

# INDUSTRIALIZATION AND EXTERNAL RELATIONS: COMPARATIVE ANALYSIS OF JAPAN'S HISTORICAL EXPERIENCE AND CONTEMPORARY DEVELOPING COUNTRIES' PERFORMANCE†

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## I. Introduction

Nobody would deny the importance of external economic relations to economic development of "late-starting" countries. But it is not an easy task to identify the functional relationship between them.<sup>1</sup>

This paper deals with the significance of external economic relations, such as commodity trade, capital movement and technology transfer, in the industrialization process. The main focus is on their association with domestic economic activities.<sup>2</sup>

The Comparative Analysis Project has a common assumption that Japan's experiences in industrialization are relevant to the contemporary developing countries. In our context, this leads us to two points we have to clarify. First, what is Japan's experience, and secondly, what is the meaning of using it as a reference in the analysis of LDC economies.

Therefore, we start with stylizing the main features of external economic relations in Japan's industrialization process. Industrialization proceeded with the corresponding changes in trade structure: light- and heavy- industrialization was anteceded by similar changes in import, and was followed suit by export. In the aggregate level, trade expanded

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<sup>1</sup> Throughout the paper, "developing countries" and "less-developed countries (LDCs)" are used synonymously. The term, "late-starting" and "backward" are used à la Gerschenkron (1952).

<sup>2</sup> Interaction between industrial growth and trade expansion was studied by Maizels (1963) and Kuznets (1967) and recently by Pauw and Fei (1973). The first two studies were based on international comparison of industrialization among individual countries since the end of the 19th century and aimed at deducing a world-wide general pattern. The last one studied the post World War II performance of four Southeast Asian countries with homogeneous institution settings and tried to find out the mechanism of transition from colonial economy to modern economic growth with special emphasis on the successful export expansion of primary products and light manufactures.

The present study may be distinguished from either of them in two respects: In the first place performance of contemporary LDCs will be compared with development experience of Japan which started her industrialization lagging behind advanced economies in Europe and North America, and secondly successive process of export expansion from primary products to light manufactures and then to heavy manufactures will be used as a frame of reference.

faster than the GNP growth, which itself was accelerated, resulting in the continuous rise in the proportion of export and import to GNP. This can be said a predestined path of development for Japan, since Japan had lagged behind to the West in industrialization, and had not been favourably endowed with the materials and resources. Nevertheless in the process a continuous improvement of balance of trade was attained.

The second point, the meaning of using the above-mentioned Japan's experience as a reference in analysing LDC economies, needs more explanation. Our argument is that prewar Japan and contemporary LDCs have some basic similarities in their industrialization processes and mechanism, which go beyond the large difference in their initial conditions.

The first is the existence of a huge technological "gap" in a broader sense with the advanced industrial countries at the beginning of industrialization. The "gap" for Japan had almost incomparable magnitude to that of "late-comer" European countries. German chemical industry, for example, shared the world's top status with Britain from the time of its establishment. Prewar Japan, on the other hand, had to import every "new" industry because of the "gap", and each new industry had to follow the typical catch-up process.

The second basic similarity is the large size of traditional indigenous sectors, from which industrialization process could receive significant support. This is often referred to as Japan's non-Western initial condition: thus the so-called dualistic development pattern. As will be explained later, the successful succession of light- and heavy-industrialization in the production and trade structures is closely related to the flexibility provided by these indigenous sectors.

On these grounds, our prediction is that the industrialization processes of prewar Japan and some of the contemporary LDCs are not very different in their fundamental characters. This is especially so for the LDCs similarly endowed with resources, and, therefore, primarily dependent on processing trade.

However, the difference in their initial conditions should not be neglected. First, development of science and technology in the last three quarters of a century gave rise to much more "new" industries. For the contemporary LDCs the "gap" is even wider than for Meiji Japan, and, as a consequence, more external resources are required for the establishment of "new" industries. The wider "gap", as the other side of the coin, gives the larger exploitation potential of accumulated knowledges, which may have something to do with the faster overall growth of the LDCs.

The second difference is in the international market situations. Japan had east and southeast Asian backward economies as her market when "new" industries reached the export stage. Contemporary LDCs, on the contrary, have very little room in finding backward economy markets for export. Together with the protection of the less competitive industries in the developed economy markets, it may be argued that the contemporary LDCs have less favourable scope in export expansion.

In order to overcome these formidable obstacles and to establish "new" industries, many LDCs relied heavily on private direct investment, a packaged transfer of such scarce resources as capital, technology and management. Moreover, their experiences and existing channels in export marketing can be a very useful asset in LDCs' export expansion. The practice of heavy reliance on direct investment, however, went to the extent that "foreign-investment-led-growth" is arguable in some LDCs. This contrasts sharply with Japan's "local-capital-led" industrialization process.

It should be added as the third difference that the contemporary LDCs suffer from unfavourable heritage of colonialism. Although colonial rule, or quasi-colonial rule, brought about some modern factors, such as railways, it obstructed or even repressed the emergence of socio-economic factors necessary for development of independent national economy. The heritage remains in the international scene, as well as domestically.<sup>3</sup> Indeed, there prevails a feeling against neo-colonialism all over the world, and especially inside LDCs, which despises everything connected with the capitalist developed market. The feeling appears most sharply with foreign private investment.<sup>4</sup> Certainly, it is understood that the profit maximization principle of foreign investment is not always consistent with the social benefit maximization to the host country. However, it should not be neglected that, under the above-mentioned situation, the establishment of "new" industries was made possible through the encouragement of their profit motives.

Based on the above-mentioned presumptions, this paper takes the following construction. Sections II and III deal with aggregate macro-economic aspect of economic growth. In the former section we try to stylize Japan's experience to be employed as a reference. Section III is for the analysis of industrialization processes of two LDCs, Thailand and Taiwan (the Republic of China). The choice is made on the ground of their similarities with Japan. In resource endowment, both countries are less fortunate in natural resources. Both economies are small in size, implying the importance of foreign trade. Industrialization strategy is also similar, relying on market mechanism and stressing private enterprises.<sup>5</sup> Section IV is for the comparative study of trade and foreign investment policies in the process of industrialization between Japan and the two LDCs.

## II. *Macro-economic Analysis of Japanese Industrialization*

The continuous process of Japan's industrialization started around 1885, after the Matsukata Deflation.<sup>6</sup> Table 1 shows the growth rates and share changes of major sectors since then. Following Ohkawa-Rosovsky's periodization, years of peaks and troughs of long swings are selected.<sup>7</sup> In any period growth rates of manufacturing and mining and their related sectors, facilitating and construction, exceeded those of agriculture and services. Manufacturing and related sectors, or industrial sector as we combine them together, formed the core of modern sector and its share expanded rapidly. The sector achieved its maximum share of 51.7% in 1938.

<sup>3</sup> Among the discussion, Singer (1950), Prebisch (1959), Nurkse (1954, 59) and Myrdal (1957) are best known.

<sup>4</sup> Some argue that the multi-national corporations tend to create enclaves of modern technology and management, thereby turning the host country into a "branch plant society" similar to "plantation society" under colonial rule. Hymer (1972)

<sup>5</sup> The choice of Taiwan on the above-mentioned grounds would be accepted. However, in the case of Thailand, some more explanations seem necessary. Some would argue that Thailand is more fortunate in resource endowment than Japan and Taiwan, and has been successful in development primarily based on export expansion of resource based commodities. Although we do not disagree the argument, our understandings are: (1) Thai resource endowment, in the long run, does not provide sufficient basis for the course of development implied in the argument, and (2) Thailand already adopted industrial promotion as her basic, and not supplementary, economic strategy for development.

<sup>6</sup> There had existed some pioneering industrialization even before the year. The period is chosen on the ground of continuity in the process.

<sup>7</sup> Ohkawa and Rosovsky (1973)

The trade performance in her industrialization process was also impressive. During the first decade, average proportions of goods and services export and import to GNE were as low as 7.2% and 7.5% respectively.<sup>8</sup> But they were soon doubled to 15.1% and

TABLE 1. INDUSTRIALIZATION OF JAPAN: 1887-1969

(A) Composition of <i>NDP</i> by industry (%)							
	<i>A</i>	<i>M</i>	<i>F</i>	<i>C</i>	<i>M'</i>	<i>S</i>	<i>NDP</i>
1887 ( <i>T</i> )	42.5	13.6	2.6	3.8	20.0	37.5	100.0
1897 ( <i>P</i> )	41.5	15.8	3.1	4.5	23.4	35.1	100.0
1904 ( <i>T</i> )	37.8	17.4	4.5	3.9	25.8	36.4	100.0
1911 ( <i>T'</i> )	35.5	20.3	6.4	4.4	31.1	33.4	100.0
1919 ( <i>P</i> )	29.9	26.2	7.9	4.2	38.3	31.8	100.0
1930 ( <i>T</i> )	20.0	25.8	11.7	5.8	43.3	36.7	100.0
1938 ( <i>P</i> )	18.5	35.3	8.2	8.2	51.7	30.0	100.0
1955 ( <i>T</i> )	22.0	26.3	8.9	4.5	39.7	38.3	100.0
1969 ( <i>P</i> )	8.7	30.5	7.9	7.5	45.9	45.4	100.0
(B) Average annual compound rate of growth (%)							
	<i>A</i>	<i>M</i>	<i>F</i>	<i>C</i>		<i>S</i>	<i>GDP</i>
1887-97	1.42	5.92	9.00	5.80		3.76	3.20
1887-1904	1.62	4.95	8.94	2.89		1.48	2.19
1904-19	1.81	6.80	9.31	3.47		3.28	3.74
1919-30	0.56	4.58	7.26	6.45		0.66	2.43
1930-38	1.30	8.88	9.47	3.05		3.54	4.86
1955-64	3.68	17.12	13.71	16.47		10.49	12.28
(C) Percentage share of <i>GNE</i> components (%)							
	<i>PC</i>	<i>GC</i>	<i>I</i>	<i>X</i>	<i>M</i>		
1887 ( <i>T</i> )	79.6	7.3	13.4	7.2	-7.5		
1897 ( <i>P</i> )	78.0	7.4	17.6	9.7	-12.5		
1904 ( <i>T</i> )	75.0	12.4	14.9	14.0	-16.3		
1911 ( <i>T</i> )	76.0	8.1	17.5	15.1	-16.7		
1919 ( <i>P</i> )	70.0	6.2	20.1	21.2	-17.5		
1930 ( <i>T</i> )	73.0	11.1	16.1	18.2	-18.4		
1938 ( <i>P</i> )	61.7	11.6	27.4	21.4	-22.1		

