An Early History of Thailand's Electronics Industrialization:

Subsidiaries Evolution and Industrialization Strategy of Thailand

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Summary

This paper investigates Japanese electronics subsidiaries' evolution in Thailand with a focus on their relationship with national industrialisation strategy of the government of Thailand. Full-scale relocations of Japanese electronic MNEs production process to Thailand were the consequence of interaction of host country's government policy, global business environment and those MNEs' business strategies. It was also found out that heterogeneous evolution processes the subsidiaries coexisted during the 80s and the 90s as a reflection of the host country's government policy.

1. Introduction

The Japanese electronics industry was, together with the car industry, one of the leading sectors of the Japanese economy in the late 20th century. Semiconductors and consumer electronics products such as TVs and "Walkman" contributed to a large amount of trade surplus. However, it was a few years after the turn of the century when a decline of the Japanese electronics industry became apparent to many observers.

Many papers were written in Japanese about the Japanese electronics industry's foreign direct investment (hereinafter referred to as "FDI") before the new millennium. Among the others, there existed a few research works on Japanese electronics FDI in Thailand.

Suehiro (1989 b) was one of early research works on electronics industry in Thailand. He gave a comprehensive analysis of "the FDI booming since 1987" from various aspects such as the trend of FDI data, background of the booming and its impact on the domestic economy of Thailand. He emphasized that FDI played the key role in industrialisation during this period rather than domestic firms. He also gave an analysis of globalisation strategy of Japanese consumer electronics manufacturers in connection with

their FDI to Thailand[1].

Shortly after Suehiro's work, a few Thai researchers published their works in Japanese in Japan. Chintayarangsan (1991) gave a concise description of the trend of production, employment and export by Thai electronic industry, and pointed that the major role of FDI was born by US firms in the 70s and then Japanese firms in the 80s. His data of import duty imposed on electronic final products such as TVs shows that the Thai government has had maintained its domestic industry protection policy in the late 80s in parallel with export promotion policy.

Pornavalai (1995) argued industrialization of Thailand by focusing on Japanese consumer electronics manufacturers' FDI in Thailand from a Thai point of view. Pornavalai particularly paid attention to those manufacturers' contribution through their exports, employment and technology transfer.

Onishi (1999) analysed Japanese electronics industry's FDI to East Asia from international division of labour point of view. He traced FDI data of the 90s and investigated development and evolution of division of labour in the area. But, the number of papers written in Japanese on the Japanese electronics industry's FDI in Thailand was drastically decreased afterwards[2].

Instead, non-Japanese researchers started to write in English about the industry's FDI, particularly in East Asia. Song (2002), by using panel data of Japanese electronics manufacturers' subsidiaries in Taiwan, Korea and Singapore covering from 1988 to 1994, analysed the sequential FDI in the region. He concluded that "*previous investments in capabilities serve as platforms for future upgrading of activities.*[3]"

Edgington and Hayter (2013) examined the changing roles borne by subsidiaries of Japanese electronics manufacturers in ASEAN countries by analysing a large-scaled interview data. They tried to integrate Birkinshaw-Hood model with Michael Porter's "value chain" model for their approach[4].

Those research works published in Japan before the turn of the century mostly focused on the Japanese FDI to Thailand from the economic development point of view. Therefore, they were discussed mainly the economic and policy environment in Thailand, and economic and industrial impact of the FDI.

On the other hand, literature published in the new millennium in English and outside of Japan took a totally different approach. Edgington and Hayter (2013) based on "the MNE subsidiary role approach" taken by Birkinshaw and Hood (1998). Song (2002) also belonged to so-called "subsidiary role stream" which was named by Birkinshaw and Ped-

ersen（2009）.

This stream of literature is largely based on the idea that FDI is a sequential process where the initial investment induces following upgrading additional investments. Their works pay particular attention to dynamic evolution process of subsidiary roles of MNEs. In addition, their works covers those Japanese subsidiaries in the last part of 80s or even after the 97–98 Asian financial crisis period.

This paper examines the Japanese electronics subsidiaries activities in Thailand in the 80s and the 90s covering the 1985 "steep Yen appreciation" period. This is an attempt to analyse an early period of Japanese subsidiary development in connection with economic and political environment in the country.

2. A Brief History of the Consumer Electronics Industry

Foreign MNCs have been playing an important role in Thailand's industrialisation process. In particular, the consumer electronics industry has been a driving force of Thailand's industrialisation. It is, therefore, useful for the analysis of industrialisation process of Thailand to review the history of the industry briefly.

2–1. The Beginnings of the TV Industry（before the 70s）

Television is the largest category in consumer electronics industry. In 2001, the total shipment value of colour television in Japan was 506 billion yen（9.6 million sets）, while that of VCR（video cassette recorder）was 120 billion yen（(6.1 million sets）in the same year[5]. Television had an exceptionally long product life cycle started in the 1940s. Most major suppliers of consumer electronics products produced televisions in parallel with other products such as stereos. Therefore, let us focus on the history of the television industry as a representing example of the consumer electronics industry.

The first television broadcasting service was started in the US in 1946. Commercial production of black and white television（B&W TV）started at the same time. The B&W TV market in the US grew much faster than even the most optimistic prediction in the 40s. Encouraged by this booming market situation, the number of firms producing TV sets reached a peak of 140 in 1950[6]. However, the television market slowed down its pace of growth and stayed at a plateau. The next market booming had to wait until 1962, eight years after introduction of colour television（CTV）in 1954.

TV broadcasting began in Japan in 1953, seven years behind the US. In the same

year, totally 35 Japanese manufacturers (excluding Tokyo Tsushin Kogyo (the predecessor of "Sony")) concluded technical license contracts with RCA which held the most of major TV patents. The Japanese B&W TV market also grew rapidly, mirroring what happened in the US market until 1960 when CTV gradually began to dominate the market in Japan.

Shintaku (1994) pointed out that the Japanese TV industry began B&W TV production seven years behind its US counterparts and CTV production six years after. In this sense, the Japanese manufacturers were typical late comers to product technology, manufacturing capability and marketing know how. However, TV production volume in Japan surpassed that of the US in 1967, fourteen years after the first TV was produced in Japan. This reversal of production volume between the two countries was due to the fact that Japanese TV exports to the US steadily increased while hardly any US made TVs was exported to Japan. In the early 70s, Japanese TV exports to the US stayed at 1－1.2 million units a year, while American TV manufacturers suffered from frequent ups and downs due to business cycles[7].

