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Economic and Political Factors Influencing Taiwan's Textiles and Apparel Exports to the United States 1973-1983

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ECONOMIC AND POLITICAL FACTORS INFLUENCING

TAIWAN'S TEXTILES AND APPAREL EXPORTS TO

THE UNITED STATES 1973-1983

By

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THE UNITED STATES 1973-1983

This research paper is approved as a creditable and independent investigation by a candidate for the degree, Master of Science, and is acceptable for meeting the research paper requirements for this degree. Acceptance of this research paper does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

CHAPTER ONE

INTRODUCTION

The lack of economic resources and a small
domestic market have required Taiwan to be committed to
the development of foreign trade. The development of the
textile and apparel industry is reflective of this commit-
ment. The textile and apparel industry can be viewed as
having two stages since the 1940's: (I) immediately after
World War II through the 1950's can be categorized as the
import substituting industrialization stage, and (II) from
1960 to the present can be called the export substituting
industrialization stage.

Import Substituting Industrialization

The meaning of import substituting industriali-
zation is to encourage domestic production as a substitute
for imported goods.

After World War II most of the textiles and apparel
used in Taiwan was imported from other countries. These
imports accounted for 16 percent of total imports. In
1949, the government of Taiwan encouraged the development
of the textile and apparel industry. The textile and
apparel industry was chosen because of its high labor
intensity, simple technology, small capital requirements,
and high rate of return.

During this stage, encouragement from Taiwan's
government was provided for importing raw materials rather
than cotton fiber or cotton cloth. The production of
cotton fiber, cotton cloth, and manmade fiber has been
sufficient·for domestic demand since 1956. During the
1950's ·textiles and clothing were less than 10 percent of
the total exports of Taiwan. The percentage increased
steadily during the decade following 1960 (see Table 1A).

Export ·Substituting Industrialization

After import substituting industrialization,
textiles and apparel were used to expand Taiwan's exports.
Production was greater than the domestic market's demand.
Increased production and exports were the two major
objectives for the export substituting industrialization.

Since 1967, exports of textiles and clothing ac-
counted for more than 20 percent of total exports (see
Table 1A). During the first half of the 1970's, textiles
and clothing exports peaked as a percentage of total trade
exports. ·But after the mid-1970's, the percentages
declined due to the expansion of manufactured products
exports such as electronics. After 1973, textiles and
clothing manufacturing became technology intensive.

Taiwan's textiles and clothing are exported to

Table 1A: Percentage of Total Exports by Taiwan Being
           Textiles and Clothing During 1952 through
           1983.

Year	Textiles & Clothing (A)	Nation's Total Exports (B)	Textiles & Clothing as a Percentage of Total Exports (A)/(B)
1952	0.9[a/]	116.5[a/]	0.77
1953	1.0	127.6	0.78
1954	1.0	93.3	1.07
1955	2.8	123.3	2.27
1956	4.6	118.3	3.89
1957	4.8	148.3	3.24
1958	5.1	155.8	3.27
1959	14.7	156.9	9.37
1960	23.2	164.0	14.15
1961	29.4	195.2	15.06
1962	44.0	218.2	20.16
1963	49.1	331.7	14.80
1964	63.2	433.0	14.60
1965	70.9	449.7	15.77
1966	95.4	536.3	17.79
1967	142.1	640.7	22.18
1968	202.6	789.2	25.67
1969	300.3	1,049.4	28.62
1970	409.4	1,481.4	27.64

Year	Textiles & Clothing (A)	Nation's Total Exports (B)	Textiles & Clothing as a Percentage of Total Exports(A)/(B)
1971	617.8	2,060.4	29.98
1972	815.9	2,988.1	27.30
1973	1,292.6	4,483.4	28.83
1974	1,534.0	5,639.0	27.20
1975	1,556.7	5,308.8	29.32
1976	2,330.1	8,166.3	28.53
1977	2,279.5	9,360.7	24.35
1978	2,975.8	12,678.1	23.46
1979	3,544.4	16,103.4	22.01
1980	4,326.8	19,810.6	21.84
1981	5,021.2	22,611.2	22.21
1982	4,818.5	22,204.3	21.70
1983	4,987.2	25,122.7	19.85

a/ Units are expressed in millions of U.S. Dollars.

Sources: Taiwan Textile Federation, Statistics of
          Textile and Apparel Industry, 1970 through
          1983, Taipei, Taiwan: TTF Weekly.

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          Council for Economic Planning and Development
          Executive Yuan, 1983.

more than fifty countries. The United States has been
the largest market, which accounted for 30.2 percent to
42.8 percent of Taiwan's total textiles and clothing
exports from 1973 through 1983 (see Table 1B).

Objectives of the Research

  The overall objective of this research paper is
to analyze Taiwan's textiles and apparel exports to the
United States during the period of 1973 through 1983.
Analyses were made of factors influencing Taiwan's textiles
and apparel trade with the U.S. The competitiveness of
Taiwan's textiles and apparel trade with other major
suppliers and trade protectionism of textiles and apparel
by the U.S. are also discussed in this paper.

  The specific research objectives are as follows:

  1. To examine the changes in level and composition
of Taiwan's textiles and clothing exports to the U.S.
between 1973 and 1983.

  2. To examine the international trade trends for
Taiwan's textiles and clothing from 1973 through 1983.

  3. To estimate the price and income elasticities
of demand for Taiwan's textiles and clothing during the
period 1973-1983.

  4. To estimate the partial elasticity of substitu-
tion with other competitors--Hong Kong, Japan, South
Korea, and mainland China between 1978 and 1983.

Table 1B: Taiwan's Textiles and Clothing Exports to the
United States as a Percentage of Total Exports
(1973-1983).

Year	Taiwan Textiles & Clothing Exports to U.S. (A)	Total Textiles & Clothing Exports of Taiwan (B)	Exports to U.S. as Percentage of Total Exports (A)/(B)
1973	390,110[a/]	1,292,604[a/]	30.2
1974	504,903	1,533,963	32.9
1975	545,645	1,556,732	35.1
1976	750,278	2,330,105	32.2
1977	859,640	2,279,451	37.7
1978	1,197,416	2,975,805	40.2
1979	1,258,456	3,544,428	35.5
1980	1,539,801	4,326,767	35.6
1981	1,687,495	5,021,231	33.6
1982	1,838,001	4,818,476	38.1
1983	2,136,456	4,987,218	42.8

a/ Units are expressed in thousands of U.S. Dollars.

Sources: Compiled from, the U.S. Department of Commerce,
U.S. General Imports/FT-135 (1973-1983), and
Taiwan Textile Federation, Statistics on Taiwan
Textile and Apparel Industry, 1973-1983.

Outline of the Research

This paper is organized into five chapters. Chapter one contains an outline of the objectives and an introduction to the paper. Chapter two provides a review of literature on the international trade of textiles and clothing. Specific emphasis is placed on the trade relationships between South Korea, Hong Kong, Japan, and mainland China. Chapter three documents the provisions of textile quotas for restricting Taiwan's textiles and clothing exports to the U.S. Chapter four contains the empirical estimation and testing of hypotheses developed. Finally, Chapter five presents the principal research conclusions, and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Although numerous studies have analyzed the textile
and apparel trade, few studies have explicitly analyzed
the trade relationship between Taiwan and the United
States. One purpose of this study was to examine this
trade relationship between 1973 and 1983. In the fol-
lowing chapter, literature discussing both countries'
textiles and clothing industries is reviewed.

Taiwan's competitiveness with other exporting
countries and textile quotas are the two major factors
influencing Taiwan's textile trade with the U.S. There-
fore, a review of Taiwan's major competitors--Japan, Hong
Kong, South Korea, and mainland China, agreements on
textiles and apparel trade, and the impact of textile
quotas will be discussed.

The Textile and Apparel Industry of Taiwan

In 1949, Taiwan chose to expand the textile
industry because Taiwan had sufficient labor available,
and the technology was relatively simple at that time.
During the last twenty years the textile industry has
contributed significantly to the economic growth of Taiwan.