Source: K. Ohkawa et al. *National Income* (LTES Vol. 1) 1974

Notes: (A) and (C) calculated from current price series and (B) from constant price series. In panels (A) and (B), *A*: agriculture, forestry & fishery, *M*, manufacturing and mining, *F*: facilitating, *C*: construction, *S*: commerce & service,  $M' = M + F + C$ . In panel (C), *PC*: private consumption, *GC*: government consumption, *I*: gross domestic fixed capital formation, *X* and *M*: export and imports of goods and services

<sup>8</sup> Japan started her trade with Western traders in 1859, about a quarter century before the start of industrialization. Although the empirical data is hard to arrange, it would be safe to assume that trade proportions were as low as those for early industrialization period, or perhaps even lower.

16.7% by 1911, and further increased to 21% and 22% in the 1930s. The rise of foreign trade proportion over time during the industrialization was widely observed in European advanced economies, but Japanese experience was unique in the sense that foreign trade proportion increased along with the rapid GNP growth and even during the inter-war period of world trade stagnation. The growth rates of export and import were 7.2% and 7.9% before the turn of the century, and 6.6% and 2.3% in the interwar period respectively.

Rapid expansion of foreign trade was accompanied by big changes in export and import structure (See Table 2). To begin with, the share of primary products in total export was three quarters at the beginning, but declined to 45% in early twentieth century. They were more or less semi-processed and a half or two thirds consisted of raw silk. Then, replacing primary export, light manufactures took the position and kept the share of more than one half of total export from 1900 to World War I. Such heavy manufactures as chem-

TABLE 2. CHANGES IN FOREIGN TRADE STRUCTURE: JAPAN

	1874-83	1882-91	1892-1901	1902-11	1917-26	1930-39	1951-55	1966-70
<i>Commodity exports</i>								
(1) Primary products, total	82.4	74.9	55.1	45.2	36.5	19.9	4.7	1.7
(2) raw silk	37.7	36.8	29.3	26.2	28.4	13.1	—	—
(3) indigenous and light manufactures (textiles)	11.7 (4.4)	17.9 (8.8)	36.7 (23.3)	42.2 (27.7)	48.7 (35.2)	53.6 (35.5)	55.4 (39.5)	27.1 (13.7)
(4) heavy manufactures	5.9	7.2	8.2	12.6	14.3	26.5	39.9	71.2
<i>Commodity imports</i>								
(5) crude foodstuff	0.7	5.0	9.9	12.5	16.1	17.5	25.0	12.8
(6) raw materials	8.1	13.7	26.6	32.7	38.2	40.5	60.6	56.9
(7) light manufactures	69.9	54.7	31.1	20.5	14.9	12.3	4.0	7.0
(8) heavy manufactures	21.3	26.6	32.6	32.3	30.8	29.7	10.4	23.3

Source: I. Yamazawa and Y. Yamamoto, *Trade and Balance of Payments*. (LTES. Vol. 14)

TABLE 3. TYPES OF PRODUCTION AND TRADE

industry \ market or source	production for home consumption	export	import
primary ( <i>p</i> )	$X_p$	$E_p$	$M_p$
		$E'_p$	
manufacturing indigenous ( <i>i</i> )	$X_i$	$E_i$	
light ( <i>l</i> )	$X_l$	$E_l$	$M_l$
heavy ( <i>h</i> )	$X_h$	$E_h$	$M_h$

Note:  $X$ ,  $E$ , and  $M$  denote production for home consumption, export, and import respectively. Suffix  $p$ ,  $i$ ,  $l$ , and  $h$  indicate industries. Production for home consumption plus export make total domestic production, while production for home consumption and import make total home consumption.

icals, metals and machinery, in their turn, started to increase their share in the 1930s, which exceeded one half around 1950. Import structure also changed drastically. Light manufactures occupied more than one half at the beginning, but were rapidly replaced by heavy manufactures and raw materials since the 1890s. Raw materials alone have been occupying two thirds of the total import since the 1950s.

These changes corresponded to those of manufacturing production. Table 3 provides a typology of production and trade by industry and market. Primary industry appears in the first row, and is composed of three categories of commodities, the self-sufficient production represented by traditional agriculture ( $X_p$ ), foreign market oriented commercialized production either in crude form ( $E_p$ ) or in more processed form ( $E_p'$ ), all of which are based on domestic natural resources. In the second row comes indigenous manufacturing industry. Its production consists of two types: for domestic market ( $X_i$ ) and for export ( $E_i$ ). Because it is indigenous, the third cell for import is empty for this industry. Though its behaviour is similar to primary industry, especially at the beginning, its modernization and the consequent amalgamation with modern manufacture may justify its separation.<sup>9</sup>

The next two rows represent two categories of modern manufacturing industries, light- and heavy- manufactures, whose products are also divided into three by market ( $X_l, E_l, M_l$ ;  $X_h, E_h, M_h$ ). Unlike primary production, manufacturing production is based more on such ordinary production factors as labour and capital. Therefore, it has a character of footlooseness. Production for home and foreign markets and import from abroad are more homogeneous and substitutable in this industry than in the case of primary production.

The division of modern manufacturing industry into "light" and "heavy" industries may attract some criticism, and not without due reasons. It neither corresponds strictly to division by factor intensity of production nor to that by the end use of products. However, it has its own advantages. Since the principle of this classification, however loose it is, is the magnitude of production technologies involved, it can be more readily applicable to the industrial evolution. Its additional advantage is the better fit to the statistical data.

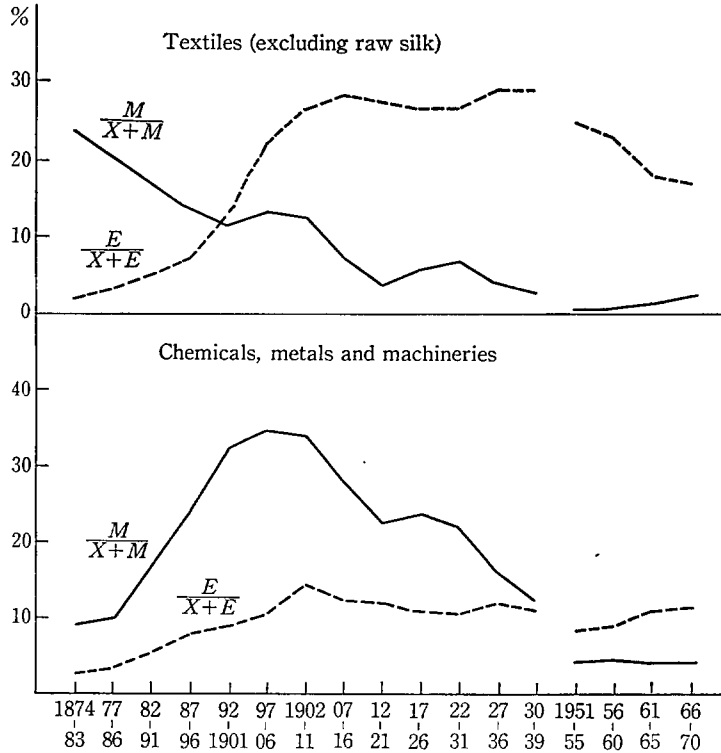
Japanese experience tells us that the development of modern manufacturing was proceeded by imports of "new" products from advanced countries, then by domestic production to substitute import, and finally by export. Import substitution can be measured in terms of the declining rate of import to home consumption,  $M / (X + M)$ , while export expansion in terms of the increasing rate of export to domestic production,  $E / (E + X)$ .

Figure 1 shows Japan's import substitution and export expansion of light (textiles) and heavy (chemicals, metals and machinery) manufactures. The fundamental mechanism which enabled these changes was the reduction of production costs associated with the expansion of domestic production. At the beginning it brought about advantages for domestic products over imports inside the domestic market, but went further on to gain international competitiveness in the foreign markets. Thus import substitution was successfully continued by export expansion in "new" industries.<sup>10</sup>

<sup>9</sup> It is not always easy to draw a line between indigenous and modern light manufactures, since such commodities as foodstuff, wood products and sundry goods were produced predominantly by indigenous technology at the beginning, but later by modern technique. It is well known that in early days of Japan's economic development the leading exports were raw silk and tea, which belong to  $E_p'$  and  $E_p$  according to our classification. On the other hand, it seems less known that wood products and sundry goods based on indigenous technique also contributed to Japan's export expansion to a considerable degree.

<sup>10</sup> One of the present writers has already discussed this mechanism in some detail. See Yamazawa (1972).

FIG. 1. IMPORT DEPENDENCE AND EXPORT-OUTPUT RATIO: 1874-1970



Source: Yamazawa, I. and Y. Yamamoto, Trade and Balance of Payments (LTES Vol. 14), forthcoming.

