PART I

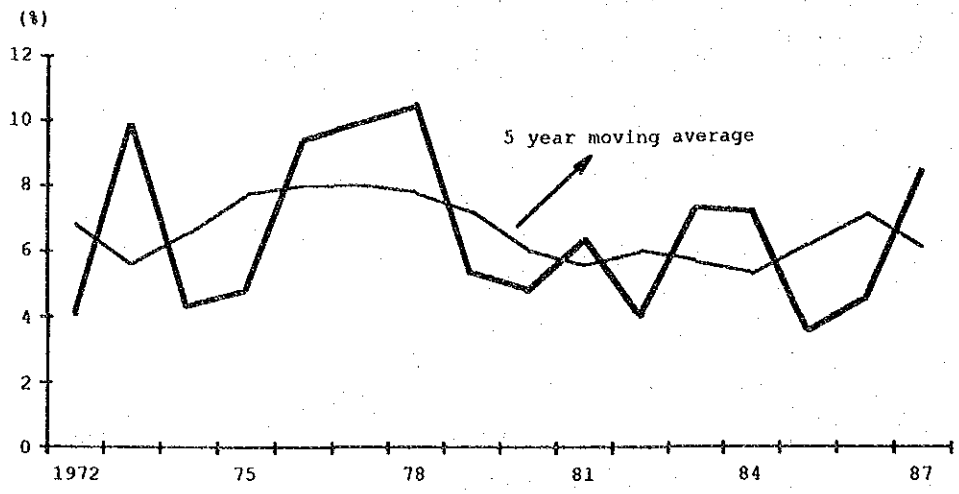
ECONOMIC ENVIRONMENT FOR LONG TERM DEVELOPMENT OF THAILAND

1. ECONOMIC GROWTH AND SECTORAL CONTRIBUTION

Thai economy is said to have entered a high-economic growth era especially since the late 1980s. We could say that Thailand is steadily becoming a new comer in the Newly Industrializing Economies (NIEs) of Asia. It is also said that a high economic growth rate in recent years has been realized mainly through a remarkable export expansion, and that foreign direct investment into Thailand has played an important role in expanding export base. In this sense, it is important to get in sight into possible changes in the external factors such as international market and the movement of foreign direct investment in designing long term development of the Thai economy. Focusing mainly on external factors, we will discuss on what are next steps for Thailand to proceed towards an industrialized economy in the next twenty years.

1.1 Growth of Gross Domestic Product since the 1970s

Through the 1970s, Thai economy experienced a high economic growth except during 1974 and 1975 being the years of oil shock. Fig. 1.1 illustrates the annual growth rate of Gross Domestic Product (GDP) in the 1970s calculated on the basis of 5-year moving average. According to this figure, the average of GDP growth rate in the 1980s seems to be lower than that of the early 1970s. However, especially since 1985, it is obvious that the level of growth rate has been increasing year by year. GDP growth rate in 1988 was 11.0% compared to 18.4% in 1987 being the highest level since the second oil shock in 1979.



Note: 5-year moving average technique was applied. As for 1972 and 1987 however, 3-year moving average technique was applied.

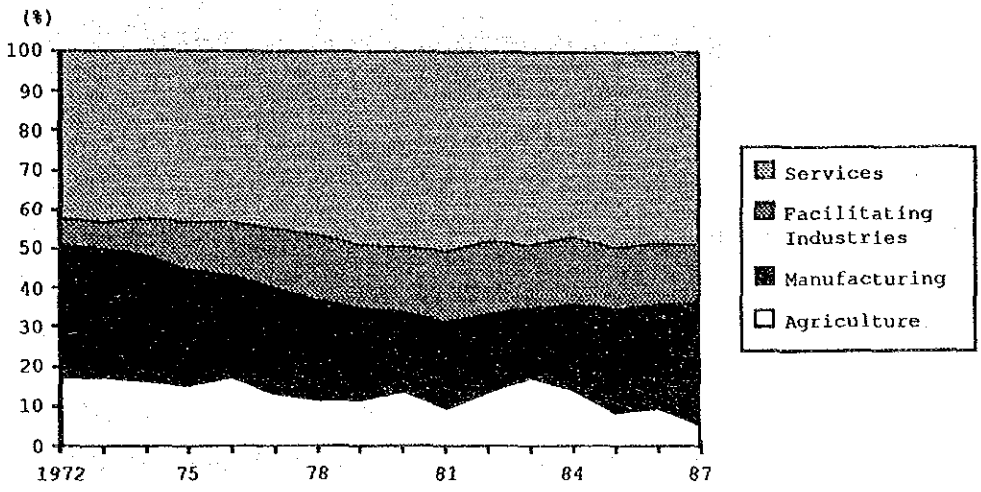
Sources: NESDB, National Income of Thailand, various issues.

Fig. 1.1 Annual Growth Rate of GDP

1.2 Growth Contribution by Sector

Thailand is abundant of agricultural and other natural resources compared with far eastern Asian countries such as Japan, Korea and Taiwan. Nevertheless, since the early 1970s through the 1980s, the leading sector of Thailand was undoubtedly the manufacturing. Fig. 1.2 and Table 1.1 show the relative contribution of sectors to the annual GDP growth in constant price series.

It can be pointed out that, firstly, the contribution of agriculture has relatively been small and decreasing year by year since the early 1970s. Secondly, in spite of a remarkable decrease from 33.8% in 1972 to 20.0% in 1980, the contribution of manufacturing sector turned to increase since the early 1980s and reached 31.2% in 1987. Thirdly, the contribution the facilitating industries, including construction, electricity, gas, water, transportation and communication, jumped up from 6.8% in 1972 to 16.9% in 1980. The contribution has been decreasing gradually since 1981 (See Fig. 1.2).



Note: Growth Contribution Ratio $= \frac{dYi}{Y} \times 100\ (\%)$.
Where, Y; GDP, d; increment, i; sector

Sources: Same as for Fig. 1.1

Fig. 1.2 GDP Growth Contribution Ratio by Sector

Table 1.1 GDP Growth Contribution Ratio by Sector

(%)

	1972	1975	1980	1985	1986	1987
Agriculture	17.5	15.7	14.1	8.8	9.8	5.7
Manufacturing	33.8	29.5	20.0	26.6	26.6	31.2
Facilitating Industries	6.8	11.9	16.9	15.5	15.2	14.2
Services	42.0	42.8	49.0	49.1	48.3	48.9

Note: (1)"Facilitating Industries" includes Construction, Electricity, Gas, Water, Transportation, and Communication.
(2)"Services" includes all other branches.
(3)5-Year moving average was applied.

Sources: Same as for Fig. 1.1

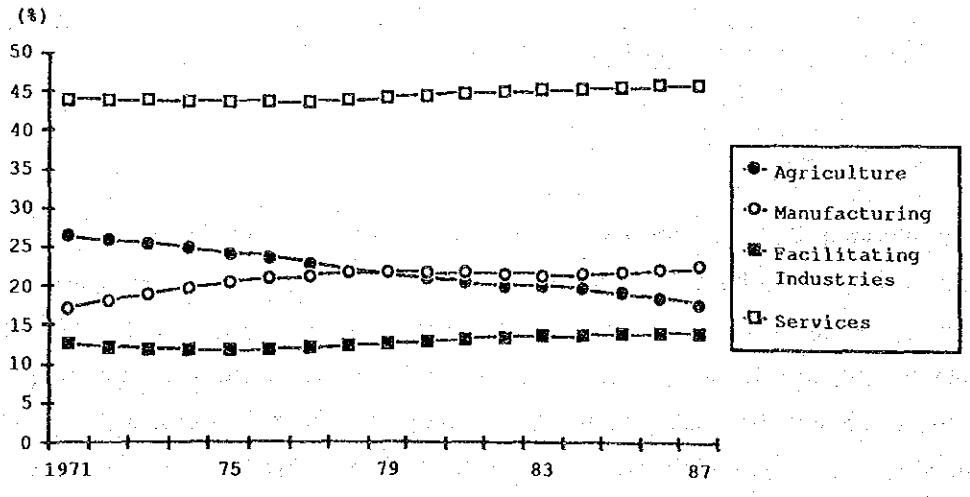
It is obvious that contribution ratio of the service sector is larger than any other sectors. Although we should not neglect the fact that the service sector plays an important role in absorbing employment, expansion of this sector depends on manufacturing and/or agriculture. It is in this regard that a more attention should be paid to the relationship between the productive activities, especially the manufacturing industries, and the facilitating industries.

In the 1970s, the relative contribution of manufacturing sector has decreased remarkably along with an increase in that of the facilitating industries (See Table 1.1). This may mean that GDP growth rate of manufacturing sector has been forced to decrease by the lack of sufficient infrastructure. An increase

in the relative contribution of the facilitating industries reflects the fact that a sales amount of infrastructures and services increased through the 1970s because of an excess demand for such infrastructures and services. It is certain that the Thai economy experienced the oil shock in this decade. Looking at a relative increase in the contribution of the facilitating industries, however, we may say that there is a desirable relationship maintained between the facilitating industries and the manufacturing industries.

Even in the 1980s, the relative contribution of the facilitating industries is still high. Furthermore, that of the manufacturing industries has significantly been increasing since 1980, despite that the relative contribution of the facilitating industries is almost the same as that in 1980. Bearing these points in mind, it could be said that the Thai economy will have to tackle with a problem of the lack of sufficient infrastructure in the coming years as well.

As a result of the steady expansion of manufacturing sector through the 1970s and the 1980s, production structure of Thai economy has significantly changed. According to the Fig. 1.3, the share of manufacturing sector clearly exceeded that of agriculture at the end of the 1970s. This should be epoch-making for a country like Thailand which has grown based on agriculture.



