 0$
(4) $\alpha_{ML} + \alpha_{MK} + \alpha_{MM} = 0$
(5) $\alpha_{LL} \leq 0$
(6) $\alpha_{KK} \leq 0$
(7) $\alpha_{MM} \leq 0$

Y_e = estimated maximum potential output
Y = value of actual output
L = total number of man-hours
K = user cost of capital
M = cost of material inputs

The ratio of the actual to the estimated potential output, which may be found as the antilog of the slack variable of the programming technique, provides a measure of technical efficiency. A ratio of one implies 100 percent efficiency. Hence, the nearer the ratio to one, the more efficient a firm is.

The above technique has some limitations which must be considered when interpreting the results. It assumes homogeneity of plants in an industry and hence, the industry can be represented by a single production function. Likewise, the use of actual data in estimating the frontier generates an average production function rather than a best practice frontier. Thus, the technical efficiency performance of a plant is assessed relative to the estimated technical efficiency for the industry rather than relative to the best production practice based on world standards.

PROTECTION

The protection enjoyed by firms or industries is measured by effective protection rate (EPR). EPR is defined as the percentage excess of domestic value added at protected prices (as made possible by protective devices like tariffs, taxes and import restrictions) over value added at free trade prices as shown in the following formula:

$$EPR = \frac{V^i_j - V_j}{V_j} \quad \frac{V^i_j}{V_j} = -1$$

where

V^i_j = domestic value added;
V_j = free trade value added

By definition of value added, EPR becomes

$$EPR = \frac{\dfrac{PQ}{(1+s_j)} \quad \dfrac{RM}{(1+s_i)}}{\dfrac{PQ}{(1+T_j)} \quad \dfrac{RM}{(1+T_i)}} - 1$$

where

PQ = value of production
RM = cost of raw materials
s_j = sales tax on output
s_i = sales tax on inputs
T_j = implicit tariff on output
T_i = implicit tariff on input

The EPR can be adjusted for the extent of the overvaluation of the currency to yield the net EPR. This is computed as

$$NEPR = (1 + EPR) \frac{OER}{SER} - 1$$

where
OER = official exchange rate; and
SER = shadow exchange rate

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Sources of Data

Data were taken from the 1983 and 1988 Census of Establishments (COE). The 1983 COE was used to represent the "before the reform" period and the 1988 COE, the "after the reform" period. The 1991 COE would have been more ideal as a source of data for measuring the effects of the trade reform, but data was not yet officially available.

Nevertheless, a survey of selected garments and textile firms was undertaken to give an indication of the industries' performance in 1991. Supplementary data from the Income and Financial Statements of these firms were also gathered from the Securities and Exchange Commission (SEC). The results cannot be generalized, however, for the entire industry because of the small sample size; nor can the results of the survey be compared with the results derived from the COE because of the differen:es in sampling procedures used in the COE and the survey.

The Census of Establishments does not include data on exports and imports. Considering the importance of these information when assessing the competitiveness of industries, this study made use of data taken from tables compiled from the United Nations International Trade Statistics by the International Economic Data Bank (IEDB) of the Australian National University (ANU) in Canberra, Australia. Where data are available and comparable, the country's performance is compared with other ASEAN countries.

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Industry Performance

THIS section examines the performance of the industries vis-a-vis the policy reforms. In particular, it looks at how the industries responded to the changing policy environment in terms of output, employment, trade, exposure to foreign competition, industrial structure and profitability, efficiency, and competitiveness.

GROWTH OF INDUSTRY

Output

The garments and the textile industries registered a rapid growth rate in the 1970s in contrast to their dismal performance in the 1980s. For the garments industry, the favorable growth in the 1970s (Table 5) was fueled primarily by the expansion of exports driven by the increase in world demand. In fact, the country had the highest growth of value added among the ASEAN countries during the 1975-1980 period. Unfortunately, the growth was not sustained as output started to decline in 1982 (Figure 1). The decline, however, was due to the general economic (not to mention the political) slowdown the country faced during the period. Output started to pick up in 1986, but the growth momentum never reached its level in the late 1970s and in 1981. The relatively more stable growth of the other ASEAN countries suggests a better performance of garments in these countries than in the Philippines.

Up until 1984, the garments industry has been increasing its share in total manufacturing valued added. The share started to fall in the

Table 5

Real Value Added of Garments in ASEAN Countries: 1970-1990
(1985 prices)

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Average annual growth rate (%)					
1970-75	2.6	37.2	21.4	28.3	21.4
1975-80	41.9	36.5	21.6	17.0	18.4
1980-85	-16.9	41.2	4.9	-0.2	2.1
1985-90	16.7	17.0	12.0	11.8	14.6
1970-80	20.6	36.8	21.5	22.5	19.9
1980-90	-1.6	36.8	8.4	5.0	6.6
Average annual share in total manufacturing value added (%)					
1970-74	1.3		1.2	2.8	3.1
1975-79	2.6	0.2	1.2	3.5	4.2
1980-84	4.0	0.8	1.9	3.4	5.8
1985-90	3.6	1.5	2.6	3.2	6.5

Annual values of value added were taken from the International Economic Data Bank (IEDB),
Australian National University (ANU), Canberra. All variables are measured in US$ at 1985 prices.

Figure 1

Real Value Added, Garments, Philippines: 1970-1990 (In US$000; 1985 prices)

(Thousands)

Year	Value
1970	40
	55
1972	30
	42
1974	45
	47
1976	101
	107
1978	172
	272
1980	267
	320
1982	202
	133
1984	126
	107
1986	127
	150
1988	180
	228
1990	229
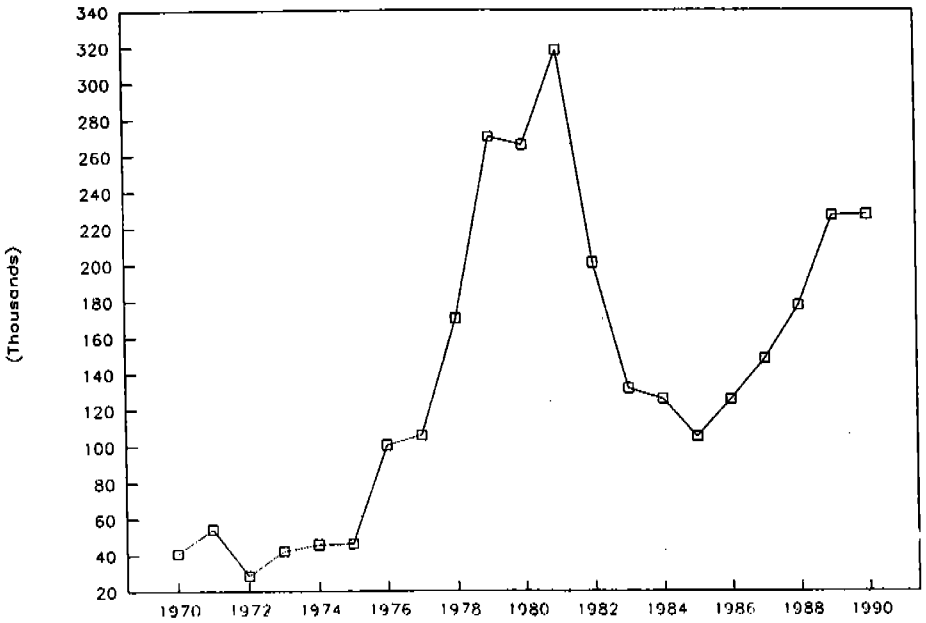
Source: See Table 5.

second half of the 1980s. Compared with Thailand, the size of the industry is smaller (Table 5).

On the other hand, textiles started with a higher growth in output during 1970-1975 than in 1975-1980 (Table 6). The absence of a linkage between textiles and garments, as discussed earlier, is apparent, as can be gleaned from Tables 5 and 6, wherein the textile industry missed its potential to increase its value added during the high growth period of the garments industry between 1975 and 1980. The textile industry registered a greater slump than the garments in the 1980s. The higher protection accorded to the textile industry compared with the garments industry made it more vulnerable to fluctuations in the economy. Furthermore, this has increased its inability to adjust accordingly with the changing economic conditions. The country posted the lowest performance in textiles among the ASEAN countries, both in the 1970s and in the 1980s.

The textile industry contributed more to manufacturing value added than the garments industry. Nevertheless, its share had been decreasing (Table 6). Compared with the other ASEAN countries, such as Thailand and Indonesia, the country has a relatively smaller textile industry. The smaller size of the industry makes it rather unfortunate for the Philippines considering the fact that the country has pioneered the industry among the ASEAN countries (Sanchez 1990). This suggests that the textile industry in the country has not been growing as fast as in the other ASEAN countries.

Employment

The growth of employment mirrors the growth of output in both industries (Tables 7 and 8). While garments contributed less to manufacturing value added than textiles, the former contributed more to employment than the latter. As will be shown later, textiles has a higher capital-labor ratio than garments.

Exports

Exports for both industries posted a better performance in the 1970s than in the 1980s (Table 9). The slowdown which started in

Table 6

Real Value Added of Textiles in ASEAN Countries: 1970-1990 (1985 prices)

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Average annual growth rate (%)					
1970-75	13.7	32.7	43.0	25.0	14.9
1975-80	8.1	11.0	11.3	9.0	11.5
1980-85	-26.6	4.8	-11.1	-21.4	-2.8
1985-90	8.9	15.9	13.6	18.0	14.6
1970-80	10.9	21.4	26.1	16.7	13.2
1980-90	-10.6	6.6	0.5	-5.9	3.4
Average annual share in manufacturing value added (%)					
1970-74	7.3		3.3	3.1	12.3
1975-79	7.4	11.4	6.1	2.4	10.5
1980-84	6.5	8.9	4.0	1.2	10.2
1985-90	3.4	9.5	3.6	0.6	10.6

Annual values of value added were taken from the International Economic Data Bank (IEDB), Australian National University (ANU), Canberra. All variables are measured in US$ at 1985 prices.

Table 7

Employment in the Garments Industry in ASEAN Countries: 1970-1990

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Average annual growth rate (%)					
1970-75	5.3	33.9	16.6	12.5	20.1
1975-80	28.2	31.1	14.4	8.9	9.1
1980-85	-5.1	34.8	7.1	-1.5	-3.5
1985-90	6.5	..	11.3	5.4	..
1970-80	16.2	32.5	15.5	10.7	14.5
1980-90	0.5	..	9.2	1.9	..
Average annual share in manufacturing employment (%)					
1970-74	5.8	..	3.6	9.6	6.4
1975-79	10.5	..	3.6	10.6	8.9
1980-84	11.8	..	5.3	10.0	9.4
1985-90	15.2	..	7.4	9.8	9.3

Annual values of employment were taken from the International Economic Data Bank (IEDB), Australian National University (ANU), Canberra.

Table 8

Employment in the Textile Industry among ASEAN Countries: 1970-1990

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Average annual growth rate (%)					
1970-75	6.6	3.0	28.6	10.0	17.7
1975-80	12.5	6.9	4.7	-3.0	4.9
1980-85	-13.4	5.2	-6.6	-22.2	-6.7
1985-90	3.5	..	5.1	5.2	..
1970-80	9.5	4.9	16.0	3.3	11.1
1980-90	-5.3	..	-0.9	-9.4	..
Average annual share in total manufacturing employment					
1970-74	14.4	..	6.9	6.3	16.9
1975-79	13.7	..	9.4	4.7	16.2
1980-84	12.8	..	7.0	2.3	14.3
1985-90	11.0	..	5.4	1.0	13.3

Annual values of employment were taken from the International Economic Data Bank (IEDB), Australian National University (ANU), Canberra.