Note: See Table 3 for the symbols  $X$ ,  $M$ , and  $E$ .

$M/(X+M)$ : import dependence ratio,  $E/(X+E)$ : export output ratio

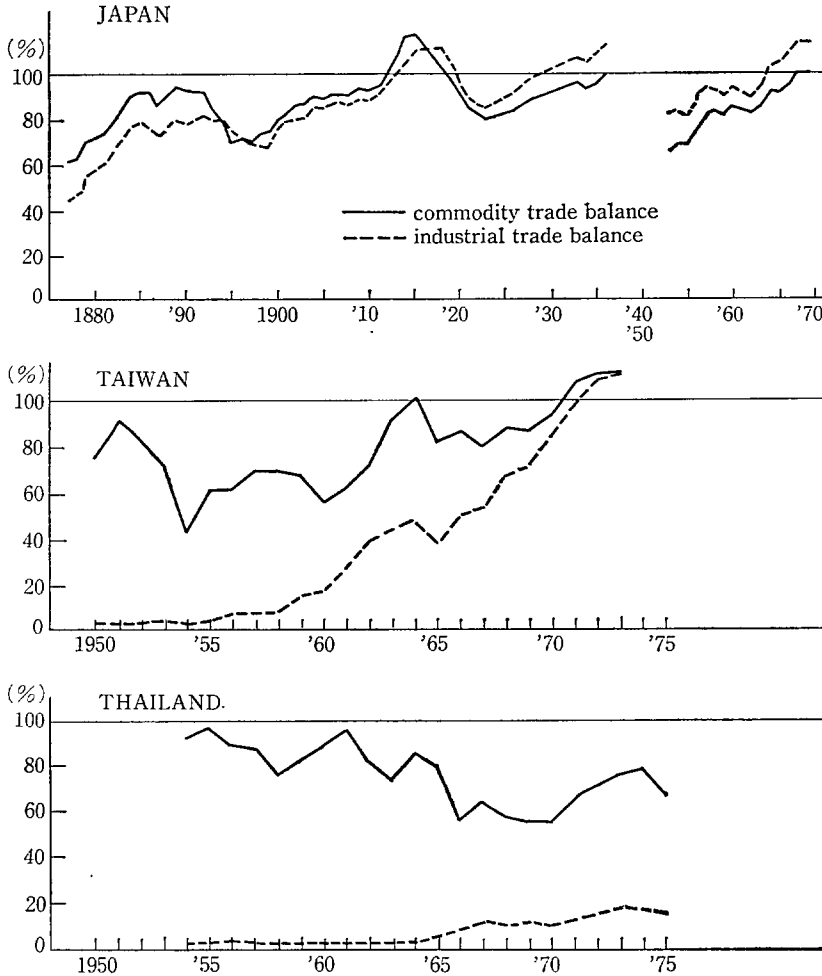
In case of narrowly defined homogeneous commodities, export expansion starts only after the completion of import substitution. However, for a broader commodity group consisting of various products with widely different comparative advantages, the two movements proceed simultaneously. Therefore, phases characterized by the dominance of one movement over the other can be divided only by a period of several years. For the industries of our concern, such dividing periods are 1895-1905 and the World War II respectively.<sup>11</sup>

The periodization above also helps us to distinguish phases by different patterns of trade. Before 1895-1905 Japan exported (semi-processed) primary products and imported light manufactures. The phase is characterized by the set of trade ( $E_p' + E_i, M_i$ ). The second set of trade of light manufacture export with heavy manufacture and raw materials import

<sup>11</sup> The dividing period for heavy manufactures may be delayed to 1950-1960 if we consider the strict restriction over imports of such heavy manufactures as passenger-cars and large-size machineries by 1961.

$(E_i, M_h + M_p)$  dominated the period between 1895-1905 and World War II. The 1960s can be featured by the third set of trade, heavy manufacture export and raw materials import  $(E_h, M_p)$ , although 1950s may be considered as the transition period from the second to the third phase, because  $(E_i)$  exceeded  $(E_h)$  in the decade.

FIG. 2. BALANCE OF TRADE IN THE PROCESS OF INDUSTRIALIZATION



Sources: Japan: Yamazawa, I. and Y. Yamamoto, *Trade and Balance of Payments*, (LTES Vol. 14) forthcoming

Taiwan: Chinese Maritime Customs, *The Trade of China*, various issues

Thailand: Bank of Thailand, *Monthly Bulletin*, various issues

Notes: Commodity trade balance: total commodity export (FOB) divided by total commodity import (CIF)

Industrial trade balance: Export of manufactures (FOB) divided by the sum of imports of manufactures and raw material (CIF)



It is notable that, in the process of these structural changes in import and export, there appeared a trend of balance of trade improvement. Top panel of Figure 2 describes Japan's trade balance in the form of ratios: solid line showing [total commodity export / total commodity import]; and dotted line [manufactured export / (manufactured import plus raw materials import)]. The latter is an indicator for the trade balance which is directly connected with industrialization, industrial trade balance as we call it, since raw materials are direct input for industrial production. Its rising trend distinctively shows that Japan's industrialization possessed a self-reinforcing character in the balance of payments aspect. This can be attributed to the above-mentioned successful change in trade structure.

The mechanism of continuous succession by heavy to light industrialization still remains to be explored. On the one hand, domestic demand for heavy manufactures, loosely classified as intermediate and capital goods, expanded in the process of light industrialization. At first it was met by imports. However, its rapid expansion, later on, provided a sufficient ground for starting local production of such commodities through backward linkage effect.<sup>12</sup>

On the other hand, heavy industrialization required large scale capital mobilization, which commanded its speed. Large quantity of capital investment was required not only for its high capital intensity but for its large size of initial investment. This is reflected in the rise of *GDCF* / *GNE* rate shown in Panel (C), Table 1. A new type of production and management technology was also necessary for the establishment of "new" industries. While light industry acquired necessary technology mainly through imitation and machinery import, heavy industry tended to rely more on joint venture practices and purchasing contract arrangements of patent and know-how. This will be discussed later in connection with direct investment.

Although domestic saving was the main source of investment, it should be noted that, in certain periods, foreign investment inflow supplemented the domestic resource considerably. Table 4, rearranged from Yamamoto Estimate, shows the inflow of foreign resources in the balance of payments account.<sup>13</sup> Foreign resources here include not only long- and short-term capitals but also net transfer receipts as reparation and grants. Periodization was made, taking into account the direction changes of capital movements for Japan from net inflow to net outflow and vice versa.

Three measures of foreign resource inflow are shown in Table 4. The first measure is overseas current surplus, the broadest definition of foreign resource inflow, and expressed as the sum of Rows (3) through (6). The second measure is the sum of [(3)+(4)+(5)], excluding short-term capital movements by monetary sector from the first. The third measure further excludes non-monetary short-term capital flow, and is defined as [(3)+(4)]. Their relative size are calculated in terms of their proportions to *GDCF*. An alternative measure is their proportions to *GDS* (gross domestic saving), but since *GDS* equals *GDCF* plus net increase in lending abroad, the two measures do not differ very much from each other.

High rate of foreign resource inflow was observed for 1894–1903 and 1904–13 periods, 17% and 20% respectively (in terms of the third measure). A large proportion of resource inflow in the former period was contributed by such special factors as reparation from China (1896–98). The latter period, on the other hand, is characterized by foreign loans. The

<sup>12</sup> It should not be neglected that the experiences in management, technology, marketing, etc., acquired in the process of light industrialization also helped the start of heavy industrialization.

<sup>13</sup> Yamazawa and Yamamoto (forthcoming)

1920–31 period saw the inflow of both foreign loans and direct investment, which, however, was more than offset by long-term capital outflow to colonies, thereby resulting in negative total inflow in the third measure. Capital outflow in the period consisted mainly of the loss of a huge amount of gold held oversea, which had been accumulated during the World War I period.

TABLE 4. FOREIGN RESOURCE INFLOW IN BALANCE OF PAYMENTS: JAPAN

(in million yen)

period	1886–93	1894–1903	1904–13	1914–19	1920–31	1932–36
(1) Balance of trade	–24.8	–399.1	–552.6	1333.7	–4737.3	–818.9
(2) Balance of service trade	8.5	–14.3	–445.6	1595.9	2092.5	–118.6
(3) Net transfer receipt	17.7	436.4	75.1	150.9	242.9	416.7
(4) Long-term capital (net inflow)	–6.6	156.4	1254.5	–1668.5	–1720.2	–2850.0
(4.1) Foreign debt (net increase)	—	170.0	1600.0	–246.0	524.0	—
(4.2) Direct investment	—	—	70.0–100.0	—	145.0	—
(5) Short-term capital (net inflow)	24.9	–165.7	–97.2	343.3	2726.5	1712.5
(6) Gold export or net decrease in specie overseas	–19.7	–13.7	–234.2	–1775.3	1395.6	1658.3
(7) Current overseas deficit/ <i>GFCF</i> (%)	1.5	12.0	15.2	–29.1	8.0	3.3
(8) Current overseas deficit/ <i>GDS</i> (%)	1.5	13.4	20.2	–24.0	9.6	4.5
(9) Transfer plus total capital inflow/ <i>GFCF</i> (%)	3.3	12.4	18.7	–11.6	3.8	–2.6
(10) Transfer plus long-term capital inflow/ <i>GFCF</i> (%)	1.0	17.2	20.2	–15.1	–4.5	–8.7

Source: Balance of payments data: I. Yamazawa and Y. Yamamoto, *Trade and Balance of Payments* (LTES Vol. 14), forthcoming

*GFCF* (gross fixed capital formation) excluding military investment and *GDS* (gross domestic saving): K. Ohkawa, et al. *National Income* (LTES Vol. 1) 1974

Notes: (1)+(2)+(3)+(4)+(5)+(6)=0

(7)=[(1)+(2)]/*GFCF*

(9)=[(1)+(2)]/*GDS*

(9)=[(3)+(4)+(5)]/*GFCF*

(10)=[(3)+(4)]/*GFCF*

Foreign resource inflow supported Japan's industrialization through two channels. First, it provided foreign exchanges. During the periods when *GDCF* rates were high, imports of capital goods and raw materials expanded rapidly and tended to exceed slower export growth. This would cause balance-of-payments difficulties, and decrease of gold held overseas, which, under the rule of gold standard, would result in the reduction of the quantity of money and deflationary effect to industrial growth.<sup>14</sup> State and company bonds

<sup>14</sup> Here, balance of payments were calculated for Japan Proper. Transactions with Taiwan and Korea under Japanese rule are included in foreign trade. The balance of payments figures for Japan Proper give misleading information to those for Japan Empire in the 1930s. However, for the two periods mentioned in the text, they are not very much different from each other. See Yamazawa and Yamamoto (forthcoming).

formed the major part of foreign resource inflow of such a type.<sup>15</sup>

The second type of contribution closely relates to direct investment. The quantity of direct investment was small. However, it should be noted that it was one of the important routes of introducing production and management technology for "new" industries, which could not be provided from domestic sources.