2-2. The US-Japan Television War (the 1970s)

The US TV manufacturers became increasingly frustrated by the number of TV imports mainly from Japan. In the late 60s, the major TV manufacturers repeatedly demanded that the US government take a counter measures. In 1968, the US government conducted an investigation into dumping against Japanese TV exports to the US. This action was taken in parallel to many other anti-dumping investigations and the enforcement of the anti-dumping law on various products including carbon resistors, transformers, speakers and other electronic components.

In fact, Japanese consumer electronics manufacturers were pushing forward with a major technological innovation: the introduction of transistors and semiconductors to consumer electronics. The originator of the idea of transistor application to consumer electronics was Sony's transistor radio of 1955. In the mid 60s, most of Japanese consumer electronics manufacturers substantially increased their transistor usage for consumer electronics products including TVs.

Japanese manufacturers were ahead of their US counterparts in transistor application, which in the US was considered mainly for military purpose. Transistor application for military purposes was a much more lucrative business than civilian applications in the US. The introduction of transistor technology had two by-products in Japan. Firstly, the

sales of conventional vacuum tube TV declined and it caused a decline of their market price which triggered the dumping investigation by the US[8]. The second by-product emerged in the 70s as production technology innovation that will be discussed further later in the chapter.

On 16 August 1971, President Nixon announced a drastic US dollar rescue package including, among the other things, the abandonment of gold convertibility of US dollars, an increase of imports duty by 10%. This announcement implied a serious impact on the Japanese economy as well. It was called "Nixon Shock". The exchange rate of the Japanese yen against US dollar had been fixed at 360 yen to a dollar throughout the post war period since 1947. However, the yen/dollar exchange rate was changed to 308 yen to the dollar by the Conference of Finance Ministers representing ten major economic countries in New York on 18 December 1971. The new exchange rate scheme is called Smithsonian Rate named after the venue of the conference.

Most expected Japanese export oriented manufacturers such as the consumer electronics industry to suffer from this yen appreciation. However, Japanese TV exports to the US did not decrease in number even after the yen appreciation. US TV manufacturers on the other hand suffered seriously from sluggish business conditions caused by the first oil crisis in 1973.

In 1976, the US TV market showed a recovery from post-oil crisis recession. Its production volume grew by 32% compared with 1975. In the same year, Japanese TV exports to the US peaked at 2.96 million units which was an extremely steep increase of 144 % from the previous year (1.75 million units increase). Consequently, 88% of that year's market growth of 1.98 million units was taken by Japanese exports[9].

The US manufacturers made an urgent appeal to the US authorities. The US government approached the Japanese authorities for a trade agreement, because it did not find sufficient evidence for dumping. In 1977, both governments concluded an agreement called the "Orderly Marketing Agreement (OMA)" which, in effect, forced Japanese manufacturers to voluntarily restrain their exports to the US. Under the OMA, in which a ceiling of Japanese TV exports to the US was set at 1.75 million units, a drastic decline to approximately a half a million in 1980 was seen. Consequently, TV production in the US by seven Japanese manufacturers reached 3.57 million units.

During this troubled decade, all the major Japanese TV manufacturers started production in the US. Sony began its US production in 1972, and Matsushita (Panasonic) purchased Quaser, TV division of Motorola, to initiate its TV production in the US. Sanyo

bought Warwick, one of the major American manufacturers in 1976. After the OMA in 1977, Mitsubishi, Toshiba, Sharp and Hitachi had built US production facilities by 1979.

This US-Japan TV war brought about two things. First, most of the major Japanese TV manufacturers established their US production bases and then increased their total TV sales (export + US domestic production) in the US. Secondly, most American TV manufacturers were sold to either Japanese or European (Phillips and Thomson) TV manufacturers. Only Zenith survived until the early 90s.

There may arise a question why this happened. The US manufacturers had various advantages compared with their Japanese counterparts. Technologically, they were the front runners in the 50s and early 60s. They had the world's largest market. This meant they had an advantage in the learning curve, and consequently cost competitiveness.

One of the most promising answers to this question was proposed by Shintaku (1994). He argued that Japanese manufacturers were, at least, a few years ahead of their American counterparts on the introduction of transistors and ICs[10]. This can be interpreted in two ways. First, transistorised TVs had many quality advantages compared with conventional vacuum tube TVs, which, for example, took longer to start showing a picture. As transistor and semiconductor technology developed, the product defect rate drastically fell and the product life became much longer.

Secondly, the wide application of transistors and semiconductors achieved a reduction in the number of required components and production technology innovation. By introducing transistors and ICs, it is said that Japanese manufacturers reduced number of components for a TV set by more than 30%. This also made the introduction of an auto-insertion machine possible. This improvement of production technology successfully reduced production cost by, on average, 37.9%.

With these technological innovations, Japanese manufacturers established a technological and cost advantages over their American counterparts. By the end of the 1980s, Japanese TV manufacturers had acquired a competitive advantages in the world market. Only European TV manufacturers such as Philips and Thomson remained as competitors. This dominant market situation lasted for a long time, until the Japanese manufacturers faced the toughest challenge in 1985, the steep yen appreciation.

3. Industrialisation Policy of Thailand

After the Second World War, recovery of the Thai economy was achieved through

exports growth of primary agricultural commodities, such as rice, rubber, teak, tin and tapioca. Because of this, promotion of industry was not the central focus of government policy. The history of Thai industrial development policy began in the 50s.

The Japanese Chamber of Commerce in Bangkok (JCCB) publishes a comprehensive Thai Economy Almanac. A part of this almanac gives concise description of the history of Thailand's industrialisation policy. According to this description, the history up to the end of the 80s can be divided into five periods[11].

Attempt by Government-led industrialisation (the 1950s)

The Korean War, which was started on 25 June 1950, ended with a cease-fire agreement in July 1953. During the war, a large amount of emergency supplies for the war was provided by many Asian neighbours. However, the end of the war caused a steep decline of the international price of agricultural products. While Thailand's export earning declined, import of industrial products that had increased during the booming period was not changed much. Because of this, Thailand suffered from growing trade deficits so that Thai government was urged to take a necessary action to improve the trade balance.

In addition, nationalistic sentiment in many developing countries developed a belief that they should industrialise their countries through their own capital accumulation. Some of them chose Socialist system where the central command system and public ownership system prevailed. One typical example was China. India also introduced a quasi-socialist system.

The others chose non-socialist strategy preserving private ownership. For those non-socialist countries, it was natural consequence to make efforts to promote indigenous industries to improve chronic trade imbalance. Therefore, "the import substitution industrialisation" was introduced by many developing countries.

