

Discussion Paper No. 0011

October 2000

**The Philippine Electronics Industry and Local
Suppliers: Developing Supporting Industries
through Foreign Capital-led Industrialization**

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Abstract

The Philippine electronics industry is typical of foreign capital-led industrialization. The Philippines wants to develop the supporting industries for electronics in order to localize the electronics industry. The Philippines wishes to foster the development of local suppliers and wishes to strengthen the backwards linkage to promote further industrial development in the Philippines.

In this paper, I will describe how supporting industries for electronics themselves are getting involved in global competition and explain that local suppliers do not have the capability to compete at present, based on our field research of the sourcing methods used by Japanese electronics TNCs in the Philippines. Then I will consider the potential development path for supporting industries and local suppliers through foreign capital-led industrialization. Finally I will reflect upon the role of local capitalists and nationalism in the advancement of the global economy.

*I would like to thank the school of Economics UP for accepting me as a visiting research associate and providing research support during my field research on the Philippine electronics industry and the development of supporting industry which I conducted in the Philippines during several stays between 1995 and march 1998. This paper is part of the results of this field research. This is a revised and expanded version of a paper presented at the 6th International Philippine Studies Conference held at the Philippine Social Science Center in Diliman, Quezon City on 10-12 July 2000.

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Developing Supporting Industries through Foreign Capital-led Industrialization

1 Philippine Electronics Industry

1-a Brief History of the Philippine Electronics Industry

The local production of electronics in the Philippines started in the 1950s by U.S. electrical TNCs. First assembly production of home appliances was started by U.S. TNCs and joint ventures between U.S. TNCs and local capital in the late 1950s after an import-substitution industrialization policy was adopted in the Philippines. Japanese TNCs began home appliance production in the Philippines in the late 1960s. Since then, Japanese TNCs, most of which are joint ventures with local capital, have come to dominate Philippine home appliance production.

The back process of semiconductor assembly was introduced by U.S. TNCs in the 1970s. U.S. TNCs are predominant in the assembly production of semiconductors in the Philippines. The production of semiconductors is exclusively for export while the production of home appliances is mainly for the local market ¹⁾. The export of semiconductors has increased rapidly since the late 1970s. It has become the top export item in the Philippines.

Triggered by "Yendaka" (Yen appreciation), Japanese electronics TNCs began to move their production sites to ASEAN countries in the mid-1980s. The circumstances for TNCs in ASEAN countries, where foreign investment had been deregulated since the early 1980s, were quite attractive. However Japanese TNCs tended to avoid the Philippines, which was still politically unstable on the heels of their economic crisis. Japanese electronics TNCs preferred to invest in Singapore, Thailand and Malaysia, as shown in Figure 1. Thailand and Malaysia have experienced high economic growth triggered by a boom in foreign direct investment, especially by Japanese TNCs, in contrast with the Philippines' long economic stagnation.

The Philippines tried to induce more foreign direct investments by inaugurating a new foreign direct investment law in 1991 which basically liberalized fully owned affiliates of foreign capital. But it was not until the early 1990s when economic recovery was clearly observed in the Philippines and investment in manufacturing sectors increased. It was not until 1994 that a big amount of foreign investment flowed into the Philippines. A boom in direct investments (both local and foreign) occurred in the Philippines in 1994 when the

amount of investment was 4 or 5 times more than the previous year.

Japanese electronics TNCs started to invest big in the Philippines from the mid-1990s, lagging behind Thailand, Malaysia and Singapore. They preferred to invest in information-electronics related production such as HDD in the Philippines. They also invested in the assembly production of semiconductors. Now, the Philippines is growing rapidly as an exporter of information-related electronics components such as Floppy Disk Drives (FDD) and Hard Disk Drives(HDD), as shown in table 1.

Japanese electronics TNCs chose ASEAN countries as export production site of home appliances and invested there vigorously since mid 1980s. They preferred to invest in Thailand and Malaysia for assembly production of such goods as televisions and air conditioners in the mid-1980s when Yen appreciated rapidly. Since then the assembly production of home appliances in ASEAN countries has rapidly expanded. Japanese parts and component suppliers followed the assembly makers. A rapid increase of local content ratio in home appliances was observed in Thailand ²⁾ and Malaysia. In the case of the Philippines, we did not see a rapid increase in local content ratio like in Malaysia and Thailand, because Japanese electronics TNCs did not choose the Philippines (which was in the midst of political and economic crisis in the late 1980s) as a site of export production of home appliances. Thus the production scale of home appliances in the Philippines did not expand, so that the production is been still mainly for the small local market. Accordingly, Japanese parts and components makers and suppliers did not invest in the Philippines because of the relatively small demand for their products.

Japanese electronics TNCs investment increased during the mid-1990s when the recovery of the Philippine economy was clearly on track. They preferred to invest in information electronics, telecommunication electronics and semiconductor production, rather than home appliance production. The Philippines was chosen as an export production site for new electronic items such as personal computer peripherals (FDD, HDD, Mother Board, etc.), the production of which have not yet been widely spread in other ASEAN countries.