Sources : Same as Fig. 1.1

Fig. 1.3 GDP Composition by Sector

2. CHANGE IN TRADE STRUCTURE SINCE THE 1970s

2.1 Export

The trade structure in terms of commodity-mix has also changed along with the change in domestic production structure, in which the weight of manufacturing sector has increased especially since the 1970s.

Fig. 2.1 and 2.2 show the export composition by commodity group since 1970 till 1985. It is obvious that the export structure of Thailand has experienced a significant change in the past 15 years, looking at a fact that, in the total export amount, a share of the manufactured products under the sections 5,6,7 and 8 of Standard International Trade Classification (SITC)[1] has increased steadily since the early 1970s through the middle of the 1980s.

According to the Fig. 2.2, it is notable that the shares of SITC 7 (machinery and transport equipment) and SITC 8 (miscellaneous manufactured articles) have increased remarkably in the total export especially since the latter half of the 1970s. On the other hand, SITC 6 (the manufactured goods classified by materials) has long been representing a substantial portion. This means that the Thai economy has kept its comparative advantage in the manufactured products based on natural resources.

However, as being reflected in the fact that the share of SITC 7 and 8 has steadily increased in the past 10 years, the Thai export has shifted its weight from the resource based manufactured products such as SITC 6 to the

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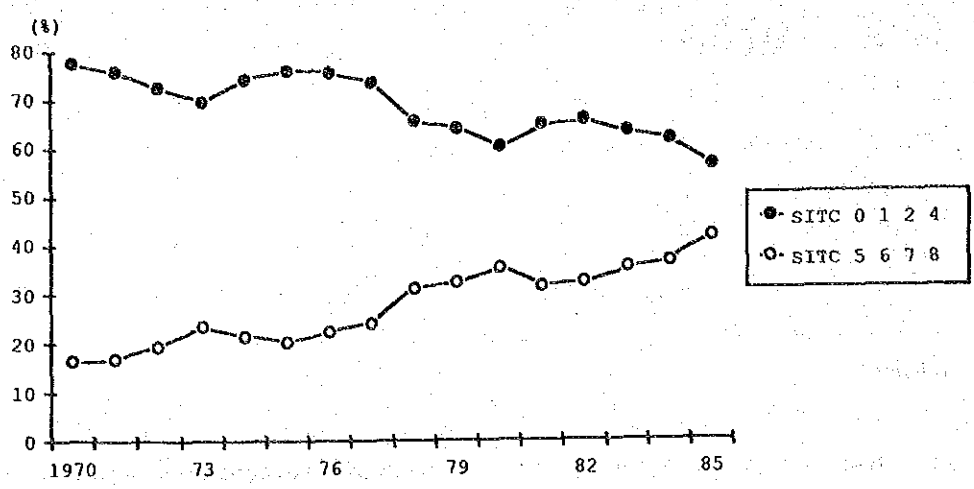
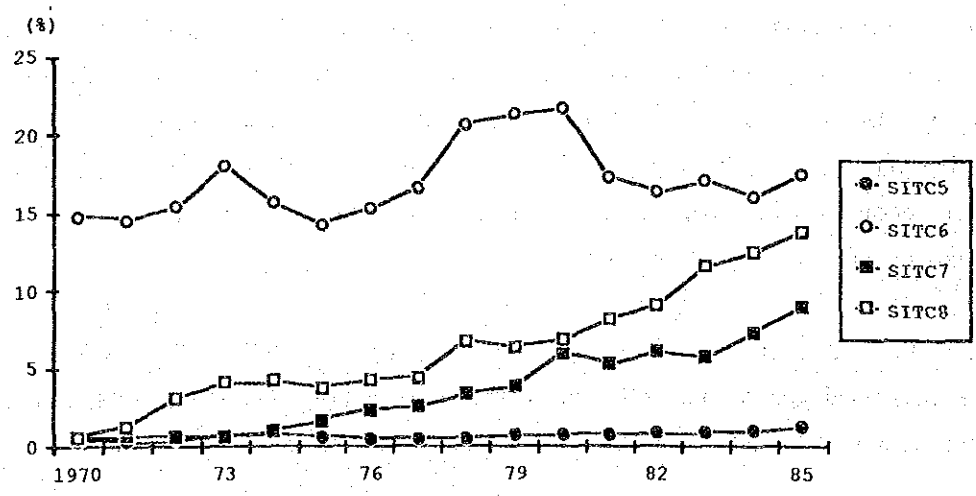
1 SITC 5: Chemicals
SITC 6: Manufactured goods classified chiefly by material: leather products; rubber manufactures; wood and cork products; paper products; textiles; non metallic mineral products; metals; manufactures of metals.
SITC 7: Machinery and transport equipment.
SITC 8: Miscellaneous manufactured articles.



Note: Commodity classification is as following:
SITC 0; Food and live animals
SITC 1; Beverages and tobacco
SITC 2; Crude materials, inedible, except fuels
SITC 4; Animal and vegetable oils and fats
SITC 5; Chemicals
SITC 6; Manufactured goods classified chiefly by material:leather, rubber, wood and cork, paper, textile, non-metallic mineral manufactures, iron and steel, non-ferrous metals, miscellaneous manufactures of metal.

Sources: UN, International Trade Statistics, various issues.

Fig. 2.1 Export Composition by Commodity Group (1)



Sources : Same as Fig. 2.1

Fig. 2.2 Export Composition by Commodity Group (2)

processing and assembling type industrial products such as SITC 7 and/or SITC 8. It is important to discuss on the labor cost and the skilled labor in order to prospect the possibilities of expanding the export of SITC 7 and/or SITC 8 in the future. It will be examined in the chapter 5, Part I of this volume.

Table 2.1 shows the change in commodity-mix[1] of Thai export since 1977 through 1988. This table indicates a significant transformation of the Thai export structure. Notable is the textile products including apparels. Their share in the total export remarkably increased from only 6.5% in 1977 to 14.5% in 1988. Nowadays, the textile products respresents a largest part, among other products, of a total value of the export from Thailand. However, the textile products export already faced with the protectionism in the industrialized countries such as the U.S.A. in recent years. It will be necessary for a sustained export growth to establish a new strategy including the one to promote direct Thai investment abroad.

Secondly, the share of the agro- processed products[2] has also increased from 2.1% to 7.5% during the period 1977 to 1988. On the contrary, the shares of rice, rubber, tapioca products and maize have significantly decreased. A total share of these commodities was 43.0% in 1977 compared to 21.6% in 1988.

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1 The commodity-mix comprises the major commodities each of which represents more than 1% of total value of export in 1988.

2 Canned fish, canned crustaceans, frozen fowl, canned pineapple and so on.

Table 2.1 Export Composition by Commodity

(%)

Items	1977	1980	1985	1986	1987	1988
Textile products	6.5	7.2	12.2	13.4	16.2	14.5
Rice	18.8	14.6	11.6	8.7	7.6	8.6
Rubber	8.7	9.3	7.0	6.5	6.8	6.7
Tapioca products	10.8	11.2	7.7	8.2	6.9	5.4
Canned fish	0.2	0.5	2.7	3.6	3.2	3.7
Precious stones	1.5	2.4	3.3	3.5	3.9	3.5
Jewellery	0.2	0.4	1.1	2.1	2.8	2.4
Prawns	1.6	1.5	1.8	1.9	1.9	2.4
Sugar	10.5	2.2	3.2	3.1	2.9	2.4
Footwear	0.0	0.3	1.2	1.4	2.0	2.4
Integrated circuits	1.6	4.6	4.3	5.5	5.1	2.2
Furniture and parts	0.2	0.4	0.7	0.8	1.1	1.6
Canned crustaceanes	0.4	0.7	1.1	1.0	1.2	1.4
Plastic products	0.3	0.5	0.7	0.6	0.7	1.4
Frozen fowl	0.2	0.5	0.8	1.3	1.3	1.2
Canned pineapple	1.3	1.1	1.7	1.4	1.2	1.2
Wood products	1.2	1.0	1.0	1.0	1.2	1.0
Fresh cuttlefish	0.9	1.0	1.1	1.6	1.4	1.0
Maize	4.7	5.5	4.0	4.0	1.3	0.9
Fresh fish	0.3	0.3	0.7	0.9	0.8	0.8
Others	30.2	34.8	32.1	29.5	30.4	35.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Bank of Thailand, Quarterly Bulletin, various issues.

Table 2.2 indicates the commodity-wise contribution[1] to the export growth during the period from 1977 to 1987. The commodities listed in the Table 2.2 are ranked in the decreasing order of magnitude of contribution to the growth. Looking at the Table 2.2, it can be said that the major commodities contributing to export growth of Thailand during the period 1977 to 1988 are textile products, rubber, integrated circuits, tapioca products and canned fish.