In October 1954, the Thai government drafted an "Industry Promotion Law" and initiated its industrialisation efforts. The law stipulated establishment of an industrialisation promotion government body, the Board of Investment (BOI). The principal aim of this industry promotion law was to implement government-led industrialisation by establishing public corporations and enforcing strict control of industry by government. For this purpose, the law had a clause that made government's capital participation into industrialisation projects compulsory. Therefore, Thailand was not attractive for foreign investors. In fact, hardly any significant foreign investment was implemented during this period. In addition, the government attempt of industrialisation through public corporation did not

achieve noteworthy success.

Beginning of private sector industrialisation (the 1960s)

Government-led industrialisation policy in the 50s did not succeed in either the promotion of industry, or an increase of foreign investment. At the end of the 50s, the Thai government changed its industrialisation policy from a government-led industrialisation to private sector-led industrialisation.

In line with this policy change, the Thai government enacted the "Industrial Investment Promotion Law (1962)". Based on the unsuccessful experience of the government-led industrialisation attempt, the new law gave the private sector a central role, while the government was supposed to provide the private sector various supports such as subsidies and incentives. At the same time, the government introduced a clear policy to promote foreign direct investment. The new policy included the following measures;

1) Clarification of private and public sectors role respectively (private sector plays the central role, while public sector concentrates in infrastructure development)
2) Promotion of import substitution industries
3) Promotion of foreign direct investment (Abolition of many restrictive measures for foreigner: a foreign investor is allowed to purchase and own a piece of land for a factory, to remit profit from the factory to abroad, to hold a majority share of a joint venture, and to be qualified to receive various incentives from the BOI)

Period of selective foreign direct investment promotion (1st half of the 1970s)

From 1969, the trade deficit of Thailand widened particularly, the trade imbalance with Japan seriously worsening. Approximately, Thailand's imports from Japan were three times larger than her exports to Japan. In line with the expansion of Japan-Thai trade relationship, Japanese direct investment to Thailand substantially increased.

This Japanese direct investment brought not only capital but also Japanese management style into Thailand. Thai public negatively reacted to some types of Japanese management style. This may be a typical case of cultural conflict in relation with foreign direct investment. According to Kobayashi, a symbolic example of such cultural conflicts in this period was "Noguchi Kick Boxing Gym" in 1972 which was designed to show the Kick Boxing, a traditional and national sports of Thailand, in a coffee parlour. Thai general public took this as insult to Thai tradition and formed a negative public opinion against Japanese foreign direct investment[12].

In 1972, the Thai government introduced a selective promotion policy for foreign direct investment by bringing into practice the "Investment Promotion Law" and the "Foreigners Occupation Control Law". The new laws contained the following measures;

1) Promotion of export industry (import duty exemption for those components and raw materials for export manufacturing, corporate tax holiday for export-oriented business)
2) Promotion of factory location in less industrialised regions (tax incentives for those factories located in designated less-industrialised regions)
3) Strengthening of BOI's administrative authority (BOI was given authority to decide length of tax holiday and level of import duty exemption)

Foreign investment promotion under strengthened BOI authority (2nd half of the 70s and 1st half of the 80s)

Under the selective foreign direct investment promotion policy, the industrialisation of Thailand showed sluggish development and the Thai economy even suffered from recession. There were two factors behind this slow down of Thailand's industrialisation. First, a few neighbouring countries such as Singapore introduced very well organised foreign investment promotion policy. Malaysia followed the policy change in the similar line. Thailand, because of this, became less attractive for foreign investors.

Second, the second oil crisis slowed the world economy particularly the US. Foreign direct investment aimed at either domestic market or export market. While export market showed a sluggish growth, the Thai domestic market was suffering from recession. The Thai government consequently had to change its policy direction again from a selective and restrictive policy to liberalisation and export promotion.

Booming foreign direct investment (2nd half of the 1980s)

The so-called "Plaza Accord" was concluded among the leading world economies in September 1985. This triggered an exceptionally steep Japanese yen appreciation. This sudden and steep yen appreciation was far too severe for normal productivity improvement efforts even for Japanese export oriented-industries to absorb. The consumer electronics industry was no exception. The major consumer electronics companies were pressed to relocate their export bases from Japan to ASEAN countries.

In the case of Thailand, the number of investment applications to the BOI increased five times, and the value of investment grew by nine fold during 1986 and 1989. Due to

the booming foreign direct investment, average GDP growth recorded double digits.

As we have observed in this brief history of Thailand's industrialisation policy, its stance on foreign direct investment seems to shift from government intervention to laissez-faire. However, the following points should be noted;

1) Except for a short period (the early 70s), Thailand maintained her tolerance to foreigners and foreign investment.
2) After unsuccessful government-led industrialisation, the Thai government's basic industrialisation policy has been private sector centred.
3) Thai native business groups have been, unlike Korea, concentrating mainly not on manufacturing sectors, but on service sectors such as commerce and finance.
4) Thailand's foreign direct investment policy particularly focused on export-oriented industries after the mid 70s.

While Thailand was trying to improve their investment environment, many neighbouring countries did not implement policy change. Indonesia, because of her rich natural resource *such as* oil, imposed many restrictions on foreign investments and held import substitution strategy. The Philippines took the similar policy stance, although it did not have substantial natural resources.

For instance, only the Philippines and Indonesia maintained the pre-shipment inspection system for customs clearance for a long time. This pre-shipment inspection system is that all the commodities exported to these countries had to go through the customs classification and valuation inspection at the shipping ports such as Yokohama. Although this system was intended to be an improvement of corrupt customs clearance at their home ports because these inspection works were implemented by Swiss-based neutral organisation, it was highly time consuming and not relevant to the modern industrial production system.

For foreign investors considering direct investment into the ASEAN region for their manufacturing bases, the Philippines and Indonesia did not look "investor friendly" because of these countries restrictive measure for foreign investors. Therefore, the investment environment of these countries was not necessarily attractive to direct investment. When the steep Japanese yen appreciation took place, the Japanese export-oriented industry found the investment environment of Thailand the most promising among the ASEAN countries.

4. Japanese Investment in Thailand

For Thailand, Japan has been the largest source of foreign direct investment（FDI）as well as official development aid（ODA）. Japan's accumulated FDI to Thailand was the largest in both pre-Plaza Accord period（before '85）and post-Plaza Accord period.

In particular, Japanese FDI to Thailand in the late 80s showed unprecedented fast growth. Its share among the foreign investors increased from 26.7%（'65–'85）to 40.6%（'86–'99）as shown in Table 1. Thailand's export-oriented industrialisation has been said to have started in this post-Plaza Accord period. During this period, the largest amount of FDI came from Japan. The most of exporting factories in the consumer electronics industry in Thailand were built in this period. However, there was preceding history of a smaller Japanese investment booming in Thailand.