### III. *Industrialization in Taiwan and Thailand*

The start of industrialization process can be identified in two ways: first, by the institutional changes towards the deliberate promotion of industrialization, and, secondly, by quantitative changes in growth trends and economic structure. The two changes, although related to each other, may not be observed simultaneously, implying the "transition", or "preparation" period.

It seems to be widely agreed in both ways that industrialization started in Thailand around 1960.<sup>16</sup> First, institutional setting was arranged for the promotion of industrialization based on private initiative by Marshal Sarit after his coup d'état in 1959. "Promotion of Industrial Investment Act" was effected in 1960, under which "Board of Investment" was established for its administration. With indiscrimination between local and foreign firms, it succeeded in inducing investment boom in the 1960s.

The start of industrialization around 1960 is also evident in growth performance of major sectors (Table 5). Before 1960, agriculture, service, and facilitating led the economic growth while manufacturing was stagnant under state enterprise system. Since 1960 it has changed to the growth led by industrial sector ( $M'$ : manufacturing, facilitating and construction) and the growth of agriculture and service lagged behind. Industrial growth continued after 1972, but the growth rate decreased under stagnant world economy since 1973 whereas agriculture and service resumed their growth, which resulted in more or less balanced economic growth.

The start of industrialization is less clearly defined in Taiwan. However, it would be safe to assume that the early 1950s marked the starting period, when industrial production recovered its prewar level.<sup>17</sup> Basic institutional set-ups were also completed in the period.<sup>18</sup> Most significantly, the First Four Year Economic Plan started in 1953, which, together with the succeeding Four Year Plans, formed the major guideline for industrialization.

Quantitatively, economic growth of Taiwan shows a steady acceleration. In 1950s growth rate was already high at around 6%. This was made possible partly because of the big U.S. economic aid, as will be discussed later. The growth was accelerated in 1960s to 8-10% level in spite of the decrease, and fade away, of the U.S. aid.<sup>19</sup> Throughout the two decades the growth rate of  $M'$  sector exceeded those of  $A$  and  $S$  sectors.

Panel As in Tables 1, 5 and 6 show the comparison of major sector shares in three coun-

<sup>15</sup> The largest share was held by "Electricity Bond", which financed the electrification of Japanese economy.

<sup>16</sup> Ingram (1971), Chomchai (1975), and Akrasanee (1973, 1975)

<sup>17</sup> Hsing (1971) points out 1952 as the breaking year.

<sup>18</sup> They include monetary reform (1949), land reform (1949), and establishments of Joint Commission on Rural Reconstruction and Productive Enterprises Control Commission.

<sup>19</sup> In 1950-60 the government revised the "Statute for Investment" so as to induce private foreign investment. It is believed that this was to compensate, at least partly, for the anticipated decrease of U.S. aid.

tries. The  $M$  and  $M'$  shares of Thailand in 1960, 13% and 24%, and those of Taiwan in 1952, 13% and 23%, correspond to those of Japan in 1887, 14% and 20%.  $A$ 's share was smaller but  $C+F$ 's and  $S$ 's shares were larger in two countries than in Japan. In 1972  $M$  and  $M'$  shares rose up to 21% and 35% respectively in Thailand and 33% and 47% in Taiwan. The former corresponds to those of Japan in 1911 and the latter to those between 1930 and 38. Therefore, the periods required for both Thailand and Taiwan to undertake the corresponding changes in Japan were halved. Their rapid changes in sector shares resulted both from higher overall growth rate on the one hand and greater growth difference between

TABLE 5. INDUSTRIALIZATION OF THAILAND: 1955-1975

(A) Composition of GDP by industry (%)							
	$A$	$M$	$C$	$F$	$M'$	$S$	$GDP$
1955	38.6	15.5	3.9	5.3	24.7	38.5	100.0
1960	38.2	13.0	3.8	7.0	23.8	38.0	100.0
1966	34.5	17.2	6.3	7.6	31.1	34.4	100.0
1972	27.5	21.0	4.3	9.5	34.8	37.7	100.0
1975	26.4	21.4	4.0	10.0	35.4	38.2	100.0
(B) Average annual compound rate of growth (%)							
	$A$	$M$	$C$	$F$	$M'$	$S$	$GDP$
1955-60	4.96	0.72	3.49	9.77		7.18	4.20
1960-66	5.06	11.31	15.35	8.27		5.12	6.76
1966-72	3.11	10.36	0.52	10.61		8.44	6.93
1972-75	7.24	9.20	6.14	10.21		9.03	8.58
(C) Percentage share of GNE components (%)							
	$I$	$PC$	$GC$	$X$	$M$		
1957	13.9	76.3	9.3	19.0	-19.0		
1960	13.9	72.9	9.8	17.4	-18.9		
1966	20.1	65.8	9.7	19.1 (16.5)	-19.4		
1972	21.1	67.1	10.9	19.4 (16.7)	-20.6		
1975	23.2	67.3	10.7	20.7 (20.0)	-24.4		

Sources: (A) & (B): *Statistical Yearbook of Thailand*,  
Bank of Thailand, *Monthly Bulletin*,  
(C): I.E. Ingram, *Economic Change in Thailand*, 1971  
BOT, *Monthly Bulletin*.

Notes: (A) & (B) are calculated from 1962 constant price series.  
(C) are calculated from current price series.  
 $I+PC+PG+X-M$  is short of 100.0 because of change in inventory.  
 $A$ : agriculture, forestry and fishery,  $M$ : manufacturing and mining,  
 $C$ : construction,  $F$ : facilitating,  $S$ : services in commerce;  
 $I$ : gross fixed capital formation,  $PC$ : private consumption,  
 $PG$ : government consumption,  $X$ : exports (figures in parenthesis show exports  
excluding U.S. military expenditure in Thailand),  $M$ : imports

$M'$  and  $A$  and  $S$  sectors on the other. It goes without saying, however, that the content of  $M$ ,  $C$ , and  $F$  sectors and the size of the economies should be given due consideration in the comparison.

TABLE 6. INDUSTRIALIZATION OF TAIWAN: 1952-72

(A) Composition of <i>GDP</i> by industry (%)							
	<i>A</i>	<i>M</i>	<i>C</i>	<i>F</i>	( $M'$ )	<i>S</i>	<i>GDP</i>
1952	34.9	13.2	4.2	5.4	(22.8)	42.6	100.0
1956	30.3	17.2	4.5	5.8	(27.5)	42.6	100.0
1960	31.2	19.5	4.2	6.8	(30.4)	38.9	100.0
1964	26.7	22.8	4.0	7.3	(34.1)	39.5	100.0
1968	20.9	26.2	4.7	8.3	(39.2)	40.2	100.0
1972	14.6	33.5	4.3	9.2	(47.0)	38.8	100.0
(B) Average annual compound rate of growth (%)							
	<i>A</i>	<i>M</i>	<i>C</i>	<i>F</i>	( $M'$ )	<i>S</i>	<i>GDP</i>
1952-56	2.8	13.7	8.7	8.6	(11.6)	6.5	6.5
1956-60	7.1	9.7	4.1	10.4	( 9.0)	3.9	6.3
1960-64	5.6	14.2	4.6	12.0	(13.0)	10.2	9.8
1964-68	1.5	11.7	12.6	11.4	(11.7)	8.4	7.9
1968-72	0.8	17.3	7.5	12.9	(15.3)	9.3	10.3
(C) Percentage share of <i>GNE</i> components (%)							
	<i>I</i>	<i>C</i>	<i>G</i>	<i>X</i>	<i>M</i>		
1952-56	12.4	72.8	18.5	8.1	-14.3		
1957-60	15.6	69.7	19.8	11.3	-18.6		
1961-64	15.2	66.2	18.0	16.0	-18.9		
1965-68	20.1	60.9	17.3	21.8	-23.9		
1969-72	24.0	54.5	17.6	35.9	-33.4		

Source: Director General of Budget, Accounting and Statistics, Executive Yuan, *National Income of the Republic of China*, 1971, 73, 76.

(A) & (C) are calculated from current price series but (B) from constant price series estimated using GNP deflator uniformly to all sectors.