1 Annual growth rate of total export during the period 1977 to 1987 was 15.5%. Growth contribution ratio (Ci), indicating the commodity-wise contribution to the total export growth, is calculated as follows:

$$Ci = \frac{Ei}{E} \times \frac{DEi}{Ei} = \frac{DEi}{E},$$

where E:total export, Ei:export of commodity i

Table 2.2 Export Growth Contribution Ratio (1977-87)

(%)

Items	Annual Growth Rate	Average Composition	Contribution Ratio
Textile products	26.6	11.3	18.2
Rubber	12.8	7.8	6.0
Integrated circuits	29.5	3.3	5.9
Tapioca products	10.3	8.9	5.5
Canned fish	51.7	1.7	5.3
Footwear	72.7	1.0	4.4
Jewellery	48.9	1.5	4.4
Precious stones	27.0	2.7	4.4
Rice	5.4	13.2	4.3
Prawns	17.2	1.8	1.9
Frozen fowl	38.2	0.8	1.8
Furniture and parts	41.0	0.6	1.6
Canned crustaceanes	30.6	0.8	1.5
Fresh cuttlefish	20.2	1.2	1.4
Wood products	15.8	1.2	1.2
Canned pineapple	15.3	1.3	1.2
Fresh fish	26.7	0.6	0.9
Plastic products	27.5	0.5	0.8
Sugar	1.4	6.7	0.6
Maize	1.6	3.0	0.3
Others	15.6	30.3	28.5
Total	15.5	100.0	100.0

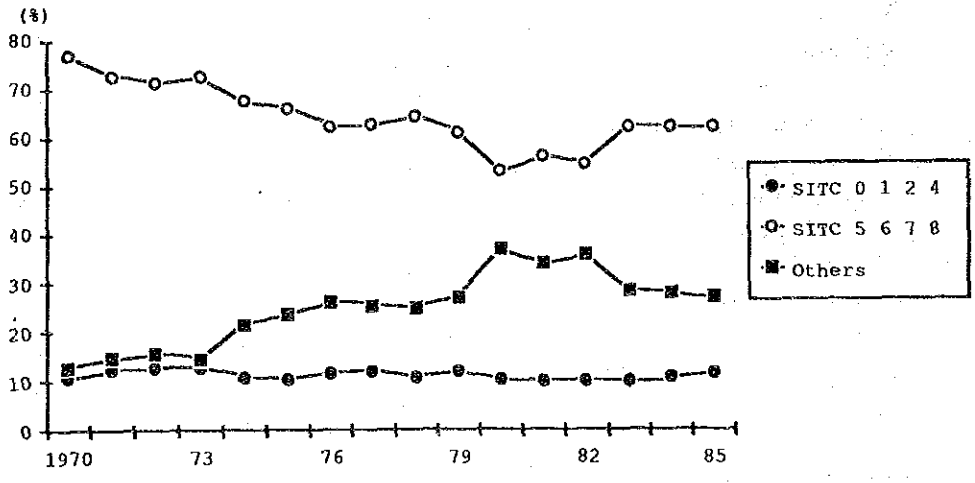
Note: "Export Growth Contribution Ratio by commodity" was calculated in the way same as "GDP Growth Contribution Ratio by Sector". See Note for Figure 1.2.

Sources: Same as Table 2.1

2.2 Import

Change of import composition has not been so significant compared with that of export. However, the import of capital and intermediate goods is still a big burden on the Thai economy.

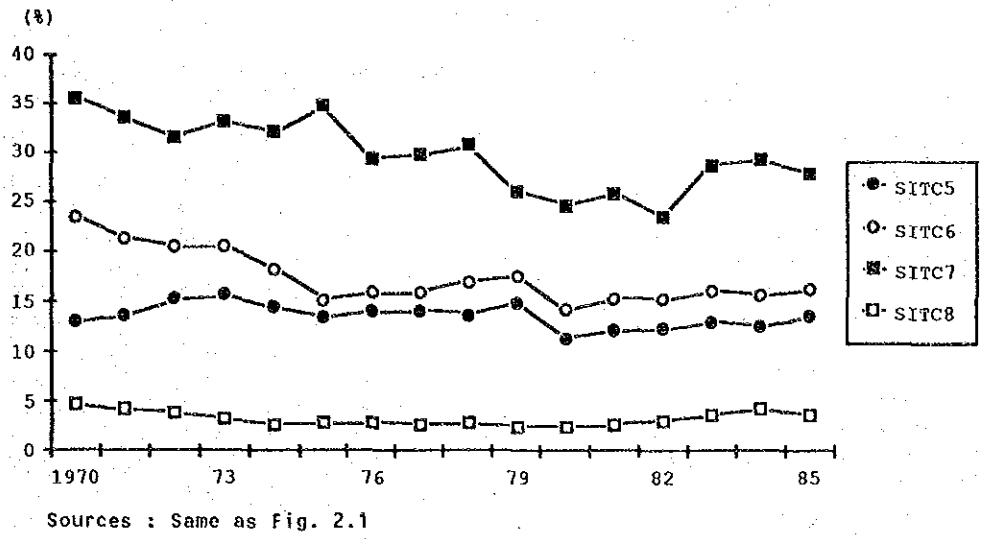
The Thai economy as one of the developing economies with abundant natural resources and efficient labor has a characteristics to import manufactured products much more than other products, as observed in the Fig. 2.3. Although, in the import amount, a total share of SITC 5,6,7 and 8 has decreased from nearly 80% in 1970 to about 50% in 1980, this does not necessarily mean the decrease of pressure against the trade balance, because the import of "others" consisting mainly of oil products increased especially after the oil shock in 1974 and 1979.



Sources : Same as Fig. 2.1

Fig. 2.3 Import Composition by Commodity Group (1)

Fig. 2.4 shows change in the commodity-mix of import on the basis of SITC at the one digit level during the same period mentioned above. It is clear that SITC 7 has been the largest among these commodity groups since the early 1970 till the middle of the 1980s. Furthermore, notable is that the share of SITC 7 turned to increase in 1983 and reached a level once recorded in the past.



Sources : Same as Fig. 2.1

Fig. 2.4 Import Composition by Commodity Group (2)

Looking further into the change in the commodity-mix of import as shown in the Table 2.3, we could point out the following:

(1) Intermediate products and raw materials have remarkably increased their share from 27.0% in 1982 to 35.1% in 1988.

(2) A greater attention should be paid to the fact that "capital goods" which represents the largest part of import in the 1980s has further increased its share from 24.5% in 1982 up to 39.8% in 1988. Especially, "non-electrical machinery and parts" together with "electrical machinery and parts" alone represents 28.6% of the total import value in 1988.

(3) It should be pointed out that relative magnitude of these commodities has been increasing through the 1980s.

In fact, these commodity groups have greatly contributed to recent rapid expansion of the total import. Table 2.4 shows the commodity-wise contribution to the import growth. Firstly, the contribution of the "intermediate products and raw materials" was 39.8% during the period 1982 to 1988. Furthermore, in case of "capital goods", the contribution was 49.6%. This means that around 50% of the total import increase during the period 1982 to 1988 was due to the capital goods import.

Table 2.3 Import Composition by Commodity

(%)

Economic Classification	1982	1983	1984	1985	1986	1987	1988
I. CONSUMER GOODS	9.1	9.4	9.3	9.5	10.1	10.1	7.6
A. Non-durable:	5.2	5.2	5.0	5.1	5.4	5.0	4.0
B. Durable:	3.9	4.3	4.3	4.4	4.8	5.1	3.6
Household goods	1.3	1.2	1.2	1.4	1.5	1.5	1.4
Electrical appliances	1.8	2.2	2.3	2.3	2.4	2.8	1.6
Wood and cork products	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Leather and leather products	0.0	0.0	0.0	0.1	0.2	0.2	0.0
Furniture	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Cycles, motorcycles, carts, etc	0.5	0.6	0.5	0.4	0.3	0.4	0.4
Small arms	0.1	0.1	0.1	0.2	0.3	0.1	0.1
II. INTERMEDIATE PRODUCTS AND RAW MATERIALS	27.0	28.1	28.4	30.2	34.9	35.8	35.1
A. Chiefly for consumer goods	17.7	18.6	19.2	20.3	25.4	25.4	23.2
Fish and preparation	0.3	0.4	0.8	1.5	3.1	2.1	2.8
Animal and vegetable crude materials	1.4	1.3	1.6	1.0	1.3	1.3	1.0
Tobacco unmanufactured	0.8	0.3	0.4	0.6	0.5	0.1	0.2
Wood, lumber, cork, pulp, waste paper	1.5	1.6	1.4	1.5	1.5	1.8	1.6
Textile fibers	1.7	1.9	2.2	2.3	2.3	2.5	2.0
Textile yarn and thread	0.6	0.6	0.6	0.6	1.0	1.3	1.2
Fabrics	1.0	1.2	1.4	1.4	1.8	1.9	1.4
Jewelry, including silver bars	0.9	1.3	1.1	1.0	1.7	2.1	2.4
Paper and paperboard	1.3	1.3	1.2	1.5	1.4	1.5	1.2
Chemicals	8.2	8.8	8.5	9.2	10.8	10.8	9.5
B. Chiefly for capital goods	9.2	9.4	9.2	9.8	9.6	10.5	11.9
Crude minerals	0.5	0.5	0.5	0.5	0.4	0.4	0.3
Base metals	8.7	9.0	8.7	9.3	9.2	10.1	11.5
III. CAPITAL GOODS	24.5	29.5	30.0	30.0	32.4	31.7	39.8
Fertilizers and pesticides	2.4	2.6	2.5	2.7	2.8	2.0	2.0
Cement	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction materials	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Tubes and pipes	0.2	0.3	0.3	0.4	0.3	0.2	0.6
Glass and other mineral manufactures	0.6	0.6	0.5	0.6	0.6	0.6	0.5
Rubber manufactures	0.3	0.3	0.3	0.3	0.3	0.3	0.8
Metal manufactures	1.5	1.7	1.6	2.0	1.7	1.8	1.9
Non-electrical machinery and parts	10.8	14.0	14.3	13.8	13.4	14.9	17.7
For agriculture use	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Tractors	0.9	0.8	0.7	0.6	0.5	0.6	0.6
For industrial use	9.8	13.1	13.5	13.2	12.8	14.2	17.1
Electrical machinery and parts	5.8	6.9	7.4	6.3	10.6	9.6	10.6
Scientific and optical instruments	1.7	1.9	1.7	1.7	2.0	1.7	2.2
Aircrafts and ships	1.1	0.6	1.3	1.4	0.7	0.4	3.3
Locomotive and rolling stock	0.0	0.3	0.0	0.7	0.1	0.1	0.2
IV. OTHER IMPORTS	39.4	33.0	32.3	30.3	22.5	22.3	17.6
Vehicle and parts	3.9	4.8	4.8	3.7	3.7	4.6	5.8
Passenger cars	0.0	0.0	0.1	0.0	0.0	0.1	0.9
Busses and trucks	1.3	1.4	1.5	1.1	1.0	1.2	1.2
Chassis and bodies	2.5	3.2	3.1	2.4	2.6	3.2	3.6
Tires	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Fuels and lubricant	30.9	24.1	23.4	22.6	13.4	13.2	7.6
Miscellaneous	4.6	4.0	4.1	4.0	5.3	4.4	4.3
Gold bullion	0.0	0.0	0.0	0.0	0.1	0.2	0.0
V. TOTAL IMPORTS	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources : Same as Table 2.1