1-b Parts and Components Production in the Philippine Electronics Industry

The development of supporting industry for home appliance production has always been hampered by limited demand, due to the small scale of production, which is mainly for the local market in the Philippines. Table 2 shows the sourcing of Japanese home appliance assemblers for Color TVs in the Philippines. None of the key components of color TVs such as picture tubes, deflection yokes, tuners, fly

back transformers, etc. are produced in the Philippines. All of these components are imported from affiliates of Japanese home appliance assemblers located in East and Southeast Asia. Table 3 shows the sourcing of Japanese home appliance assemblers for air conditioners, Table 4 shows sourcing for refrigerators, and Table 5 shows sourcing for washing machines. Our field research ³⁾ shows that there is no local production of key components for air conditioners, refrigerators and washing machines (compressors, condensers, motors, etc.) as for color TVs. No Japanese key component makers have invested in the Philippines, nor have Japanese suppliers for small plastic and metal parts established production facilities ⁴⁾.

However, there is a group of local suppliers ⁵⁾ who produce simple small plastic and metal parts, packaging, wiring harnesses, electro plating, gaskets, etc. for home appliances as shown in Table 6. Our field research conducted in March 1997 and February 1998 revealed a number of characteristics regarding the production by the main local suppliers. Filipino suppliers produce many kinds of items, but orders for each item are small. Most suppliers produce both industrial parts (not only for home appliances but also automobiles) and commercial products such as plastic plates, tables, chairs, ball pens, hot-water heater, and etc. Rather than supply their parts to only single customers, they sell to two or three customers or more, most of whom are Japanese TNCs. Major local suppliers take part in suppliers' associations which collaborate with each customer. They belong to two or more suppliers' associations as shown in Table 7. The production volume of each part is too small for them to survive if they depended on a single customer.

Now they are being challenged to improve their capability for QCD (high Quality, Cost reduction, rigid Delivery) to supply the needs of their customers; Japanese electronics TNCs, because the sourcing of better parts from outside the Philippines is getting easier due to advances made by AFTA and WTO. However, it is difficult for local suppliers to improve their capability through specialization, i.e., concentrating on the production of a few items, as Japanese suppliers have done in the past in Japan. Local suppliers in the Philippines are inclined to diversify their product line rather than to concentrate on a few items. If they concentrated on a few items, they would not be able to get an adequate volume of orders due to the small order quantity for each item. It is a big challenge for local suppliers to improve their capabilities in the midst of globalization where competition among suppliers is becoming more severe.

The situation for the production of parts and components for semiconductors and computer peripherals differs from that of home appliance in the Philippines. The back process for semiconductor assembly production was first introduced to the Philippines by U.S. capital in the late 1970s. It is now the leading Philippine export. There has been an accumulation of semiconductor assemblers to some

extent in the Philippines, thus a considerable demand for parts and materials has been created. In addition, assembly production has a long history which measures more than 20 years in the Philippines. But, as often criticized, the local content ratio remains quite low ⁶⁾. Most of the parts and materials are imported, because there are no competent local suppliers. The production of parts and materials for semiconductors requires a far higher level of technology, such as a precision engineering than that for home appliances. In addition, the transport cost of imported parts either by ship or plane is not a factor because of the relatively small volume. Since the early 1990s, SEIFI ⁷⁾ has started a campaign to increase the local content ratio of semiconductors.

The assembly production of HDDs for personal computers was started by Japanese electronics TNCs in the early 1990s in the Philippines. It is expanding in spite of the Asian financial crisis, as shown in Table 1. Japanese parts and components suppliers for HDDs followed the TNCs to the Philippines. Both HDD and semiconductor production in the Philippines are mainly for export and their production volume is quite big, resulting in considerably large demand for parts and components.

Our field research on the production of computer peripherals (HDD assembly) in the Philippines ⁸⁾ revealed the following: The local content ratio of HDD production in the Philippines is much higher than that of semiconductor production, however there are no competent local suppliers for HDD. Japanese parts and components makers and suppliers have set up operations in the Philippines. Consequently, the ratio of local content is increasing. However, there is no increase in sourcing from local suppliers. The sourcing of three Japanese HDD assemblers in the Philippines is shown in Table 8. We can see that they are sourcing from the Philippines, but not from local suppliers. In fact there is hardly any sourcing from local suppliers. Therefore, an increase in local sourcing does not necessarily mean growth for local suppliers.

There are many obstacles which prevent them from supplying HDD and semiconductor production, such as their backward technology, unskilled technique, scarce capital, and so on. On the other hand, Japanese parts and components suppliers (in some cases, Asian NIEs suppliers) have come to the Philippines to supply for HDD and FDD production.

2 The Situation of Supporting Industry in the Philippines

There are various conditions indispensable to the development of supporting industry, such as fundamental technology accumulation, training of engineers and technicians, funding (capital), development of a material industry, and so on.