In spite of similarly rapid industrialization in both countries, their trade performances showed considerable difference. (Panel Cs in Tables 1, 5 and 6). In Taiwan a rapid increase in foreign trade proportions (the ratios of export and import to GNP) is observed. Those for Taiwan increased more rapidly than in Japan, from 8% and 14% in 1953-56 to 35% and 33% in 1968-72 respectively.<sup>20</sup>

In Thailand the increase was much smaller. Exclusion of U.S. military expenditure from Thai export figures would have reduced the export-GNP ratio, shown in parentheses,

<sup>20</sup> The proportion further rose to 41% and 44% in 1975, and 52% and 50% in 1976 (provisional), respectively. The proportions are very high in comparison with Japan. However, considering the size of the economy, they cannot be said too high.

TABLE 7. CHANGES IN FOREIGN TRADE STRUCTURE: THAILAND (%)

	1957	1960	1966	1972	1975
Commodity exports					
(1) Primary products	94.4	95.7	85.6	73.6	76.2
(2) Four traditional exports	77.2	70.1	52.6	36.3	26.7
(3) Light manufactures	1.7	1.3	2.1	9.5	12.8
(4) Heavy manufactures (excluding tin metal)	0.2 (0.2)	0.1 (0.1)	9.5 (0.3)	9.4 (1.3)	11.0 (2.5)
Commodity imports					
(5) Primary products	22.7	21.6	19.8	21.9	30.4
(6) Foodstuff	10.6	9.2	6.7	5.9	7.0
(7) Crude materials	12.1	12.4	13.1	16.0	23.4
(8) Light manufactures	74.7	26.1	18.0	14.3	11.3
(9) Heavy manufactures		49.1	59.9	60.9	56.3

Source: Bank of Thailand, *Monthly Bulletin*, May 1977.

Note: (1) & (5): SITC 0-4, (6): SICT 0+1, (7): SICT 2-4, (3) & (8): SITC 6+8-67-68, (4) & (9): SITC 5+7+67+68

TABLE 8. IMPORT SUBSTITUTION AND EXPORT EXPANSION IN THAI MANUFACTURING INDUSTRIES

	import demand ratio			export output ratio		
	1960	1966	1972	1960	1966	1972
1. food & beverages	5.5	12.3	9.1	11.7	21.8	15.0
2. textile	38.5	29.9	9.1	1.7	8.7	9.1
3. heavy manufactures (including petroleum products & tin metal)	66.1 (40.0)	70.8 (64.9)	57.8 (51.1)	0.8 (0.8)	2.0 (15.2)	3.8 (11.5)

Sources: Calculated from data in Narongchai Akrasanee, "Import Substitution, Export Expansion and Sources of Industrial Growth in Thailand", N. Suzuki ed. *Asian Industrial Development*, 1975.

to the stagnant level. The ratios were rather high at around 20% from the beginning, which may be partly explained by her trade status as primary products exporter for the past hundred years, and remained almost unchanged.<sup>21</sup> The difference, i.e. rapid increase in Taiwan and Japan, and small increase in Thailand, reflects the state of interaction between trade and production in the process of industrialization.

Changes in export and import structure seem to support this proposition. (Tables 7 and 9) In early Japan primary products occupied more than 80% of total export, as high proportion as observed in Taiwan and Thailand, but they were rapidly replaced by manufactures. The similar but more rapid change was observed in Taiwan; the structural change equivalent to that in Japan for 1880-1935 occurred in Taiwan for 1952-72.

<sup>21</sup> It is understood that there is a bias for underestimate of Thai figures because the border trade, which involves a significant portion of Thai manufacturing products, is not included in the calculation.

TABLE 9. CHANGES IN FOREIGN TRADE STRUCTURE: TAIWAN

	1952	1956	1960	1964	1968	1972
Commodity exports						
(1) Primary products	97.7	91.7	73.4	60.5	35.5	16.8
(2) Rice, Sugar & Tea	79.9	70.5	50.8	36.0	9.0	3.4
(3) Light manufactures	1.2	4.7	19.4	28.8	46.6	52.3
(4) Heavy manufactures	1.0	3.6	7.3	10.7	17.9	31.0
Commodity imports						
(5) Primary products	33.9	39.9	41.0	47.7	37.9	26.5
(6) Light manufactures	21.2	10.3	9.1	8.7	9.3	14.0
(7) Heavy manufactures	44.9	49.8	49.9	43.7	52.8	59.5

Source: Chinese Maritime Customs, *The Trade of China*, various issues

TABLE 10. IMPORT SUBSTITUTION AND EXPORT EXPANSION IN TAIWAN'S MANUFACTURING INDUSTRIES

	1961	1965	1968	1972
1. Light manufactures: total				
import demand ratio	5.9	6.1	10.1	34.8
export output ratio	19.6	21.1	35.0	70.1
2. Textiles				
import demand ratio	7.7	8.7	13.1	43.2
export output ratio	20.8	21.0	34.5	72.7
3. Heavy manufactures: total				
import demand ratio	38.6	31.8	28.6	38.8
export output ratio	8.6	7.9	10.4	29.7
4. Machinery				
import demand ratio	69.6	50.0	41.3	48.2
export output ratio	6.6	11.1	19.6	41.8

Sources: Exports and imports: Chinese Maritime Customs, *The Trade of China*, various issues

Output 1961: Ministry of Economic Affairs, The Republic of China, *Report on Industrial & Commercial Survey*, No. 1

1965-: D.G.B.A.S., *National Income of the Republic of China*, various issues

In case of Thailand the change took a different form. Primary products still occupied three quarters of total exports in 1972, but its contents underwent a radical change: the combined share of four traditional primary exports (rice, rubber, tin and teak) was halved, while expansion of such new commodities as tapioca, maize and sugar made up the loss.<sup>22</sup> Manufactured exports occupied only 11%, when tin metal, which is more adequate to be considered

<sup>22</sup> Those new primary exports may be comparable with Japan's raw silk, which maintained a share of one quarter in 1920s.

as  $E_p'$ , is excluded. This lack, or non-success, of rapid manufacturing export expansion, among others, seems to be the major characteristic of Thai trade performances, with which Thai export structure would have looked closer to those of other two countries with higher export GNP ratios.

For the import side similar changes were observed in the structure of two countries in spite of the difference in their magnitude of changes in import-GNP ratio. Manufactures dominated import at the beginning of industrialization in both countries as well as in Japan. Light manufactures ( $M_l$ ) tended to be replaced by heavy manufactures ( $M_h$ ) and raw material ( $M_p$ ) but much less than in Japan, heavy manufactures have occupied 40%–60% of total imports from the beginning. This is partly affected by technical progress, in which primary product material tended to be substituted by heavy manufactured one, and by such new consumption demands as passenger cars and household electric appliances.

The relationship between structural changes in trade on the one hand, and industrial evolution on the other, is indicated in two measures: first, by import / demand [ $M / (X + M)$ ] and export / output ratios [ $E / (X + E)$ ] of major sectors, and, secondly, by output structure.

TABLE 11. CHANGES IN OUTPUT STRUCTURE

	(A) Indigenous and other light manufactures	(B) Textile	(C) Heavy manufactures
(%)			
Japan			
1882–1891	51.7	27.8	20.5
1892–1901	47.7	34.7	17.6
1902–1911	50.5	26.8	22.7
1917–1926	37.3	31.2	31.5
1927–1936	34.4	28.1	37.5
Thailand			
1960	72.5	12.0	15.5 (15.5)
1966	64.0	10.7	25.3 (16.6)
1972	53.0	13.7	33.3 (23.6)
Taiwan			
1953	60.4	18.4	21.2 (17.5)
1955	50.1	23.2	26.7 (21.7)
1961	42.4	17.9	39.7 (34.2)
1956	40.4	17.4	42.2 (36.4)
1968	32.2	16.7	51.2 (43.9)
1972	25.1	20.5	54.4 (47.5)

Note: Calculated from total output at current prices. Figures in parenthesis indicate shares excluding petroleum products and tin metal for Thailand and petroleum products for Taiwan.

Sources: Japan: Yamazawa, I. and Y. Yamamoto, *op. cit.*, Thailand: Narongchai Akra-sanee, *op. cit.*, Taiwan 1953, 1955: Lee, T. H. & K.S. Liang, "Process and Pattern of Economic Development in Taiwan", Ichimura, S. ed. *Economic Development of East and Southeast Asia*, University Press of Hawaii, 1975, Taiwan 1961–1972: See Table 10.



The first measure is summarized in Tables 8 and 10, which are comparable with Figure 1 for Japan, and the second measure for three countries is shown in Table 11.

In Thailand rapid import substitution and small but steady export expansion were observed in textile industry. However, its share in total output was as low as 10–13%, therefore, hampering its contribution to export expansion. On the other hand indigenous sector with stagnant export output ratio still dominates output structure, although the share is decreasing. Heavy manufacture occupies a larger share than that of Japan in corresponding period. But import dependency ratio is still high and export expansion is negligible if tin metal is excluded. It is noteworthy that heavy manufacturing production has started before light manufacture achieved full export expansion.