Although other industries such as electronics have grown in the past ten years, the textile industry still plays a major economic role (1).

In the 1970's, the textile and apparel trade expanded rapidly. Table 2A presents production indices for Taiwan's textile industry during the period 1973-1979. During 1973-1979, the expansion of Taiwan's textile industry was led by the growth in manmade fibers. Cable and Baker reported that Taiwan exports of textile products to all other importing countries increased by 610 percent between 1971 and 1981. Clothing accounted for about 57 percent of Taiwan's total exports of textile products to all other importing countries (2).

Taiwan's textile industry is not only self suf-ficient in manmade fibers but is a net exporter. Shipments in 1981 reached a record $123 million compared to less than $6 million in 1971.

In the mid-1970's the greatest growth was in knitted goods. Knitted garment exports soared from 5 million dozens in 1974 to 10 million dozens in 1975. By 1981, sales of woven clothing reached $1,156 million com-pared with $1,094 million for knitted clothing. The U.S. remains Taiwan's largest woven clothing market, accounting for over half by value in the first half of 1982 and over 40 percent by volume (3).

Table 2A: Taiwan's Textile Industry Indices of Production for the period 1973-1979 with the Base Year of 1970.

	1973	1974	1975	1976	1977	1978	1979
Index of Manufacturing Production·	144	142	150	188	210	274	284
Index of Textile Production	115	114	151	177	187	209	210
Index of Man-made Fiber Production	208	219	333	377	439	548	599
Index of Clothing Production	98	115	129	148	157	197	222
Index of Knitwear production	96	117	174	204	217	279	240

Source: Vincent Cable and Betsy Baker, World Textile and Production Trends, London: The Economist Intelligence Unit, EIU Special Report No. 152, 1983.

The rate of increase in production and exports in Taiwan fell sharply in the late 1970's and early 1980's due to the following factors: (I) market restrictions; (II) a recession in the industrialized countries; (III) greater competition from other developing and socialist countries; and, (IV) rising costs of production (4). A number of these factors have also affected the U.S. textile industry.

The Textile and Apparel Industry of the United States

Over the last twenty years, textile production has been moved from the northeast to the southeast in the United States. Pressure for this transformation was partly due to the competition from foreign low-cost suppliers, internal structural reforms, and technical changes (5).

Cable and Baker pointed out six distinctive features in the American textile industry. First, the replacement of natural with synthetic fibers has been rapid in the U.S. Both U.S. production of cotton textile and woolen products have declined. Second, the large size of the U.S. market and company reorganization has led to increased concentration and firm size in the industry. Third, a major geographical shift in production from the northeast to the southeast area. This has been due to pressures of rising domestic labor costs and growing

international competition. Fourth, the U.S. industry has gone further than any other to maximize the advantages of scale and machinery automation. Fifth, the U.S. industry has subcontracted the most labor intensive operations to low wage countries. The subcontract has been done primarily by U.S. company subsidiaries under offshore processing (OP) operations. The primary country involved is Mexico. In 1978 roughly five percent of textiles and clothing imports had an OP origin. Finally, the U.S. industry has derived advantages from investing heavily in new technology (6).

Cable and Baker also reported that since 1980 the high value of the dollar has lessened U.S. export competitiveness (7). Pelzman reports a number of major factors, which have contributed to the growth of textile imports into the U.S. market. He demonstrated that the growth of U.S. textiles (excluding clothing) output has not been as large as that of its competitors. South Korea, Hong Kong, Taiwan, and Turkey experienced far greater growth rates of textiles production than did the U.S. (8).

In the following sections, the major competitors of Taiwan's textiles and clothing trade with the U.S. are discussed. These are also the major competitors of the U.S. textile industry.

The Major Competitors of Taiwan's Textiles and Clothing Trade with the United States

The major competitors of Taiwan's textiles and clothing trade with the U.S. are Japan, Hong Kong, South Korea, and mainland China.

Japan

Japan has been considered to be a competitor. Cable and Baker reported that textiles and clothing accounted for about 40 percent of total Japanese exports in the 1950's. By the end of the 1970's the textile share was negligible. Over the period 1963 through 1973 Japanese production of textiles and clothing rose 7.5 percent annually. Since 1973 production has fallen steadily (9). The Japanese textiles and clothing industry is no longer considered a low cost exporter and producer compared to those of other Asian countries.

Hong Kong

Hong Kong is one of the major developing exporters of textile products to the developed world. The Hong Kong textile industry is based on cotton and has an export orientation. Hong Kong has been able to expand cotton textile exports by more than the six percent real growth rate. This is partly due to its expansion to the European market and improved quality of its textile products (10). The U.S. is Hong Kong's largest market for textiles and

clothing. Cable and Baker in their study of world textile and production trends found the textile and clothing industry to employ nearly 41 percent of Hong Kong's industrial workforce and produce 42 percent of total exports. Clothing is the largest of the two sectors and employs two-thirds of 400,000 the textiles and clothing labor force. Clothing contributed $5 billion in export earnings in 1981 versus $0.94 billion for textiles (11). Hong Kong exports suffer from textile import quotas of developed countries. The United States is one of those countries which set textile import quotas for Hong Kong.

Hong Kong initiated a bilateral trade agreement with the U.S. in March 1982. The agreement will terminate on December 31, 1987. This agreement made no cutbacks in Hong Kong quotas. However, most of the best selling products, such as wearing apparel and sweaters, have low import growth rates on the quotas. Restricted categories comprise of two-thirds of Hong Kong's textile and clothing exports to the United States (12).

South Korea

South Korea's textile and clothing industry also grew rapidly in the 1970's. This industry provided 18 percent of South Korea's GNP, work for 30 percent of South Korea's manufacturing labor force and accounted for 30 percent of its exports in the 1970's. The United States

is South Korea's largest export market. South Korea also
faces serious problem of protectionism by the United
States. The U.S. allows South Korea to maintain 0.5 to
4.5 percent yearly growth rates for the textile and apparel
quotas (13).

Mainland China

The textiles and clothing exports of mainland
China have increased rapidly since the mid-1970's. In
1977, the U.S. textile imports from mainland China were
¢60 million, compared with $800 million from Hong Kong.
By 1979 mainland China was the sixth largest exporter of
cotton fabrics to the U.S., mainly in the form of plain
cotton cloth. By 1981 mainland China's textile exports to
the U.S. had reached $620 million of which $380 million
was clothing. The high level of the mainland China's
exports to the U.S. had produced serious trade conflict.
The negotiation to replace a 1980-1982 agreement broke
down in January 1983 (14).

Agreements on Textile and Apparel Trade

Import quotas are used for restricting textiles
and apparel imports from the developed countries. The
definition of an import quota is a quantitative restric-
tion on imports. Instead of imposing a tax on the sales
of foreign products, a quota limits imports to no more

than a specific volume per time period (15).

The first quota on textiles was signed between
the American and Japanese trade associations. Under this
agreement, the Japanese industry was to limit 1937 cotton
fabric shipments to no more than 155 million square
yards. In 1938 that figure was to be reduced by a third
to 100 million yards. In 1939, American President
Roosevelt wrote the tariff commission directing an investi-
gation concerning raw cotton and cotton textile imports.
A quota for cotton imports was established. This quota
was further subdivided by country of origin, and no growth
was provided in the quotas (16).

In 1956 a bilateral agreement between the U.S.
and Japan was signed which was designed to control trade
of cotton products. On the initiative of the U.S., multi-
lateral discussions designed to reorder textile trade were
held in 1961 under the auspices of the General Agreement
on Tariffs and Trade (GATT) (17).

The Short Term Cotton Textile Arrangement (STA)
was negotiated in 1961. The European Economic Community,
the United Kingdom, Japan, Hong Kong, India, and Canada
were key signatories. The STA covered the year October
1, 1961, through September 30, 1962, and provided that
countries already restricting cotton textile imports
from low wage countries would liberalize those restrictions.