However, the expansion of the demand for parts and components is even more important for the development of supporting industry at first as exemplifies well by the home appliance production. The small scale of home appliances production in the Philippines is in fact an impediment to the further development of supporting industry.

For the development of supporting industry, the foremost requirement is the expansion of demand for parts and components. Then, the development of the technology and techniques, material industry and funding mechanism are required. Therefore, some degree of accumulation of assemblers (either local or foreign) is essential. There was an accumulation of assemblers in Singapore, Malaysia and Thailand at first, which expanded and created the demand for parts and components to a considerable extent. Then the local production of parts and components started, even though there were no competent local suppliers. The existence of big demand induced foreign parts and components makers and suppliers to produce near the big demand which the assemblers created within the host countries. Thus local production was started by foreign suppliers even though there was not enough local technology or funding in the host countries. In the next phase, the local suppliers would have the chance to supply their products after improving their capability.

The production of parts and components for information electronics requires more precise and sophisticated engineering and more expensive equipment than for home appliances in general. There are some local suppliers of plastic and metal parts for home appliance production in the Philippines, however most are engaged in simple parts of plastic injection or metal press. Regretfully, they do not have the capability to produce for HDDs or semiconductors, even though we can expect the demand for parts and components to be continuously expanding.

If the Philippines had been chosen as a production site for the export of home appliances by Japanese electronics TNCs earlier, the local suppliers would have more experience by now, and many other local firms would be induced to participate the part production, thanks to a big demand of the parts. However, the Philippines was chosen as an export site for information electronics, such as FDDs and HDDs or semiconductors, a much higher hurdle for local suppliers to get over, due the backward techniques and technology and a shortage of funds. Under present conditions, local suppliers can produce only simple plastic and metal parts and some packaging for home appliance production.

Generally speaking, the supporting industry for electronics requires more sophisticated technology than the assembly production of home appliances or information electronics. For example, the production of key components for home

appliances such as picture tubes or compressors requires higher technology than assembly production of TVs, refrigerators and air conditioners. In the case of personal computers, more sophisticated technology is required for the key components and peripherals than the assembly production. Furthermore, more precision engineering is required for the key components of HDDs, namely MR heads, medias and spindle motors than for assembly production. This also holds true for some kinds of minute plastic and metal parts for HDDs. When we define the supporting industry of electronics as one which includes key components such as picture tubes, compressors, HDDs, MR heads and so on, it is not easy for local suppliers to participate, compared with final assembly production. The sophisticated technology, high precision engineering and high precision mold and die production that are essential to the supporting industry of electronics is lacking among the local suppliers at present. If there is no breakthrough in the status quo, it will be difficult for the local suppliers to penetrate the market and enjoy the expanding demand for parts and components of information electronics and semiconductor. In fact they might be continuously isolated from it.

3 The Potential Development Path for Local Suppliers

3-a The Perception Gap between Host Country and TNCs

When we examine more closely the requirements of Japanese electronics TNCs in the Philippines, we notice that there is a wide perception gap between the TNCs and the host country on the development of supporting industry. Japanese electronics TNCs perceive that the development of supporting industry in the host country means simply the development of local production of parts, components, mold and die and related materials which meet their strict requirements. However this is not enough for the host country. The host country wishes to foster the local suppliers and to strengthen the backward linkage through the development of the supporting industry.

The current supporting industry for electronics has very different characteristics from the traditional small and medium size industry in developing countries. The new supporting industry is far advanced in terms of technology, equipment, management and products. It has become an unrealistic assumption that traditional small and medium size firms can be converted easily to support electronics industry and to participate with a production network between TNCs and local suppliers. The current supporting industry is quite new to the developing countries such as the Philippines. The need for new technology, new equipment and new management are indispensable. Most traditional small and medium size firms lack this fundamental technology. In addition, even if the fundamental technology has been acquired to some extent by traditional small firms, it is not enough for

them to participate as new supporting industry without the acquisition of new technology and management.

The reinforcement of the backward linkage in the host country has been supposed to be achieved through the formation of network between TNCs and local small and medium size firms in the host countries. However, in the case of new information electronics and semiconductors, the supporting industry is also unfamiliar to the local firms in the host country. Therefore, if there is an urgent need by TNCs for supporting industry in the host country, the highly probable resolution would be the relocation of capable supporting industry to the host countries at first. Our research shows that most Japanese electronics TNCs in the Philippines prefer to source the precision plastic and metal parts and high technology components from Japanese suppliers who have followed them to the Philippines.

Recently we have observed a rapid increase in the local content ratio of electronics in ASEAN countries. The local production of parts and components has expanded and deepened. However, as criticized in Thailand and Malaysia, only a few local suppliers participate in the supplier system, despite the increase of local content ratio. This increase of local content ratio is mainly due to sourcing from Japanese suppliers that have followed the Japanese electronics TNCs to the host countries. Therefore, the government of Malaysia has recently taken an aggressive industrial policy designated to induce local suppliers to participate in the supplier's system.