Output structure has changed more rapidly in Taiwan. The share of indigenous industry was halved and that of heavy manufacture more than doubled in twenty years. The share of textile industry was one and a half times as large as in Thailand, and, combined with high export-output ratio since the late 1950s, contributed to the expansion of manufactured exports from Taiwan. Import demand ratio was kept low until the former half of 1960s. But it started to rise in the late 1960s for the latter three categories in spite of their steady increase in export output ratios. This paradoxical tendency seems to reflect

TABLE 12. FOREIGN RESOURCE INFLOW IN BALANCE OF PAYMENTS: THAILAND

	(in million bahts)						
	1951-56	1957-60	1961-63	1964-66	1967-69	1970-72	1973-75
(1) Balance of trade	-1,134	-4,439	-5,349	-8,996	-29,870	-31,070	-45,266
(2) Balance of service trade	-1,694	-295	1,515	6,284	17,633	18,023	20,598
(2.1) U.S. military expenditure in Thailand	0	0	643	3,945	13,472	12,394	10,247
(3) Net transfer receipt	582	2,737	2,590	2,554	3,996	3,155	9,518
(4) Long-term capital: net inflow	1,360	1,409	3,951	3,815	6,808	7,827	14,723
(4.1) Direct investment	100	253	624	1,506	3,053	3,216	7,186
(5) Short-term capital (non-monetary): net inflow	1,625	1,197	1,192	2,758	2,157	3,070	6,445
(6) Short-term capital (monetary): net inflow	-570	-668	-3,899	-6,415	-723	-1,004	-6,018
(7) Gross fixed capital formation	n.a.	27,658	35,821	54,277	83,460	99,187	171,886
(8) Current overseas surplus to <i>GFCF</i> : ratio (%)	n.a.	17.1	10.7	5.0	14.7	13.2	14.4
(9) Transfer plus total capital to <i>GFCF</i> : ratio (%)	n.a.	19.3	21.6	16.8	15.5	14.2	17.9
(10) Transfer plus long-term capital to <i>GFCF</i> : ratio (%)	n.a.	15.0	18.3	11.7	12.9	11.1	14.1

Sources: 1951-69: I.E. Ingram, *Economic Change in Thailand*, 1971; 1970-75: Bank of Thailand, *Monthly Bulletin*, May 1977

Notes: (1)+(2)+(3)+(4)+(5)+(6)=0

(8)=-[(1)+(2)] / (7) (9)=[(3)+(4)+(5)] / (7)

(10)=[(3)+(4)] / (7)

the expansion of intraindustry processing trade in which material or intermediate products were imported and later shipped abroad in processed form, which will be discussed later.

Figure 2 confirms the above-mentioned statement. Industrial trade balance, shown in the form of ratio of manufactured commodity export against manufactured commodity and raw materials import, shows steady and rapid improvement for both Japan and Taiwan, while only a small rise is observed for Thailand. This again suggests the lack of rapid manufacturing expansion as the major difference between Thailand and the other two countries.

In spite of the difference in output structure and trade performance, industrialization commonly required the input of capital and foreign technology in the two countries. Distinct increase in  $GDCF / GNE$  ratio was observed in both countries as is shown in Panel Cs of Tables 5 and 6, which reflects increasing capital requirement for industrialization. Here the amount and form of foreign resources inflow attract special attention. The form of the resource inflow, direct investment in particular, is closely related to the transfer of foreign technology both in production and management, another indispensable input for industrialization.

The inflow of foreign resource to Thailand and Taiwan is shown in Tables 12 and 13 in the comparable accounting framework to Table 4 for Japan. It is measured in three alternative terms: (a) current overseas deficits, (b) transfer receipt plus total capital inflow, and (c) transfer receipt plus long term capital inflow. It should be noted that (b) tended to exceed (a) in both countries. The difference between (a) and (b) is gold export and net decrease of foreign exchange reserves overseas whose negative value indicates that the two countries have been accumulating a part of foreign resource inflow in the form of gold and foreign exchange reserves.<sup>23</sup>

As in the case of Japan, we are most concerned with the measure (c). The ratio of (c) to  $GDCF$  is shown in the row (10) of Table 12 for Thailand and the row (8) of Table 13 for Taiwan.

In Thailand this ratio was the highest in 1961–63, decreased to between 11% and 13% for the succeeding decade, and increased slightly in 1973–75.<sup>24</sup> It is notable that Thai figures are not very high in comparison to those of Japan during two decades before World War I. The foreign resource inflow in the (c) measure was dominated by net transfer receipt (mainly U.S. non-military aid) in the 1950s, but since 1960 long-term private capital has been exceeding it, 40% of which consists of direct investment. The bulk of other long-term capital inflow is loans and credits to private enterprises, which are also directly related to the import of machinery and production equipments, while portfolio investment occupies only 8% of total private long-term capital at most.

In Taiwan the 1950s was characterized by the surprisingly high ratio of foreign resources inflow, due to U.S. aid. It is well known that U.S. aid to Taiwan provided large quantity of raw materials, of which cotton had the largest share, and thus directly supported industrial production.<sup>25</sup> The aid rapidly decreased in the 1960s, as a consequence, at least partly, of its own success. The ratio of private long-term capital to  $GDCF$  is given in row (9) of

<sup>23</sup> The similar tendency was observed in Japan for the period of foreign capital inflow. This was required for the expansion of domestic money supply under gold standard system. However, under today's managed currency system, this may reflect prudent monetary policy for economic growth in two countries.

<sup>24</sup> The ratio would rise further if we include U.S. military expenditure, shown in the row (2.1) in Table 12, into calculation.

<sup>25</sup> Hsing (1971), Chapter 4

Table 13. The figures for the first two periods include private short-term capital, and relatively small proportion, one third or one half at most, of them is of long-term nature. Therefore, it would be safe to conclude that the ratio of private long-term investment was kept low until the middle of 1960s, when it jumped up to 8-9% level. This rise, however, did not cover the decreasing rate of economic aid, and as a result Taiwan's reliance on foreign financial resources experienced a continuous decline.

TABLE 13. FOREIGN RESOURCE INFLOW IN BALANCE OF PAYMENTS: TAIWAN

	(in million US dollar)				
	1953-56	1957-60	1961-64	1965-68	1969-72
(1) Balance of goods and service trade	-389.2	-444.8	-262.0	-326.4	590.6
(2) Net transfer receipt	330.3	294.3	217.7	97.0	50.6
(2.1) Government	326.7	(280)	162.3	22.2	3.0
(3) Long term capital inflow	69.0	186.6	166.7	354.6	447.8
(3.1) Private	30.6*	(60*)	45.6	249.6	453.6
(3.2) Direct investment	n.a.	23.7	52.3	72.3	187.9
(4) Short term capital inflow (non-monetary)	-10.1	-36.1	62.6	-51.0	-68.8
(5) Short term capital inflow (monetary)			-174.0	-74.3	-1020.3
(6) U.S. Aid	(370-420)	419.7	359.6	94.4	—
(7) Current overseas surplus to <i>GDCF</i> (%)	49.6	47.3	19.3	10.7	-10.7
(8) Transfer plus long term capital to <i>GDCF</i> (%)	73.0	57.9	29.2	16.2	8.7
(9) Private long-term capital to <i>GDCF</i> (%)	5.1*	(7.5*)	3.6	9.0	8.0
(10) U.S. Aid to <i>GDCF</i> (%)	(64-81)	47.8	28.1	3.4	—

Sources: (1)~(5) 1953-59: UN, *Statistical Yearbook*, 1960-72: Central Bank of China. (6) Council for International Cooperation and Development, *Taiwan Statistical Data Book*, 1975, Table 11-3, p. 217.

Notes: (1)+(2)+(3)+(4)+(5)=0 (7)=- (1) / *GDCF* (8)=[(2)+(3)] / *GDCF*  
(9)=(3.1) / *GDCF* (10)=(6) / *GDCF*

(2) and (3): not strictly comparable between the first three periods and after, due to the change in classification. Figures with \* in (3.1) and (9) include private short-term capital. (6) includes both grant and loans. (7) *NT* amount directly obtained from the national income data. (8)-(10) *NT* amount converted from US dollar amount, using the rates for imports, i.e. the least valued rates for *NT*, quoted in IMF, *International Financial Statistics* (1972 Supplement et al.).

Therefore, the percentage proportions obtained are very high, compared to other works. For example, Hsing obtained the percentages of 47.13 (1951-55), 33.71 (1956-60) and 16.83 (1961-65) for the contribution of US aid to *GDCF* (equivalent of (10)), using the official exchange rate for conversion. See Hsing (1971) p. 197 Table 4.6.

In both countries, a significant proportion of economic aid was input into the construction of infrastructure, which probably is reflected in their larger share of *F* sector as compared to Japan. The inflow of capital and technology, on the other hand, was mainly channeled into manufacturing sector, and contributed to light and heavy industrialization of the economies and affected their trade performances.

#### IV. *Foreign Resources and Industrialization*

In this section, we proceed from aggregative analysis to the institutional and policy aspects of external factors in the process of industrialization.

The types and channels of technology import, or "technology borrowing", and the establishment of "new" industries as its consequence, attract our attention. In doing so, Japan employed three methods. The first was "production through imitation", in which Japan imported machinery and employed foreign engineers and technicians. Light industrialization was mainly carried out along this line. Cotton manufacturing by modern technology, both yarns and fabrics, is the best example.<sup>26</sup> The second was purchase of patent and know-how from enterprises in advanced countries with loyalty payments. As in the first case, machinery and technological personnels were provided from abroad. In most of Japan's heavy industry, such as steel and ammonium sulphate, technology import took this form. The third case was employed when supplying firms demanded share transfer in compensation of the provision of patent, know-how and machinery, thus the establishment of joint ventures.

Japan became a recipient of foreign direct investment after 1900s, especially in the 1920s.<sup>27</sup> Although the amount was rather small, as shown in Table 4, its impact on Japan's heavy industrialization is not to be ignored when we see its nature more closely. Table 14 gives a list of subsidiaries of and joint ventures with foreign firms, classified by industry. From the table can be detected some characteristics of direct investment into Japan.