Also, the agreement was to avoid market disruption in non-restricting countries. Low wage countries would agree to control exports as needed, but not to levels below those attained in the year ended June 30, 1961 (18).

An extension of the STA in 1962, known as the Long Term Arrangement on Cotton Textiles (LTA) was the first attempt ever made to deal with the changes in comparative advantage between the less-developed countries and developing countries (19). In 1962 a bilateral agreement between the U.S. and Taiwan was signed which restricted Taiwan's cotton textile exports to the U.S.

On October 15, 1971, President Nixon announced the conclusion of an agreement with Taiwan, Hong Kong, Japan, mainland China, and South Korea controlling shipments of manmade fiber and wool textiles and apparel to the United States (20).

The Multi Fiber Arrangement (MFA) became effective on January 1, 1974. The MFA among 51 countries was extended on January 1, 1978, and again from January 1, 1982 to July 31, 1986. Unlike the LTA which applied only to cotton textiles and apparel, the MFA includes textile and apparel products made of cotton, wool, and manmade fibers. Under the provisions of the MFA, a country may restrict imports of textile and apparel products through the negotiation of a bilateral agreement under Article 4

or, where no agreement can be reached, through unilateral action under Article 3(6). The MFA is an exception to the principles of the GATT in that it permits import restrictions on a discriminatory basis (21).

On January 1, 1975, the U.S.-Taiwan bilateral agreement designed to control textiles and apparel imports in manmade fiber, wool, and cotton from Taiwan, was extended to December 31, 1977. This bilateral agreement was renewed on January 1, 1978, and extended to December 31, 1982.

Impact of Textile Quotas

Keesing and Wolf state that textile quotas may cause favorable and harmful consequences. Positive effects of textile quotas are: (I) quotas provide certainty of market access for the industries' exports up to agreed limits; (II) they create pressure to diversify; (III) they encourage geographical diversification of supplier to be benefit; and, (IV) they allow suppliers to capture the windfall gain resulting from high prices for the remaining exports.

Unfortunately, each of the positive consequences is mixed with harmful effects. For example, in the process of capturing the windfall gains from export licensing, the industry can become cartelized to the detriment of

local consumers. Businesses are encouraged to make
efforts to "rent-seeking activities" including, maybe,
illegal transactions. The quota shifts the distribution
of income between export customers and domestic consumers.
The procedure of the quota allocation may cause socially
divisive and inequitable effects (22).

Conclusions from Studies

The four major competitors--Japan, Hong Kong,
South Korea, and mainland China were analyzed for their
competitiveness. All four countries have textile quotas
imposed by the United States. Japan was the first country
to have textile quotas imposed by the U.S.

The U.S. has been the largest market for Taiwan,
South Korea, and Hong Kong's textiles exports. The ex-
ports of textiles and clothing from Taiwan and South Korea
are centered on manmade fiber products, while Hong Kong
and mainland China are concentrated on cotton products.

Agreements for textile quotas were discussed
from 1930's through 1970's. All of these agreements
provide a background for the investigation between the
U.S. and Taiwan, which will be examined in the next
chapter.

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CHAPTER THREE

BILATERAL AGREEMENT OF TEXTILES AND APPAREL

TRADE BETWEEN THE UNITED STATES AND TAIWAN

The purpose of this chapter is to describe the

United States imposed textile quotas on Taiwan. During

the period of this study, 1973 to 1983, two bilateral

agreements were negotiated between the United States

and Taiwan. These two agreements are described in this

chapter. The first agreement was effective between

January 1, 1975 and December 31, 1977. The second

agreement was effective between the period of January 1,

1978 and December 31, 1982.

Introduction

For the United States, trade in textiles and apparel

has been an important domestic issue. Import controls

were requested as protection for the textile and apparel

industry. This is partly due to the impacts of textiles

and clothing on employment in the U.S. textile industry (1).

As discussed in Chapter Two, the U.S. imposed

import quotas to control textile and apparel imports from

South Korea, Japan, mainland China, Hong Kong, and Taiwan.

According to the bilateral trade agreement provi-

sions of MFA, the U.S. can impose textile quotas with

a six percent growth rate (2). These bilateral agree-
ments controlled over 80 percent of total U.S. imports of
textiles and clothing in 1980. Until the early 1980's,
the U.S. had negotiated bilateral quota agreements in
textile products with 22 supplying countries and consul-
tative mechanisms with 11 other countries (3). Taiwan's
textile product exports to the U.S. have been controlled
by import quotas since the early 1960's under a bilateral
trade agreement. The U.S. bilateral quotas under the
MFA were based on a specific annual growth rate for
different textiles and clothing categories.

Bilateral agreements provide that aggregate group
and specific ceilings can be modified by means of carry-
over and carryforward stipulations. The aggregate group
is divided into three subgroups. The content of these
subgroups for both 1975-1977 and 1978-1982 bilateral
agreements is given in Table 3A.

Carryover and carryforward are defined as follows:

"In the case of carryover the provision allows for
the allocation of an unused portion of the previous
year's quota to the present year. On the other hand,
the allocation to the present year of a portion of
next year's quota is provided by the carryforward
(4)."

It can been seen from Table 3A, both 1975-1977
and 1978-1982 agreements classify cotton, wool, and
manmade fiber textiles. The contents of categories
for the two agreements are different. Taiwan's government

Table 3A: The Description of Subgroups in 1975-1977 and
            1978-1982 U.S.A.-Taiwan Textile Bilateral
            Agreements.

Year	Group	Description	Category
1975-1977	I	Yarn, fabric and made-up and miscellaneous goods of cotton and/or manmade fiber	1-38, 64 200-213, 214-243.
	II	Apparel of cotton and/or manmade fiber	39-63 214-240
	III	Wool textile products	101-132.
1978-1982	I	Yarns, fabrics, made-up goods and miscellaneous textile products of cotton and man-made fibers	300-320 360-369 600-627 665-669
	II	Apparel of cotton and man-made fibers	300-359 360-659
	III	Wool textiles and textile products	400-469

Source: Taiwan Textile Federation (Taipei, Taiwan),
          unpublished data.

was to limit annual exports of cotton, wool, and manmade
fiber textile and textile products from Taiwan to the U.S.
to aggregate, group, and specific limits in this kind of
classfication. The 1975-1977 and 1978-1982 bilateral
agreements are to be described as follows in this chapter.

The 1975-1977 Textile Bilateral Agreement

The first agreement was from January 1, 1975
through December 31, 1977. The purpose of this Agree-
ment was to limit annual exports of cotton, wool, and
manmade fiber textiles and textile products from Taiwan
to the United States.

Quotas were imposed by the classifications of
cotton, wool, and manmade fiber textiles. The definitions
of the classifications are as follows:

(I) Cotton textiles if containing 50 percent or
more weight of cotton, or if the cotton component exceeds
by weight the wool and/or the manmade fiber component.

(II) Wool textiles if not cotton, and the wool
equals or exceeds 17 percent by weight of all component
fibers.

(III) Manmade fiber textiles if neither of the
foregoing applies.

For the first year, the agreement limit was
812,992,510 square yards equivalent for all textiles and

textile products. For the second agreement year, this
limit was decreased to 714,310,022 square yards equivalent.
For the third year the agreement limit would be increased
by 6.25 percent.

The aggregate limits for every agreement year
were imposed by a maximum import quantity from Taiwan.
For instance, the 1976 total textiles export quota from
Taiwan to U.S. was 714,310,022 square yards equivalent.
In fact, from Table 3B, it can be seen that total amount
of 597,569,639 square yards equivalent in 1976 did not
exceed the aggregate limit.

In group I, the textiles and clothing quota for
the first agreement year was limited to 166,658,314
square yards equivalent and for the second agreement year
was limited to 156,056,744 square yards equivalent.