We can see the same perception gaps in other ASEAN countries such as Malaysia and Thailand. However, it is more difficult in the Philippines to narrow the gap than in Malaysia and Thailand because it is a relatively latecomer as a production site for computer peripherals and was not fully developed for home appliance production.

A policy which gives preferential treatment to local suppliers, like in Malaysia, is not so appropriate for the Philippines, where the scale of production of electronics is considerably smaller. The basic and essential condition for the development of supporting industry in the Philippines is an increase in the number of electronics and related firms, either foreign or local, to encourage formation of an industrial cluster or agglomeration. The nationality of suppliers should not be the first priority. It is essential for the Philippine government to induce as many suppliers as possible, foreign or local to invest in the Philippines.

3-b What is an Effective Policy for Development of Supporting Industry and Local Suppliers?

The supporting industry in the Philippines is underdeveloped for a number of reasons. First of all, it is the insufficient demand. There are also many impediments and restraints to the development of supporting industry such as the low level of technology, limited number of technicians and engineers, the shortage of funds, scarcity of information, conventional management style, a premature material industry, and so on. These impediments need to be overcome. However, when we consider an effective industrial policy, the first priority should be to increase the agglomeration of electronics firms without considering nationality. We have to re-examine the assumption that fostering local suppliers is the most important task for genuine development of supporting industry. The Philippine government should endeavor to induce as many as assemblers to re-locate in the Philippines firstly, which will increase the demand for parts and components. Secondly, it should promote a policy to attract as many parts and components suppliers as possible without regard to nationality.

There are a few policy measures which the Philippines should implement in order to advance this agglomeration. First of all, support for human resource development is important. It might appear to be an indirect measure for the development of supporting industry. However, public support for technical education focusing on the electronics industry is probably more effective than a preferential policy for local suppliers or a compulsive policy which forces foreign assemblers to source from local suppliers. A higher level of technical education for the Philippine people will strengthen the comparative advantage of the Philippines as a host country of foreign direct investment within ASEAN. We can expect a further evolution of the division of labor within the industry in ASEAN in spite of the Asian financial crisis. One of the comparative advantages of the Philippines at present is human resources. The Philippines lags behind Singapore, Malaysia and Thailand in the formation of an industrial cluster or agglomeration of the electronics industry. However, the Philippines has a comparative advantage in human resources not only plenty of unskilled labor, but also many competent engineers and middle managers⁹⁾. At present the number of college and university graduates, including engineering department graduates is much more in the Philippines than in Thailand, Malaysia or Indonesia. In addition, most people understand English, the world business language.

There is an urgent need for public support for the training of engineers and technicians¹⁰⁾. Scientific and technical education should be improved and enriched in the high schools, colleges and universities. More vocational schools should be opened. Along with school education, public support is also needed at the factory

level to improve fundamental technologies such as injection, press, casting, forging, plating and the fabrication of die and mold. Both a special technical education like that focusing on electronics and a basic scientific education need to be strengthened. If the Philippines produces labors and students well-educated in science and electronics, the more electronics TNCs will chose the Philippines as a suitable location for their investment. Thus, the agglomeration of the electronics industry in the Philippines will be advanced, and the participation of local firms can be expected to increase in several ways, such as being local suppliers, doing sub-contract production, or as OEM (original equipment manufacturing), ODM (original design manufacturing) and OBM (original brand manufacturing), as observed in Singapore and Taiwan. In order to foster local suppliers, it is probably better to recruit local suppliers from well-educated people with new technology and new management than from the conventional small and medium size local firms

11)

When we look back over the history of the electronics industry worldwide, private sector-led development has been prominent in the developed countries. Strong support by the state did not necessarily bring success. There are examples, such as Korea which did succeed in the electronics industry, especially in semiconductor production such as DRAM (Dynamic RAM), through strong state support. But, private sector-led development is probably more efficient than strong state intervention, especially in the information electronics industry such as personal computers, in which continuous innovations in techniques and marketing research are essential because of very changeable demands. The parts and component suppliers for personal computers also have to meet ever-changing requests from the assemblers. Therefore, strong state intervention or support is not so effective for the supporting industry of personal computers. Indirect support by the public sector, like technical education, is probably more effective. .

We do not insist here that "laissez faire" is the only model for industrial development. We should realize that the role and effect of industrial policy varies by industry. The role and effect of industrial policy in the material industry (steel, petrochemical, plastic, cement, pulp, and so on) or automobile industry are probably different than the electronics industry. An industrial policy should be devised for each industry, not in general.