Table 2.4 Import Growth Contribution by Commodity (1982-88)

(%)

Economic Classification	Annual Growth Rate	Average Composition	Contribution Ratio
I. CONSUMER GOODS	13.8	8.3	6.5
A. Non-durable:	12.0	4.6	3.1
B. Durable:	16.0	3.7	3.4
Household goods	19.2	1.3	1.4
Electrical appliances	14.7	1.7	1.4
Wood and cork products	12.4	0.1	0.0
Leather and leather products	38.5	0.0	0.1
Furniture	19.8	0.0	0.0
Cycles, motorcycles, carts, etc	9.9	0.4	0.2
Small arms	18.1	0.1	0.1
II. INTERMEDIATE PRODUCTS AND RAW MATERIALS	22.6	31.0	39.8
A. Chiefly for consumer goods	22.7	20.5	26.3
Fish and preparation	67.5	1.6	6.0
Animal and vegetable crude materials	11.2	1.2	0.8
Tobacco unmanufactured	-11.2	0.5	-0.3
Wood, lumber, cork, pulp, waste paper	18.2	1.6	1.6
Textile fibers	20.7	1.8	2.1
Textile yarn and thread	33.7	0.9	1.7
Fabrics	22.8	1.2	1.6
Jewelry, including silver bars	38.1	1.7	3.6
Paper and paperboard	15.9	1.2	1.1
Chemicals	20.2	8.8	10.1
B. Chiefly for capital goods	22.4	10.6	13.4
Crude minerals	9.5	0.4	0.2
Base metals	22.9	10.1	13.2
III. CAPITAL GOODS	27.2	32.1	49.6
Fertilizers and pesticides	13.5	2.2	1.7
Cement	20.1	0.0	0.0
Construction materials	3.1	0.1	0.0
Tubes and pipes	35.8	0.4	0.8
Glass and other mineral manufactures	14.5	0.6	0.5
Rubber manufactures	40.6	0.5	1.2
Metal manufactures	22.1	1.7	2.2
Non-electrical machinery and parts	27.5	14.2	22.2
For agriculture use	12.9	0.1	0.1
Tractors	10.4	0.7	0.4
For industrial use	28.6	13.4	21.8
Electrical machinery and parts	29.6	8.2	13.8
Scientific and optical instruments	22.7	1.9	2.5
Aircrafts and ships	41.1	2.2	5.2
Locomotive and rolling stock	56.7	0.1	0.3
IV. OTHER IMPORTS	2.6	28.5	4.1
Vehicle and parts	25.2	4.8	6.9
Passenger cars	113.9	0.5	2.9
Busses and trucks	16.5	1.2	1.2
Chassis and bodies	25.0	3.1	4.3
Tires	4.8	0.1	0.0
Fuels and lubricant	-7.2	19.2	-7.9
Miscellaneous	16.1	4.4	4.1
Gold bullion	-39.3	0.0	0.0
V. TOTAL IMPORTS	17.3	100.0	100.0

Remarks: "Import Growth Contribution Ratio" was calculated in the same way as "GDP" Growth Contribution Ratio by sector". See Note for Figure 1.2.

Sources: Same as for Table 2.1

The changing trade balance of Thailand should roughly be checked with reference to the commodity group under SITC at the one digit level by using "Net Export Ratio". The next export ratio (NER) is defined here and applied as:

$$NER = \frac{Xi - Mi}{Xi + Mi}$$

where Xi: export of i - goods

Mi: import of i - goods

Value of NER varies from - 1 to + 1. When it is +1, the industry which produces the corresponding goods is fully specialized in export. A positive NER means that the industry, or consequently the country, is the net exporter of i - goods.

Table 2.5 shows the NER by commodity group since 1970 till 1985. We can find out some points related to the changing import-mix in these ten years. Firstly, the commodity groups being specialized in export are only SITC 0 and 8 at present, except for SITC 1 whose share in Thai trade is relatively small. Although NER of the group SITC 8 turned from negative to positive in 1976, it is necessary to pay attention to a fact that manufacturing the products under these commodity groups should involve import of the materials for themselves.

Table 2.5 Net Export Ratio by Commodity Group (1970-85)

	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9
1970	0.7	-0.2	0.5	-0.9	-0.4	-1.0	-0.5	-1.0	-0.9	-0.2
1971	0.8	-0.4	0.4	-0.9	-0.4	-1.0	-0.4	-1.0	-0.7	0.0
1972	0.8	-0.4	0.4	-0.8	-0.7	-1.0	-0.3	-1.0	-0.3	-0.1
1973	0.8	-0.1	0.4	-0.8	-0.4	-0.9	-0.2	-1.0	0.0	0.1
1974	0.9	-0.2	0.4	-0.9	-0.5	-0.9	-0.2	-1.0	0.1	0.1
1975	0.9	-0.1	0.3	-1.0	-0.5	-0.9	-0.2	-0.9	-0.1	0.0
1976	0.9	0.0	0.3	-1.0	-0.6	-0.9	-0.1	-0.9	0.1	-0.2
1977	0.9	-0.1	0.2	-1.0	-0.8	-0.9	-0.1	-0.9	0.1	-0.2
1978	0.9	0.1	0.3	-1.0	-0.8	-0.9	0.0	-0.8	0.3	-0.2
1979	0.8	0.0	0.2	-1.0	-0.9	-0.9	-0.1	-0.8	0.3	-0.3
1980	0.8	0.0	0.3	-1.0	-0.7	-0.9	0.0	-0.7	0.3	-0.4
1981	0.8	0.1	0.1	-1.0	-0.6	-0.9	-0.1	-0.8	0.4	-0.2
1982	0.9	0.1	0.2	-1.0	-0.2	-0.9	-0.1	-0.7	0.4	-0.5
1983	0.8	0.2	0.1	-1.0	-0.5	-0.9	-0.2	-0.8	0.3	-0.6
1984	0.8	0.0	0.1	-1.0	-0.4	-0.9	-0.2	-0.7	0.3	-0.6
1985	0.8	-0.2	0.1	-0.9	0.1	-0.9	-0.1	-0.6	0.5	-0.6

Remarks: "Net Export Ratio" is defined as $\frac{X-M}{X+M}$
where X: Export, M: Import

Sources: Same as for Figure 2.1

Secondly, in relation to this fact, a significant decrease in NER of SITC 2 reflects an increase in the import of intermediate products and raw materials (See Table 2.4), although the group as a whole is still specialized in export and contribute to the trade surplus.

Finally, NER of SITC 5 and 7 are still negative. Considering a relatively large magnitude of these commodity group in import (See Fig. 2.4), those import will continue to be a big burden on the trade balance of Thailand in the future. It is the capital goods that has the largest share in the total import value and is a major cause to increase the total import value.

2.3 Investment Goods Import and Trade Deficit

In the following discussion, an attempt will be made to analyze the relationship between import of the investment goods[1] and trade deficit in Thailand.

Fig. 2.5 illustrates changes in the investment goods import, the trade deficit, and the ratio of trade deficit to Gross Domestic Product (TD/DGP). It is obvious that there is a close relationship between "investment goods import" and "trade deficit" through the 1970s and the 1980s. It can be pointed out that the increase of investment goods import will be a big burden for the Thai economic development as a whole in coming years.

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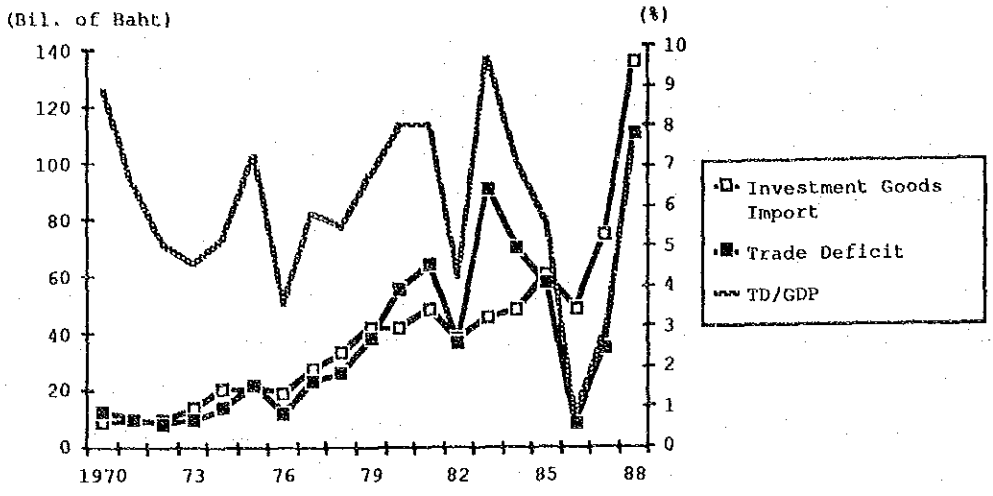
1 "Investment goods" include: agricultural machinery and apparatus, transport equipment, building materials, electric equipment and apparatus, other machinery, engines, tools and implements, office and scientific equipment and apparatus.



Remarks: "Investment Goods" includes agricultural machinery and apparatus, transport equipment, building materials, electric equipment and apparatus, other machinery, engines, tools and implements, and so on.

Sources: NESDB, National Income of Thailand, various issues.
IMF, International Financial Statistics, various issues.