The limit of the first agreement year of group
II was 640,217,999 square yards equivalent and those of
second year was 553,292,094 square yards equivalent.
In group III the aggregate limit for the first and second
agreement year were 6,116,197 and 4,592,184 square yards
equivalent respectively.

Some categories were given by specific limits,
but exports can exceed those specific amounts under the
provisions of carryover and carryforward.

Carryover may be utilized as available up to 11

Table 3B: U.S. Textile Imports from Taiwan, By Quantity of MFA Categories. a/

Year	Cotton Textiles	Wool Textiles	Manmade Fiber Textiles	Total and percent change	
1976	119,403,723	4,528,484	473,637,432	597,569,639	
1977	112,720,396	5,805,380	520,187,877	638,713,653	+6%
1978	144,559,582	4,377,483	578,135,983	727,073,048	+14%
1979	104,706,267	4,921,276	502,481,291	612,108,834	-16%
1980	151,232,834	5,435,700	625,837,745	782,506,279	+28%
1981	191,098,741	4,356,697	629,195,304	824,650,742	+5%
1982	217,554,995	6,237,995	714,502,759	938,295,339	+14%

a/ Units are measured in equivalent square yards.

Source: Complied from, U.S. International Trade Commission, "U.S. Imports of Textile and Apparel Products Under Multifiber Arrangement, 1976-1982," (Washington D.C.: Government Printing Office, 1983).

percent of the current year's applicable limits, but for

the first agreement year only shall be limited to 5

percent. Carryforward may be utilized up to 6 percent

of the receiving year's applicable limits and charged

against the next year's applicable limits. The combina-

tion of carryover and carryforward may not exceed 11

percent of the receiving year's applicable limits in any

agreement year.

Besides carryover and carryforward, there has been

some flexibility for switching among categories, that is,

"swing provision." Within the aggregate limit, the limit

for group I may be exceeded in any agreement year by 15

percent, the limit for group II may be exceeded by 7 percent

and the limit for group III may be exceeded by 1 percent.

Within the group limit, swing for categories

having specific limits shall be: in group I, 10 percent;

in group II, seven percent; and in group III, five percent.

Categories not given specific limits are subject

to consultation levels and to the aggregate and applicable

group limits. In the event the government of Taiwan

wishes to permit exports to the U.S. in any category in

excess of the applicable consultation level during any

agreement year, the government of Taiwan shall request

consultations with the government of the U.S. on this

question and the U.S. shall enter into such consultation.

Another textile bilateral agreement was negotiated in January 1, 1978 because the U.S. government still felt the impact of textile imports on their domestic textile and apparel industry.

The 1978-1982 Textile Bilateral Agreement

The term of this agreement contains the five years period from January 1, 1978 through December 31, 1982.

The quantity limits for the first agreement year are listed as follows:

Group I: 165,867,488 square yards equivalent

Group II: 588,075,642 square yards equivalent

Group III: 5,001,706 square yards equivalent

Total limits: 758,944,836 square yards equivalent.

For the later four agreement years, the aggregate limits would be increased by six percent per year for Group I, Group II, and total limits. For Group III, it could only be increased by one percent.

Within the aggregate limit, the limit for Group I could be exceeded in any agreement year by 15 percent, the limit for Group II could be exceeded by 7 percent and the limit for Group III could be exceeded by 3 percent.

Within the group limit, swing for categories having specific limits shall be: in Group I, 10 percent; in Group II, seven percent; and in Group III, five percent,

except categories having less than normal growth in cotton and manmade fiber apparel shall have a six percent swing.

The carryover percentage was limited to 11 percent except for the first agreement year. The carryforward percentage was 7.15 percent. The total percentage for carryover and for carryforward was no more than 11 percent.

Since 1980, two systems for textile import quotas have been used by the U.S., which are "Specific Limits" and "Basket System." "Specific Limits" are quotas imposed on some popular products which limit to a specific quantity per year. For products not subject to "Specific Limits", an import threshold was established in each case, which might trigger a consultation procedure originating from the importing country and aimed at establishing a quota, that is, "Basket System".

Under "Basket System", exporting countries need to apply for an export Certificate for exporting textiles and textile products to the U.S. In Taiwan, export certificate are given out by the Taiwan Textile Federation. Textile quotas are distributed on the basis of past performance, and quota trading and allocation of additional quotas are done by means of blind bidding.

Conclusion

Although the provisions of these two agreements were designed on January 1975 and January 1, 1978, provisions are amended year by year.

Most of Taiwan's textile and apparel product exports to the U.S. are centered on sensitive categories, that is, sweaters of wool and manmade fiber products, and knit shirts of manmade fiber products. The sensitive categories are regulated by "Specific Limits", which give a specific quantity for each category.

Both agreements were divided into three groups. In general, these three categories were distinguished as cotton, wool, and manmade fiber textile and textile products. The contents of categories were different between the 1975-1977 and 1978-1982 bilateral agreements.

Besides specific quotas being imposed, there were carryover, carryforward, and swing provisions to change the original limits. In sum, the regulations for both bilateral agreements between the U.S. and Taiwan are complex. There were 140 and 106 categories for the 1975-1977 and 1978-1982 agreements respectively. In the following chapter, research methods are employed to examine Taiwan's textile and apparel exports to the U.S.

ENDNOTES

1. Joseph Pelzman and Joseph Andrews, The Competitiveness of the U.S. Textile Industry (South Carolina: The University of South Carolina, 1980), p.49.

2. The Council on Wage and Price Stability, Textile/ Apparel (Washington, D.C.: Executive Office of the President, July 1978), p.61.

3. Joseph Pelzman, "The Textile Industry," American Academy of Political and Social Sicence, No.460, March 1982, p.96.

4. Joseph Pelzman and Joseph Andrews, The Competitive- ness of the U.S. Textile Industry (South Carolina: The University of South Carolina, 1980), p.74.

CHAPTER FOUR

RESEARCH DESIGN

The purpose of this chapter is to analytically

examine the trends of Taiwan's textiles and apparel

exports to the U.S. and to analyze the competitiveness

between Taiwan and other major exporters to the U.S.

This chapter is divided into four sections.

First, shift-share analysis is used to examine the change

in the composition of Taiwan's textiles and apparel

exports to the U.S. over the period 1973 through 1983.

Second, a trend function was employed to examine whether

the textile quotas of 1975 and 1978 impacted on the growth

rate of Taiwan's textiles and apparel exports to the U.S.

Third, an export demand function was estimated to determine

income and price elasticities for Taiwan's textiles and

clothing exports. Finally, an elasticity of substitution

is estimated for analyzing Taiwan's competitiveness with

other major competitors.

Shift-Share Analysis

The shift-share analysis was employed to analyze

the composition of change in Taiwan's textiles and apparel

exports to the U.S. over the period 1973-1983.

The shift-share analysis divides changes in exports into three components, the national growth effect, the industry mix effect, and the regional shares effect. The national growth effect reflects the impact on the change in Taiwan's textiles and clothing exports to the U.S. caused by change in total U.S. textiles and clothing imports. The industry-mix effect concerns the distribution of Taiwan's textiles and clothing exports to the U.S. between faster and slower growth textiles and clothing industries. The regional shares effect refers to whether the U.S. increased its market share of importing textiles and clothing from Taiwan (1).

According to Standard International Trade Code (SITC), textiles and clothing are included in three categories, that is, SITC 26, SITC 65, and SITC 84. The descriptions of the three categories are as follows:

> "SITC 26: Textile fibers (not manufactured into yarn, thread or fabrics) and their waste.
> SITC 65: Textile yarn, fabrics, made-up articles and related products.
> SITC 84: Clothing and accessories; elastic or rubberized knit fabrics; knit house furnishings and articles; and articles made of fur(2)."

Data required for the analysis were the value of the total U.S. textile imports and the value of Taiwan's textile exports to the U.S. for both 1973 and 1983. Absolute and percent changes in U.S. total textile imports and Taiwan's textile export to the U.S. are presented in the Table 4A.