In the late 60s and early 70s, five major Japanese electronics manufacturers, Matsushita, Mitsubishi, Sanyo, Toshiba and Hitachi, established their production bases as joint ventures in Thailand. Their investment was mainly aiming at the Thai domestic market rather than exports. Under the import substitution policy of the Thai government, these five companies decided to invest in Thailand as a response to an increase of import duty rates[13].

Although most of these joint ventures had more than a 30,000 unit of TV production capacity, even the largest manufacture, Sanyo, produced only 4,500 units a year. Most of electronic components require more than one million units of production to be commercially viable. Therefore, their TV production was a form of "Kit Production" where almost all components are imported and only the very final assembly was completed in Thailand.

This can be confirmed by the fact that these factories employed only 692 people on average. Compared with modern export oriented manufacturing facilities which usually have over 1,000 employees are employed and more than one million units of TVs are produced, the production total of these five joint ventures were rather small and not full-scale production systems.

As discussed in the preceding sections of this paper, the Japanese consumer electronics industry achieved global cost and quality competitive advantage through technological innovation by introducing transistors and ICs. However, these joint venture production facilities were not designed to materialise these technological innovations into practice. Rather they were typical FDI under import substitution policy of Thailand.

Labour intensive and small lot production, and heavy protection by import duty and

Table 1 Registered Capital Since 1965 in Thailand (Unit : million Baht)

	Accumulated Total		Share (%)			
	'65-'85	'86-'99	'65-'85 Total	'65-'85 Foreign	'86-'99 Total	'86-'99 Foreign
Total	36,635	780,087	100.0%		100.0%	
Thailand	26,276	509,090	71.7%		65.3%	
Foreign Total	10,359	270,997	28.3%	100.0%	34.7%	100.0%
Japan	2,768	109,966	7.6%	26.7%	14.1%	40.6%
USA	1,717	30,558	4.7%	16.6%	3.9%	11.3%
Taiwan	937	21,530	2.6%	9.0%	2.8%	7.9%
Hong Kong	509	12,693	1.4%	4.9%	1.6%	4.7%
UK	724	11,061	2.0%	7.0%	1.4%	4.1%
Singapore	458	11,401	1.3%	4.4%	1.5%	4.2%
Netherlands	276	0	0.8%	2.7%	0.0%	0.0%
Switzerland	152	3,337	0.4%	1.5%	0.4%	1.2%
Malaysia	271	4,342	0.7%	2.6%	0.6%	1.6%
France	66	1,774	0.2%	0.6%	0.2%	0.7%
Germany	0	9,244	0.0%	0.0%	1.2%	3.4%
Others	2,481	55,102	6.8%	24.0%	7.1%	20.3%

Source : Board of Investment, Annual Activity Report, (various issues)

Table 2 TV Production Capacity and Production Statistics

Name of the Company	Year of Establishment	Production Capacity	Production Statistics B&W	Production Statistics CTV
Kan Yong Electric Manufaturing (Mitsubishi)	n.a.	18,000	2,000	250
Sanyo Universal (Sanyo)	1970	45,500	4,000	500
National Thai (Matsushita)	1969	36,000	2,000	1,000
UEI-Hitachi (Hitachi)	1971	36,000	3,000	500
Thai Toshiba Electric Industries (Toshiba)	n.a.	30,000	1,500	150

Note : Production statistics is based on interview for 1979 and 1980 annual production
Source : Suehiro, Akira, Chapter 8 Thailand, in Institute of Developing Economies (IDE) ed., "Hatten Tojokoku no Denki Denshi Sangyo (The Electric and Electronics Industry of Developing Countries)," IDE, 1981, pp. 240

other legal entry barriers are the typical features of the manufacturing industry under the import substitution policy. Needless to say, the supply of components for a few thousand units of production in Thailand was far from commercially viable.

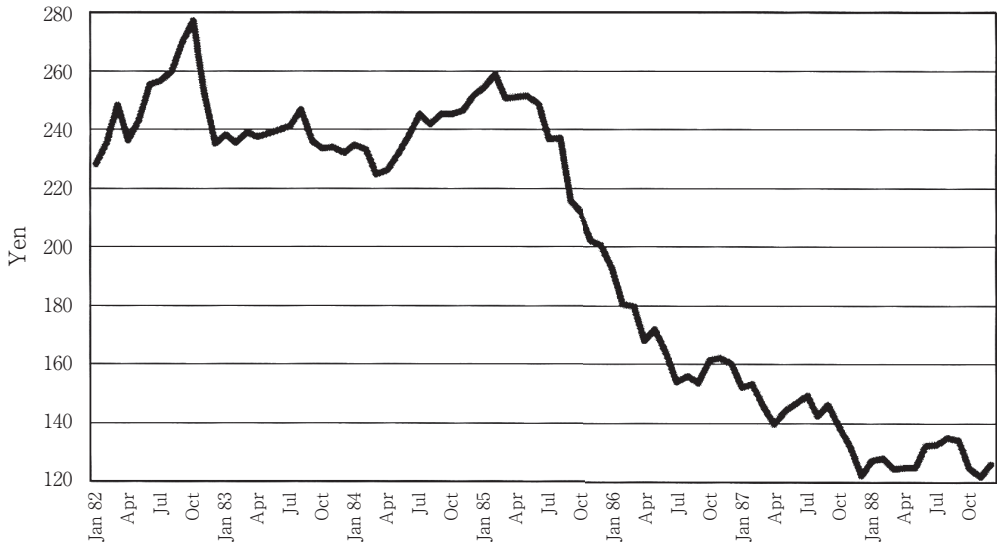
The Thai government, and almost all researchers and scholars, in those days, fully

expected the import substitution industry to eventually grow and transform itself into an export industry. However, the metamorphosis from an import substitution industry to an export industry did not happen naturally. Thailand had to wait until another steep yen appreciation by the Plaza Accord in 1985 to acquire an export oriented consumer electronics industry with a completely different production system from the import substitution system.

The steepest yen appreciation in Japan's history was triggered by the Plaza Accord in 1985. In three years, Japanese yen's value against the US dollars was doubled. This meant that the price in yen became twice more expensive in the US dollar terms in three years. The Japanese consumer electronics industry, one of the leading exporting industries in Japan, faced serious situation. If it continued to export its products to the US from Japan with the same export price in Japanese yen, its products would be sold twice more expensive in the US dollar terms. If it reduced the export price in Japanese yen by half, it would lose money. Most of the leading manufacturers rushed to Asian NIES (Newly Industrialised Economies) countries and ASEAN countries to find alternative export oriented production bases.