Table 9

Average Annual Growth Rate of Real Exports of the Garments
and the Textile Industries in ASEAN Countries: 1983 and 1988
(In percent)

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Textiles					
1970-75	27.2	-3.5	36.1	13.3	36.0
1975-80	23.8	75.5	26.6	13.3	22.5
1980-85	-13.2	33.5	-4.2	-6.9	-0.2
1985-90	30.1	40.0	12.7	17.9	15.0
1970-80	25.5	30.1	31.3	13.3	29.1
1980-90	6.3	36.7	3.9	4.8	7.1
Garments					
1970-75	105.1	63.3	38.4	20.5	109.1
1975-80	44.9	94.0	20.7	21.8	28.0
1980-85	-5.4	20.7	11.7	0.4	10.6
1985-90	40.6	35.1	28.1	21.4	35.1
1970-80	72.4	78.0	29.3	21.1	63.6
1980-90	15.3	27.7	19.6	10.4	22.2

Annual values of exports were taken from the International Economic Data Bank (IEDB), Australian National University (ANU), Canberra. All variables are measured in US$ at 1985 prices.

1982 was principally due to the general deceleration in world demand and hence, there were cutbacks in orders from the country's major trading partners. Although the other ASEAN countries were similarly affected, Table 9 shows that the garments industry in these countries had withstood the pressures of those years better than the Philippines. While the situation was compounded by the economic and political problems in the country, the industry's reliance on consignments and its dependence on imported inputs may have contributed to the dismal performance of garment exports in the light of the unfavorable international environment.

Nevertheless, compared with the country's total exports, garments performed better in terms of foreign exchange earnings, especially in 1984-1985 when the country experienced a severe BOP crisis (Table 10). Likewise, the percent share of garments on the top 20 exports and total exports of the country had scaled up, albeit in small increments (Table 11). This reflects the industry's resiliency amidst unfavorable domestic and international developments, compared with the other exports of the country. It also indicates the country's growing dependence on non-traditional products for foreign exchange.

The bulk of total garment exports were made from raw materials consigned from abroad. The share of this type of exports had increased from 34 percent in 1983 to an average of 62 percent during the late 1980s, reducing the product's value added to mere labor (Appendix Table 10). With the high import content, the growth of exports contributes much lesser to foreign exchange earnings or value added than the numbers suggest.

Among the major garment products, outer garments, knitted and crocheted, have remained top exports. The growing profitability of these industries draws more firms in the knitting industry as shown by the increasing share of knitting mills (PSIC 32121 and 32122) in total textile establishments (Appendix Table 4).

On the other hand, the growth of textile exports had not been as fast as garments. The protection accorded to the textile industry discouraged the export of textiles because of high domestic profit. The reliance of the industry on the domestic market for its products is

Table 10

Average Annual Growth Rate of Real Foreign Exchange Earnings from Garments and Total Exports: 1983-1990 (In percent)

Year	Garments	Total Exports
1983-1984	6.4	4.4
1984-1985	-0.9	-16.5
1985-1986	21.3	2.1
1986-1987	46.5	14.4
1987-1988	16.9	19.6
1988-1989	15.4	6.3
1989-1990	8.4	0.5

See Appendix Table 7 for the growth rate of real foreign exchange earnings of garments by sub-groups.

Source: *Direction of Philippine Trade and Export Performance* (various issues), Department of Trade and Industry (DTI), Manila.

Table 11

Share of Garment Exports in the Top 20 Exports and Total Exports, Philippines: 1983-1990 (In percent)

Year	Top 20 Exports	Total Exports
1983	7.23	9.39
1984	7.99	9.57
1985	13.45	11.36
1986	12.87	13.51
1987	18.97	17.29
1988	17.25	16.89
1989	18.73	18.34
1990	20.14	19.78

See Appendix Table 8 and Appendix Table 10 for details on specific sub-groups.

Source: *Direction of Philippine Trade and Exports* (various issues), Department of Trade and Industry (DTI), Manila.

shown by its less than 1 percent contribution to the country's total export earnings (Table 12). The industry's export performance was also unstable as shown by the sharp increases and decreases in the annual growth rate of export earnings. This shows that the industry cannot be relied upon for the much-needed foreign exchange for the country.

Nonetheless, export of textiles had begun to increase starting in 1986, i.e., after the implementation of the advance tax credit scheme in 1985 (Table 13). The increase is particularly seen in indirect exports through the garment exporters.

RESPONSE TO TRADE REFORM POLICY

Policy Environment

Table 14 shows the effective protection rate (EPR) and net EPR for the garments and textile industries by 5-digit PSIC for 1983 and 1988. Only tariff and taxes are considered as sources of protection in the calculation of EPR.

The EPR for textiles-primary and textiles-secondary plummeted as a result of the trade reform. Nonetheless, both industries are still favored by the trade regime as shown by its positive EPR. The EPR for the garments industry, on the other hand, worsened. However, under the drawback system, all tariff and tax payments on inputs into exports are returned to the exporters in the form of tax credits. In effect, this gives garment exports zero protection, except for those garment items subject to export taxes, in which case drawbacks reduce the penalty from input taxation.

An examination of individual PSICs in 1988 reveals interesting results. The EPR for fabric knitting mills (32121), manufacturers of carpets and rugs (32141), manufacture of articles made of native materials (32153), manufacture of artificial leather, oil cloth and others (32160) and manufacture of fiber batting, padding and upholstery filling (32170) are relatively low or even negative compared to others. As will be discussed later, these are the same industries that

Table 12

Export Performance of the Textile Industry: 1983-1990

Year	Annual growth of foreign exchange earnings (%)	Share in total Philippine exports (%)
1983		0.68
1984	-15.0	0.56
1985	-2.8	0.65
1986	0.8	0.64
1987	62.5	0.91
1988	-10.7	0.68
1989	12.2	0.72
1990	-0.5	0.71

Source: *Direction of Philippine Trade and Export Performance* (various issues), Department of Trade and Industry (DTI), Manila.

Table 13

Market Distribution for Local Textiles: 1979-1989

Year	Production (000 MT)	Distribution to market (%)		
		Domestic	Indirect export	Direct export
1979	115.2	91.1	..	8.9
1980	96.2	84.5	1.8	13.6
1981	95.5	83.2	3.1	13.6
1982	80.8	86.9	2.1	11.0
1983	88.0	90.9	2.3	6.8
1984	75.6	87.4	5.4	7.1
1985	71.5	83.1	8.5	8.4
1986	93.5	77.0	18.2	4.8
1987	120.0	64.2	26.7	9.1
1988	133.0	70.7	22.5	6.8
1989	155.0	n.a.	n.a	n.a

Source: Department of Trade and Industry, 1990. *Revised Textile Plan, 1989-1995*, Makati, 1990, Annex III, p.26.

Table 14

Effective Protection Rate (EPR) and Net EPR (NEPR) of the Textile and the Garments Industries: 1983 and 1988
(In percent)

PSIC*	Description	1983		1988	
		EPR	NEPR	EPR	NEPR
Textiles (primary)		**90.6**	**52.5**	**29.1**	**2.4**
32111	Integrated textile	83.9	47.1	25.2	-0.6
32112	Fiber and filament	71.6	37.3	24.5	-1.2
32113	Spinning	126.2	81	29.3	2.6
32115	Weaving	169.8	115.8	27.6	1.3
32116	Finishing	54.9	24	22.5	-2.8
32117	Hand weaving	102.9	62.3	24.2	-1.5
32118	Manufacture of laces narrow fabric and small wares in narrow fabrics	90.7	52.6	24.5	-1.2
32119	Spinning,weaving, texturizing, and finishing, n.e.c.	65.7	32.5	27.7	1.4
32121	Fabric knitting	90.6	52.5	12.7	-10.6
32122	Hosiery, underwear and outerwear knitt	56.5	25.2	68.4	33.7
Textiles (secondary)		**111.8**	**69.4**	**47.6**	**17.2**
32131	Manufacture of textile industrial bags	78.6	42.9	90.5	51.2
32132	Manufacture of made-up textile goods for house furnishings	73.1	38.4	50.6	19.5
32133	Manufacture of canvas products	211	148.8	33.3	5.8
32139	Manufacture of made-up textile goods, except wearing apparel, n.e.c.	63.6	30.9	89.2	50.1
32141	Manufacture of carpets and rugs	154.4	103.5	4.5	-17.1
32151	Manufacture of mats and mattings	213.7	150.7	65.5	31.3
32152	Manufacture of nets, excluding mosquito nets	130	84	83.7	45.8

Table 14 *continued*

PSIC*	Description	1983		1988	
		EPR	NEPR	EPR	NEPR
32153	Manufacture of articles made of native materials	101	60.8	16.7	-7.4
32159	Cordage, rope, and twine manufacturing	73.7	38.9	41	11.9
32160	Manufacture of artificial leather, oil cloth and others	232.3	165.8	-1.5	-21.8
32170	Manufacture of fiber batting, padding and upholstery filling including coir	101	60.9	-9.3	-28
32199	Manufacture of miscellaneous textiles, n.e.c.	—	—	99.8	58.5
Garments: Manufacturing of wearing	**apparel excluding footwear**	**3.1**	**-17.5**	**-3.5**	**-23.4**
32211	Custom tailoring	0.9	-19.3	-3.4	22
32212	Custom dressmaking	0.9	-19.2	-4.7	-24.3
32221	Men's and boys' garment manufacturing	3.3	-17.3	-5.4	-24.9
32222	Women's, and girls' and babies' garment manufacturing	3.3	-17.4	-4.9	-24.5
32229	Ready-made clothing manufacturing, n.e.c.	3.4	-17.3	2.5	-18.6
32230	Embroidery establishments footwear	2.3	-18.2	2.3	-18.8
32291	Manufacture of raincoats by cutting and sewing except rubber	3	-17.6	-3.2	-23.2
32292	Manufacture of hats, gloves, handkerchiefs, neckwear (except knitted and paper) and apparel belts regardless of material	1.6	-18.7	-7.5	-26.6

* Philippine Standard Industry Classification
Under the drawback system, all tariff and tax payments on inputs into exports are returned to the exporters in the form of tax credits giving garments zero protection.

became cost efficient, and hence were able to attain comparative advantage after the trade reform.

Among the firms that were surveyed, two out of 21 textile firms and five out of nine garment firms were accorded negative protection in 1991 (Table 15). The average EPR for the firms was relatively high. However, the result could not be generalized for the entire textile and garments industries in 1991 since the sample is not representative of the industries.

The lower value of the NEPR compared with the EPR for textiles and garments shows the overvaluation of the peso (Tables 14 and 15).

Exposure to Foreign Competition

The indicators in Tables 16 and 17 show that trade liberalization had exposed domestic manufacturers of both industries to more direct foreign competition. The share of the country in world exports of garments and textiles had increased in the 1980s. Although the country's share had been on an upward trend, other ASEAN countries, especially Thailand and Singapore, seemed to have experienced greater foreign competition as shown by their higher shares in world exports than the country. The share of Indonesia had been consistently lower than the country until the first half of the 1980s. During 1985-1987, however, its share surpassed that of the Philippines.

The share of exports in domestic production had also increased, although it had never been higher than that of Indonesia and Malaysia. The share of domestic firms in total demand had also declined as shown by the increase in import penetration ratio.