Table 4A: Value and Growth of Total U.S. Textile Imports and Taiwan's Total
            Textile Exports to the U.S. During 1973-1983. a/

Industry	Value a/		Change Between 1973-1983	
	1973	1983	Absolute b/	Percent c/
U.S. Total Textile Import				
SITC 26	235,568	332,802	+97,234	+41
SITC 65	1,568,134	3,448,353	+1,880,219	+120
SITC 84	2,153,854	10,274,188	+8,120,334	+377
Total	3,957,556	14,055,343	+10,097,787	+255
Taiwan Textile Export to the U.S.				
SITC 26	3,118	3,622	+504	+16
SITC 65	25,337	263,624	+238,289	+940
SITC 84	361,655	1,869,210	+1,507,555	+417
Total	390,110	2,136,456	+1,746,346	+448

a/ Units are expressed in thousands of U.S. Dollars.
b/ Absolute change equals 1983 values minus 1973 values for specified category.
c/ Percentage value equals absolute change divided by value for 1973.
Source: Bureau of the Census, U.S. Department of Commerce, U.S. General Imports,
          Schedule A Commodity by Country, Report FT-135. Washington D.C.: U.S.
          Government Printing Office, 1973 and 1983.

U.S. imports were concentrated in SITC 84, clothing
and accessories. The value of clothing imports more than
quadrupled. For Taiwan's textile exports to the U.S., the
main category was also SITC 84. Between 1973 and 1983,
the value of clothing exported to the U.S. increased by
417 percent. Total textile imports in the U.S. grew by
255 percent over the period, while Taiwan's total exports
to the U.S. grew by 448 percent.

Table 4B presents the summary table for these three
components of textile trade value change--national growth
effect, industry mix effect, and regional shares effect.
The computations for these three effects are presented in
Table 6A and 6B of the appendix.

The value of Taiwan's total textile exports to
the U.S. would have grown by $994,780,000 if these exports
would have grown as fast as U.S. imports of all textiles.
The industry mix effects for both SITC 26 and SITC 65
caused a decline of $6,673,000 and $34,205,000 respectively,
while that of SITC 84 was increased by $44,122,000. This
implies that Taiwan's clothing exports to the U.S. are more
than that of textiles. Regional shares effect on
SITC 26 declined $774,000 between 1973 and 1983, while
SITC 65 and SITC 84 increased by $207,883,000 and
$541,213,000 respectively. This indicates that market
shares of textile fibers declined while textile
yarns, fabrics, and clothing were increased in

Table 4B: Summary Table--Taiwan's Textile Export Value to the U.S. and Components of Value Change 1973-1983. a/

Industry	Taiwan's Textile Exports to the U.S.			Components of Textile Trade Value Change		
	1973	1983	Change	National Growth Effect	Industry Mix Effect	Regional Shares Effect
SITC 26	3,118	3,622	504	7,951	-6,673	-774
SITC 65	25,337	263,624	238,287	64,609	-34,205	+207,883
SITC 84	361,655	1,869,210	1,507,555	922,220	+44,122	+541,213
Total	390,110	2,136,456	1,746,346	994,780	+3,244	+748,322

a/ All figures in thousands of U.S. dollars.

the U.S. textiles and clothing markets.

Trend of Taiwan's Textiles and Clothing Exports to the U.S.

In this section, a trend function was employed to
examine whether the textile quotas of 1975 and 1978 impacted
the growth rate of Taiwan's textiles and apparel exports
to the United States during 1973-1983. This is accomplished
by estimating the following trend function.

$$E_t = a + b\,T_t + c\,(D_{1,t} * T_t) + d\,(D_{2,t} * T_t) + e_t$$

where

E_t = Value of total Taiwan's textile/apparel exports
in year t, in millions of U.S. Dollars,

T = Year, 1973 = 1,..., 1983 = 11,

$D_{1,t}$ = Dymmy variable for period of first bilateral
trade agreement,
=0 for t=1973-1975,
=1 for t=1976-1983,

$D_{2,t}$ = Dummy variable for second bilateral trade
agreement,
=0 for t=1973,...,1978,
=1 for t=1979,...,1983, and

e_t = the disturbance term.

For the 1975 agreement, the null hypothesis is
that no effect existed (H_0: c=0) and the alternative
hypothesis is that a significant effect existed. For
the 1978 agreement, the null hypothesis is that no effect
existed (H_0: d=0). The alternative hypothesis is that
a significant effect existed.

In the above equation, c indicates whether the
1975 textile quota from the U.S. impacted on the growth
rate of Taiwan's textiles and clothing exports to the
U.S., while d indicates that of the 1978 U.S.-Taiwan
bilateral textile agreement. The data used in this model
are provided on Table 6C of the Appendix. Both regression
results for textiles and for apparel are presented on
Table 4C. It can be concluded that both equations were
statistically significant at the 1 percent level in ex-
plaining the level of exports to the U.S.

In testing the individual parameters c and d, it
can be shown that we would not reject the null hypothesis
of both equations because those t values for c and d are
not less than the critical t value, $-t_{.01,7} = -2.998$.
Therefore, the quotas did not have a statistically
significant impact on the level of Taiwan's textiles and
apparel exports to the U.S.

Export Demand Function

In this section an export demand function was
estimated to determine income and price elasticities for
Taiwan's textiles and clothing exports. The methodology
is based on the method used by Donges and Ridel to
estimate income and price elasticities for Hong Kong
exports of manufactures (3).

The export demand function is presented as follows:

Table 4C: Regression Results for Time Trends of Textiles
            and Apparel in Taiwan. a/

(i) Textiles

$$E = -10.154 + 21.852 \ T - 2.458 \ (D_1 * T) + 4.688 \ (D_2 * T)$$
$$(-.317) \quad (1.426) \quad (-.234) \quad\quad (1.118)$$

$R^2 = .94$ F-value = 36.31   D.W. = 2.40

Number of observations = 11.

(ii) Apparel

$$E = 178.703 + 122.770T + 13.080(D_1 * T) + 10.281(D_2 * T)$$
$$(1.952) \quad (2.806) \quad (.436) \quad\quad (.859)$$

$R^2 = .99$ F-value = 161.58   D.W. = 2.23.

Number of observations = 11.

---

a/ The number in parentheses below the estimated
   cofficient is the t ratio.

$$\ln Q_t = a + b \ln \frac{P_t \cdot r_t}{P_t^x} + c \ln Y_t + e_t$$

where,

Q_t = index of quantum textiles and clothing exports of Taiwan in year t, t=1973,...,1983,

P_t = index of unit value of Taiwan's textiles and clothing exports in year t,

r_t = export exchange rate (Taiwan\$ per US\$), in year t,

P^x = producer price index of textiles and clothing industries of the U.S., in year t,

Y_t = real GNP of the U.S. in year t, and

e_t = error term.

By using natural logarithms, the export demand function can be transformed to a linear form. Q_t and P_t used 1981 as the base year. In the above equation, b is the estimator of the price elasticity, while c is the estimator of the income elasticity of export demand.

The data for export quantum indices and for unit value indices are presented in Tables 6D and 6E of the Appendix. The estimated equations are presented in Table 4D. Both of the estimated coefficients for income had a positive sign and were statistically significant. The demand for textiles and apparel has a direct relationship with U.S. real GNP. Increased real GNP resulted in increased imports.

Table 4D: Regression Results for Taiwan's Export-Demand
           Functions in Textiles and Apparel During
           1973-1982. a/

(a) Textiles:

$$\ln Q = -19.073 - 1.349 \ln \left(\frac{P \cdot r}{P^x}\right) + 3.768 \ln Y$$
$$(-5.974)(-3.405) \phantom{\ln \left(\frac{P \cdot r}{P^x}\right)} (10.193)$$

$$\bar{R}^2 = .94 \quad \text{F-value} = 72.63 \quad \text{D.W.} = 2.17$$

Number of observations = 11.