According to the survey by the Japanese Chamber of Commerce and Industry in Bangkok (JCCB) in 1996, 76.7% of member companies belonging to the manufacturing

Fig.1　Yen/$ Exchange Rate



Note: Monthly average exchange rates at the Tokyo Foreign Exchange market
Source: Bank of Japan (https://www.stat-search.boj.or.jp/ssi/cgi-bin/famecgi2?cgi=$ap181g3f)

industry were established in Thailand after the yen appreciation in 1985. As shown in Table 3, 63 companies (54+9) were established after 1985 in the electronics and electrical machineries industry, while only 9 companies had been established before 1985. In the electronics and electrical machineries industry, the share of those companies established after this steep yen appreciation in 1985 reaches 87.5%. This fact can be interpreted as the result of Japanese consumer electronics industry's relocation of their export bases from Japan to Thailand.

Japanese electronic machineries manufacturing companies established in Thailand were divided into two groups, those founded before 1985 and the rest. There seems to be a gap between these two groups. The first group established before 1985 is, as discussed before, an import substitution type where most of the components are imported and assembled by relatively labour intensive methods. Because of this, the required amount of investment was rather small. Among the other things, they did not have to face international competition because of government protection.

Table 3 Japanese Direct Investment to Thailand
(Number of Companies in the Year of Establishment)

	～69	70～79	80～84	85～89	the 90s
Food/Agriculture/Fisheries	2	3	1	14	3
Textile/Garment	8	2	2	12	5
Lumber/Paper	0	0	0	3	0
Chemical/Pharmaceutical	6	9	1	13	2
Petroleum	1	0	0	1	1
Ceramics	1	1	0	5	1
Steel/Non Ferro-Metals	3	0	2	16	2
Metal Products	2	1	0	28	8
Machineries	0	0	1	10	2
Electronics/Electric Machineries	4	2	3	54	9
Transport Machineries	5	3	0	14	4
Car	3	1	0	9	3
Motor Cycle	3	0	0	2	2
Others	1	1	0	2	0
Precision Machineries	0	1	0	6	2
Other Manufacturing Industry	0	6	2	38	1
Sub-total	32	28	12	203	34

Note (1) : Figures indicate the number of JCCB member companies established in each decade
Note (2) : Some of companies are engaged in more than one category of business. Sub-total does not necessarily correspond to a simple total number of companies.
Source : Survey on Japanese Manufacturing Industry in Thailand, June 1996
"Shoho (Monthly Bulletin)", Japanese Chamber of Commerce and Industry, Bangkok

Table 4 is the export ratio of those JCCB member companies.

In the first place, the export ratio of the electronics and electrical machineries industry was higher than the manufacturing industry's average. It is noteworthy to point out that 41.8% of companies belonging to the electronics and electrical machineries industry have had 100% export ratio. Furthermore, in the case of the companies belonging to the electronics and electrical machineries industry, totally 79.1% exported more than a half of their shipment.

Before looking at the further details, there are a few points to be noted.

1) Japanese manufacturers successfully introduced transistors and ICs into TV manufacturing in the early 70s.
2) By introducing transistors and ICs, they achieved a substantial reduction of the number of required components.
3) This reduction of the required number of components brought about a cost reduction and improvement in the quality and performance of products.
4) The introduction of transistors and ICs also made the introduction of automatic components insertion machines into workshops possible. These automatic components insertion machines replaced labour intensive production process and contributed further to improvement of productivity and quality control.

Taking the fact that 87.5% of the companies belonging to the electronics and electrical machineries industry were established after 1985 (Table 3) into consideration, the majority of those factories established after 1985 were likely highly export oriented and, then consequently, might be considered as a result of transfer of export bases from Japan to Thailand.

Table 5 is the industry-wise breakdown of the member companies of JCCB. The type of industries is highly diversified from the electronics and electrical machineries industry to the ceramics industry. However, it is noticeable that the electronics and electrical ma-

Table 4 Export Ratio (Share of Exports in Total Shipment)

	Less than 30%	30～49%	50～99%	100% Export
Electronics & Electrical Machineries	16.4%	4.5%	37.3%	41.8%
Manufacturing Industry Average	27.4%	10.9%	38.3%	23.8%

Source : Survey on Japanese Manufacturing Industry in Thailand, June 1996
"Shoho (Monthly Bulletin)", Japanese Chamber of Commerce and Industry, Bangkok

Table 5 Japanese Manufacturing Companies by Business Category

	No. of Companies	Share (%)
Electronics and Electric Machineries	74	23.3
Metal Products	39	12.3
Chemicals and Pharmaceuticals	31	9.7
Textile and Garment Products	30	9.4
Transport Machineries	28	8.8
Food, Agriculture and Fisheries Products	23	7.2
Steal and Non Ferro-Metals	23	7.2
Machineries	13	4.1
Precision Machineries	9	2.8
Ceramics	9	2.8
Petroleum Products	3	0.9
Lumber, Paper and Pulp	3	0.9
Other Manufacturing Industry	49	15.4

Note : Some companies are engaged in more than one category of business. Real total number of the companies does not correspond to a simple sum of numbers indicated above.
Note : The numbers above are the member companies of JCCB
Source : Survey on Japanese Manufacturing Industry in Thailand, June 1996 "Shoho (Monthly Bulletin)", Japanese Chamber of Commerce and Industry, Bangkok

chineries industry is the largest group of companies with 74 members. It should be noted that the electronics industry consists of the final product industry and the component industry. Among those 74 companies belonging to the electronics and electrical machineries industry, some are the final product manufacturers and some others are component manufacturers.

Component manufacturers supply their products to final products manufacturers either in Thailand or outside of country. However, those final product manufacturers tend to have higher export ratio.