4 Local Capitalist and Industrial Development under the Foreign Capital-led Industrialization

It has been widely accepted in the Philippines like as other developing countries that only the industrialization carried by the local capitalists (national bourgeoisie) deserves to be called genuine industrialization. However, it has been

shown that local capitalists do not always advance industrialization in reality. Some kinds of behavior by local capitalists could lead an industrialization to deadlock, as exemplified by the behavior of Marcos cronies during the first half of the 1980s. It was not until early the 1990s that Philippine industrialization was revitalized. One of the most important factors in the revitalization of Philippine industrialization was the vigorous inflow of foreign direct investment in the early 1990s.

The policy stance of monitoring the nationality of local suppliers for the development of supporting industry is based on the assumption that the growth of the national bourgeoisie is essential for the genuine industrialization of developing countries. On the other hand, due to increasing alliances and mergers among giant TNCs in developed countries, the power of TNCs is becoming stronger ¹²⁾, thus the tendency to dominate world production is being reinforced, especially in the automobile and electronics industries. There is a widening disparity between the local firms in ASEAN countries and giant TNCs, so that it is even more difficult for the local capital (national bourgeoisie) in ASEAN countries to catch up TNCs especially in automobile and electronics industries. Governments of ASEAN countries seem to give up fostering of national bourgeoisie who can compete with TNCs in global competition; instead, they prefer to promote policy for development of supporting industry and try to foster local firms as local suppliers for TNCs.

The development of supporting industry via fostering of local suppliers seems to be one possible resolution to resolve this disparity in the ASEAN countries. The governments of ASEAN countries wish that the development of supporting industry could help to resolve the structural disparity between local small business and big business (both foreign and national) by inducing small local firms to participate in the production network system of assemble industries mainly introduced by TNCs in their countries. They prefer to take a development path via cooperating with (or being subordinated to) TNCs. However even the task of fostering local suppliers for TNCs is not so easy for developing country like the Philippines.

It has been argued that foreign capital-led industrialization could not promote genuine industrialization because it is vulnerable to the outside economy and has the tendency of dependency, both a result of the footloose movement of TNCs. However, this criticism is not entirely accurate. It has recently been shown by many case studies on TNCs in the ASEAN countries that most TNCs are not footloose in the assembly industries like that of automobiles and electronics, but stay in the host area where the agglomeration such as supplier system and industrial cluster are in the process of formation. TNCs dare not leave a host area where they can take advantage of agglomeration and they have already invested a

lot in expensive equipment¹. On the contrary, many other TNCs, seeking a good location for new investment are inclined to invest in areas where they can take advantage of agglomeration.

Japanese electronics TNCs have been inclined to continue investing in home appliance production in Thailand and Malaysia, in spite of many problems such as increased labor cost, overcrowded industrial estates, high factory land prices, and job hopping due to the continuing inflow of foreign investment until the mid-1990s. Nevertheless, they preferred to invest in Thailand and Malaysia to the Philippines. Why? Firstly, they were able to reduce the total amount of investment for both of new and expanded projects. For the expanded production, they were able to utilize fixed assets such as land, factories and equipment which were already operating, so they could reduce additional investments, compared with completely new investment in a different country such as the Philippines. Even for a new product line, they could use some of the same fixed assets. Secondly, in addition to investment saving, they can also take advantage of the better developed infrastructure (both hard and soft) and better developed supporting industry, including industrial cluster and production network such as supplier system, even though which have been not so well developed compared with in the developed countries.

This phenomenon shows that agglomeration or industrial clusters have a very important effect ¹³⁾ on attracting new or additional investment in a host area, especially in the assembly industries such as automobiles, electronics, and machinery. In Taiwan and Singapore, where TNCs have been able to enjoy non-restrictive activity far earlier than the Philippines, Thailand, Malaysia and Indonesia, we can observe that many local electronics firms have been proliferated both as suppliers and assemblers and also observe continues inflow of electronics TNCs in Taiwan and Singapore. Thus, a preferential policy for local capital or the restrain of foreign capital is not the only way to advance host country industrial development, especially with regard to the electronics industry.

Developing countries may hinder their own industrial development and deviate from the path of worldwide industrial development if they adhere to protectionist policies and uncritical support for national bourgeoisie or local capitalists, particularly in industries such as electronics.

5 Challenges in the 21st Century

In this paper, I have pointed out and analyzed fact finding research performed in the field of supporting industry for electronics in the Philippines. These findings may suggest that the role of local capitalists (national bourgeoisie)

and the significance of economic nationalism ¹⁴⁾ should be reconsidered to facilitate industrialization in the midst of the global economy. Namely, the assumption that local capitalists (national bourgeoisie) can play a essential roles in building the national economy and as they grow and carry out industrialization, the structural disparity of underdeveloped economies will be resolved must be reexamines carefully

The structural disparity between agriculture and industry, the disparity between big business and local small business, and the income disparities seem to be widening with the advancement of globalization. Therefore, it is a still very important task for developing countries like the Philippines to alleviate these disparities and enhance the welfare of the people. In addition, it is also very important for developing countries to decide upon the process and direction of industrial development itself. Even though we cannot deny the positive role of foreign capital-led industrialization in the host country, to be exclusively dependent on foreign capital often excludes the host country from the pivotal decision making in some industries where foreign TNCs dominate and it may infringe upon the interest of the people in the host country.