(b) Apparel:

$$\ln Q = -22.353 + .012 \ln \left(\frac{P \cdot r}{P^x}\right) + 3.688 \ln Y$$
$$(-6.845) (.014) \phantom{\ln \left(\frac{P \cdot r}{P^x}\right)} (6.832)$$

$$\bar{R}^2 = .87 \quad \text{F-value} = 34.01 \quad \text{D.W.} = 2.10$$

Number of observations = 11.

---

a/ The number in parentheses below the estimated
   coefficient is the t ratio.

For price elasticity, the statistically significant coefficient of the textiles equation indicates as export price increases, the demand for importing textiles declines in the U.S. For the apparel equation, the insignificant b is 0.012. The quantities of apparel exports from Taiwan to U.S. does not appear to be influenced by their prices. This is partly due to other countries' export price competitiveness.

The Analysis of the Competitiveness with Other Suppliers

As mentioned before, the five Asian suppliers-- Hong Kong, South Korea, mainland China, Japan, and Taiwan-- accounted for over one half of the United States' total textiles and apparel imports during the period 1975-1983. This situation is shown in Table 6F of the Appendix.

The exports to the U.S. are concentrated on SITC 84 for Taiwan, Hong Kong, and South Korea from 1973 through 1983 (see Table 4E). Exports of mainland China and Japan were greater in SITC 65 than for those of SITC 26, and SITC 84.

To analyze Taiwan's competitiveness with the other four countries, cross price elasticities and the partial elasticities of substitution were estimated among these five countries. In the multifactor case, the partial elasticity of substitution between factors i and j (e.g. Taiwan/Japan, etc.) is:

Table 4E: Export Value of Taiwan, mainland China, Hong Kong, South Korea and Japan, Classified by SITC 26, 65, and 84. a/

Year	SITC	Taiwan	Mainland China	Hong Kong	South Korea	Japan
1973	26	3,117	6,164	423	257	22,243
	65	25,337	9,922	89,546	20,067	300,482
	84	361,655	1,559	432,667	245,381	248,123
1974	26	3,255	4,629	763	588	29,431
	65	38,292	29,619	117,898	33,339	305,332
	84	463,387	5,898	523,524	317,143	197,079
1975	26	3,867	3,139	751	393	14,596
	65	40,882	34,224	73,449	30,163	290,848
	84	500,897	9,904	594,538	444,828	168,191
1976	26	2,220	8,377	1,093	258	17,708
	65	66,252	48,541	132,800	50,089	374,825
	84	681,806	18,707	992,078	730,154	227,879
1977	26	3,526	5,672	811	455	17,440
	65	73,178	38,556	136,535	46,069	413,027
	84	782,936	27,420	1,170,213	769,863	252,183
1978	26	4,440	10,172	986	760	15,765
	65	109,825	69,265	151,355	63,493	490,203
	84	1,083,152	67,889	1,476,842	1,048,154	312,946
1979	26	4,942	12,780	838	134	11,437
	65	111,515	96,637	152,974	66,323	332,703
	84	1,141,999	165,755	1,587,291	1,029,589	198,243

Table 4E   (continued)

Year	SITC	Taiwan	Mainland China	Hong Kong	South Korea	Japan
1980	26	6,971	13,178	668	71	7,440
	65	163,840	151,829	166,254	119,315	394,891
	84	1,368,990	251,674	1,774,651	1,091,945	213,544
1981	26	4,768	18,868	1,030	0	7,269
	65	242,594	261,425	206,544	170,069	539,919
	84	1,440,133	444,315	2,023,981	1,369,048	290,943
1982	26	5,187	16,181	1,407	91	9,095
	65	212,094	251,484	155,986	185,909	556,267
	84	1,620,720	674,288	2,118,426	1,480,404	268,439
1983	26	3,622	14,250	2,279	1,391	14,968
	65	263,624	263,178	189,483	246,167	618,833
	84	1,869,210	845,403	2,415,528	1,720,307	360,686

a/ United are expressed in thousands of U.S. Dollars.

Source: Compiled from, U.S. Department of Commerce, U.S. General Imports Schedule
A Commodity by Country, Report FT-135, Washington D.C.: U.S. Government
Printing Office, 1973-1983.

$$\sigma_{ij} = \frac{\varepsilon_{ij}}{\nu_j} - \eta^D$$

where

$\eta^D \leq 0$ is the price elasticity of U.S. import demand. The coefficients calculated in the export demand functions were used.

ν_j is the share of Taiwan sales in total U.S. imports. Data are presented in Table 6G of the Appendix.

ε_{ij} is the cross price elasticity between countries i and Taiwan (j).

$$\varepsilon_{ij} = \frac{P_i}{q_i} \cdot \frac{dq_i}{dq_j}$$

To estimate the response of relative exports to the U.S. to changes in relative export prices, the function $q_1/q_2 = A (P_1/P_2)^b$ was estimated in logarithmic form:

$$\ln \left(\frac{q_1}{q_2}\right) = a + b \ln \left(\frac{P_1}{P_2}\right) \text{ with } a = \ln A.$$

The cross price elasticity of demand for this function is:

$\varepsilon_{12} = -Ab \left(\frac{q_2}{q_1}\right) \left(\frac{P_1}{P_2}\right)^b$. The relative import share is: $\frac{q_1}{q_2} = - \frac{Ab}{\varepsilon_{12}} \left(\frac{P_1}{P_2}\right)^b$. Therefore, the estimated intercept

term is: $a = \ln \left(- \frac{Ab}{\varepsilon_{12}}\right)$ which implies that the cross

elasticity $\varepsilon_{12} = -b$ since $a = \ln A$.

The data were selected from three-digit dis--
aggregated SITC. SITC 843, 845, and 846 are chosen because
the three categories accounted for most textiles and
apparel exports to the U.S. from Taiwan, Hong Kong, Japan,
South Korea, and mainland China. The time period for this
analysis was limited to the period 1978-1983 due to lack
of data before 1978 for the three categories.

The descriptions of SITC 843, 845, and 846 are as
follows:

> "SITC 843: Women's, girls' and infants' outer
> wearing apparel of cotton, wool,
> manmade fiber or other textile fibers,
> SITC 845: Other outer wearing apparel, of
> textile material, including sweaters,
> SITC 846: Under garments, knit (4)."

The regression results are presented in Tables 4F,
4G and 4H. The variation in the dependent variable ex-
plained by the independent variable, R^2, is larger between
Taiwan and mainland China than of those of Hong Kong, South
Korea, and Japan. The cross price elasticity is the
negative of the coefficient of the relative prices, b.

The t value are shown statistically significant
between Taiwan and mainland China in SITC 843, 845, 846,
Hong Kong is SITC 843, and Japan is SITC 845. The statisti-
cally significant estimators of the cross elasticities
are used for calculating the partial elasticities of
substitution, $\sigma_{ij} = \dfrac{\varepsilon_{ij}}{\nu_j} - \eta^D$. The results are presented

Table 4F: Regression Results of the Estimation of the Elasticity of Substitution of SITC 843 1978-1983. a/

Country	Intercept (a)	Elasticity of Substitution (b)	R^2	D.W.	F-test
Mainland China	.045 (1.837)	.736 (14.523*) b/	.986	1.292	142.23
Hong Kong	.698 (4.38)	2.280 (6.08*) b/	.903	1.853	37.03
South Korea	.026 (.27)	1.661 (2.27)	.584	1.681	5.62
Japan	.422 (5.273)	.469 (2.113)	.691	.866	4.72

a/ t-statistics in parentheses.

b/ * means significant at 5 percent level.