Table 6 is the breakdown of the JCCB member companies on the basis of the type of industry. In the table, "Assembly Industry" corresponds to the final products industry in this study's terminology, and "Supporting Industry" corresponds to the component industry. Values in Table 6 require some special attention to understand. Some of the member companies of JCCB are both final product manufacturers and component manufacturers at the same time. For instance, some final product manufacturers produce components by themselves for their final products. At the same time, they supply those components to other final product manufacturers. Therefore, there is some double counting in number of

Table 6　Japanese Companies by Business Category and by Type of Industry

	Assembly Industry	Supporting Industry	No Answer
Metal Products	21 (53.8%)	25 (64.1%)	0
Machineries	10 (83.3%)	4 (33.3%)	1
Electronics/Electric Machineries	51 (68.9%)	42 (56.8%)	0
Transport Machineries	16 (57.1%)	14 (50.0%)	0
Car	11 (64.7%)	6 (35.3%)	0
Motor Cycle	7 (87.5%)	3 (37.5%)	0
Others	2 (50.0%)	2 (50.0%)	0
Precision Machineries	5 (55.6%)	7 (77.8%)	0
Other Manufacturing Industry	28 (62.2%)	25 (55.6%)	4

Note (1) : Figures indicate the number of JCCB member companies established in each decade.
Note (2) : Some of companies are engaged in more than one category of business. Sub-total does not necessarily correspond to a simple total number of companies.
Source : Survey on Japanese Manufacturing Industry in Thailand, June 1996
"Shoho (Monthly Bulletin)", Japanese Chamber of Commerce and Industry, Bangkok

companies. Totally 74 companies of JCCB members belong to the electronics and electrical machineries industry. Among those 74 companies, 51 companies (68.9% = 51/74) are final product manufacturers, while 42 companies (56.8% = 42/74) are component manufacturers. Therefore, 19 companies (51 + 42 − 74 = 19) belong to the final product industry and the component industry at the same time.

As pointed out, 56.8% of Japanese companies belonging to the electronics and electrical machineries industry located in Thailand are component manufacturers (Table 6). Table 4 shows that only 20.9% of companies exporting less than half of their shipment from the electronics and electrical machineries industry. Therefore, it is presumed that those companies with high export ratio are not limited to the final product manufacturers. The Japanese component manufacturers in this industry located in Thailand are presumed to be internationally competitive and capable of exporting their components to the overseas market.

Based on analysis of statistical data, it is useful to point out the followings;

1) The electronics factories located in Thailand were mainly established after 1985.
2) Both final product and component industries established after 1985 were export-oriented.
3) Because they were the result of transfer of export bases from Japan to Thailand, they had to be globally competitive in terms of productivity.
4) In order to achieve high productivity and a high level of quality control, a large

scale automatic production system was introduced along with their large scale production volume.

5) Regardless to all these, there still remained some import-substitution subsidiaries in parallel to other export-oriented subsidiaries

These facts can be explained from three different aspects. First, Yen appreciation since 1985 made all the costs of production in Japan much more expensive in the US dollar terms. It was not just a hike in labour cost. Therefore, partial relocation of labour intensive part of production process did not make sense to the Japanese consumer electronics industry. As long as the products are made in Japan, those products became twice more expensive in the US dollar terms. They did not have any other choice but to implement full-scale relocation of their export bases from Japan to, for example, Thailand.

Second, as discussed in the preceding section of this paper, the Japanese consumer electronics industry's export bases in Japan were highly automated and integrated as large production systems. Because of this, it was not relevant to consider to extract only a part of the system to do partial relocation of production process. Consequently, a full-scale relocation of production process as large export base was chosen for FDI by the Japanese consumer electronics industry after 1985 Plaza Accord.

Third, nevertheless, the government of Thailand still imposed higher import duty on final consumer electronic products, as pointed by Chintayarangsan (1991). In addition, it was easier to build a new export oriented factory rather than transforming a small import-substitution factory to export oriented one. Consequently, the import substitution factories and export oriented factories co-existed in the late 80s and the 90s.

5. Investment Environment of Thailand

Among the member countries of ASEAN, Thailand has been one of the most favoured destinations for Japanese foreign direct investment (FDI) together with Singapore and Malaysia. Harada and Ino (1988) compiled a list of the major reasons why Thailand has been popular among Japanese investors for their FDI[14].

1) Political and social stability
2) Laissez faire policy and FDI promotion measures
3) Social tolerance towards foreigners and foreign capital
4) Rich in human resources with competitive labour cost

5)　A relatively large domestic market

6)　Gateway to greater Indo-China

7)　Compared with other countries, Thailand does not have any particular disadvantage.

Harada and Ino (1988) write that although Thailand may not be particularly outstanding in any one or a few factors to attract foreign investors compared with neighbours, when all the factors *are* taken into consideration, Thailand offers the best investment environment overall.

Indeed, these factors can be accepted as general attractive points of Thailand for FDI from foreign investor's point of view. However, an analysis on the motives of FDI to Thailand discovers some differences among industries and a change in the same industry in terms of motives of investment into Thailand. Table 7 shows difference in reasons for Japanese FDI between the two groups of companies established in Thailand.

JCCB survey shown in Table 7 covers totally 312 JCCB member companies in the manufacturing industry. In the Table, those companies are divided into two groups. The first group of 68 (22.3%) companies started their production before 1985, while the second group of 236 (77.6%) came to Thailand after 1985. It should be noted that those import substitution manufacturers coming to Thailand before 1985 focused on domestic market expansion. On the other hand, those Japanese investments after 1985 came to

Table 7　Reasons for Direct Investment Decisions in Thailand by Start Year of Production (Before 1985 and After 1985)　(No. of Co.)

	～'84	'85～	No answer
Domestic Market Growth	48	62	4
Yen/Dollar Exchange Rate Changes *	2	52	1
Requests by Business Partner **	3	35	1
Labour Resources ***	2	35	1
Supply to Third Country	5	32	0
Raw Material Resources	4	11	1
Response to Government's Import Restriction	4	5	0
Sub-Total (312 firms answered)	68	236	8

Note : Totally 312 companies (Japanese affiliated) answered to this questionnaire survey.
No answer means that the company did not specify the start year of production.
* Yean/Dollar exchange rate changes imply "steep Yen appreciation against US$."
** Requests by Business Partners implies requests from those companies purchasing components and/or raw materials.
*** Response to labour shortage in Japan
Source : Survey on Japanese Manufacturing Industry in Thailand, June 1996
"Shoho (Monthly Bulletin)", Japanese Chamber of Commerce and Industry, Bangkok

Thailand for both the domestic market and the yen appreciation against the US dollars.

Table 8 shows the industry-wise distribution of reasons for investment. In Table 8, the electronic machineries industry focused on both the domestic market (21 companies: 28.7%) and yen appreciation (19 companies: 26.0%), while transport machineries industry (car and motorbike) focused almost solely on the expansion of domestic market (18 companies: 64.3%). To this extent, it can be confirmed that Japanese electronics manufacturers came into Thailand to transfer their export production bases from Japan to Thailand. They were export oriented. Nevertheless, they also intended to cultivate the Thai market.