First, it is concentrated in heavy industry. This reflects the expansion of domestic demand and import for heavy manufactures as a result of the advance in industrialization process. Hence the incentives for starting import-substituting production was upraised. The gradual increase of import duties for protection, after Japan's Tariff Autonomy Restoration in 1899, also heightened the incentive.<sup>28</sup>

Secondly, direct investment into Japan predominantly took the form of joint ventures, with exceptions in automobile assembly and rubber products. The managerial initiative was held in the hands of Japanese partner, again reflecting the main objective of technology import. In many cases, such as artificial silk and electrical machinery, the major role in establishing the import-substituting firms was played by main importers. Foreign partners, on the other hand, limited their role as suppliers of technology and machinery, and the significance of their fund provision was practically very little.

Thus Japan was able to fill the big technology gap with Western advanced enterprises very rapidly. As a consequence, import-substitution proceeded, and, as shown in Figure 1, Japan's import dependence of heavy manufactures declined. It should be noted that, in the process, domestic production realized cost reduction and domestic technology develop-

<sup>26</sup> Technology transfer in cotton industry is described in many books on the history of cotton industry development. See for example Kajinishi (1964)

<sup>27</sup> Prior to the Treaty Revision in 1899, direct investment by foreigners had not permitted outside foreign settlement. Shortly after the beginning of trade, there were brisk direct investment activities inside the settlement, such as tea manufacturing. However, they do not seem to have had significant effect on outside industrial development.

<sup>28</sup> For details of Japan's tariff protection policy, see Yamazawa (1975)

ment, as well as quantitatively meeting the expanding domestic demand. Artificial silk industry, for example, went through severe competition with imports in the 1920s to succeed in export, and finally acquired the status of world top exporter with a share of 27% in the middle of 1930s.<sup>29</sup> Similarly, production of large scale electric generators started as a mere imitation, but it provided the technological basis for the development of domestic technology in 1930s, when construction boom of power station required even larger generators.

TABLE 14. FOREIGN DIRECT INVESTMENT IN JAPANESE MANUFACTURING INDUSTRIES: 1899-1940

Industry	Name of firm	Year of establishment	Parent foreign firm	Foreign equity participation*
Electric machinery	Nihon-denki	1899	Western Electric	54→32
	Tokyo-denki	1905	General Electric	55**
	Shibaura-seisakujo	1908	General Electric	24**
	Fuji-denki	1923	Siemens	30→30
	Mitsubishi-denki	1924	Westing House	40→ 4
	Toyo-Otis Elevator	1932	Otis Elevator	66→70
	Sumitomo-denki	1932	I.S.E.	13→ 7
	Tokyo-Western	1929	ERP	100→ 0
Rubber products	Yokohama-gomu	1917	Goodrich	50→ 9
	Chuo-gomu	1917	Dunlop	100→99
Automobile	Japan Ford	1925	Ford	100 ***
	Japan GM	1927	General Motors	100 ***
Sheet Glass	Nihon-Itagarasu	1918	Libby Owens	34→17
Artificial fibre	Asahi-Kenshoku	1924	Glanzstoff	25
	Nihon-Bemberg	1929	J. P. Bemberg	25→ 5
Phonograph records	Nihon-chikuonki	1927	Columbia	59→ 2
	Nihon-Victor	1929	R.C.A.	68→25
Other machineries	Nihon-seiko	1907	Vickers-Armstrongs	50→ 6
	Toyo-kikan	1928	Babcock & Wilcox	66→66
	Kyozo-seisaku	1928	United Steel and Signal	20→13
	Toyo-Carrier	1930	Carrier Corporation	50→46
	National-Kinsen-Torokuki	1935	National Cash Register	70→70

Source: Kogyo-Ginko, "Gaikoku-Gaisha-no-Honpo-Toshi", in Okura-sho (Ministry of Finance) ed. *Zaisei-Kinyu-Tokei-Geppo*, No. 5 pp 64-67.

Notes: \* (% share at the time of establishment) → (% share in 1941)

\*\* merged into Tokyo-Shibaura-denki: 1939. International Electric 33%→16%

\*\*\* Stopped production in 1939.

<sup>29</sup> Around 1930, Japanese artificial silk manufacturers had an acute competition with Italians on yarns to be supplied for export processing at bonded factories. Although the domestic market was protected, this factor constituted a competition pressure.

Finally, a tendency to localization is discernible, for which strong government policy was primarily responsible. An encouragement policy for the purchase of domestic products in governmental and official use was taken. Privileges, such as exemption from taxes and provision of subsidies, were granted only to companies with foreign participation less than certain proportion. A more direct policy inducing the decrease of foreign participation was also employed through various controls. Thus, by the end of 1930s, most of the joint ventures were localized in every aspect of capital, management and production.<sup>30</sup>

Production of heavy electric machinery gives us a typical example of industry development through joint venture process. Rapid electrification of Japan in the 1900s, while drawing foreign portfolio investment as mentioned earlier, gave rise to domestic demand for heavy electric equipments such as motors and generators. In order to meet this demand, the major electric companies were established as joint ventures.

Electric machinery industry was also typical in the localization process. In 1930 the Ministry of Communication issued a regulation for encouraging the use of domestically produced machinery, under which companies with less than 50% of foreign participation were considered as domestic.

Automobile industry is another example of strong localization policy. In 1929, of the domestic demand of 35,000, 84% derived from knock-down production. Another 14% was held by import, and production by domestic firms was as limited as 2%. In dealing with this situation, Japanese government, on the one hand, gave subsidies to domestic firms, and, on the other hand, controlled foreign operation in various forms. On top of the Yen devaluation of 43% in 1932, 1936 saw the increase of import duties for parts for knock-down, and a new control against the increase of knock-downs. As a result, localization was completed in 1939 with the withdrawal of foreign assemblers, GM and Ford, from local production.

We can now turn to the LDC cases. In Thailand, the underlying situation of foreign enterprises acceptance has many similarities with Japan. From early 1960s, the rapid increase of domestic demand, hence import, for manufactures opened the way to import-substitution, and many subsidiary companies and joint ventures were established. In order to secure domestic market for these companies, import duty was generally upraised.

Thai foreign investment policy, as compared to Japan, was more active. Under the "Promotion of Investment Incentives Act", the BOI granted various privileges, among which exemptions from corporate taxes for five years and from import duties on machinery were the most important.<sup>31</sup>

The Act covered both Thai and foreign firms, probably to the advantage of foreign investments. From Table 15, which describes their performances, it can be seen that the Act opened various industrial fields for foreign participation. Indeed, foreign investments exist in most of the manufacturing industries from consumer's to intermediate goods, and their share in many modern manufacturing industries are very high. Higher amount of capital employed per worker for foreign firms may partly explain this predominance. It is reported that, although not shown in the table, foreign firms have higher amount of value added per worker as well. And, backed by the higher technological capability implied by

<sup>30</sup> Informations on foreign investment into Japan can be acquired from company histories of companies concerned. Aihara (1973) presents a neat summary for them.

<sup>31</sup> Hirata (1973), Tambunlertchai (1975, 1977)

these figures, foreign partners has been holding initiatives in management. This may be called "foreign-investment-led" growth.

"Foreign-investment-led" growth was probably the quickest and the most practical way, if not the only way, open for Thai industrialization. Certainly, without foreign participation, Thailand would not have been able to establish so many "new" industries in so short a time span. However, such a course of development has its own problems.<sup>32</sup> First, import-substitution through foreign investments, especially in heavy industry, tended to be "shallow developemnt", consisting primarily of assembly and final processing which depends heavily on imports of parts and intermediate commodities, which is given evidence by heavy import dependence of material input in many industries shown in column (9), Table 15. This means little linkage effect to other sectors, and little impact on overall economic growth, while the growth of total output of the industries exaggerate real stages of development. The structure of tariff protection has tended to promote the shallow development. Import duties on consumer goods and other finished products were raised from 25-30 per cent to 30-55 per cent in 1971, while import duties on intermediate products remained to be 20-30 per cent as they had been during the 1960s, thereby reinforcing the escalated tariff structure in favor of finishing process.<sup>33</sup>

Secondly, even when the domestic production of basic industrial materials is undertaken, it tends to be subject to inefficiency caused by small scale of production and lack of effective competition. The BOI permitted a Japanese-Thai joint venture firm monopoly production of a major synthetic fibre. Its scale of production is one tenth of average scale in Japan and its supply price to domestic market exceeded that of import including tariff and tended to erode the competitiveness of the finished products. The firm demanded import surcharge on top of the existing tariff, while the users of the fibre, both local and joint venture firms of spinning and weaving, insisted the reduction of domestic supply price to world competitive one.<sup>34</sup>

Thirdly, import-substitution at the final level did not lead export. On the contrary, together with the increase of intermediate goods import due to the above-mentioned high dependency, this caused chronical balance of payments difficulties.

These problems have an intrinsic reason in the behaviour of foreign investment, although Thai government policy was also responsible.<sup>35</sup> For foreign companies, which had been exporting commodities to Thai market, tariff protection and tax privileges constituted sufficient incentives to start the final-stage local production. However, its deepening to intermediate goods and materials sharply conflicts with the benefit of parent companies, who still maintains the role of chief suppliers of such commodities as a result of their "defensive" investment.<sup>36</sup>

<sup>32</sup> Here we are trying to point out the issues related to foreign investment, not those on industrialization policy, although they are mixed and difficult to distinguish from each other in LDCs like Thailand. For the latter subject, see Tambunlertchai (1975) and Akrasanee (1977).

<sup>33</sup> Akrasanee (1977) describes this tariff structure as typical of countries at the early stages of industrialization.

<sup>34</sup> *Economic Review '76*, Supplement to Bangkok Post, Dec. 31, 1976, pp. 62-63. See Akrasanee (1977) for the problems associated with the control of industry in Thailand.

<sup>35</sup> It should not be neglected that Thai companies share the problems with foreign ones. Therefore, direct investment is not the sole agent to be blamed. The primary purpose of the BOI had been import-substitution and export had been neglected until 1972, when the revised Act explicitly stated of manufactures export as one of its major objectives.