Fig. 2.5 Investment Goods Import and Trade Deficit

TD/GDP improved since 1970 till 1976 in spite of the increase in the investment goods and the trade deficit. However, the ratio has increased since 1976 along with the increased import of the investment goods. There was a remarkable improvement in the trade balance in 1986 mainly because of rapid export expansion. It is clear that TD/GDP significantly decreased and that the three variables have gotten closely interdependent since 1986.

The Thai economy as a whole still has a characteristics of being dependent on the large scale import of the investment goods such as machineries and materials, in spite of rapid and significant industrial development in recent years. When we discuss the economic development in a long term perspective, a focus should be put on efficient production of these products.

In the following chapter, an attempt is made to discuss mainly on the possibility of import substitution of the capital goods or producers durables. The import substitution of the intermediate goods and raw materials will also be important for Thailand in the future. However, development of the machinery industry, which is an important factor for technological progress and employment absorption in longer run, should be focused here rather than the intermediate industries which can be developed by standardized technologies if scales of economy is realized as domestic demand grows sufficiently.

3. IMPORT DEPENDENCY OF CAPITAL GOODS SINCE THE 1970s

3.1 Import Dependency of Capital Goods and Technological Progress

In general, the import substitution of capital goods[1] is one of the essentials for economic development of a country in terms not only of trade balance but also of the domestic technological progress through accumulating skilled labor. At an initial stage of industrialization, the import of capital goods will inevitably increase and accompany the incoming of advanced technologies from industrialized countries. However, domestic production of capital goods will also increase through assimilation and spill-over of those new technologies at the next step. Sufficient and well-trained skilled labor, which is one of the most important factors for industrialization, will be accumulated in the process of this assimilation and spill-over within the country. When new technologies are introduced again, same process will continuously take place.

As a result of an accumulation of the skilled labor and know-how for realizing efficient production process, import dependency of the capital goods will decrease in a long term. Fig. 3.1 illustrates changes in the import dependency of the producers durables since 1970. The import dependency[2] of producers durables has decreased through the 1970s and the 1980s having shown fluctuations within a cycle of 5 to 6 years. However, the dependency jumped up to 36% in 1988 compared to 25% in 1987. The level of 36% is the one attained in the middle of the 1970s.

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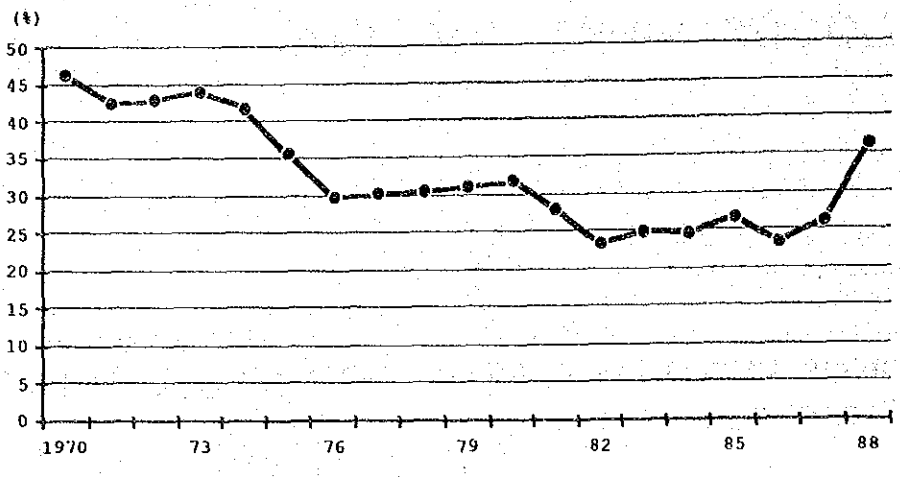
1 "Capital goods" here mean "producer durables", including agricultural machinery and apparatus, electric equipment and apparatus, other machinery, engines, tools and implement, office and equipment and apparatus.

2 "Import dependency of producers durables" here is defined as the ratio of producers durables import to the gross domestic fixed capital formation (only the machineries and apparatus excluding the transport equipments).



Remarks: "Producers Durables" includes Agricultural machinery and apparatus, Electric equipment and apparatus, Machinery, Engines, Tools and implements, Office and scientific equipment and apparatus.

Sources : Same as Fig. 1.1

Fig. 3.1 Producers Durables Import Dependency

Growth of the machinery industries in a sufficient speed will contribute to the technological diffusion from foreign advanced to local supporting industries, because technological accumulation is to be realized through interactions between the introduction of advanced technologies and the assimilation and diffusion of them, or in other words, the interaction between import and domestic production.

Table 3.1 shows import dependency of the capital goods in selected developing countries. Looking at this table, the import dependency of Thailand is not too high compared with other countries. However, it is higher than the average of "middle income countries" and the share of machinery industries in the manufacturing GDP is rather small compared with Korea, for example, which shows a relatively high import dependency of capital goods. Korea might have got to some extent the industrial base for realizing interactions between the introduction and the diffusion of the technologies borrowed from developed countries.

Table 3.1 Capital Goods Import Dependency of Developing Countries

(%)

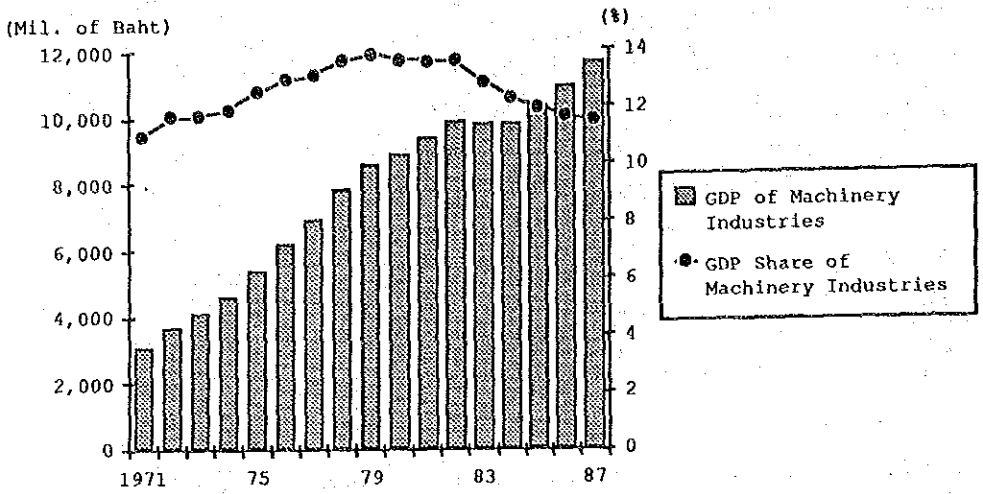
	Investment Ratio	CG. Import Dependency	GDP share of Machinery industry in Manufacturing sector
Low-income economies	28	19	-
Middle-income economies	23	27	-
High-income economies	21	25	-
India	24	9	26
Indonesia	26	31	10
Philippines	15	6	7
Thailand	26	33	14
Malaysia	23	87	23
Mexico	15	28	14
Brazil	20	8	24
Korea, Rep.of	29	40	24
Germany, Fed rep.	20	28	38
Japan	30	2	38
United States	16	25	35

Note: (1) "Investment Ratio" is the ratio of Gross domestic Investment to the GDP at current prices.
(2) "Capital Goods" includes Transport machinery. See Note Fig. 3.1

Sources: World Bank, World Development Report 1989.

3.2 Small GDP Share of Machinery Industry in the Manufacturing Sector

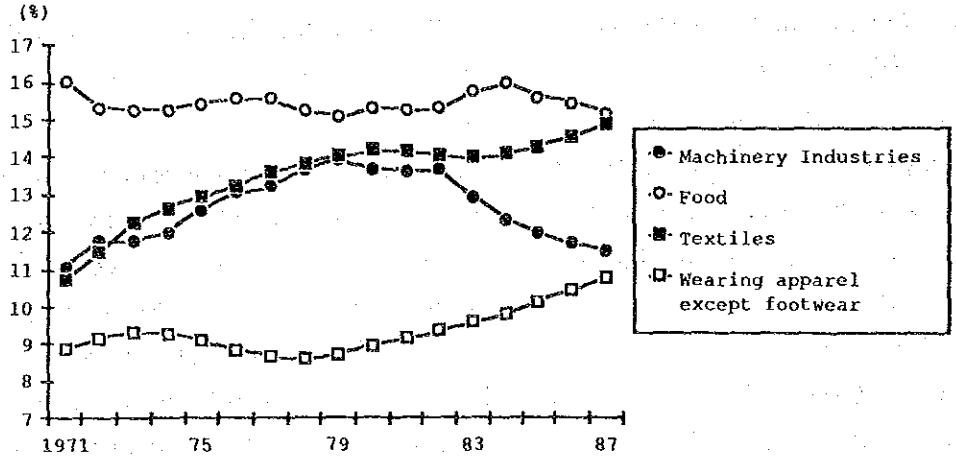
Looking at the Fig.3.2 which shows the change in the machinery industrial GDP in both absolute and relative terms since 1971 till 1987, relative weight of machinery industries in the manufacturing sector decreased especially since 1982, although the absolute amount of GDP increased during the 1970s and the 1980s except for 1983 and 1984. Fig. 3.3 illustrates the changing relative weight in GDP term of major industries in the Thai manufacturing sector. It is obvious that weight of textiles and wearing apparels has remarkably increased since 1982. Though expansion of domestic production is necessary for accumulating advanced technologies, Fig. 3.3 shows that the industrial base of Thailand is not yet strong enough to assimilate advanced technologies despite the significant economic growth through export expansion of manufactured goods in these years.



Remarks: "Machinery Industries" includes General machinery, Electric machinery, and Transport machinery.