Unlike the electronic machineries industry, the transport machineries industry did not transfer their export base from Japan to Thailand. Rather, they built factories to cater for their specially designed Asian cars for the ASEAN market.

Therefore, it is noteworthy that the motive for FDI by the electronics industry was changed in 1985 from import substitution type of investment to export-oriented type of investment. However, the motive of the transport machineries industry continued to be domestic market and regional market oriented.

The discussion has been focusing on attractiveness of Thailand for FDI. However, the attention should also be paid to comparative advantage of Thailand as FDI destination.

After 1985 Plaza Accord, there were five countries, among the ASEAN member states, that tried to attract foreign direct investment. They were Thailand, Malaysia, Sin-

Table 8 Reasons for Direct Investment Decisions in Thailand by Categories of Business

	Electronics & Electrical Mach.	Transport Machineries	Chemical & Pharmaceuticals
Domestic Market Growth	21	18	22
Yen/Dollar Exchange Rate Changes *	19	1	0
Requests by Business Partner **	7	5	5
Labour Resources ***	11	0	0
Supply to Third Country	12	2	3
Raw Material Resources	1	0	1
Response to Government's Import Restriction	1	2	0
Sub-Total	73	28	31

* Yean/Dollar exchange rate changes imply "steep Yen appreciation against US$."
** Requests by Business Partners implies requests from those companies purchasing components and/or raw materials.
*** Response to labour shortage in Japan
Source : Survey on Japanese Manufacturing Industry in Thailand, June 1996
"Shoho (Monthly Bulletin)", Japanese Chamber of Commerce and Industry, Bangkok

gapore, Indonesia and the Philippines. Vietnam was not member of ASEAN and did not start its Doi Moi, liberalisation policy until 1987.

Among these countries, Singapore obviously offered the most attractive investment environment. Singapore facilitated the most extensive tax incentives for foreign direct investors starting from Pioneer Status covering not only manufacturing sectors but the service sectors. As far as manufacturing sectors are concerned, Singapore was the most successful country to attract foreign direct investment. However, Singapore had already shifted its focus on investment promotion from labour intensive manufacturing to information and knowledge intensive functions such as RHQ (Regional Headquarters) or OHQ (Overseas Headquarters), and R&D centres. From the investor's point of view, the labour supply in Singapore was already limited and the operation cost for manufacturing bases was much higher than her ASEAN neighbours.

Although Indonesia received the largest Japanese direct investment, most cases of direct investment were either oil related or textile related. The largest sector for foreign direct investment in Indonesia was petrochemical plants using Indonesia's rich oil resources. Historically, Indonesia's investment promotion policy has swung between nationalistic import substitution policies and pragmatic export oriented policies. On the one hand, nationalistic and political motives to build ethnic Indonesian owned businesses rather than Chinese Indonesian business groups prevailed among the political leaders. On the other hand, Indonesia's rich oil and gas resources had been one of the largest sources of foreign currency income. Because of these factors, import substitution policy became dominant when the price of oil was high, and an export oriented policy prevailed when oil prices declined.

For instance, Indonesia amended its tax related system on 1 January 1984. In this amendment, various investment promotion measures including tax incentives for foreign investors were abolished. There consequently remained only various restrictions for foreign capital and an unnecessarily complicated customs clearance and taxation systems. In such a way, regardless of the fact that it had the largest population among the ASEAN nations, Indonesia was not the most attractive destination for non-oil foreign direct investment after 1985.

Indonesia also changed its policy towards liberalisation and deregulation in the early 90s. However, the massive Japanese foreign direct investment boom was already finished.

The Philippines has been promoting foreign export oriented manufacturers. However, it has kept a basic policy to segregate foreign manufacturers from the domestic market. One may consider this policy as a classic export promotion policy that is in line with im-

port substitution strategies. Traditionally, the Philippines has followed an American style political system as well as business practice.

Because many American manufacturers' way to cope with global competition was to relocate their production base from their soil to other countries with cheaper labour cost, almost all finished or semi-finished products produced overseas have been supposed to be taken back to the US. To this extent, the American way of overseas production had to be conducted with maximum usage of cheap labour and a minimum number of American expatriates assigned to a factory.

The Philippines adopted the best way to attract such American business style to promote American investment. Its foreign investment promotion scheme did not have to open domestic markets. Because of this, the Philippines kept its free trade zone (FTZ) isolated from her domestic market. It also kept a large negative list for foreign entry. On top of this, the Philippines had the notorious PSI (Pre-Shipment Inspection) that required complicated and time-consuming procedures for custom clearance. The tax incentive and administrative flexibility was much less than that of Malaysia. Labour disputes and security problems were also an inevitable part of doing business in the Philippines. Because of these, Japanese direct investors looking for export bases did not find the Philippines attractive as a destination for their investment.

Consequently, only Thailand and Malaysia were seen as promising foreign direct investment destination for Japanese manufacturers who were looking to relocate their export bases from Japan. Malaysia was one of the most successful cases for foreign direct investment among the ASEAN countries. However, her small domestic market and the bumi-putra (Malay First) policy as a political agenda limited her success as export base development.

On the basis of the abovementioned analysis, we may notice that general and static conditions proposed by Harada and Ino (1988) are not sufficient to explain the success of Thailand. The general investment conditions offered by Malaysia were much more generous: facilitating various tax incentives and a "one window" administration system. The Malaysian government were prepared to respond favourably to various requests by foreign direct investors. Indonesia liberalised cumbersome administrative procedures and promoted industrial estates development by Japanese trading companies to promote Japanese direct investment from the early 90s.

Regardless of Malaysia's favourable investment environment in general, car manufacturers, with the exception of Mitsubishi which joined Malaysia's national project, did not

invest in Malaysia but in Thailand. Because the Malaysian government set an entry barrier for foreign car manufacturers to protect its own national car industry, Proton, Thailand became the car manufacturing centre of the ASEAN nations.

Indonesia, regardless of its efforts, could not attract non-oil manufacturing industries the way that Thailand and Malaysia had, because Indonesia simply came too late. The Japanese and subsequently Taiwanese and Korean manufacturing investment boom slowed down in the early 90s.

Therefore, we may add the following to the list of reasons for Thailand's success;

1) The Thai government maintenance of "hands off" industrial policy which did not attempt any government-led industrialisation project such as "National Car." This hands off policy successfully kept the door of Thailand open for many foreign investors.
2) Liberalisation of Thai foreign direct investment promotion was timely making the best of the steep Japanese Yen appreciation and the subsequent Japanese overseas investment boom.
3) The investment environment Thailand was favoured by two leading industries for different reasons. The electronics industry chose Thailand as their export base, while the transport machineries industry favoured Thailand because of her relatively large domestic and regional market.