Our fact finding research suggests that local capitalists do not necessarily have adequate capability to carry out the task of resolving disparities and ensure the welfare of the people in the Philippines. TNCs do not seem to be interested in the alleviation of the disparities of the host countries; they are interested in the performance of their affiliates in the host countries. Who can carry out this task? Who are the main players if we cannot necessarily depend on local capitalists or TNCs? One of players would be the public authorities which have three dimensions; local governments, nation states and supra national authorities. Other players could be local capitalists, working people, citizen, NGO, PO in the private sector and so on. Before ending this paper, I would like to think a little bit about the role of the nation state among the possible players.

Globalization has advanced based on deregulation and liberalization of the worldwide economy. Most developing countries have carried out deregulation and liberalization of their economies, and have been influenced much more than before by the global economy since the 1980s. Many protective economic policies were given up and the number of spheres has been increased where the market mechanism works fully in the developing countries. It seemed to many that the role of the nation state would be no longer useful and that it would eventually disappeared. However, it has become clear that the market mechanism is not an almighty means to induce economic growth and alleviate disparities in developing countries as the effects of market mechanism have been already shown in developed countries. It has been realized that some kind of institutional

coordination and public support may be needed in order to alleviate disparities and ensure sustainable and balanced economic development. As Peter Evans analyzed, instead of the eclipse of the state, the abilities of the state to adjust and coordinate, and not its imperative nor coercive abilities, are more needed in the view of advances in globalization ¹⁶).

However, the capability of the government of the Philippines is too weak at present to coordinate the many kinds of interests among the groups in the Philippines and TNCs. More advanced administrative abilities than needed in the past are necessary in the midst of globalization. How can the Philippines obtain these capabilities? Is it possible for the state of the Philippines to coordinate and adjust separately the complicated interests of local groups and TNCs in the midst of advances in the global economy even though the Philippines would be able to enhance the capabilities of the state? Will some kind of cooperation and alliance among ASEAN countries (supra national authority) be needed to bargain with TNCs as globalization advances?

These are the challenges facing the Philippines in the 21st centuries to facilitate further development.

Footnotes

- 1) The ratio of exports of home appliances to total production in the Philippines is estimated at 23% in 1994 and 1995. See Morisawa Keiko "The Philippine Electronics Industry and Intra Asian Trade and Investment" in *Intra Asian Trade and New Industrialization* (in Japanese) ed. by Osaka City Univ. Institute for Economic Research & Nakagawa Nobuyoshi, Tokyo Univ. Press, 1997.
- 2) JICA reported that the local content ratio (in value) of home appliances in Thailand is 90 %, and in audiovisual electronics is 70 %. JICA (Japan International Cooperation Agency) & Dept. of Industrial Promotion, Ministry of Industry, The Kingdom of Thailand, *The Study on Industrial Sector development: Supporting Industries in The Kingdom of Thailand*, UNICO International Corporation.
- 3) The field research for home appliance assembly production in the Philippines was conducted in July 1995 as the first part of a research project grant in aid for International Scientific Research from the Japanese Monbusho lasting from April 1995 until March 1998 titled "New International Division of Labor in Asia: a Study of the Development of Supporting Industry in the Philippine Electrical and Electronics Industry."
- 4) Some Japanese suppliers for plastic parts and metal press parts have come to the Philippines, but they supply only the information electronics and automobile industries, and not home appliance industry in the Philippines.
- 5) In this paper, local suppliers mean native suppliers in the host country. This does not mean foreign suppliers located in the host country. For example, in the case of the Philippines, local suppliers mean Philippine suppliers.
- 6) According to our interview conducted in March and June of 1996, the local content ratio of semiconductors is in most cases less than 5%. For example, the material local content ratio at Texas Instruments Philippines, Inc. is 5-6%, and the ratio at ROHM Electronics Philippines, Inc. is less than 1 %.
- 7) SEIFI is the abbreviation for the Semiconductor Electronics Industry Foundation, Inc., one of the most active industrial associations in the Philippines, which started to research and identify the demands of the Philippine electronics industry for materials and parts in the early 1990s, it has published the results in order to inform makers and suppliers, both local and foreign, about the volume of demand for materials and parts. It has also held a conference (fair) where electronics industry assemblers and suppliers could meet.
- 8) The field research for HDD assembly production in the Philippines was conducted in July 1997 and February 1998 as part of a research project mentioned in note 3).
- 9) The ratio of students who go on to college and university is highest, while the number of graduates from college and university as well as the number of graduates from the department of engineering are the largest in the Philippines among ASEAN countries. During the long economic stagnation in the 1980s, many

graduates went abroad to many locations, including neighbor ASEAN countries, seeking jobs as engineers and middle managers. On the other hand, because of the economic boom, a shortage of engineers and managers in the other ASEAN countries appeared in the late 1980s, earlier than in the Philippines.