Sources: Same as for Figure 1.1

Fig. 3.2 GDP Share of Machinery Industries



Sources: Same as for Figure 1.1

Fig. 3.3 GDP Share of Major Industries in Manufacturing Sector

For expanding domestic machinery production efficiently, it is essential to establish linkages between large scale machinery industries and the small and medium scale industries. In other words, efficient systems of sub-contracting and/or supporting industries should be encouraged towards the next decade. It is needless to say that such an efficient production system can not be built up without sufficient skilled labor.

4. DIRECT FOREIGN INVESTMENT INTO THAILAND

4.1 Increase of Direct Foreign Investment from Asian Newly Industrialized Economies

It is often pointed out that the direct foreign investment (DFI) from Asian Newly Industrialized Economies (NIEs) comprising Korea, Taiwan, Hong Kong, and Singapore, especially from Taiwan, into Thailand has significantly increased and represented a large part of total DFI into Thailand in recent years. The increase of DFI from Taiwan is obvious in the Table 4.1. In fact, a total amount of registered capital by the DFI from Asian NIEs including Taiwan represents 19.8% of the total DFI in Thailand in 1988, and 34.5% in the period of January through September in 1989.

It is also said that Asian NIEs is loosing international competitiveness in the field of so-called light manufacturing industries because of the increase of domestic labor cost and the currencies appreciation after the Plaza Agreement in 1985. Compared to the DFIs from industrialized countries, including Japan, U.S.A., U.K., the DFIs from Asian NIEs are generally small in registered capital amount per project. The DFI from Taiwan, for example, has increased in the field of footwear, bag and sport goods. It is notable that the number of DFI project from Taiwan is larger than that from Japan in 1988 and 1989 (See Table 4.1).

4.2 Direct Foreign Investment from Japan

The DFI from Japan has represented in recent years the largest part of the total amount of registered capital of DFI's into Thailand. The share of Japan was 49.0%, 61.7% and 46.2% in 1987, 1988 and 1989 (Jan. to Sep.), respectively. The share of Taiwan, being the second largest investor into Thailand, was only 13.5% to 20.5% in the same period. In the following, we will discuss about the role of Japanese DFI in the Western Pacific Region, tentatively defined here as

Table 4.1 Direct Foreign Investment Into Thailand

Country	Registered Capital (Millions of Baht)			No. of projects			Registered Capital per Project (Millions of Baht)		
	1987	1988	1989 (Jan-Sep)	1987	1988	1989 (Jan-Sep)	1987	1988	1989 (Jan-Sep)
Japan	3,665	18,288	7,181	136	265	175	26.9	69.0	41.0
Taiwan	1,540	3,983	3,189	102	308	170	15.1	12.9	18.8
U.S.A.	574	1,851	718	34	106	48	16.9	17.5	15.0
Hong Kong	350	894	851	32	86	47	11.0	10.4	18.1
Singapore	54	470	967	17	59	38	3.1	8.0	25.4
Malaysia	16	228	62	7	25	12	2.3	9.1	5.2
Korea	107	530	364	7	36	22	15.3	14.7	16.5
Australia	38	240	180	12	19	15	3.2	12.6	12.0
Canada	98	17	10	1	11	1	98.0	1.5	9.8
U.K.	112	1,651	814	16	44	16	7.0	37.5	50.8
Germany	31	179	265	7	17	16	4.4	10.5	16.6
Switzerland	592	174	425	10	19	18	59.2	9.2	23.6
France	26	93	259	3	14	13	8.6	6.6	19.9
Belgium	104	982	30	4	15	7	25.9	65.5	4.3
Italy	126	29	40	3	4	5	41.8	7.2	8.1
Netherlands	54	30	206	5	3	9	10.8	10.0	22.9
Total	7,486	29,638	15,559	396	1031	612	18.9	28.7	25.4

Sources: BOI

comprising Asian NIEs, ASEAN countries, China, Indo-china countries and Japan. It will be confirmed that, for Thailand, DFI is useful not only to technology transfer but also to expanding and diversifying the trade in this region.

Table 4.2 shows industrial composition of DFI from Japan in different regions as of March, 1987. Based on this Table, one can point out the followings: (1) while North America is the largest host region of Japanese DFI, Asia is still the second largest representing 20.6% of its total outstanding in 1987; (2) although Japanese DFI has flowed generally into the non-manufacturing sector, in Asia, exceptionally, the share of manufacturing sector is relatively high.

It is also often pointed out that Japanese DFI is generally in limited scale because they are put by small and medium scale companies in Japan. According to the Table 4.3 which shows the investment amount per project, it is clear that Japanese DFI is rather small especially in Asia.

Furthermore, in case of DFI into Thailand, the investment scale per project is smaller than the average of Asia.

Table 4.2 DFI from Japan : Industry Composition by Region (Outstandings as of March, 1989)

(%)

	North America	Latin America	Europe	Asia	* (World Total)
1. Manufacturing	26.5 (35.1)	23.7 (17.1)	17.0 (8.7)	38.2 (29.5)	26.6 (100.0)
Food	1.5 (47.1)	1.0 (16.3)	0.6 (7.6)	1.3 (23.3)	1.1 (100.0)
Textiles	0.7 (12.3)	2.1 (19.5)	1.5 (9.8)	5.5 (56.1)	2.0 (100.0)
Wood, Pulp	1.7 (55.3)	1.0 (16.7)	0.0 (0.2)	0.9 (17.0)	1.1 (100.0)
Chemicals	2.6 (22.2)	2.7 (12.9)	1.6 (5.2)	6.1 (30.9)	4.1 (100.0)
Basic metal	3.4 (22.9)	8.3 (30.6)	1.8 (4.8)	8.1 (31.9)	5.2 (100.0)
Machinery	3.3 (47.6)	1.7 (13.3)	1.9 (10.7)	3.1 (26.0)	2.5 (100.0)
Electric Machinery	7.3 (57.7)	1.6 (6.8)	3.6 (11.1)	5.0 (23.1)	4.5 (100.0)
Transport machinery	4.0 (35.8)	4.8 (23.8)	3.4 (11.9)	3.8 (19.6)	4.0 (100.0)
Others	1.9 (31.5)	0.5 (4.8)	2.5 (15.9)	4.3 (41.6)	2.1 (100.0)
2. Non-Manufacturing	70.4 (35.5)	76.0 (20.8)	78.7 (15.3)	60.3 (17.7)	70.1 (100.0)
Agriculture,Forestry	0.7 (31.4)	0.9 (22.5)	0.0 (0.1)	1.1 (31.1)	0.8 (100.0)
Fisjery	0.4 (27.5)	0.5 (20.9)	0.0 (0.4)	0.5 (21.9)	0.5 (100.0)
Mining	3.4 (10.1)	7.5 (12.3)	6.2 (7.2)	29.5 (51.8)	11.7 (100.0)
Construction	1.2 (43.6)	1.0 (19.1)	0.4 (5.3)	1.1 (22.7)	1.0 (100.0)
Wholesale and retail	22.6 (58.2)	6.0 (8.5)	19.9 (19.8)	5.8 (8.7)	13.7 (100.0)
Finance	16.7 (34.5)	21.0 (23.6)	41.3 (33.3)	4.9 (5.9)	17.1 (100.0)
Services	4.3 (25.5)	3.3 (10.9)	2.4 (5.6)	11.4 (39.8)	5.9 (100.0)
Transportation	0.3 (1.2)	29.7 (77.4)	0.3 (0.5)	1.2 (3.2)	7.4 (100.0)
Real estate	15.4 (88.1)	0.1 (0.3)	1.0 (2.2)	1.9 (6.2)	6.2 (100.0)
Others	5.7 (33.7)	5.9 (19.1)	7.3 (16.8)	2.9 (10.0)	5.9 (100.0)
3. Branches	1.7 (22.1)	0.2 (1.5)	4.1 (20.4)	1.3 (10.0)	2.7 (100.0)
4. Ownership of dwelling	1.3 (81.5)	0.1 (3.9)	0.3 (6.4)	0.2 (6.2)	0.6 (100.0)
5. All industries	100.0 (29.4)	100.0 (19.2)	100.0 (13.7)	100.0 (20.6)	100.0 (100.0)

Sources: Ministry of Finance, Government of Japan.

Table 4.3 Investment Amount Per Project by Region

(Millions of Baht)

	North America	Latin America	Europe	Asia	Thailand	* World Total
1. Manufacturing	3.5	5.1	2.2	1.3	1.0	2.4
Food	1.3	1.6	2.2	0.6	0.6	1.0
Textiles	1.9	2.7	1.5	1.7	1.7	1.8
Wood, Pulp	7.2	4.8	0.7	0.7	0.3	2.2
Chemicals	3.8	4.5	2.2	1.6	0.6	3.2
Basic metal	6.5	19.2	0.9	2.9	1.0	4.1
Machinery	2.7	2.9	1.6	1.0	1.8	1.7
Electric Machinery	5.0	2.7	3.3	1.0	1.3	2.4
Transport machinery	11.3	16.1	12.8	2.8	1.1	7.5
Others	1.4	1.0	2.2	0.7	1.1	1.1
2. Non-Manufacturing	2.8	3.5	4.0	2.5	0.5	3.0
Agriculture,Forestry	1.5	0.8	0.3	0.7	0.5	0.8
Fisjery	1.5	0.9	0.4	0.5	0.2	0.8
Mining	5.0	10.5	68.5	32.0	0.2	12.9
Construction	2.1	3.0	2.8	0.6	0.4	1.3
Wholesale and retail	1.5	2.2	1.5	0.6	0.7	1.3
Finance	24.3	21.6	15.1	3.9	1.2	14.9
Services	1.6	3.2	1.9	3.0	0.3	2.5
Transportation	0.6	3.0	0.9	1.8	0.2	3.0
Real estate	8.8	0.9	8.5	5.5	0.7	7.7
Others	2.2	1.4	4.5	1.2	0.3	2.0
3. Branches	2.0	0.8	3.2	0.5	0.2	2.5
4. Ownership of dwelling	0.2	0.2	0.2	0.2	0.2	0.2
5. All industries	2.6	3.7	3.3	1.8	0.8	2.6

Sources : Same as Table 4.2

All of these points suggest that DFI from Japan as well as elsewhere has flowed into Thailand seeking for relatively efficient and sufficient labor to produce and export their manufactured products not to new market but to the existing market. However, some experts says that there is already some division of labor among investors of different countries: Taiwanese investors in labor-intensive and light industries; Koreans in assembly-type electric apparatus industries; Japanese in hi-tech assembly-type electronics industries. Judging from such information, it might be said that Thai economy has been involved in a large wave of industrialization through accommodating DFI from countries in the western pacific region.