Industry Structure and Profitability

Industrial concentration either in the textile or in the garments industry was lower after the trade reform as shown by both the 4-firm concentration ratio and herfindahl index (Tables 18 and 19). Although these statistics give a very crude measure of monopoly

Table 15

Effective Protection Rate (EPR) and Net EPR (NEPR)
of Selected Textile and Garment Firms: 1991
(In percent)

Firm Number	EPR	NEPR	Firm Number	EPR	NEPR
Textile	**82.7**	**46.2**	**Garments**	**66.4**	**33.1**
1	25.6	0.5	1	22.0	-2.4
2	37.1	9.7	2	-29.2	-43.4
3	37.6	10.1	3	25.9	0.7
4	33.3	6.6	4	-31.8	-45.4
5	22.4	-2.1	5	23.2	-1.4
6	-32.5	-46.0	6	-20.8	-36.6
7	53.5	22.8	7	-11.2	-29.0
8	13.2	-9.4	8	-26.4	-41.1
9	-100.0	-100.0	9	23.4	-1.3
10	20.4	-3.7			
11	26.6	1.3			
12	32.2	5.8			
13	25.7	0.6			
14	31.1	4.9			
15	34.2	7.4			
16	35.0	8.0			
17	25.5	0.4			
18	36.6	9.3			
19	33.9	7.1			
20	43.0	14.4			
21	29.0	3.2			

Table 16

Indicators of the Garments Industry's Exposure to Foreign Competition in ASEAN Countries

Indicator	Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Share in	1970-74	0.05		0.14	0.81	0.17
world exports	1975-79	0.39	0.06	0.25	0.93	0.48
of garments (%)	1980-84	0.66	0.37	0.41	1.22	0.98
(X/WX)	1985-87	0.85	0.92	0.91	1.38	2.02
Share of exports	1970-74	5.70	11.24	33.15	..	..
in production (%)	1975-79	22.28	68.66	54.60	..	..
(X/Q)	1980-84	35.89	97.23	61.76	..	..
	1985-87	69.46	94.06	96.14	..	..
Import	1970	1.66	76.60[1]	45.68	109.90	..
penetration	1975	1.96	42.60	34.49	81.41	..
rate (%)	1980	0.83	-61.27	23.45[2]	115.49	..
(M/(Q+M-X))	1987	13.75	18.63	73.50	197.82	..

[1]1972 [2]1981 . - insignificant .. - no data

(1) Trade and production data were taken from the International Economic Data Bank (IEDB), Australian National University (ANU), Canberra. All variables are measured in US$ at 1985 prices.

(2) Definition of variables: X = exports; WX = world exports; Q = domestic production; M = imports.

Table 17

Indicators of the Textile Industry's Exposure to Foreign Competition in ASEAN Countries

Indicator	Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
Share in	1970-74	0.07	0.01	0.08	0.50	0.23
world exports	1975-79	0.16	0.03	0.22	0.63	0.52
of garments (%)	1980-84	0.20	0.18	0.35	0.70	0.66
(X/WX)	1985-87	0.24	0.80	0.36	0.75	0.82
Share of exports	1970-74	3.39	0.52	16.10	..	..
in production (%)	1975-79	4.64	1.17	17.02	..	..
(X/Q)	1980-84	5.68	6.01	34.74	..	..
	1985-87	10.74	18.97	..	..	..
Import	1970	11.26	28.66[1]	65.24	111.67	..
penetration	1975	10.15	14.83	33.55	110.50	8.45
rate (%)	1980	8.16	12.70	33.01[2]	123.34	7.88[3]
(M/(Q+M-X))	1987	31.71	13.85	103.50	166.64	..
Intra-industry	1970	0.34	0.05	0.15	0.34	0.26
trade index	1975	0.66	0.03	0.48	0.55	0.89
1-(abs(X-M)/(X+M)	1980	0.91	0.34	0.77	0.62	0.74
	1985	0.73	0.72	0.75	0.57	0.70
	1990	0.62	0.69	0.62	0.64	0.99

[1]1972   [2]1981   [3]1982

(1) Trade and production data were taken from the International Economic Data Bank (IEDB), Australian National University (ANU), Canberra. All variables are measured in US$ at 1985 prices.

(2) Definition of variables: X = exports; WX = world exports; Q = domestic production; M = imports.

Table 18

Garments Industry's Structure and Profitability: 1983 and 1988

PSIC	Description	Price cost margin (%)		4-Firm concentration ratio (%)		Herfindahl index	
		1983	1988	1983	1988	1983	1988
Garments	Manufacture of wearing apparel excluding footwear	11.7	15.8	25.0	24.0	0.03	0.02
32211	Custom tailoring	27.1	27.3	39.4	17.1	0.06	0.02
32212	Custom dressmaking	16.7	19.8	71.9	25.2	0.17	0.03
32221	Men's and boys' garments	21.1	14.3	65.7	38.1	0.16	0.05
32222	Women's, girls' and babies' garments	8.6	24.9	45.0	38.7	0.07	0.05
32229	Ready-made clothing	9.5	7.1	83.0	22.8	0.20	0.03
32230	Embroidery establishments footwear, n.e.c.	9.6	4.9	71.7	40.2	0.23	0.06
32291	Manufacture of raincoats by cutting and sewing excluding rubber	37.3	4.5	100.0	100.0	0.75	0.64
32292	Manufacture of hats, gloves, handkerchiefs, neckwear (excluding knitted and paper), and apparel belts regardless of materials	11.0	-26.1	79.0	78.5	0.20	0.18

Price cost margin = (value added - compensation)/value added; 4-Firm concentration and Herfindahl index are based on value added.

Table 19

Textile Industry's Structure and Profitability: 1983 and 1988

PSIC	Description	Price cost margin (%)		4-Firm concentration ratio (%)		Herfindahl index	
		1983	1988	1983	1988	1983	1988
Textiles (primary)		16.8	11.5	36.2	24.3	0.06	0.03
32111	Integrated textile mills	16.6	12.4	86.8	61.8	0.32	0.13
32112	Fiber and filament mills	22.7	16.8	75.6	73.0	0.21	0.20
32113	Spinning mills	16.6	7.3	68.0	53.3	0.14	0.10
32115	Weaving mills	11.6	7.2	98.4	95.4	0.76	0.37
32116	Finishing mills	10.2	23.6	80.2	90.4	0.20	0.50
32117	Hand weaving mills	23.0	15.4	94.5	87.0	0.28	0.45
32118	Manufacture of laces, narrow fabrics, small wares in narrow fabric textile	17.3	19.5	66.1	77.4	0.13	0.21
32119	Spinning, weaving, texturizing, and finishing, n.e.c.	-6.2	5.0	65.6	64.2	0.15	0.13
32121	Fabric knitting	9.3	10.3	57.7	68.4	0.11	0.14
32122	Hosiery, underwear, and outerwear knitting	5.9	8.7	75.6	48.5	0.27	0.08

Table 19 *continued*

PSIC	Description	Price cost margin (%)		4-Firm concentration ratio (%)		Herfindahl index	
		1983	1988	1983	1988	1983	1988
Textiles (secondary)		16.3	9.3	63.8	42.4	0.21	0.08
32131	Manufacture of textile industrial bags	23.6	11.0	92.5	79.8	0.59	0.39
32132	Manufacture of made-up textile goods for house furnishings	25.2	-1.2	60.5	57.6	0.13	0.11
32133	Manufacture of canvas products	5.8	74.5	100.0	100.0	1.00	1.00
32139	Manufacture of made-up textile goods, excluding wearing apparel, n.e.c.	35.7	10.0	100.0	73.6	0.34	0.17
32141	Manufacture of carpets and rugs	12.6	18.4	99.4	76.0	0.82	0.17
32151	Manufacture of mats and mattings	10.2	8.6	96.1	74.0	0.39	0.24
32152	Manufacture of nets, excluding mosquito nets	8.8	-3.9	73.6	76.4	0.17	0.19
32153	Manufacture of articles made of native materials	22.3	14.2	67.9	23.9	0.13	0.03
32159	Cordage, rope, and twine manufacturing, n.e.c.			13.7		100.0	1.00
32160	Manufacture of artificial leather, oil cloth, and other impregnated and coated fabrics excluding rubberized	2.0	11.4	100.0	100.0	0.45	0.43
32170	Manufacture of fiber batting, padding, and upholstery filling including coir	16.4	-1.3	99.6	91.2	0.39	0.32
32199	Manufacture of miscellaneous textiles,n.e.c.			-6.2		100.0	0.56

Price cost margin = (value added-compensation)/value added; 4-Firm concentration ratio and Herfindahl index are based on value added.

power (since these do not show how collusive the behavior of individual firms is), still these figures give an indication of the extent to which industrial power is concentrated in the hands of few firms. Kirkpatrick, Lee and Nixon (1984) found that concentration ratios and profits (price-cost margins) are positively related indicating that firms with dominant market positions are enjoying excess industrial power.

There was a substantial decrease in monopoly/oligopoly power in most of the Philippine Standard Industry Classifications (PSICs) in the garments industry, raising the degree of competition and hence, causing greater efficiency in the industry (Table 18). This may help explain the faster growth of the industry compared with textiles.

While there was a decrease in concentration ratios in the textile industry's PSICs from 1983 to 1988, the decline had not been substantial. Some of the PSICs (32116, 32118, and 32121) had in fact increased in concentration. The relatively high concentration ratios indicate that the industry has an imperfectly competitive structure and that this situation had not been altered (Table 19).

A significant increase in the number of firms in garments and textiles were registered between 1983 and 1988 (Table 2). This observation, however, does not suggest that industry rationalization, where inefficient firms are forced to exit, did not occur (because the number of firms had in fact increased). The exit of firms cannot be determined from the two censuses of establishments used. The increase in the number of firms, however, may indicate a freer entry into the industries after the reform. For the garments industry, this development could further enhance the competitive behavior especially in the domestic market.

A freer entry into the textile industry might initially appear alarming because of the domestic orientation of the industry. If entry is costless, profitability induced by protection causes the so-called "Chamberlinian excess capacity" problem where additional firms "crowd" the industry, reducing output per firm and pushing average costs up until all the excess profits are dissipated by reduced efficiency. However, as will be discussed later, the increase in the number of firms was also accompanied by a rise in the number of efficient firms.

The price-cost margins (PCMs) for the garments industry had increased between 1983 and 1988. It might seem acceptable that a decline in concentration is accompanied by an increase in profitability. The literature on industrial organization and the new trade theory, however, show that PCM at equilibrium is determined by the conjectural variations (μ) of firms, the elasticity of demand ($\varnothing$) facing domestic firms, and the number of firms in the industry (n), i.e., $m = 1/\{1+(\mu/n\varnothing)\}$, where m is the mark-up (Austria; Tyers et al. 1992).

Nevertheless, most of the industry's PSICs registered a decrease in PCM. Likewise, the textiles-primary and textiles-secondary also experienced a fall in PCM. The decline could be attributed to the reduction in the difference between domestic prices and international prices as a result of greater exposure to foreign competition arising from the trade reform. Moreover, greater competition from foreign producers, as a result of the increase in import penetration ratio, restrained the market power of domestic firms in the domestic market.

Efficiency

Discussion on efficiency is divided into three sections. Measures used in this study include partial productivities, allocative efficiency or competitiveness, and technical efficiency or productivity.

Partial productivities. Improvements in labor and capital productivities had been observed between 1983 and 1988. Based on partial indicators of productivity, the manufacture of women's, girls', and babies' garments (32222) and the manufacture of raincoats (32291) became more efficient in the use of labor and capital, respectively, relative to the other industries (Table 20). Among the industries, the manufacture of raincoats was the least capital intensive.

Increase in labor productivity after the period of the reform were most notable in custom dressmaking shops (32212) and manufacture of women's, girls' and babies' garments (32222). On the other hand, the increase in capital productivity was relatively high in the manufacture of embroidery, n.e.c. (32230) and in the manufacture of raincoats (32291).