Table 4G: Regression Results of the Estimation of the Elasticity of Substitution of SITC 845 1978-1983. a/

Country	Intercept(a)	Elasticity of Substitution(b)	R^2	D.W.	F-value
Mainland China	.028 (.22)	.953 (7.53*)b/	.934	3.023	56.65
Hong Kong	.136 (3.22)	.090 (.83)	.146	1.407	.69
South Korea	.306 (1.76)	.616 (1.13)	.241	1.678	1.27
Japan	-.164 (-1.95)	1.000 (13.34*)b/	.978	1.499	177.98

a/ t-statistics in parentheses.
b/ * means significant at 5 percent level.

Table 4H: Regression Results of the Estimation of the Elasticity of Substitution of SITC 846 1978-1983. a/

Country	Intercept(a)	Elasticity of Substitution(b)	R^2	D.W.	F-value
Mainland China	-.302 (-2.42)	.868 (7.64*)b/	.936	1.747	58.41
Hong Kong	-.146 (-7.54)	1.181 (2.51)	.612	1.714	6.30
South Korea	-3.710 (-1.48)	15.60 (1.16)	.253	1.793	1.36
Japan	-.008 (-.02)	.943 (1.79)	.449	.292	3.22

a/ t-statistics in parentheses.
b/ * means significant at 5 percent level.

Table 4I: The Computations of the Partial Elasticities of Substitution.

(A) Taiwan/mainland China (T/C) in SITC 843

$\eta^D = 0.000$, $\nu_T = 0.12$, $\varepsilon_{T/C} = -.736$

$\sigma_{T/C} = -\dfrac{.736}{.12} = -6.13$

(B) Taiwan/Hong Kong (T/HK) in SITC 843

$\eta^D = 0.000$, $\nu_T = 0.12$, $\varepsilon_{T/HK} = -2.280$

$\sigma_{T/HK} = -\dfrac{2.280}{.12} = -19$

(C) Taiwan/mainland China (T/C) in SITC 845

$\eta^D = 0.000$, $\nu_T = 0.28$, $\varepsilon_{T/C} = -.953$

$\sigma_{T/C} = -\dfrac{.953}{.28} = -3.40$

(D) Taiwan/Japan (T/J) in SITC 845

$\eta^D = 0.000$, $\nu_T = 0.280$, $\varepsilon_{T/J} = -1.000$

$\sigma_{T/J} = -\dfrac{1.000}{0.280} = -3.57$

(E) Taiwan/mainland China (T/C) in SITC 846

$\eta^D = 0.000$, $\nu_T = 0.210$, $\varepsilon_{T/C} = -.868$

$\sigma_{T/C} = -\dfrac{.868}{.210} = -4.13$

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in Table 4I. The estimated demand elasticity for SITC 84

was not significantly different from zero, $\eta^D = 0$.

Cross-Price elasticities in the above analyses

are negative. It implies that SITC 843, 845, and 846 are

complementary goods between Taiwan/mainland China, Taiwan/

Hong Kong in SITC 845, and Taiwan/Japan in SITC 846,

The estimated cross-price elasticities are gross

elasticity measures which include an income effect. As

indicated in the estimated export demand analysis above,

the income effect of growth in the U.S. market was very

strong during this period. It is therefore probable that

the positive income effect outweighs any substitutability

between the exporting countries.

The calculated partial elasticities of substitution

correct for any income effect. These are all negative as

expected indicating that apparel exports of mainland China

and Hong Kong are the most important competitors of

Taiwan's apparel exports to the U.S.

Conclusion

Four research methods are used to analyze factors

influencing Taiwan's textiles and apparel exports to the

U.S. The composition of change can be seen by using

shift-share analysis. SITC 84 was the largest category

for United States' total textile imports and for Taiwan's

textile exports to the U.S. during 1973-1983.

The bilateral agreements caused no significant decrease in quantity of textiles and apparel exports from Taiwan to the United States in terms of trend function analysis.

An export-demand function was used to examine income and price elasticities. The estimated income elasticity is positive, that is, there is a direct relationship with U.S. real GNP. For elasticity of price, as export price rises, the demand for importing textiles declines in the United States. For apparel, the quantities of exports from Taiwan to the U.S. were not affected by their prices.

The partial elasticity of substitution was employed to analyze the competitiveness with other suppliers. There is significant evidence in price elasticity between Taiwan and mainland China in SITC 843, 845, and 846. This situation is also found between Taiwan and Hong Kong in SITC 843 and between Taiwan and Japan in SITC 845. Price factor was used to investigate the competitiveness due to lack of sufficient data for non-price factors such as quality and technology.

ENDNOTES

1. Avrom Bendavid-Val, <u>Regional and Local Economics Analysis for Practitioners</u>, (New York: Praeger Publishers, 1983), p.67.

2. Bureau of the Census, U.S. Department of Commerce, U.S. General Imports, Schedule <u>A Commodity by Country</u>, <u>Report FT-135</u>, (Washington D.C.: U.S. Government Printing Office, 1983), pp.3-12.

3. Juergen B. Donges and James Riedel, "The Expansion of Manufactured Exports in Developing Countries: An Empirical Assessment of Supply and Demand Issues," <u>Weltwirshaftliches Archives</u>, Volume 1, 1977, p.62.

4. Bureau of the Census, U.S. Department of Commerce, <u>U.S. General Imports</u>, Schedule <u>A Commodity by Country</u>, <u>Report FT-135</u>, (Washington D.C.: U.S. Government Printing Office, 1983), pp.80-81.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Summary and Conclusions

This study was conducted to analyze Taiwan's textiles and apparel exports to the United States during 1973-1983. The United States has been Taiwan's largest textiles and clothing market. Since the 1960's, Taiwan has suffered from textile quotas especially from the U.S. During the period 1973-1983, there were two bilateral textile trade agreements between the U.S. and Taiwan. The description of the two agreements were presented in Chapter Three. Four major competitors from Asia--Hong Kong, Japan, South Korea, and mainland China--were chosen to examine the competitiveness for Taiwan's textiles and apparel exports to the U.S.

Shift-share analysis, trend function, export-demand function, and elasticity of substitution were used to examine the relationships of Taiwan's export of textiles and clothing to the U.S.. By using shift-share analysis, the changes in level and composition of Taiwan's textiles and clothing exports to the U.S. were examined.

A trend function was used to examine whether U.S. imposed quotas influenced the rate of growth in Taiwan's export of textiles and clothing to the U.S.

Price and income elasticities were estimated by an export

demand function. The elasticity of substitution was used

to examine whether price factor is an important role be-

tween Taiwan and its competitors. The period used to

analyze the elasticity of substitution was from 1978 ,to

1983 because a disaggregation of SITC 843, 845, and 846

was not available before 1978.

Between 1973 and 1983, exports of clothing from

Taiwan to the U.S. increased by 417 percent. In fact,

most textile quotas are concentrated on clothing such as

SITC 843, 845, and 846. Therefore, SITC 84, clothing and

accessory, is the largest category for the U.S. textiles

and apparel imports and for Taiwan's exports.

From 1973 through 1983, two bilateral textile

trade agreements were designed between Taiwan and the

U.S. One was negotiated on January 1, 1975, the other one

was signed in 1978. Both agreements were centered on

sensitive categories such as sweaters of wool and man-

made fiber products. For the estimation of partial elasti-

city of substitution analysis these categories were chosen.

It was found that price is a major factor influencing

textiles exports to the U.S. for Taiwan and mainland

China in SITC 843, 845, and 846. This situation also

occurred between Taiwan and Hong Kong in SITC 843, and

in Japan for SITC 845. From the analysis of the export

demand function, there is a positive relationship between income and U.S. textile imports. For elasticity of price, as price goes up, the demand for importing textiles decreases. For apparel, the quantities of exports from Taiwan to the U.S. does appear to be affected by their prices.

There is no significant decrease in quantity of textiles and apparel exports from Taiwan to the U.S. But the competitiveness from other U.S. suppliers-- South Korea, Hong Kong, mainland China, and Japan has been a major factor affecting Taiwan's textiles and clothing exports to the United States.