For Thai economy, of basic importance is to ride on the wave of overriding industrialization in this region as a whole through smoothly shifting its structure of comparative advantage. It is certain that Thailand nowadays has comparative advantage in the relatively efficient and sufficient labor and the abundant agricultural resources. However, with the increase of wage rate in the course of industrialization through expanding the manufactured export, the international competitiveness will gradually be lost in long term if other conditions are not changed.

In order to proceed with a smooth shift in the source of development, which is one of the development policy issues towards the next century, Thai economy will have to accumulate skilled labor and production know-how so as to continuously improve the labor productivity of the whole economy.

Although industrialization has been to some extent realized through the export expansion of light industries such as apparel making and agro-processing, there remains an issue of the import substitution of machineries, intermediate products and raw materials. Reviewing some historical experiences of other nations, the export expansion of light industry and the import substitution in heavy industry proceeded concurrently in the process of industrialization. Accordingly, we may say that Thailand should start in the near future the import substitution for heavy industries, especially for the producers durables along with the expansion of domestic demand through accumulating skilled labor and highly educated human resources towards the establishment of an efficient industrial base for production and export, which is also the base for technological progress of the country in the long run.

5. THAILAND IN THE WESTERN PACIFIC REGION

The main purpose of the DFI from Asian NIEs as well as Japan is generally to export their products from Thailand, where labor cost is relatively low, to the existing market of their own in the world. However, it is likely that Thai economy has already experienced wage increase to some extent through the rapid industrialization in these 10-15 years. In this section, bearing these points in mind, we will discuss the changing position of Thailand in the Western Pacific Region focusing mainly on the large wave of industrialization in this region.

5.1 Direction of Export from Thailand since the 1970s

Table 5.1 shows the regional export by commodity group and by destination during the period from 1976 to 1986. We can roughly summarize the experiences of Thai manufactured products export expansion for this period as follows: (1) annual growth rate of the manufactured export was larger than that of the agro-processed products during the every period of 1971-1976, 1976-1981 and 1981-1986. It suggests that the Thai export expanded through the industrialization in the 1970s and the 1980s; (2) Thai export has expanded especially in the market of the U.S.A., Europe, and the Asian NIEs, although annual growth rate of the export towards the Asian NIEs decreased from 32.3% (1971-1976) to 13.0% (1981-1986).

Consequently, the relative magnitude of the ASEAN-3[1] is still small in the market of Thai exports compared with other importing region or country. Although further study and research will be necessary for a more detailed analysis, we may say hypothetically that, in the 1970s and the 1980s, ASEAN countries have been the competitors one another in the foreign markets other than the ASEAN market. However, bearing in mind the momentum of DFI-flow in the Western Pacific Region, ASEAN countries should open the market one

1 Indonesia, Philippines and Malaysia

in the Western Pacific Region, ASEAN countries should open the market one another, based on the market mechanism and detailed policy dialogue, for the purpose of expanding and deepening the international division of labor in the Region.

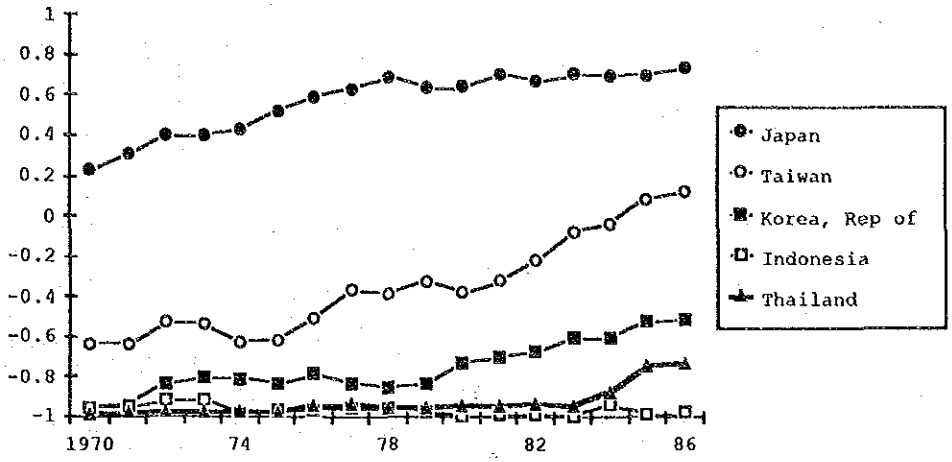
Table 5.1 Direction of Export by Commodity Group

(%)

	Export Composition by Region			Export Growth		
	1976	1981	1986	1971-76	1976-81	1981-86
A. Manufactured Products						
ASEAN-3	6.7	5.0	4.1	-	21.3	12.0
Asia NIEs	19.8	23.1	19.5	60.2	32.3	13.0
Japan	9.6	7.4	6.9	50.6	21.9	15.0
Europe	25.1	19.0	19.3	75.6	21.4	17.2
U.S.A.	17.7	20.7	25.4	46.5	32.3	21.8
Canada	1.1	0.9	1.6	66.5	22.3	31.4
China	0.0	1.2	1.1	-	256.8	15.9
Others	20.0	22.8	22.1	-	31.7	16.1
World Total	100.0	100.0	100.0	51.0	28.3	16.8
B. Agro-processed products						
ASEAN-3	5.6	2.9	3.9	-	0.4	12.3
Asia NIEs	6.2	10.4	10.2	29.5	26.9	5.3
Japan	36.4	16.6	22.4	64.3	-2.2	12.1
Europe	37.7	39.1	32.6	48.2	15.3	1.8
U.S.A.	6.1	12.9	15.5	34.2	33.2	9.5
Canada	0.3	0.7	2.0	8.3	39.0	31.3
China	2.1	2.4	2.5	-	18.1	5.9
Others	5.8	15.0	10.9	-	38.6	-0.8
World Total	100.0	100.0	100.0	49.4	14.5	5.6

Sources: Same as for Figure 1.1

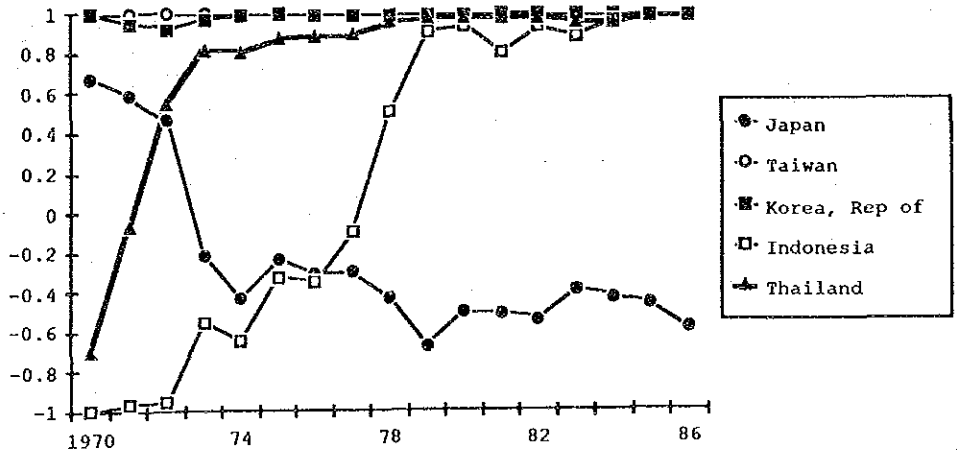
Figures 5.1 through 5.3 show the change of NER by major commodity group in selected countries in the Region. Looking at these figures, it is clear that: (1) although competitiveness of Japan is still strong in the machinery export, it has remarkably decreased in the clothing and footwear which are products of so called labor intensive industries; (2) NER of Korea and Taiwan is almost unity respectively in the field of these products. Following after Korea and Taiwan, Thailand has strengthened its competitiveness remarkably in recent years; (3) Thailand is now being followed by Indonesia in each industry of machinery, clothing and footwear.