Table 20

Factor Productivities and Intensities in the Garments Industry: 1983 and 1988

PSIC	Description	Labor productivity (P000)			Capital productivity			Capital-labor ratio (P000)		
		1983	1988	Ratio	1983	1988	Ratio	1983	1988	Ratio
Garments		18.3	43.7	2.4	0.09	0.15	1.7	212.0	287.9	1.4
32211	Custom tailoring	10.7	21.7	2.0	0.10	0.12	1.2	106.7	185.4	1.7
32212	Custom tailoring	7.1	20.1	2.8	0.06	0.14	2.3	128.4	147.1	1.1
32221	Men's and boys' garment manufacturing	33.4	41.4	1.2	0.07	0.18	2.6	485.4	232.2	0.5
32222	Women's, girls' and babies' garment manufacturing	16.3	59.4	3.6	0.12	0.23	1.9	139.4	260.3	1.9
32229	Ready-made clothing manufacturing, n.e.c.	19.3	33.2	1.7	0.17	0.09	0.5	112.2	367.6	3.3
32230	Embroidery establishments footwear, n.e.c.	14.5	23.5	1.6	0.01	0.08	8.0	1288.5	297.9	0.2
32291	Manufacture of raincoats by cutting and sewing, excluding rubber	12.8	26.1	2.0	0.09	0.36	4.0	138.6	71.7	0.5
32292	Manufacture of hats, gloves, handkerchiefs, neckwear (excluding knitted and paper) and apparel belts regardless of material	14.5	17.4	1.2	0.23	0.05	0.2	63.8	334.8	5.2

(1) Labor productivity is measured as value added per unit worker.

(2) Capital productivity is measured as value added per unit of capital.

The country's experience in labor productivity improvements in garments is further shown in Table 21. Nonetheless, the levels attained are lower compared to the other ASEAN countries, except Indonesia.

Labor and capital productivities had also improved in the textiles-primary industry. The most efficient in the use of labor were fiber mills (32112) during 1983 and 1988 (Table 22). On the other hand, hand weaving (32117) was the most efficient in the use of capital and the least capital intensive.

Highest increases in labor and capital productivities were registered in spinning, weaving, texturizing and finishing, n.e.c. (32119) and integrated mills (32111), respectively. Integrated mills also had the highest decrease in capital-labor ratio. Likewise, while labor productivity increased in the textiles-secondary industry, capital productivity and capital-labor ratio worsened.

A comparison of the capital-labor ratios in Tables 20 and 22 also shows that the textile industry is more capital-intensive than the garments industry.

Compared with other ASEAN countries, the country's labor productivity in textiles had been relatively lower than these countries, except that of Indonesia (Table 23).

Table 21

Labor Productivity in the Garments Industry among ASEAN Countries: 1970-1990 (US$'000, 1985 prices)

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
1970-74	1.64	0.91	2.27	2.94	2.71
1975-79	1.59	1.28	2.94	4.77	3.07
1980-84	2.05	1.74	3.33	6.30	5.20
1985-90	1.60	1.71	3.38	7.51	5.74

Labor productivity is based on value added per worker. Figures refer to average for the period.

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

Table 22

Factor Productivities and Intensities in the Textile Industry: 1983 and 1988

PSIC	Description	Labor productivity (P000)			Capital productivity			Capital-labor ratio (P000)		
		1983	1988	Ratio	1983	1988	Ratio	1983	1988	Ratio
Textiles (primary) 2.1			30.5	53.3	1.7	0.04	0.04	1.0	717.4	1,507.6
32111	Integrated textile	28.4	47.4	1.9	0.02	0.06	3	1486.2	815.8	0.5
32112	Fiber and filament	45.4	85.9	1.9	0.05	0.02	0.4	980.3	5,541.3	5.7
32113	Spinning	37.8	52.2	1.4	0.06	0.05	0.8	612.7	1,060.1	1.7
32115	Weaving	27.2	42.8	1.6	0.06	0.06	1.0	484.4	700.0	1.4
32116	Finishing	25.2	57.3	2.3	0.06	0.11	1.8	402.9	501.8	1.2
32117	Hand weaving	14.5	23.6	1.6	0.22	0.25	1.1	65.1	93.4	1.4
32118	Manufacture of laces, narrow fabrics, and small wares in narrow fabrics	20.5	52.0	2.5	0.09	0.09	1.0	233.8	580.6	2.5
32119	Spinning, weaving, texturizing, and finishing	6.3	32.9	5.2	0.05	0.08	1.6	118.9	417.2	3.5
32121	Fabric knitting	22.0	48.7	2.2	0.07	0.06	0.9	308.8	747.2	2.4
32122	Hosiery, underwear and outerwear knitting	15.2	43.3	2.8	0.18	0.08	0.4	86.7	504.9	5.8

Table 22 *continued*

PSIC	Description	Labor productivity (P000)			Capital productivity			Capital-labor ratio (P000)		
		1983	1988	Ratio	1983	1988	Ratio	1983	1988	Ratio
Textiles (secondary)		**23.2**	**35.3**	**1.5**	**0.09**	**0.02**	**0.2**	**249.4**	**1,963.8**	**7.9**
32131	Manufacture of textile industrial bags	30.6	37.6	1.2	0.14	0.01	0.1	213.6	4,404.8	20.6
32132	Manufacture of made-up textile goods for house furnishings	9.0	12.6	1.4	0.25	0.05	0.2	36.4	264.0	7.3
32133	Manufacture of canvas products	18.5	49.9	2.7	0.16	1.46	9.1	112.3	34.3	0.3
32139	Manufacture of textile goods, excluding wearing apparel, n.e.c.	5.8	15.5	2.7	0.30	0.09	0.3	19.4	169.0	8.7
32141	Manufacture of carpets and rugs	25.4	48.6	1.9	0.13	0.04	0.3	193.0	1,133.9	5.9
32151	Manufacture of mats and mattings	17.6	63.1	3.6	0.04	0.15	3.8	406.7	416.4	1.0
32152	Mfr. of nets, excluding mosquito nets	13.3	12.6	0.9	0.08	0.05	0.6	175.7	249.1	1.4
32153	Mfr. of articles made of native products	21.3	30.4	14.0	0.11	0.12	1.1	193.3	252.4	1.3
32159	Manufacture of cordage, rope, and twine	—	17.7	—	—	0.94	—	—	18.8	—
32160	Manufacture of artificial leather, oil cloth and other impregnated and coated fabrics excluding rubberized	15.4	41.4	2.7	0.04	0.16	4.0	353.2	257.9	0.8
32170	Manufacture of fiber batting, padding and upholstery filling including coir	9.0	28.3	3.1	0.30	0.33	1.1	319.1	85.2	
32199	Manufacture of miscellaneous textiles, n.e.c.	11.4	—	0.33	—	—	34.9	—		

(1) Labor productivity is measured as value added per unit worker.
(2) Capital productivity is measured as value added per unit of capital.

Table 23

Labor Productivity in the Textile Industry among ASEAN Countries: 1970-1990 (US$'000, 1985 prices)

Period	Philippines	Indonesia	Malaysia	Singapore	Thailand
1970-74	3.82	1.41	3.31	4.96	4.10
1975-79	3.64	1.99	5.67	7.27	4.26
1980-84	3.20	2.27	5.41	9.71	5.97
1985-90	2.03	2.45	6.44	14.21	6.54

Labor productivity is based on value added per worker. Figures refer to average for the period.

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

Allocative efficiency or competitiveness. Not one textile industry, either primary or secondary, was economically efficient in 1983 (Table 24). However, improvements in the allocative efficiency of textiles-primary were observed after the reform as shown by the lower DRC/SER ratio. Nonetheless, judging from the ratio, the industry is still economically inefficient. An exception, however, is hand weaving (32117) where comparative advantage is already attained. The result strengthens the earlier finding that hand weaving is the most efficient in the use of labor and the least capital intensive among the textiles-primary industries before and after the trade reform. Likewise, the manufacture of laces and narrow fabrics and small wares in narrow fabric mills (32118) became mildly inefficient.

Most of the PSICs in textiles-secondary became efficient in 1988. As shown earlier, some of the industries received relatively low, if not negative, protection in 1988.

The garments industry has proven to be an efficient user of domestic resources for the two periods. Since the industry is an exportable industry and hence, tariff reduction has less effect on the industry, the favorable effects of the trade reform on the foreign exchange could have increased efficiency and competitiveness in the industry. However, some of the industries [customs tailoring (32211), manufacture of raincoats (32291), and manufacture of hats, gloves, handkerchiefs and neckwear (32292)] appeared to have lost their comparative advantage after the reform.

Table 24

Ratio of the Domestic Resource Cost to the Shadow Exchange Rate in the Textile and Garments Industries: 1983 and 1988

PSIC	Industry	1983	1988
Textiles (primary)		**5.3**	**3**
32111	Integrated textile	*	2.2
32112	Fiber and filament	3.8	100.1
32113	Spinning	4.2	1.7
32115	Weaving	3.5	1.9
32116	Finishing	3.7	1.6
32117	Hand weaving	2	1
32118	Manufacture of laces, narrow fabrics and		
	small war in narrow fabrics	3.2	1.4
32119	Spinning, weaving, texturizing finishing, n.e.c.	3.8	1.6
32121	Fabric knitting	2.9	1.7
32122	Hosiery, underwear and outerwear knitting	1.9	2.3
Textiles (secondary)		**2.9**	**22.6**
32131	Manufacture of industrial bags	2.3	*
32132	Manufacture of made-up textile goods for house fur	3	1.8
32133	Manufacture of canvas products	3.7	0.3
32139	Manufacture of made-up textile goods,		
	excluding we apparel, n.e.c.	1.7	2.4
32141	Manufacture of carpets and rugs	2.6	0.8
32151	Manufacture of mats and mattings	4.9	1.5
32152	Manufacture of nets, excluding mosquito nets	4	2.8
32153	Manufacture of articles made of native products	2.5	1.1
32159	Manufacture of cordage, rope, and twine	2	1.2
32160	Manufacture of artificial leather, oil cloth and other		
	impregnated and coated fabrics excluding rubberized	3.5	1
32170	Manufacture of fiber batting, padding and upholstery		
	filling including coir	3.1	0.8
32199	Manufacture of miscellaneous textiles, n.e.c.		1.7

Table 24 *continued*

PSIC	Industry	1983	1988
	Garments: Manufacture of wearing apparel except footwear	**0.9**	**0.9**
32211	Custom tailoring	1.1	1.5
32212	Custom dressmaking	1.3	1.3
32221	Men's and boys' garment manufacturing	1	1
32222	Women's, and girls' and babies' garment mfg.	0.8	0.7
32229	Ready-made clothing manufacturing	0.7	1.3
32230	Embroidery establishments footwear, n.e.c.	5	1.1
32291	Manufacture of raincoats by cutting and sewing, except rubber	1	1.5
32292	Manufacture of hats, gloves, handkerchiefs, neckwear (except knitted and paper) and apparel belts regardless of material	0.9	2.5

(1) ' indicates negative net earnings or savings of foreign exchange. Industries with DRC/SER ratio >0 - 1.2 are classified as efficient; 1.21 - 1.5 as mildly inefficient; and >1.51 as very inefficient.
(2) SER for 1983 was P13.891 and P26.368 for 1988.

A further analysis of the DRC/SER ratios in Table 24 and the distribution of output in Appendix Table 6 shows that the country had not been producing according to its comparative advantage and hence, the misallocation of the country's resources. For example, hand weaving (32117), which is the most efficient and competitive among the textiles-primary industries, contributed only 0.2 percent of the industry's total value added in 1988 (Appendix Table 6). This is also true for the manufacturing of artificial leather, oil cloth and other coated fabrics (32160) and the manufacture of fiber batting, padding, and upholstery filling (32170). This is in contrast to the manufacture of industrial bags (32131), which is an excessively high cost industry, as shown by its negative DRC/SER ratio, and is also the most capital-intensive. This industry produced the bulk of output among textiles-secondary industries in 1988.

An exception, however, can be seen in the manufacture of womens', girls' and babies' garments (32222). The country's productive resources had actually moved towards this relatively efficient industry (i.e., its DRC/SER was less than one and its capital

and labor productivities were also the highest). More than 50 percent of total garments output (Appendix Table 5) and an average of 10 percent of the country's top 20 exports (Appendix Table 8) were generated by the industry.