6. Conclusion

Thailand achieved full-scale industrialisation in the late 80s through the introduction of foreign direct investment as well as technology transfer. As the largest foreign investor into Thailand, the Japanese manufacturing industry played the most important role during the period. To this extent, Thailand, in parallel with Malaysia, was the first case of industrialisation by foreign capital rather than indigenous capital. Compared to Korea and Taiwan, Thailand chose a strategy to achieve industrialisation by using foreign capital, technology and know how for the first time in modern history[15].

There seem to be three major factors which contributed to the industrialisation of Thailand. First is the investor side factor. Japanese consumer electronics manufacturers succeeded in achieving technological innovation through introduction of transistors and ICs. They substantially improved performance and quality of CTVs and, at the same time,

established a cost advantage by introduction of automated production systems. In the early 1980s, the only real competitors for Japanese consumer electronics manufacturers were a few European manufacturers.

When a very steep yen appreciation took place after the 1985 Plaza Accord, Japanese manufacturers tried to find a way to cope with this external shock where products produced in their factories in Japan became three times more expensive in dollar terms in just three years. The only choice was to relocate their export bases from Japan to somewhere else very urgently.

The second is the foreign direct investment recipient factor. Thailand had given up its government-led nationalistic industrialisation attempt at an early stage in the post war period. Thai local business groups mainly focused on the service and finance sectors, rather than the manufacturing sector. Therefore, Thailand did not have indigenous business groups to protect in manufacturing sector. Furthermore, it continuously suffered from trade deficits, hence eagerly looked for any industry to contribute to her exports. By the early 80s, Thailand had already facilitated a foreign investment friendly environment. This foreign investment environment included opportunity for foreign capital to produce products in Thailand not only for exports but also for the domestic market.

The third is changes in the way of foreign direct investment. In the post war period, the first dominant way of foreign direct investment in manufacturing industry was the American way. Some American manufacturers relocated their most labour intensive part of the production process to some places where labour cost was much cheaper. Let us call this "Type I FDI" where "a partial relocation of the production process" takes place and final products are exported back to home country (the US).

This style of FDI was also convenient for a country like the Philippines that had domestic industry to protect, because all the semi-finished products were shipped back to the US, not to harm domestic market at all. Instead, this style of foreign direct investment produced only a large number of low labour cost employment opportunities and a few privileged local business people either as joint venture partners or as the elites assuming top management posts of those joint ventures.

The second way of foreign direct investment was "a partial relocation of production process" to cater for the host country's domestic market. A development country that maintains import substitution policy sets high import duty or quantitative restriction on imports to protect its domestic market. If a foreign manufacturer who intends to cultivate this developing country's market, it has to find a way to cope with the high import duty.

It is theoretically possible to export its products regardless to the high import duty. However, a practical solution for most cases is to build a small factory which has only final assembly capability to cater this protected market instead of export. Let us call this "Type II FDI." Although many developing countries hope this type of FDI would turn to real industrialisation in the future, such transformation did not happen.

The third way of direct investment is full-scale relocation of production bases. The very steep yen appreciation after 1985 was far too large an external shock to absorb by cost reduction through "Kaizen" for Japanese manufacturers. They did not have any other choice but to relocate the entire production process to a third country whose local currency was not appreciated and rather stable against the US dollar. Unlike the Type I and II FDI, the finished products were meant to be exported to the third countries such in the North-America and the Europe. This was particularly necessary for price sensitive low end products. Let us call this "Type III FDI."

Because this was full-scale relocation of production bases by final products manufacturers, component manufacturers could expect their customers in Thailand. Foreign direct investments by component manufacturers, in Thailand, took place in parallel to those by final products manufacturers. This is the reason why Thailand has a more balanced industrial structure where both final products and component manufacturers are located. In this period, liberalisation of capital movement became part of mainstream discussion in GATT Rounds. This also contributed to the third type of foreign direct investment.

It is noteworthy that the Type II FDI remained in Thailand in the 80s and the 90s in parallel with Type III FDI because of remaining relatively high import duty on finished products. As discussed in introduction, those recent research works by Song, Edington and Hayter found out dynamic evolution of subsidiaries of Japanese electronics MNEs in East Asia. However, in the early part of Thailand's industrialisation by electronics industry, there were heterogeneous evolution processes of the subsidiaries roles.

Notes

1）Akira Suehiro is a pioneer of Thai economic and business studies in Japan. He wrote numerous papers and books including Suehiro（1989 a）which has been considered as a pioneer work on economic studies of Thailand. This book entitled "Capital Accumulation in Thailand 1855–1985" covers the period before the Japanese investment booming period starting 1985. In contrast, Suehiro（1989 b）covers the booming period since 1987.

2）Onishi（1999）focused international division labour and global strategy of Japanese electronics on the whole covering ASEAN countries and China. Therefore, his work is not necessar-

ily specialized in the Japanese electronics subsidiaries in Thailand

3) Song (2002) investigated in individual company specific data collected from Toyo Keizai and others.

4) Edgington and Hayter wrote many other papers closely related to their works published in the same year, Edgington and Hayter (2013 b), Edgington and Hayter (2013 c)

5) The data were taken from JEITA (2002) : Japan Electronic and Information Technologies Association, "The Electronics Industries Data Book", JEITA: Japan Electronic and Information Technologies Association (JEITA) is the industrial association of Japanese electronics manufacturers. In collaboration with the ministry of economy, trade and industry (METI), it publishes many periodicals including JEITA (2002).

6) Porter (1983) is the most comprehensive case study of early development history of the US television industry and the market. The detailed description is given in pp. 453.

7) Shintaku (1994) attributes this Japanese manufacturers' success to fast introduction of semiconductors (transistors) and subsequent drastic improvement of productivity in pp. 41.

8) JEITA (2002)

9) Shintaku (1994) pp. 44

10) Shintaku (1994) pp. 49–69.

11) JCCB (2000) pp. 124–127

12) Kobayashi (2001) pp. 75–77

13) IDE (1981) pp. 240–244

14) Harada and Ino (1988) pp. 113–118

15) For the development of Thai electronics industry, in addition to Japanese MNEs, many American MNEs also made substantial contribution. However, this paper is an attempt to examine the Japanese electronics subsidiaries activities in Thailand in the 80s and the 90s covering the 1985 "steep Yen appreciation" period. Analysis on those American MNEs' contribution is given to another opportunity.

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