Note: As for "Net Export Ratio", see Remarks for Table 2.5

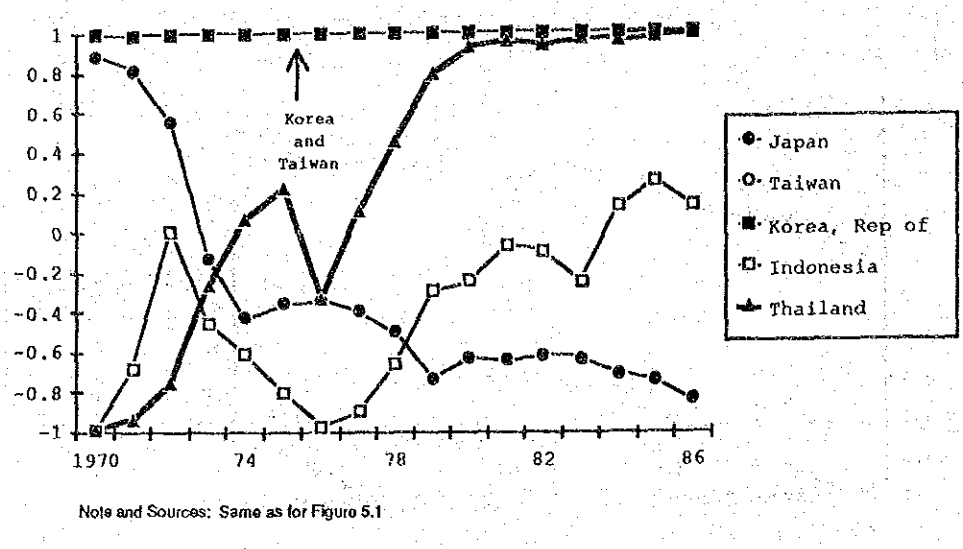
Source: Same as for Figure 1.1

Fig. 5.1 Net Export Ratio : Machinery



Note and Sources: Same as for Figure 5.1

Fig. 5.2 Net Export Ratio : Clothing



Note and Sources: Same as for Figure 5.1

Fig. 5.3 Net Export Ratio : Footwear

Because of the lack of consistent data, we could not illustrate the NER of other countries. But it is unnecessary to say that Thailand is nowadays being followed by many countries including China, the ASEAN countries other than Indonesia, and some of the South Asian countries of which labor cost is lower than Thailand. Those countries will be a tough competitor for Thai exports in coming years. Accordingly, Thailand, in the dynamic industrialization of the Western Pacific Region, should improve its labor productivity through accumulating skilled labor and highly educated human resource for long-term development of Thai international trade of manufactured products including agro-processed products.

PART II

MACRO-ECONOMIC PROJECTIONS IN THAILAND

1. METHODS AND ASSUMPTIONS

1.1 Introduction

The source of the projections reviewed in this part are described in Appendix. The methods used in each source are described in Chapter 1, which also contains a summary discussion of the key assumptions used in preparing the projections. The projection results are compared in Chapter 2. Chapter 3 discusses the implications of the projections for the Upper Central Region.

1.2 Methods of Projections

1.2.1 General Remarks

The range of models and the paucity of details about specification and assumptions used to generate projections from each model are a major obstacle in the preparation of the review. The extent to which results differ, which can be due to differences in assumptions used and the relationships assumed by the model, cannot be precisely quantified without more details about how the projections were prepared.

The present review confines itself to comparing the published figures on the basis of a set of indicators, and to assessing, qualitatively, how each projection differs in terms of the future outlook implied by the projections.

1.2.2 Summary Description of Individual Sources

This section reviews the methods of preparing the projections used in the various sources listed in Appendix.

1) The Sixth National Economic and Social Development Plan

The forecasts for the Sixth Plan were prepared using a computable general equilibrium macroeconomic model, an earlier version of which the NESDB had developed jointly with the World Bank. The model contains a variety of price adjustment mechanisms for the sectors included in the model.

2) The Revised Sixth Plan

The revision of the Sixth Plan, implemented in 1989, uses a new model, which NESDB developed, also jointly with the World Bank (World Bank, 1989). This is a simple aggregate model with emphasis on the two-gap; the investment-savings gap and the trade gap. The specification of the model follows general macro-economic principles, and is largely based on accounting relationships. The details are as shown in the World Bank report, to be discussed below.

3) The World Bank Report, "Thailand: Country Economic Memorandum, Building on the Recent Success - A Policy Framework"

The report contains an account of the projection that the Bank had developed jointly with NESDB. In the word of the report, the model is "an aggregate supply driven model with the emphasis on the two-gap.the model comprises two submodels, a macroeconomic submodel and an external debt submodel".

"The macro submodel consists of six different sections: production and income, investment and capital accumulation; savings, consumption and government; external trade; money, interest rate and prices; and other indicators. (There are) five principle technical and behavioral equations: the production function, the private investment function, GDP deflator and other prices, and export and import demand equations. (These) were estimated by employing appropriate regression methods."

"The External Debt submodel consists of 18 different files which are capable of generating debt profiles, given assumptions on terms, conditions and new commitments. The model includes relationships with the current account deficit and capital inflows."

4) The Siam Commercial Bank Economic Research Division,: Trends and Challenges for the Thai Economy"

The projections are prepared by the Research Department of the bank. The Research Department prepares GDP estimates from the expenditure and production sides. The estimates are then refined during the consultation process until a consensus view emerges about the likely magnitudes of both estimates. The monetary aspects are given considerable attention.

5) Thailand Development Research Institute, "Financial Resources Management", prepared by the Macroeconomic Policy Program, for the Year-end Conference on Resources Management, 1986.

6) Thailand Development Research Institute, "An Economic Forecast for Thailand in 1988 and During the Sixth Plan period", Year-end Conference, 1988.

TDRI prepares economic projections using its own macrocconomic models, though the published reports do not give details of the models used.

1.3 Assumptions Used in the Projections

1.3.1 The Framework for Analysis

The preparation of projections is intended for the exploration of the future from the standpoint of the present. As such, projections are conditional statements of what the future is seen to be. By definition, there are many uncertainties which need to be assumed. For this reason, it is only doing justice to the projections to examine, not only the results, but the assumptions used in preparing the forecasts.

For Thailand, the main assumptions which affect the projection results consist of two sets, the international economic situation and the internal situation.

The International situation

For an export-oriented and oil-importing economy, the two major variables affecting the national economic performance are the growth of world trade and the oil price. The growth of world trade will determine, given the

constant exchange rates, the demand for the country's exports, while the oil price will determine the amount of foreign exchange required to import the oil to meet the country's demand.

The Internal situation

While the external conditions are important in determining the economic performance of the country, they are not the only factors. The internal situation is also important. The capacity of the economy to respond to opportunities or to adjust to adverse conditions will depend on many factors, such as the resource endowment, including land, labor force and natural resources. Government policies are also important, especially those relating to the exchange rate, monetary regulation and controls, fiscal policy and, perhaps specifically in the case of Thailand, investment promotion policy.

1.3.2 A Review of Individual Assumptions

1) The World Bank Country Report

(1) External situation

World trade

The world economy will grow between 2.0 and 2.5 % during 1988-2001, which will translate into real import growth of about 3 % for the period. Allowing for Thailand's pattern of exports, which is concentrated in high growth areas such as the USA, the EEC and Japan, demand for export from Thailand is assumed to rise by 4.5 %.

Oil price

The oil price is expected to rise gradually, from US$ 15/barrel in 1988 to US$ 16/barrel in 1989 and US$ 19/barrel in 1990. A gradual increase is assumed thereafter to reach US$ 45/barrel in 2001.

Terms of trade

This is expected to stabilize at the level obtaining in 1988.

Exchange rate

The international exchange rates are assumed to be stable at the levels holding at early 1988.

Interest rate

Unchanged, ranging from 7.5 % on US$ fund, 5.5 % on yen, DM and Swiss franc funds.

Direct foreign investment

Increase to about 4 % of domestic investment during 1989- 1990, but will stabilize at 3 % of domestic investment thereafter.

Other foreign inflows

Workers' remittances will remain constant in real terms. Tourism income will increase at 6 %.

(2) Domestic situation

Fiscal policy

The share of government sector relative to GDP will increase, in terms of both income and expenditure, but the fiscal deficit will be maintained at a manageable level.

Monetary policy

The baht/US$ exchange rate will be maintained at the current level of 25.2 baht/US$. This implies a depreciation of the baht relative to the yen, DM and Swiss franc.

Factors of production

The expansion of agriculture will occur by intensification of land use and not by expansion of cultivated area. The labor force will rise by 2.6 % per annum in the first five years, then decline to 1.8 % by the year 2001, due to the lowering of population growth.

2) TDRI 1986 Report

(1) External situation

World trade

World GDP to grow by 3.2 % in 1989-1990. The Yen/US$ rate is assumed to be unchanged, and there will be no restriction on trade imposed by Thailand's trading partners.

Oil price

Oil price is assumed to be 18 US$/barrel in 1988, rising by 2 US$/barrel to 24 US$ in 1991.

Terms of trade

Commodity prices for the major export crops are assumed to fall. Only sugar cane is assumed to have an increase of 4% per annum. The price of rice will remain constant.

Exchange rate

No change in the yen/dollar rate.

Interest rate

No detail.

Direct foreign investment

No detail.

Other foreign inflows

No detail.

(2) Domestic situation

Fiscal policy

Restrictive expenditure policy, with 2 % increase in government hiring and 3% growth in public investment.

Monetary policy

No detail.

Factors of production

No detail.

3) TDRI 1988 Report

(1) External situation

World trade

Expanding at the rate which does not harm Thai exports.

Oil price

16 US$/barrel in 1989, 17 US$ in 1990 and 18 US$ in 1991.

Terms of trade

Stable crop prices, lower than the high 1988 level.

Exchange rate

No major change.

Interest rate

No detail.

Direct foreign investment

Maintained at a high level due to (i) investment in export industry (ii) initiation of petrochemical projects (iii) investment promotion by BOI and (iv) investment in infra-structure will accelerate.

Other foreign inflows

No detail.

(2) Domestic situation

Fiscal policy

No detail.

Monetary policy

No detail.

Factors of production

No detail.

4) Siam Commercial Bank 1989 Forecasts

(1) External situation

World trade

Expanding due to policy coordination among industrialized countries.

Oil price

Gradual increases, not quantified.

Terms of trade

No change from 1988, which sees a favorable increase in export prices compared with increase in import prices.

Exchange rate

Continued weakening of the US$ relative to the yen and other currencies, but the Baht/US$ rate is stable at the 1988 level.

Interest rate

A slight increase in interest rates from 1988.

Direct foreign investment

No detail.

Other foreign inflows

No detail.

(2) Domestic situation

Fiscal policy

No detail.

Monetary policy

No detail.

Factors of production

No detail.