Allocative efficiency performance of individual firms. Interesting results are seen in the performance of individual firms as summarized in Tables 25 to 30. For the garments industry, an increase in the percentage share of efficient firms was observed after the reform. Allocative efficiency was driven by the majority of firms (mostly small firms employing less than 100 workers) in the industry and not just by a few firms for both periods.

For the textiles-primary industry, three quarters of the firms were very inefficient before the reform (Table 27). The percentage of large firms which were very inefficient was relatively high compared with the garments industry. This offers support to the common argument that for capital intensive industries (like textiles) in developing countries, the monopolists or the oligopolists, which are usually the large firms, are inefficient. The high protection they receive through

Table 25

Percentage Distribution of Firms by Employment Size and DRC/SER Levels in the Garments Industry: 1983

DRC/SER	Small	Medium	Large	Total
Efficient	45.8	2.7	8.4	56.9
Mildly inefficient	5.4	0.4	1.3	7.1
Very inefficient	27	0.9	1.3	29.7
Foreign exchange dissaving	6	0.1	0.1	6.3
Total	84.8	4.1	11.1	100

Industries with DRC/SER ratio >0-1.2 are classified as efficient; 1.21-1.5 as mildly inefficient; >1.51 as very inefficient; and negative ratio as foreign exchange dissaving.

Table 26

Percentage Distribution of Firms by Employment Size and DRC/SER Levels in the Garments Industry: 1988

DRC/SER	Small	Medium	Large	Total
Efficient	51.6	4.7	8.4	64.7
Mildly inefficient	5.1	0.8	0.6	6.6
Very inefficient	22.2	0.9	2.4	25.6
Foreign exchange dissa	2.7	0.2	0.1	3
Total	**81.7**	**6.7**	**11.5**	**100**

Industries with DRC/SER ratio >0-1.2 are classified as efficient; 1.21-1.5 as mildly inefficient; > 1.51 as very inefficient; and negative ratio as foreign exchange dissaving.

Table 27

Percentage Distribution of Firms by Employment Size and DRC/SER Levels in the Textile (Primary) Industry: 1983

DRC/SER	Small	Medium	Large	Total
Efficient	5.3	1.8	1.8	8.8
Mildly inefficient	6.6	1.3	1.8	9.7
Very inefficient	44.5	10.6	20.3	75.3
Foreign exchange dissaving	3.1	0.4	2.6	6.2
Total	**59.5**	**14.1**	**26.4**	**100**

Industries with DRC/SER ratio >0-1.2 are classified as efficient; 1.21-1.5 as mildly inefficient; > 1.51 as very inefficient; and negative ratio as foreign exchange dissaving.

Table 28

Percentage Distribution of Firms by Employment Size and DRC/SER Levels in the Textile (Primary) Industry: 1988

DRC/SER	Small	Medium	Large	Total
Efficient	24.3	3.9	8.8	37
Mildly inefficient	8.8	3.2	5.6	17.6
Very inefficient	22.9	5.3	10.6	38.7
Foreign exchange dissaving	4.9	1.4	0.4	6.7
Total	**60.9**	**13.7**	**25.4**	**100**

Industries with DRC/SER ratio >0-1.2 are classified as efficient; 1.21-1.5 as mildly inefficient; >1.51 as very inefficient; and negative ratio as foreign exchange dissaving.

Table 29

Percentage Distribution of Firms by Employment Size and DRC/SER Levels in the Textile (Secondary) Industry: 1983

DRC/SER	Small	Medium	Large	Total
Efficient	10.3	0	0.7	11
Mildly inefficient	9.6	0.7	0	10.3
Very inefficient	55.9	8.8	8.8	73.5
Foreign exchange dissaving	2.9	0.7	1.5	5.1
Total	**78.7**	**10.3**	**11**	**100**

Industries with DRC/SER ratio >0-1.2 are classified as efficient; 1.21-1.5 as mildly inefficient; >1.51 as very inefficient; and negative ratio as foreign exchange dissaving.

Table 30

Percentage Distribution of Firms by Employment Size and DRC/SER Levels in the Textile (Secondary) Industry: 1988

DRC/SER	Small	Medium	Large	Total
Efficient	38.6	4.9	1.6	45.1
Mildly inefficient	7.6	1.1	0.5	9.2
Very inefficient	34.8	4.9	2.7	42.4
Foreign exchange dissaving	2.2	0.5	0.5	3.3
Total	83.2	11.4	5.4	100

Industries with DRC/SER ratio >0-1.2 are classified as efficient; 1.21-1.5 as mildly inefficient; >1.51 as very inefficient; and negative ratio as foreign exchange dissaving.

their lobbying power enables them to stay in the industry despite high levels of inefficiency. The lost resources would be much higher if resources spent on rent-seeking activities (e.g., lobbying for higher protection) are included.

Improvements in the efficiency of individual textile-primary firms were registered after the reform. There was quite a large increase in the number of small firms in 1988 (Table 28). This entry of new firms may have caused the increased efficiency in the industry. The percentage of inefficient textile firms was still relatively high after the reform compared with garments.

For the textiles-secondary, majority of the firms were very inefficient before the reform; these were mostly small firms (Table 29). After the trade reform, however, the percentage of inefficient firms was greatly reduced and in the same manner, the percentage of efficient firms increased (Table 30).

On the other hand, majority of the textile firms which were surveyed had attained comparative advantage in 1991 (Table 31). For garments, on the other hand, the firms which received negative protection were cost efficient, while those with relatively high EPR were excessively cost inefficient.

Table 31

Domestic Resource Cost (DRC) of Selected Garments and Textile Firms: 1991

Firm Number	DRC/SER	Firm Number	DRC/SER
Textiles	2.9	Garments	*
1	2.2	1	*
2	1.4	2	0.6
3	0.8	3	*
4	0.9	4	0.8
5	1.8	5	*
6	0.9	6	2.2
7	1.0	7	0.2
8	*	8	0.7
9	0.0	9	*
10	*		
11	0.9		
12	1.4		
13	1.0		
14	0.8		
15	0.7		
16	1.0		
17	9.8		
18	1.3		
19	34.9		
20	0.8		
21	0.3		

(1) * Indicates negative net earnings or savings of foreign exchange.
(2) SER for 1991 was P34.349.
(3) The negative DRC for some of the garments firms is quite surprising. This may have been caused by the inconsistency of data using both the survey results and the financial and income statements of the firms (see discussion on data sources).

Technical efficiency or productivity. None of the industries operated on 100 percent technical efficiency (Table 32). This finding lends support to the results of other recent empirical work on technical efficiency (Hill and Kalirajan 1991; Cao 1992; Kalirajan 1991). These studies found a wide range of technical inefficiency among firms. Even industries which show the greatest international competitiveness do not necessarily have below average spreads of inefficiency within them (Green and Mayes 1991).

Among the textiles-primary industries, the most technically efficient was weaving mills (32115) in 1983 and hand weaving in 1988 (32117). As presented earlier, the latter was the same industry that had attained comparative advantage, but had not received enough share from the allocation of the country's resources as shown by its almost negligible contribution to total output.

Technical efficiency for textiles-secondary was relatively high in 1983 and 1988.

The manufacture of women's, girls' and babies garments (32222) proved to be not only the most competitive but also the most technically efficient among the garments industries. The manufacture of men's and boys' garments and ready-made clothing also exhibited high technical efficiency in 1988.

Comparison of estimates before and after the reform reveals little technical efficiency or productivity improvement. In the 1980s (the trade reform period), there was macroeconomic instability in the country due to the high interest rate and inflation rate resulting from the increased domestic borrowing and money creation to finance the burgeoning public sector deficit. The unfavorable environment may have prevented the positive effects of the trade reform on technical efficiency from being realized. Similarly, Chile had experienced the same fate when its trade liberalization efforts resulted in only little improvement in technical efficiency because of adverse macroeconomic condition (Tybout, de Melo and Corbo 1991).

Nevertheless, the PSICs which experienced an improvement in technical efficiency were the same industries which had attained comparative advantage or international competitiveness.

Table 32

Estimates of Technical Efficiency in the Textile and the Garments Industries: 1983 and 1988
(In percent)

PSIC	Description	1983	1988	Ratio
Textiles (primary)				
32111	Integrated textile	75.7	40.0	0.53
32112	Fiber and filament	82.2	70.2	0.85
32113	Spinning	71.4	79.7	1.12
32115	Weaving	97.8	59.7	0.61
32116	Finishing	86.5	83.4	0.96
32117	Hand weaving	90.1	91.1	1.01
32118	Manufacture of laces, narrow fabrics and small wares in narrow fabrics	74.0	69.0	0.93
32119	Spinning, weaving, texturizing, finishing	90.2	87.8	0.97
32121	Fabric knitting	70.2	25.1	0.36
32122	Hosiery,. underwear and outerwear knitting	53.3	67.7	1.27
Textiles (secondary)		92.1	94.9	1.03
Garments				
32211	Custom tailoring	40.3	88.1	2.19
32212	Custom dressmaking	88.0	59.7	0.68
32221	Men's and boys' garments	67.0	98.9	1.48
32222	Women's, girls' and babies' garments	97.2		
32229	Ready-made clothing	86.6	98.8	1.14
32230	Embroidery establishments footwear, n.e.c.	39.0	84.1	2.16
32291	Manufacture of raincoats by cutting and sewing except rubber	55.1	1.0	0.02
32292	Manufacture of hats, gloves, handkerchiefs,neckwear (excluding knitted and paper) and apparel belts regardless of materials	59.0	57.4	0.97

Technical efficiency was not estimated for individual PSICs in textiles-secondary because of the small number of firms in each PSIC.

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Determinants of Inter-Firm
Differences in Allocative Efficiency

WHAT are the factors that affect differences in competitiveness among firms? This query addresses the need to design policies that are potentially most important in improving firm-level competitiveness. The 1988 census data include some of these hypothesized variables, although the list may not be exhaustive. Data on the export orientation of firms, for example, which is a very good indicator of competitiveness is not included in the census data.

The following variables are hypothesized to affect DRC:

1) *Capital intensity*. Considering the relative scarcity of capital and the abundance of labor in the country, the differences in the amount by which these factors are combined affect cost efficiency. Firms that have high capital-labor ratios are therefore considered to be high domestic resource cost users. Hence, the expected sign is positive.

2) *Factor productivities*. Not only is the combination of capital and labor important but also the efficiency with which these factors are utilized. Firms that generate high value added per unit of capital or labor are expected to incur lower domestic resource costs.

3) *Period of operation*. Firms that started operation before 1983 are hypothesized to be high-cost firms because the cost structure of the firm is influenced by the high protection accorded them.

4) *Price-cost margin.* Firms that have high PCM also have high DRC. In the context of high protectionism in developing countries, firms with high mark-up (and hence enjoy excessive profits) are the imperfectly competitive industries. These are the same industries that are considered inefficient.

5) *Location.* Firms that are located in Metro Manila or Cebu are hypothesized to have lower DRC because the presence of agglomeration allows significant economies of scale, thereby resulting to lower cost per unit of output.

6) *Form of ownership.* The relationship here is rather ambiguous *a priori.* On one hand, it is said that single proprietorship (usually an owner-manager type of firm) is more efficient due to greater flexibility in management, drawing from models of household economics. On the other hand, corporations or partnerships are also considered more efficient due to economies of scale with respect to organization and technical knowledge.

Table 33 shows the results of the multiple regression of DRC against the above factors for both garments and textiles. Capital productivity is found significant, with the expected sign for both industries. Labor productivity does not appear to be a significant determinant of DRC for textiles. While this factor is significant in garments, the sign is positive.

Capital intensity is also significant, i.e., firms with high capital-labor ratios are high-cost firms. Location of firms does not affect DRC, however. Form of ownership is only significant in garments. The negative sign implies that firms of single proprietorship have high DRC. Since garments is an exportable industry, efficiency in exporting is better achieved when there is economies of scale which is easier achieved in corporations than in single-proprietorship.