Limitations of the Study

One of major limitations involved collection of data. A variety of classication for textile and clothing are used in statistical data books. In the classification of textile and apparel, there are SITC (standard international trade code), CCCN (customs co-operate council nomenclature), SIC (standard industrial classification code), CCC code for Taiwan, and MFA (multi-Fiber Arrangement) categories.

The provisions of bilateral agreements between the U.S. and Taiwan are revised every year during the same agreement period. Moreover, quotas are set by

MFA categories that are not suitable for other statistical
data.

Suggestions for Further Research

Further research is needed to investigate more
factors than those of this study. And more detailed cate-
gories can be used in analyzing the elasticity of substi-
tution. An econometric model could be developed to
analyze the textiles and clothing exports from Taiwan to
the U.S.

Another study that needs to be undertaken is a
search for a reasonable research method to examine the
impact that arose from textile quotas for all of
restricted items.

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APPENDIX

Table 6A: National Growth Effect of Taiwan's Textile Exports to the U.S. 1973-1983.a/

Industry	Taiwan Textiles Export to U.S.A. 1973 (1)	N=USA Textile Import Growth (2)=(1)x255%	R=Actual Growth (3)	R-N=M+S Net Relative Change To be Accounted for (4)
SITC 26	3,118	+7,951	+504	-7,447
SITC 65	25,337	+64,609	+238,287	+173,678
SITC 84	361,655	+922,220	+1,507,555	+585,335
Total	390,110	+994,780	+1,746,346	+751,566

a/ Units are expressed in thousands of U.S. Dollars.

Table 6B: The Computation of Industry Mix Effect, Taiwan's Textile Exports to the
          U.S. 1973-1983. a/

Industry	Distribution of total 1973 Textile's Value (in percent)		Deviation: Industry Growth Rate Minus National Growth (in percent)	The Value of Taiwan's Textile Export to USA 1973	Industry-Mix Effect (M) (M)=(3)x(4)
	USA (1)	Taiwan (2)	(3)	(4)	(5)
SITC 26	6	1	-214	3,118	-6,673
SITC 65	40	6	-135	25,337	-34,205
SITC 84	54	93	+122	361,655	+44,122
Total	100	100	0	390,110	+3,244

a/ All figures in thousands.

Table 6C: Taiwan's Textiles and Apparel Exports to the
            U.S. by SITC Division 1973-1983. a/

Year	Textiles SITC 26&65	Apparel SITC 84	Total
1973	28	362	390
1974	41	463	504
1975	45	501	546
1976	68	682	750
1977	77	783	860
1978	114	1083	1197
1979	117	1142	1259
1980	171	1369	1540
1981	248	1440	1688
1982	217	1621	1838
1983	268	1870	2138

a/   Units are measured in millions of U.S. Dollars.

Source: Bureau of the Census, U.S. Department of Commerce
          U.S. General Imports, Schedule A Commodity by
          Country, Report FT-135, Washington D.C.:
          Government Printing Office, 1973-1983.

Table 6D: Export Quantum Indices of Taiwan's Textiles
and Clothing Trade 1973-1983. a/

Year	Textile Products	Clothing and Accessory
1973	43.04	50.49
1974	39.49	48.35
1975	46.16	53.17
1976	63.78	77.78
1977	59.72	67.88
1978	71.37	87.58
1979	75.21	87.22
1980	82.36	104.94
1981	100.00	100.00
1982	97.86	104.74
1983	111.84	113.28

a/ Base year: 1981=100

Source: Department of Statistics, Ministry of Finance,
Monthly Statistics of Exports and Imports,
The Republic of China, February 20, 1984.

Table 6E: Index of Unit Value of Taiwan's Textiles and
            Clothing Exports 1973-1983. a/

Year	Textile Products	Clothing and Accessories
1973	62.34	55.08
1974	78.94	69.51
1975	66.17	65.44
1976	72.81	69.87
1977	76.35	78.81
1978	79.18	77.77
1979	99.04	88.18
1980	99.75	94.76
1981	100.00	100.00
1982	92.44	101.96
1983	85.42	102.25

a/ Base year: 1981=100

Source: Department of Statistics, Ministry of Finance,
          Monthly Statistics of Exports and Imports,
          The Republic of China, February 20, 1984.

Table 6F: The U.S. Textiles and Apparel Import Value from Major Suppliers
1973-1983. a/

Year	Taiwan	Mainland China	Hong Kong	South Korea	Japan	Other Countries	Total
1973	390110	17644	522637	265705	570848	2190612	3957556
	9.9%	.4%	13.2%	6.7	14.4%	55.4%	100%
1974	504903	40146	642186	351070	531841	2445000	4515146
	12.2%	1.0%	14.2%	7.8%	11.7%	54.1%	100%
1975	545645	47268	688738	475384	473635	2144971	4355641
	12.5%	1.0%	15.4%	11.0%	10.9%	49.2%	100%
1976	750278	75626	1125971	780500	620413	2652471	6005259
	12.5%	1.3%	18.7%	13.0%	10.3%	44.2%	100%
1977	859640	71649	1307559	816377	682649	2943184	6681058
	12.9%	1.1%	19.6%	12.2%	10.2%	44.0%	100%
1978	1197416	145325	1629183	1112407	818914	1754947	6658192
	18.8%	2.2%	24.5%	16.7%	12.3%	26.3%	100%
1979	1258456	275172	1741103	1094055	542383	4034650	8945819
	14.1%	3.1%	19.5%	12.2%	6.1%	45.0%	100%
1980	1539801	416681	1941573	1211331	615875	4066673	9791934
	15.7%	4.3%	19.8%	22.4%	6.3%	41.5%	100%

Table 6F   (continued)

Year	Taiwan	Mainland China	Hong Kong	South Korea	Japan	Other Countries	Total
1981	1687495	724608	2231555	1539117	838131	4611418	11532324
	14.5%	6.2%	19.2%	13.2%	7.2%	39.6%	100%
1982	1838001	941953	2275819	1666404	833801	4380352	11936330
	15.4%	8.0%	19.1%	14.0%	6.9%	36.6%	100%
1983	2136456	1122831	2607290	1967865	994487	5226414	14055343
	15.2%	8..0%	18.6%	14.0%	7.0%	37.2%	100%

a/ Units are expressed in thousands of U.S. Dollars.

Source: Bureau of the Census, U.S. Department of Commerce, U.S. General Imports, Schedule A Commodity by Country, Report FT-135, Washington D.C.: Government Printing Office, 1973-1983.

Table 6G: The Shares of Taiwan's Textiles and Apparel
          Sales in Total U.S. Imports 1978-1983. a/

(A) SITC 843:

	Taiwan's Exports to the U.S.	U.S. Total Imports	Shares (%)
1978	156,660	1,516,274	10
1979	191,704	1,680,166	11
1980	257,388	1,913,365	13
1981	342,873	2,583,750	13
1982	366.358	2,732,246	13
1983	425,786	3,374,628	13

Average: 12

(B) SITC 845:

	Taiwan's Exports to the U.S.	U.S. Total Imports	Shares (%)
1978	387,428	1,293,529	30
1979	315,199	1,152,069	27
1980	414,894	1,368,544	30
1981	401,214	1,458,507	28
1982	396,363	1,534,877	26
1983	470,965	1,848,650	25

Average: 28

Table 6G. (continued)

(C)   SITC 846:

	Taiwan's Exports to the U.S.	U.S. Total Imports	Shares (%)
1978	185,704	896,662	21
1979	200,074	897,747	22
1980	245,387	1,017,864	24
1981	199,150	1,101,842	18
1982	248,810	1,189,829	21
1983	287,346	1,457,283	20
		Average:	21

a/ Units are expressed in thousands of U.S. Dollars.

Source: Compiled from, Bureau of the Census, U.S. Department of Commerce, U.S. General Imports, Schedule A Commodity by Country, Report FT-135, Washington D.C.: Government Printing Office, 1978-1983.