10) Our interviews revealed that most local suppliers who were suffering from a lack of the necessary technology and technique had an urgent need for public support for the technology. They said that it was difficult for them to get the necessary skills by themselves as private firms.

11) Aside from public support for technological education, the public finance system for small and medium size industry should be improved in order to help local firms to get the appropriate technology.

12) Reference to Dunning, John H, *Alliance Capitalism and Global Business*, Routledge, 1997

13) Refer to "Industrial cluster", see Porter, Michael E., *The Competitive Advantage of Nations*, Macmillan, 1990

14) Refer to new terminology "the positive nationalism. See Reich, Robert, *The Work of Nations*, Random House, 1991.

15) Reference to Evans, Peter "The Eclipse of the State? : Reflections on Stateness in the Era of Globalization," *World Politics*, vol.50, No.1.

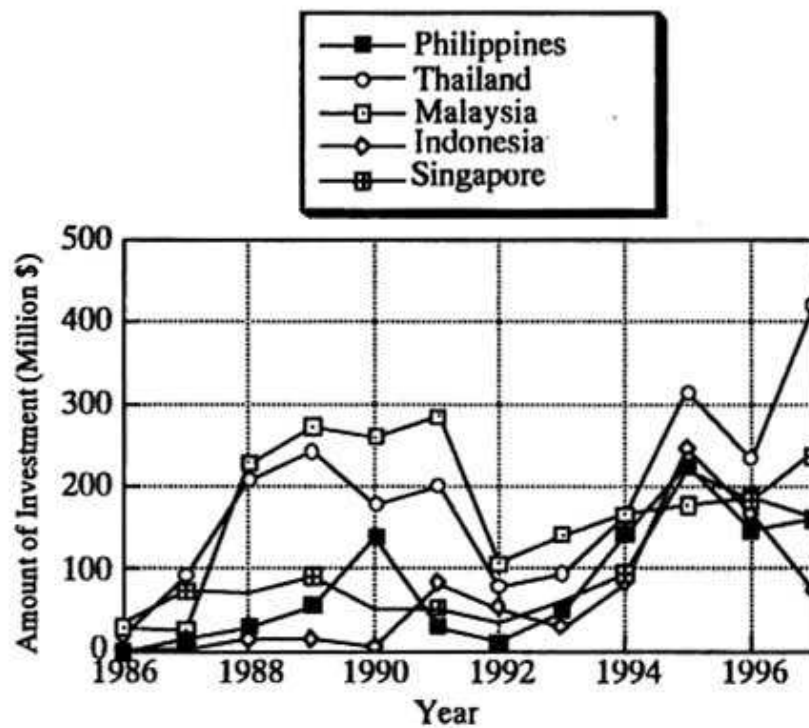


Figure 1 Japanese Foreign Direct Investment in the ASEAN Countries: Electronics Industry

Source) The Ministry of Finance, *Kokusai Kinyukyoku Nenpo*. each year; *Zaisei kinyu Tokeigeppo*. No.560. December 1998.

Note) As the Ministry of Finance has announced the amount of investment in yen since 1995, the figures of investment since 1995 are changed from yen to dollars using the average Exchange rate of each year.

Table1 Scale of Production of Electronics in ASEAN Countries : 1997-98

(Unit 1,000)

Product	Year	Philippines	Thailand	Malaysia	Indonesia	Singaporean
C T V	1997	1,050	6,178	8,067	4,200	2,046
	1998	980	6,546	7,840	2,700	1,000
Air condi- tioner	1997	240	2,790	2,395	110	450
	1998	230	2,940	2,625	80	420
Washing Machine	1997	730	n.a	n.a	n.a	n.a
	1998	710	n.a	n.a	n.a	n.a
Refrig- erator	1997	540	2,120	155	1,300	50
	1998	590	2,380	155	900	50
F D D	1997	41,400	17,980	25,930	--	--
	1998	46,200	19,800	23,050	--	--
H D D	1997	9,000	13,500	10,700	--	54,240
	1998	15,000	20,200	17,200	--	56,000

Note;The figures in '97 are result , the figures in '98 are projection.

Source;Nihon Denshi Kogyokai (Electronic Industries Association of Japan),

'98 Kaigai Denshi Kogyo no Doko Chosa Hokokusho. 1998.

Table 2 Sourcing of Japanese Home Appliance Assemblers for Color TV in the Philippines

Home Appliance	Picture Tube	Deflection Yokes	Tuner	Flyback Transformers	Printed Circuit Board (PCB)	Local Content Ratio
Assembler 1	Malaysia Cahina	Malaysia	Malaysia	Malaysia	Board & Assembly : Philippines Electronics Parts : Imported	19%
Assembler 2	Malaysia Singapore	Malaysia Singapore	Malaysia Singapore	Malaysia Singapore	Board&Assembly : Philippines Electronics Parts : Imported	20%
Assembler 3	Korea	Indonesia	Indonesia	Indonesia	Assembly : Philippines Board&Electronics : Imported	30%
Assembler 4	Singapore	Malaysia	Malaysia	Malaysia	Assembly : Philippines Board&Electronics : Imported	15%

Source; Author's interviews with Japanese Home Appliance Assemblers in July 1995.