Table 33

Determinants of DRC in the Garments and the Textile Industries

Factors	Garments	Textiles
Capital productivity	-0.77	-0.58
	(-5.35)*	(-15.18)*
Labor productivity	0.02	0.01
	(2.21)**	(0.26)
Capital-labor ratio	7.05	0.26
	(26.31)*	(6.76)*
Price-cost margin	-0.01	-0.58
	(-0.04)	(-16.08)*
Location	-0.003	0.01
	(-0.03)	(-0.03)
Form of ownership	-6.54	-1.48
	(-2.56)**	(-0.49)
Period of operation	55.86	25.56
	(2.21)**	(12.14)*
	-0.94	0.88
D.W. statistics	2.01	1.97
n	883.00	433.00

Numbers in parenthesis are the t-ratios. Significance at 1 percent (5 percent) is indicated by * (**).

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Conclusion
and Policy Recommendations

THIS study has shown that the exposure of the country to foreign competition had gradually increased throughout the 1980s as shown by the share of the country in world exports of garments and textiles, share of exports in domestic production of these industries, and the import penetration ratio. Nonetheless, the country's record has not been comparable with that of the other ASEAN countries.

Improvements in the performance, efficiency, and competitiveness of the garments and the textile industries were also observed after the government launched the trade reform program in the 1980s. Nevertheless, the efficient industries (garments) are still being penalized while the inefficient ones (textiles, except for some PSICs) still received favored protection from the government.

The textile industry underwent industrial restructuring with the entry of new firms, mostly small firms, into the industry. While the entry and exit of firms cannot be determined from the form of the data used, the fact that there was a significant increase in the number of firms indicates in fact a new entry of firms in the industry. It was the small firms who became responsive to the government's policy of improving efficiency in the industry.

Labor and capital productivities in the textile industry also increased while capital-labor ratios were reduced. Most of the industry's PSICs have already attained a certain degree of efficiency and competitiveness (relatively low DRC/SER ratio) after the reform and yet, the exports performance of the industry has been relatively low. This signals a rather cautious optimism of firms towards the

changing domestic environment given the same relatively high tariffs for the industry. Moreover, production in some of the industry's PSICs does not conform with the industry's comparative advantage. Consequently, this calls for a speedy reduction of protection accorded to the industry. Now is the time to capitalize on the improved efficiency; otherwise, the trend might not be sustained or it could be reversed, and the industry loses its chance to succeed.

While it is true that the garments industry has already attained comparative advantage, much still needs to be done to sustain the industry's favorable performance and make it at par with the performance of other ASEAN countries, especially in the international market. For one, the industry can no longer rely on the cheap labor in the country. Markets for cheap labor needed for intensive garment exports have already been captured by China. The Philippines, therefore, needs to shift to high value added garments for the country to make a significant impact in the export market. Domestic producers should move on from being design-takers and order-takers to becoming innovative in creating new designs that would capture the international market.

Likewise, the increasing automation in garments manufacturing in other countries calls for technology upgrading, investments in manpower training, and intensified research and development. Furthermore, specific incentives need to be given to domestically-owned firms to encourage them to become significant in the export sector. Only then can the industry create backward linkages in the economy. The experience of the last two decades shows that foreign-owned firms who actually dominate exports of the industry do not have the incentive to integrate with the rest of the economy.

The linkage between the textile and the garments industries need to be strengthened. The issue calls for the growth of a more efficient domestic textile manufacturing sector which will lead to a more integrated and dynamic textile-garment industry. Each industry must see each other as dynamic forces which, when combined, could manufacture products which can command national as well as international competitiveness.

The power outages in the country need to be addressed immediately to avert the exodus of investment on garments and textiles out of the country.

Trade reform did little in improving technical efficiency for both textiles and garments. The effects of the reform on technical efficiency may have been masked by the unstable macroeconomic conditions during the reform period.

Finally, factor productivities and capital intensity are important factors that need to be considered in making decisions for resource allocation in the garments and the textile industries.

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Bibliography

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Aigner, D., C.A.K. Lovell, and P. Schmidt. "Formulation and Estimation of Stochastic Frontier Production Function Models." *Journal of Econometrics* 6 (1977): 21-37.

Alburo, F. and G. Shepherd. "Trade Liberalization Experience in the Philippines, 1960-84." PIDS Working Paper Series No. 86-01. Makati: Philippine Institute for Development Studies, 1986.

Austria, M. "Aggregate Productivity in the Philippines." Unpublished Ph.D. dissertation. The Australian National University, Canberra, 1992.

Baldwin, R. *Foreign Trade Regimes and Economic Development: The Philippines.* New York: Columbia University Press, 1975.

Bautista, R. *Impediments to Trade Liberalization in the Philippines.* London: Trade Policy Research Centre, 1989.

_____ and J. Power. "Industrial Promotion in the Philippines." In R. Bautista, J. Power, and Associates *Industrial Promotion Policies in the Philippines.* Makati: Philippine Institute for Development Studies, 1979.

_____ and Associates. *Industrial Promotion Policies in the Philippines.* Makati: Philippine Institute for Development Studies, 1979.

Cao, Y. "Technical Efficiency in the Chinese Steel Industry: Before and After the Reform." Unpublished Ph.D. dissertation. The Australian National University, Canberra, 1992.

De Dios, L. "Review of the Remaining Import Restrictions." PIDS Research Paper Series No. 94-08. Makati: Philippine Institute for Development Studies, 1994.

De Melo, J. and S. Urata. "The Influence of Increased Foreign Competition on Industrial Concentration and Profitability." *International Journal of Industrial Organization* 4 (1986): 287-304.

Department of Trade and Industry. *A Review of the Garments Sector with Proposed Plans for the Period 1987-1996.* Makati: Department of Trade and Industry, 1987.

Dornbusch, R. "The Case for Trade Liberalization in Developing Countries." *Journal of Economic Perspectives* 6, 1 (1992): 69-85.

Fabella, R. "Trade and Industry Reforms in the Philippines, 1980-87: Performance, Process and the Role of Policy." In M. Montes and H. Sakai (eds.) *Philippine Macroeconomic Perspective: Development and Policies.* Tokyo: Institute of Developing Economies, 1989.

Farrell, M.J. "The Measurement of Productive Efficiency." *Journal of the Royal Statistical Society* A120, Part 3 (1957): 253-81.

Forsund, F., C.A.K. Lovell, and P. Schmidt. "A Survey of Frontier Production Functions and of their Relationship to Efficiency Measurement." *Journal of Econometrics* 13 (1980): 5-25.

Green, A. and D. Mayes. "Technical Efficiency in Manufacturing Industries." *Economic Journal* 101 (1991): 523-38.

Gregorio, R. "An Economic Analysis of the Effects of Philippine Fiscal Incentives for Industrial Promotion." In R. Bautista, J. Power, and Associates *Industrial Promotion Policies in the Philippines.* Makati: Philippine Institute for Development Studies, 1979.

Havrylyshyn, O. "Trade Policy and Productivity in Developing Countries: A Survey of the Literature." *The World Bank Research Observer* 5, 1 (1990): 1-24.

Hill, H. and K.P. Kalirajan. "Small Industry and Firm-level Efficiency: A Developing Country Case Study." NCDS Working Paper. Canberra: The Australian National University, 1991.

Jondrow, J., C.A.K. Lovell, I.S. Materov, and P. Schmidt. "On the Estimation of Technical Efficiency in the Stochastic Frontier Production Model." *Journal of Econometrics* 19 (1982): 233-38.

Kalirajan, K.P. "An Analysis of Production Efficiency Differentials in the Philippines." Mimeographed. Department of Economics, The Australian National University, Canberra, 1991.

Kirkpatrick, C. and J. Maharaj. "The Effect of Trade Liberalization on Industrial-sector Productivity Performance in Developing Countries." In J. Fontana (ed.) *Foreign Trade Reform and Development Strategy.* London: George Allen and Unwin, 1992.

Kirkpatrick, C., N. Lee, and F. Nixon. *Industrial Structure and Policy in Less-Developed Countries.* London: George Allen and Unwin, 1984.

Kumbhakar, S.C., B. Biswas, and D.V. Bailey. "A Study of Economic Efficiency of Utah Dairy Farmers: A System Approach." *Review of Economics and Statistics* 71, 4 (1989): 595-604.

Liu, L. "Entry-Exit, Learning and Productivity Change: Evidence from Chile." World Bank Working Paper No.769. Washington, D.C.: The World Bank, 1991.

Meeusen, W. and J. van den Broeck. "Efficiency Estimation from Cobb-Douglas Production Functions with Composed Error." *International Economic Review* 18, 2 (1977): 435-43.

Mercado, R. "A Study of the Effects of the Tariff Reform and Import Liberalization on the Textile Industry." Tariff Commission-PIDS Joint Research Project Staff Paper Series No. 86-14. Makati: Philippine Institute for Development Studies, 1987.

National Census and Statistics Office. *Census of Establishments, Manufacturing.* Manila: National Census and Statistics Office, 1972, 1975, 1978, 1983, 1988.

Page, J. "Firm Size and Technical Efficiency." *Journal of Development Economics* 16 (1984): 129-52.

Pitt, M. and L.F. Lee. "The Measurement and Sources of Technical Inefficiency in the Indonesian Industry." *Journal of Development Economics* 9 (1981): 43-64.

Pack, H. "Productivity and Technical Choice: Applications to the Textile Industry." *Journal of Development Economics* 16 (1984): 153-76.

Power, J. and E. Medalla. "Trade Liberalization in the Philippines: Assessment of Progress and Agenda for Future Reform." PIDS Working Paper Series No. 86-01. Makati: Tariff Commission and Philippine Institute for Development Studies, 1986.

Rodrik, D. "The Limits of Trade Policy Reform in Developing Countries." *Journal of Economic Perspectives* 6, 1 (1992): 87-105.

Sanchez, A. "The Textile Industry in the Philippines and Thailand: A Comparison." *Journal of Philippine Development* 17, 30 (1990): 67-87.

Schmidt, P. and C.A.K. Lovell. "Estimating Technical and Allocative Inefficiency Relative to Stochastic Production and Cost Frontiers." *Journal of Econometrics* 9 (1979): 343-66.

_____. "Estimating Stochastic Production Cost Frontiers when Technical and Allocative Inefficiency are Correlated." *Journal of Econometrics* 13 (1980): 83-100.

Tybout, J. "Linking Trade and Productivity: New Research Directions." *World Bank Economic Review* 6, 2 (1992): 189-211.

_____, J. de Melo, and V. Corbo. "The Effects of Trade Reforms on Scale and Technical Efficiency, New Evidence from Chile." *Journal of International Economics* 31 (1991): 231-50.

Tyers, R., P. Gibbard, M. Austria, and C.S. Suh. "Imperfect Competition and Returns to Scale in General Equilibrium: Results for Four Archetype Western Pacific Economies." Report to the Australian Research Council, Department of Economics, The Faculties, The Australian National University, 1992.

Van der Broeck, J., F. Forsund, L. Hjalmarsson, and W. Meeusen. "On the Estimation of Deterministic and Stochastic Frontier Production Functions." *Journal of Econometrics* 13 (1980): 117-38.

World Bank. *The Philippine Issues and Policies in the Industrial Sector.* Vol. I. Washington D.C., 1987.