TABLE 15. PERFORMANCE OF FOREIGN OWNED FIRMS IN THAI'S MANUFACTURING INDUSTRIES

	(1) No. of sample firms (foreign owned / total)	(2) Shares (%) of foreign owned firms in		(3) employment		(4) Export as % of total sales		(5) Average fixed assets per employee (1000 B)		(6) Percentage of imported to total materials
		assets	sales	in	Thai	foreign	Thai	foreign	Thai	
1. Metal & mineral products	16/27	54.2	37.3	55.8	69.9	0.9	197.9	42.4	20.3** (63.6)	
2. Food	16/26	59.4	66.9	50.1	24.1	8.7	123.9	106.5	44.0	
3. Textile	26/37	85.3	84.9	80.7	8.9	0.8	99.5	50.1	58.8	
4. Wood products	2/19	6.6	5.3	7.1	29.2	4.3	136.6	120.4	68.9	
5. Chemical products	10/12	91.4	94.7	91.4	5.3	—	176.2	142.1	66.6	
6. Rubber products	9/14	97.0	96.8	89.6	1.5	3.8	178.1	38.2	72.7	
7. Electric appliances	9/9	100.0	100.0	100.0	1.2	—	52.0	—	83.3	
8. Non-metallic mineral products	7/11	17.8	9.2	23.0	1.0	4.4	265.0	239.9	41.3	
9. Motor vehicle and spare parts	14/19	61.0	74.6	72.5	1.1	—	84.2	83.6	86.3	
10. All industries	109/174	56.2	68.7	64.6	27.4	3.9	120.8	117.5	49.0 (62.2)	

Source: Rearranged from Tables 5-10, 5-16, 5-21, 5-25 in Somsak Tambunlerchai, *Foreign Direct Investment in Thailand's Manufacturing Industries*, original data was obtained from Board of Investment 1972 Survey.

\* Foreign-owned firm is defined as firm with 10% or more of equity participation from any single foreign country. Thai firm is defined as firm with less than 25% foreign equity participation.

\*\* Excluding value of materials used by the tin-smelting company.



Moreover, "foreign-investment-led" growth tends to conflict with export expansion in two senses. First, as above-mentioned, it has less tendency toward cost reduction, and, therefore, the products do not acquire competitiveness in international market. Secondly, exports from subsidiaries would cause more acute competition for those from parent companies. This would partly explain the lack, or small success, of Thai manufacturing export expansion.

In case of Taiwan, it would be convenient to discuss the foreign investment issue before and after around 1965. Prior to the year, investment inflow took a similar form with Thailand, along import-substitution. Government policy was not so different as well, providing tariff protection and tax incentives. Although the original Statute for Investment by Foreign Nationals of 1954 was not very effective, 1960 Revision provided more liberal terms. Together with the Statute for Encouragement of Investment in July 1960, it succeeded in increasing investment inflow.<sup>37</sup> The annual average inflow rose from 4 million US dollars for 1952-60 to 20 million for 1961-64. Among the various industrial fields which attracted direct investments in this period, electric appliances, such as refrigerators and air-conditioner, and pharmaceuticals could be considered representative.<sup>38</sup>

One important factor with foreign investment in Taiwan, especially with joint ventures, is that the managerial initiative was maintained in the hands of Chinese partners, which may have resulted in larger linkage effect. The following example would give a fine illustration. In 1963 a joint venture between Chinese and Japanese firms was established for producing acrylic yarns. Chinese side took the initiative and invited a Japanese partner, who accepted to invest 45% of shares. At the beginning, the Japanese firm supplied the material, acrylic staple. However, in 1969, to produce the material locally, the joint venture set up its own subsidiary and the Japanese firm changed its supply to a baser material, monomer. Finally, in 1976, monomer started to be supplied locally, and the Japanese partner lost the established market totally.<sup>39</sup>

Nevertheless, the period after 1965 attracts more attention for its particularity in emphasizing export expansion. As discussed in Section III, direct investment never played quantitatively important role in Taiwan's economic growth. However, the impact on export expansion needs special attention.

This period also saw a rapid increase of foreign investment inflow, which averaged 55 million US dollars for 1965-68. In 1969 the amount exceeded 100 million US dollars. As a consequence, around 1970, direct investment in Taiwan had a predominant characteristic of export-orientation. Table 16, presenting the industrial distribution of direct investments in Taiwan, shows a heavy concentration in electronics and textile industries. It is not an accident that they are among the most export-expanding industries, for foreign investment in this period was sought for the provision of foreign market. This is related to the paradoxical rise of both import dependence and export ratios described earlier.

The practice is best known by the operation of export processing zones, established in 1966, where the duty-free import of materials is coupled with the export of all products.

<sup>36</sup> The main motive of foreign investment in Thailand is summarized as "to protect their shares of the market, and enjoy the promotional privileges, particularly the tariff protection on final products and exemption from import duties on capital and intermediate inputs" in Tambunlertchai (1975) p. 209

<sup>37</sup> Hsing (1971)

<sup>38</sup> Matsumoto and Ishida (1971)

<sup>39</sup> Gosei Seni Kaigai Toshi Kenkyukai (1977)

TABLE 16. DIRECT INVESTMENT IN TAIWAN: 1952-1969

	Foreign Investment			Overseas Chinese Investment		
	Number	Amount (1,000 US dollars)	Share	Number	Amount (1,000 US dollars)	Share
Agriculture and Fishery	4	1,428	0.5	21	3,969	2.9
Mining	1	73	—	1	310	0.3
Food	27	7,050	2.5	51	13,832	10.3
Textiles	18	6,253	2.2	33	12,280	9.1
Clothing, Footwear	43	6,859	2.4	66	8,576	6.4
Wood & Bamboo Products	10	405	0.1	20	2,401	1.8
Pulp & Paper	8	1,226	0.4	13	2,376	1.8
Leather Products	10	661	0.2	10	680	0.5
Plastics & Rubber Products	44	6,245	2.2	49	4,485	3.3
Chemicals	71	66,815	23.2	40	4,004	3.0
Non-metal Minerals	20	2,720	1.0	46	7,035	5.2
Metal	68	11,264	3.9	30	2,708	2.0
Machinery & Equipments	31	9,436	3.3	11	3,138	2.3
Electronics	110	143,221	49.8	24	4,196	3.1
Construction	6	8,786	3.0	61	13,416	10.0
Commerce & Finance	5	1,381	0.5	26	9,162	6.9
Transport	4	3,597	1.2	18	6,740	5.0
Other Services	12	6,259	2.2	33	27,407	20.4
Others	33	4,150	1.4	79	7,716	5.7
Total	525	287,829	100	632	134,431	100.0

Source: Council for International Economic Corporation and Development [quoted from ECAFE Kyokai (Japan ECAFE Association), *Chosa Geppo* (Monthly Report), June 1971, pp. 22-23]

However, it is not confined to the zone, and there are many indications that this “international sub-contracting” operation, although very difficult to calculate, has a significant proportion of Taiwan manufacturing production. The effect of such a practice to overall industrialization is difficult to assess at the moment. Among the four stated purposes, two, promotion of industrial investment and technology transfer, seem dubious in the light of the nature of such operations. The third, export expansion, should be examined against the high proportion of material import. The fourth, employment promotion, is the only tangible factor beneficial to development.<sup>40</sup>

In conclusion, foreign direct investment, while making rapid industrial development possible, tends to aggravate many problems which the LDCs are facing. The behaviour of foreign investments based on their own profit incentives would not necessarily correspond to the maximum social benefit for host countries. One case is the “shallow development”, which is characterized by assembly and final-stage processing. This has little linkage effect, and tends to work against smooth exportization. In the case of “export-processing-zone” type of foreign investment, the linkage effect is rather limited, although it achieves some

<sup>40</sup> Hirata, 1977

export expansion and employment promotion.

It can be understood, in this connection, that present LDCs tend to adopt policies encouraging the localization of capital, management and production, although local firms are not free from these problems. However, mere strict controls on foreign investment would deprive the recipient countries of its benefit. Therefore, a flexible operation of foreign investment and trade policies corresponding to individual situations would be needed. We have to stop here, for what macro-analysis can do with this issue is not much, but micro-analysis could supplement our discussion.

### V. *Major Findings and Tentative Conclusion*

Our comparative analysis of the two LDCs with Japan seems to justify our presumption that there exist basic similarities in their industrialization process. The catch up process of industries was commonly revealed for the three countries, showing the "backward" nature of their industrialization. External resources, both tangible and intangible, were sought for mainly for this reason. Thus the pattern of international trade is closely linked with industrialization.

The link was intensified by their resource endowments, another basic similarity. Abundant labour, for example, supported the rapid expansion of light manufactures export.

However, the similarity is only in the broadest sense, and in detail many differences were pointed out. Among our major findings are: (1) the two LDCs achieved faster overall economic growth and structural transformation; (2) the successive pattern of development from light to heavy industry observed for Japan is not found unanimously. Light and heavy industrialization proceed simultaneously in the two LDCs. Especially in Thailand, heavy industrialization started before the completion of light manufactures exportization; (3) the simultaneous rise of both import dependence and export ratios was found for Taiwan; and (4) the response towards foreign direct investment varied among the three countries.

These differences seem to reflect their divergent initial conditions. The wider "gap", which we described in Section I, may be responsible for the faster overall growth. The same factor may have caused the difference in their expectation towards foreign investment and the divergent performance of foreign capital in the catch up process. Difference in international market situation, another factor pointed out in Section I, seems to explain part of both the lack of Thai manufacturing export expansion, and Taiwan's simultaneous rise of import dependence and export ratios.

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