Table 3 Sourcing of Japanese Home Appliance Assemblers for Air Conditioners in the Philippines

Home Appliance	Compressor	Condenser	Evaporator	Motor	Cabinet	Local Content Ratio
Assembler 1	Malaysia	Thailand	In-house	Malaysia	In-house	17%
Assembler 3	Singapore	Singapore	In-house	Singapore	In-house	30%

Source; Author's interviews in July 1995.

Table 4 Sourcing of Japanese Home Appliance Assemblers for Refrigerators in the Philippines

	Compressor	Condenser	Evaporator	Frame	Inner	Local Content Ratio
Assembler 1	Singapore	Philippines	In-house	In-house	In-house	48%
Assembler 3	Indonesia	Philippines	In-house	In-house	In-house	60%

Source; Author's interviews in July 1995

Table 5 Sourcing of Japanese Home Appliance Assemblers for Washing Machines in the Philippines

	Motor	Bearing	Pivot	Pulsator Pulley	Spin Tub	Box	Local Content Ratio
Assembler 1	Taiwan	Japan Singapore	In-house	Philippines	In-house	In-house	40%
Assembler 2	Caina Taiwan	Japan	Philippines	Philippines	Philippines	In-house	36%

Source; Author's interviews in July 1995.

Table 6 Main Local Suppliers for Home Appliance Production in the Philippines

Local Suppliers	Year Established	Number of Employees	Sales Turnover	Average Growth Rate of Sales (92-96)	Growth Rate of Sales in 1997	Product
M	1967	1200	457.7	20%	n.a.	Plastic Parts for Home Appliances & Automobiles Plastic Tables & Chairs / Packaging Materials
P	1972	857	361.2	4.80%	10%	Plastic Parts for Home Appliances, Packaging Items Ball Pens, Plastic Crates & Boxes
Ch	1963	142	82.2	37.90%	n.a.	Plastic Sheets, Lighting Fixtures, Light Diffusers
S	1961	475	86.8	14.30%	-15%	Plastic and Metal Parts for Home Appliance & Automobiles
Va	1975	224	189	41.50%	-30%	Metal Parts for Home Appliances and Automobiles Crisper Glass
F	1980	249	126.6	25.20%	22%	Wiring Harnesses, Lamp sockets, Heater Wires
A	1968	680	460	18.60%	n.a.	Wires, Cables, Harnesses
R	1975	213	180.7	10.30%	10%	Metal Crown Caps & Metal Lithography
I	1962	192	70	18.70%	n.a.	Electro Plating, Metal Stamping, Metal Parts Hot-Water Heaters
J	1983	61	22.2	17.90%	13%	Crystal Dropping, Printing Aluminium & Plastic
Vi	1979	71	42.8	8.30%	-19%	Gaskets for Refrigerators, Plastic Products
Mg	1965	200	220	n.a.	n.a.	Styrofoam
G	1975	80	50	-4.20%	n.a.	Corrugated Boxes
Assembler A	1967	2074	6,699	17.20%	18.70%	

note: Unit of sales turnover : Million Pesos.

source: Author's interviews in March 1997 and February 1998.

Table 7 Multiple Membership in Associations by Main Local Suppliers

Local Supplier	Number of Supplier Association
M	3 (Home Appliance)
P	2 (Home Appliance)
Ch	1 (Home Appliance)
S	3 (Home Appliance2,Automotive1)
Va	3 (Home Appliance2,Automotive1)
F	3 (Home Appliance)
A	3 (Home Appliance2,Automotive1)
R	1 (Home Appliance)
I	2 (Home Appliance)
J	3 (Home Appliance)
Vi	2 (Home Appliance)
Mg	3 (Home Appliance)
G	3 (Home Appliance)

Source: Author's interviews in March 1997, February 1998.

Table 8 Sourcing of Japanese HDD Assemblers in the Philippines

Parts & Components	HDD Assembler A	HDD Assembler B	HDD Assembler C
MR Head	Japan , China	Philippines , China	In House
Media	Malaysia	Japan , Singaporean	Japan
Spindle Motor	Philippines , Thailand	Philippines , Thailand	Philippines
Voice Coil Motor	Philippines , malaysia	n.a	Philippines
P C B (Printed Circuit Bord)	Vietnam	Japan , Taiwan	Japan , Philippines
Flexible P C B	Philippines	n.a	Philippines
Aluminum Die Cast	Philippines Singaporean , Malaysia	Philippines	Philippines

Source; Author's interview with each HDD Assembler in July 1992 and February 1998.