Appendices

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Appendix Table 1

Employment, Garments Industry by PSIC, Censal Years

PSIC	1972	1975	1978	1983	1988
Employment					
32211	2643	3156	4590	1535	1911
32212	359	610	1031	602	1234
32221	2524	4068	11467	9916	20553
32222	11126	18529	41516	41630	64921
32229	-	-	8988	11570	30320
32230	-	-	2926	2602	5062
32291	-	-	938		91
32292	2325	6549	4293	7404	18068
Manufacture of miscellaneous apparel	32	-	-	-	-
Total	**19009**	**32912**	**75749**	**75259**	**142160**
Percentage Distribution					
32211	13.9	9.6	6.1	2.0	1.3
32212	1.9	1.9	1.4	0.8	0.9
32221	13.3	12.4	15.1	13.2	14.5
32222	58.5	56.3	54.8	55.3	45.7
32229	-	-	11.9	15.4	21.3
32230	-	-	3.9	3.5	3.6
32291	-	-	1.2		0.1
32292	12.2	19.9	5.7	9.8	12.7
Manufacture of miscellaneous apparel	0.2	-	-	-	-
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Appendix Table 1 *continued*

PSIC	1972	1975	1978	1983	1988
Share in total manufacturing employment (%)					
32211	0.60	0.62	0.38	0.22	0.22
32212	0.08	0.12	0.09	0.09	0.14
32221	0.57	0.79	0.95	1.41	2.40
32222	2.53	3.62	3.42	5.94	7.58
32229	-	-	0.74	1.65	3.54
32230	-	-	0.24	0.37	0.59
32291	-	-	0.08		0.01
32292	0.53	1.28	0.35	1.06	2.11
Manufacture of miscellaneous apparel	0.01	-	-	-	-
Total	**4.33**	**6.43**	**6.25**	**10.74**	**16.59**

Source: National Census and Statistics Office. *Census of Establishments*, Manufacturing, Manila, censal years.

Appendix Table 2

Employment, Textile Industry, by PSIC, Censal Years

PSIC	Employment					Distribution (%)					Share in total manufacturing employment (%)				
	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988
Primary															
32111	-	62	60172	14125	20119	-	0.2	38.3	19.5	26.7	-	0.01	4.96	2.02	2.35
32112	741	597	7266	18788	11915	1.6	1.5	4.6	25.9	15.8	0.17	0.12	0.60	2.68	1.39
32113	30927	20526	9351	9753	12731	65.0	51.9	5.9	13.4	16.9	7.04	4.01	0.77	1.39	1.49
32114	-	-	181	-	-	-	-	0.1	-	-	-	-	0.01	-	-
32115	-	-	33895	7240	7191	-	-	21.6	10.0	9.5	-	-	2.79	1.03	0.84
32116	10756	12095	2571	1124	3239	22.6	30.6	1.6	1.5	4.3	2.45	2.36	0.21	0.16	0.38
32117	749	476	3673	515	442	1.6	1.2	2.3	0.7	0.6	0.17	0.09	0.30	0.07	0.05
32118	829	721	1153	1193	1134	1.7	1.8	0.7	1.6	1.5	0.19	0.14	0.10	0.17	0.13
32119	2279	4331	3125	1225	2064	4.8	10.9	2.0	1.7	2.7	0.52	0.85	0.26	0.17	0.24
32121	935	735	6102	5430	4664	2.0	1.9	3.9	7.5	6.2	0.21	0.14	0.50	0.77	0.54
32122	330	38	29720	13206	11949	0.7	0.1	18.9	18.2	15.8	0.08	0.01	2.45	1.88	1.39
Total	**47546**	**39581**	**157209**	**72599**	**75448**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**10.82**	**7.73**	**12.96**	**10.36**	**8.80**
Secondary															
32123	-)		-	-	-	-)		-	-	-	-)		-	-	-
32124	-)	611	-	-	-	-)	1.9	-	-	-	-)	0.12	-	-	-
32125	-)	-	-	-	-)	-	-	-	-)	-	-		-	-	
32126	1089	5058	-	-	-	8.2	15.4	-	-	-	0.25	0.99	-	-	-

PSIC	Employment					Distribution (%)					Share in total manufacturing employment (%)				
	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988
32129	118	206	-	-	-	0.9	0.6	-	-	-	0.03	0.04	-	-	-
32131	820	885	2365	4956	5588	6.2	2.7	11.8	38.2	39.8	0.17	0.20	0.71	0.65	0.19
32132	2178	4313	1836	460	1106	16.3	13.1	9.2	3.5	7.9	0.50	0.84	0.15	0.07	0.13
32133	5529	14472	-	.	32	41.5	44.0	-	.	0.2	1.26	2.83	-	.	.
32139	-	-	604	.	157	-	-	3.0	.	1.1	-	-	0.05	.	0.02
32141	663	1144	5277	1501	635	5.0	3.5	26.4	11.6	4.5	0.15	0.22	0.44	0.21	0.07
32142	569	-	2230	.	-	4.3	-	11.2	.	-	0.13	-	0.18	-	-
32151	1932	2782	1947	2355	1821	14.5	8.5	9.7	18.1	13.0	0.44	0.54	0.16	0.34	0.21
32152	-	2369	1954	1350	1213	-	7.2	9.8	10.4	8.6	-	0.46	0.16	0.19	0.14
32153	-	-	2761	905	2800	-	-	13.8	7.0	19.9	-	-	0.23	0.13	0.33
32159	-	-	115	.	11	-	-	0.6	.	0.1	-	-	0.01	-	.
32160	-	-	471	1116	186	-	-	2.4	8.6	1.3	-	-	0.04	0.16	0.02
32170	-	-	373	343	443	-	-	1.9	2.6		3.2		-		-
0.03	0.05	0.05													
32192	185	340	-	-	-	1.4	1.0	-	-	-	0.04	0.07	-	-	-
32193	241	349	-	-	-	1.8	1.1	-	-	-	0.05	0.07	-	-	-
32194	-)	-	-	-	-)	-	-			-)	-	-	-		
32199	-)	377	39	-	45	-)	1.1	0.2	-	0.3	-)	0.07	-	-	0.01
Total	13324	32906	19972	12986	14037	100.0	100.0	100.0	100.0	100.0	3.03	6.43	1.65	1.85	1.64

Source: National Census and Statistics Office. *Census of Establishments, Manufacturing,* Manila, censal years.

Appendix Table 3

Number of Establishments in the Garments Industry by PSIC, Censal Years

PSIC	1972	1975	1978	1983	1988
Number of establishments					
32211	165	288	241	89	159
32212	22	47	54	31	110
32221	62	86	136	66	229
32222	54	131	222	157	565
32229	-	-	47	32	350
32230	-	-	87	40	108
32291	-	-	4		2
32292	11	24	24	21	33
Manufacture of miscellaneous apparel	2	-	-	-	-
Total	**316**	**576**	**815**	**436**	**1556**
Percentage Distribution					
32211	52.2	50.0	29.6	20.4	10.2
32212	7.0	8.2	6.6	7.1	7.1
32221	19.6	14.9	16.7	15.1	14.7
32222	17.1	22.7	27.2	36.0	36.3
32229	-	.	5.8	7.3	22.5
32230	-	-	10.7	9.2	6.9
32291	.	-	0.5	.	0.1
32292	3.5	4.2	2.9	4.8	2.1
Manufacture of miscellaneous apparel	0.6	-	-	-	-
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Appendix Table 3 *continued*

PSIC	1972	1975	1978	1983	1988
Share in total manufacturing establishments (%)					
32211	3.69	4.51	2.86	1.55	1.38
32212	0.49	0.74	0.64	0.54	0.96
32221	1.39	1.35	1.61	1.15	1.99
32222	1.21	2.05	2.64	2.74	4.92
32229	-	-	0.56	0.56	3.05
32230	-	-	1.03	0.70	0.94
32291	-	-	0.05	.	0.02
32292	0.25	0.38	0.28	0.37	0.29
Manufacture of miscellaneous apparel	0.04	-	-	-	-
Total	**7.06**	**9.01**	**9.68**	**7.61**	**13.54**

Source: National Census and Statistics Office. *Census of Establishments, Manufacturing,* Manila, censal
          years.

Appendix Table 4

Number of Establishments in the Textile Industry by PSIC, Censal Years

PSIC	Number of establishments					Percentage Distribution					Share in total manufacturing establishments (%)				
	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988
Primary															
32111	-	3	32	16	30	-	2.2	8.9	7.3	9.3	-	0.05	0.38	0.28	0.26
32112	33	32	14	18	21	26.8	23.7	3.9	8.2	6.5	0.74	0.50	0.17	0.31	0.18
32113	21	24	25	23	32	17.1	17.8	7.0	10.5	9.9	0.47	0.38	0.30	0.40	0.28
32114	-	-	3	-	1	-	-	0.8	-	0.3	-	-	0.04	-	0.01
32115	-	-	32	13	17	-	-	8.9	5.9	5.3	-	-	0.38	0.23	0.15
32116	17	17	18	14	19	13.8	12.6	5.0	6.4	5.9	0.38	0.27	0.21	0.24	0.17
32117	8	9	61	13	28	6.5	6.7	17.0	5.9	8.7	0.18	0.14	0.72	0.23	0.24
32118	11	12	14	16	21	8.9	8.9	3.9	7.3	6.5	0.25	0.19	0.17	0.28	0.18
32119	11	16	9	12	16	8.9	11.9	2.5	5.5	5.0	0.25	0.25	0.11	0.21	0.14
32121	10	19	56	45	46	8.1	14.1	15.6	20.5	14.2	0.22	0.30	0.66	0.78	0.40
32122	12	3	94	49	92	9.8	2.2	26.3	22.4	28.5	0.27	0.05	1.12	0.85	0.80
Total	123	135	358	219	323	100.0	100.0	100.0	100.0	100.0	2.75	2.11	4.25	3.82	2.81
Secondary															
32123	-)		-	-	-	-)		-	-	-	-)		-	-	-
32124	-)	4	-	-	-	-)	1.4	-	-	-	-)	0.06	-	-	-
32125	-)	-	-	-	-)	-	-	-	-)	-	-	-			
32126	23	67	-	-	-	22.3	22.6	-	-	-	0.51	1.05	-	-	-

Appendix Table 4 *continued*

PSIC	Number of establishments					Distribution (%)					Share in total manufacturing establishments (%)				
	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988
32129	4	6	-	-	-	3.9	2.0	-	-	-	0.09	0.09	-	-	-
32131	3	5	14	16	29	2.9	1.7	6.2	16.3	13.0	0.07	0.08	0.17	0.28	0.25
32132	21	59)	25	8	22	20.4	19.9)	11.1	8.2	9.9	0.47	0.92)	0.30	0.14	0.19
32133	-	46)	.	1	-	15.5)	-	.	0.4	0.22	0.72)	.	0.01		
32139	10	-	14	.	7	9.7	-	6.2	.	3.1	-	-	0.17	.	0.06
32141	21	9	9	8	14	20.4	3.0	4.0	8.2	6.3	0.47	0.14	0.11	0.14	0.12
32142	14	-	6	-	13.6	-	2.7	-	-	0.31	-	0.07	-	-	
32151	-	24	12	10	21	-	8.1	5.3	10.2	9.4	-	0.38	0.14	0.17	0.18
32152	-	62	17	11	12	-	20.9	7.6	11.2	5.4	-	0.97	0.20	0.19	0.10
32153	-	-	105	29	103	-	-	46.7	29.6	46.2	-	-	1.25	0.51	0.90
32159	-	-	7	.	1	-	-	3.1	.	0.4	-	-	0.08	.	0.10
32160	-	-	5	8	4	-	-	2.2	8.2	1.8	-	-	0.06	0.14	0.03
32170	-	-	8	8	6	-	-	3.6	8.2	2.7	-	-	0.09	0.14	0.05
32192	3	4	-	-	3	2.9	1.4	-	-	1.3	0.07	0.06	-	-	-
32193	4	3	-	-	-	3.9	1.0	-	-	-	0.09	0.05	-	-	-
32194	-)	-	-	-	-)	-	-	-	-)	-	-	-			
32199	-)	7	3	-	-	-)	2.4	1.3	-	-	-)	0.11	0.04	-	-
Total	103	296	225	98	223	100.0	100.0	100.0	100.0	100.0	2.30	4.63	2.67	1.71	1.94

Source: National Census and Statistics Office. *Census of Establishments, Manufacturing*, Manila, censal years.

Appendix Table 5

Census Value Added in the Garments Industry by PSIC, Censal Years

PSIC	1972	1975	1978	1983	1988
Census value added (P million at 1972 prices)					
32211	11	18	22	5	6
32212	2	1	5	2	3
32221	26	33	113	67	128
32222	37	66	143	207	546
32229	—	—	49	71	188
32230	—	—	26	16	24
32291	—	—	4	.)	
32292	11	20	11	33)	58
Manufacture of miscellaneous apparel	—	—	—	—	—
Total	**87**	**138**	**373**	**401**	**954**
Percentage Distribution					
32211	12.6	12.9	5.9	1.3	0.7
32212	2.3	0.9	1.4	0.4	0.3
32221	29.8	24.1	30.4	16.8	13.5
32222	42.4	47.8	38.3	51.6	57.2
32229	—	—	13.3	17.8	19.7
32230	—	—	6.9	4.0	2.5
32291	—	—	1.0	.)	
32292	12.6	14.2	3.0	8.2)	6.1
Manufacture of miscellaneous apparel	0.2	—	—	—	—
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Appendix Table 5 *continued*

PSIC	1972	1975	1978	1983	1988
Share in total manufacturing value added (%)					
32211	0.13	0.14	0.15	0.04	0.04
32212	0.02	0.01	0.03	0.01	0.02
32221	0.30	0.27	0.75	0.47	0.78
32222	0.43	0.53	0.95	1.43	3.32
32229	—	—	0.33	0.49	1.14
32230	—	—	0.17	0.11	0.15
32291	—	—	0.02	.)	
32292	0.13	0.16	0.07	0.23)	0.35
Manufacture of miscellaneous apparel	—	—	—	—	.
Total	**1.01**	**1.10**	**2.48**	**2.78**	**5.81**

Source: National Census and Statistics Office. *Census of Establishments, Manufacturing,* Manila, censal
               years.

Appendix Table 6

Census Value Added Textile Industry by PSIC, Censal Years

PSIC	Census value added (P million, 1972 prices)					Percentage Distribution					Share to total manufacturing value added (%)				
	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988
Primary															
32111	—	11	712140	120809	167830	—	0.0	50.3	16.7	25.4	—	0.00	4.75	0.84	1.02
32112	2650	1169	60932	283140	157830	0.5	0.3	4.3	39.2	23.9	0.03	0.01	0.41	1.96	0.96
32113	281347	190650	83594	115926	110556	55.5	46.3	5.9	16.0	16.7	3.26	1.52	0.56	0.80	0.67
32114	—	—	548	—)		—	—	0.0	—)		—	—	0.00	—)	
32115	—	—	350383	73632)	45844	—	—	24.8	10.2)	6.9	—	—	2.33	0.51)	0.28
32116	156709	173023	8535	8764	29149	30.9	42.0	0.6	1.2	4.4	1.81	1.38	0.06	0.06	0.18
32117	7014	9534	819	1957	1595	1.4	2.3	0.1	0.3	0.2	0.08	0.08	0.01	0.01	0.01
32118	9243	945	25846	8292	9108	1.8	0.2	1.8	1.1	1.4	0.11	0.01	0.17	00.6	0.06
32119	42191	35422	18108	4917	11721	8.3	8.6	1.3	0.7	1.8	0.49	0.28	0.12	0.03	0.07
32121	4469	600	59660	36442	37734	0.9	0.1	4.2	5.0	5.7	0.05	0.00	0.04	0.25	0.23
32122	2959	205	94890	69191	90107	0.6	0.0	6.7	9.6	13.6	0.03	0.00	0.63	0.48	0.55
Total	506582	411560	1415456	723070	661474	100.0	100.0	100.0	100.0	100.0	5.86	3.28	9.43	5.00	4.02
Secondary															
32123	—)		—	—	—	—)		—	—	—	—)		—	—	—
32124	—)	6146	—	—	—	—}	1.6	—	—	—	—)	0.05	—	—	—
32125	—)		—	—	—	—)		—	—	—	—)		—	—	—

PSIC	Census value added (P million, 1972 prices)					Percentage Distribution					Share to total manufacturing value added (%)				
	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988	1972	1975	1978	1983	1988
32126	10548	67906	—	—	—	8.4	17.4	—	—	—	0.12	0.54	—	—	—
32129	1188	1334	—	—	—	0.9	0.3	—	—	—	0.01	0.01	—	—	—
32131	6497	3803	15746	53742	32454	5.2	1.0	8.5	45.3	38.7	0.08	0.03	0.10	0.37	0.20
32132	14479	23871)		3207	5993	11.6	6.1)		2.7	7.1	0.17	0.19)		0.02	0.04
32133	50131	94520)	9919	.)		40.0	24.2)	5.3	.)		0.58	0.75)	0.07	.)	
32139	—	—	13973	.)	582	—	—	7.5	.)	0.7	—	—	-0.09	.)	0.00
32141	8278	17746	71530	13111)		6.6	4.6	38.5	11.1)		0.10	0.14	0.48	0.09)	
32142	5551	—	28648	—)	4894	4.4	—	15.4	—)	5.8	0.06	—		0.19)	0.03
32151	24313	25505	19049	18583	17320	19.4	6.5	10.3	15.7	20.6	0.28	0.20	0.13	0.13	0.11
32152	—	22278	6578	5727	3137	—	5.7	3.5	4.8	3.7	—	0.18	0.04	0.04	0.02
32153	—	—	11819	6779)	—	—	6.4	5.7)			—	—	0.08	0.05)	
32159	—	—	221	—)	15015	—	—	0.1	.)	17.9	—	—		—)	0.09
32160	—	—	5201	14328	1296	—	—	2.8	12.1	1.5	—	—	0.03	0.10	0.01
32170	—	—	2995	3071	3088	—	—	1.6	2.6	3.7	—	—	0.02	0.02	0.02
32192	2392	5799	—	—	—	1.9	1.5	—	—	—	0.03	0.05	—	—	—
32193	1811	3037	—	—	—	1.4	0.8	—	—	—	0.02	0.02	—	—	—
32194	—)	—	—	—	—)	—	—	—	—)		—	—	—	—	—)
32199	—)	118026	76	—	109	—)	30.3		—	0.1	—)	0.94			—)
Total	125188	389971	185756	118548	83888	100.0	100.0	100.0	100.0	100.0	1.45	3.11	1.24	0.82	0.51

Source: National Census and Statistics Office. *Census of Establishments, Manufacturing,* Manila, censal years.

Appendix Table 7

Annual Growth Rate of Real Foreign Exchange Earnings of Garments by Sub-group: 1983-1990

(In percent)

Sub-group	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90
Garments	6.4	-0.9	21.3	46.5	16.9	15.4	8.4
Total exports	4.4	-16.5	2.1	14.4	19.6	6.3	0.5
Finished embroidered							
Goods, apparel and clothing imported on consignment basis	69.0	-4.5	33.9	62.6	18.8	10.5	5.7
Outergarments and other articles knitted or crocheted	-11.1	5.3	39.6	49.0	13.6	11.0	-8.9
Undergarments, knitted or crocheted	-38.3	-18.1	30.1	60.5	-0.6	20.8	3.7
Outergarments, women's, girls' and infants', of textile fabrics	-24.9	21.0	-20.2	-3.1	27.2	35.4	24.8
Outergarments, men's and boys', of textile fabrics	-31.0	2.7	-11.1	-24.0	25.7	62.7	28.8
Undergarments, of textile fabrics other than knitted or crocheted	5.1	13.4	-16.4	-3.1	53.1	16.4	-12.3
Articles of apparel and clothing accessories of other textile fabrics, headgear of all materials	92.6	45.8	30.1	-27.3	-67.8	-3.9	-4.0

Source: *Direction of Philippine Trade and Export Performance*, (various issues), Department of Trade and Industry (DTI), Manila.

Appendix Table 8

Share of Garments Exports in the Top 20 Philippine Exports, by Sub-group: 1983-1990

(In percent)

Sub-group	1983	1984	1985	1986	1987	1988	1989	1990
Children's wear and infants' wear, manufactured from materials imported on consignment basis	2.53	2.78	5.77	5.22	6.68	6.88	7.90	8.34
Women's wear, manufactured from materials imported on consignment basis	1.36	2.30	3.87	4.04	6.35	5.46	5.53	6.06
Men's wear, manufactured from materials imported on consignment basis								
Dresses, skirts, suits and costumes, women's, girls' and infants', of synthetic fibers, knitted or crocheted	3.35	2.91	3.81	3.61	5.95	4.91	5.29	5.74
Total	**7.23**	**7.99**	**13.45**	**12.87**	**18.97**	**17.25**	**18.73**	**20.14**

Source: *Direction of Philippine Trade and Exports*, (various issues), Department of Trade and Industry (DTI), Manila.

Appendix Table 9

Real Foreign Exchange Earnings of Garments, by Sub-group: 1983-1990

(FOB value in US$ million, 1985 prices)

Sub-group	1983	1984	1985	1986	1987	1988	1989	1990
Garments	498.9	530.9	526.0	638.0	934.8	1092.3	1260.1	1366.2
Finished embroidered								
Goods, apparel and clothing imported on consignment basis	169.9	287.0	274.0	366.8	596.4	708.4	783.0	827.8
Outergarments and other articles knitted or crocheted	69.4	61.7	65.0	90.7	135.2	153.6	170.5	185.7
Undergarments, knitted or crocheted	95.1	58.6	48.0	62.4	100.2	99.6	120.4	124.9
Outergarments, women's, girls' and infants', of textile fabrics	72.6	54.5	66.0	52.7	51.0	64.9	87.9	109.7
Outergarments, men's and boys', of textile fabrics	79.1	54.5	56.0	49.8	37.8	47.5	77.3	99.6
Undergarments, of textile fabrics other than knitted or crocheted	11.8	12.3	14.0	11.7	11.3	17.4	20.2	17.7
Articles of apparel and clothing accessories of other textile fabrics, headgear of all materials	1.1	2.1	3.0	3.9	2.8	0.9	0.9	0.8
Total exports	5310.9	5546.3	4629.0	4723.9	5406.4	6466.2	6872.6	6908.0

Source: *Direction of Philippine Trade and Export Performance*, (various issues), Department of Trade and Industry (DTI), Manila.

Appendix Table 10

Percentage Distribution of Garments Export Earnings, by Sub-group:1983-1990
(FOB value in US$ million)

Sub-group	1983	1984	1985	1986	1987	1988	1989	1990
Garments	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Finished embroidered goods, apparel and clothing imported on consignment basis	34.05	54.07	52.09	57.49	63.80	64.85	62.13	60.59
Outergarments and other articles knitted or crocheted	13.92	11.63	12.36	14.22	14.46	14.06	13.53	13.59
Undergarments, knitted or crocheted	19.06	11.05	9.13	9.79	10.72	9.12	9.55	9.14
Outergarments, women's, girls' and infants', of textile fabrics	14.56	10.27	12.55	8.26	5.46	5.94	6.97	8.03
Outergarments, men's and boys', of textile fabrics	15.85	10.27	10.65	7.80	4.04	4.35	6.14	7.29
Undergarments, of textile fabrics other than knitted or crocheted	2.36	2.33	2.66	1.83	1.21	1.59	1.60	1.30
Articles of apparel and clothing accessories of other textile fabrics, headgear of all materials	0.21	0.39	0.57	0.61	0.30	0.08	0.07	0.06
Percentage share of total Philippine exports	**9.39**	**9.57**	**11.36**	**13.51**	**17.29**	**16.89**	**18.34**	**19.78**	

Source: *Direction of Philippine Trade and Exports,* (various issues), Department of Trade and Industry (DTI), Manila.