

**THE TRANSFORMATION OF PRODUCTION & CONSUMPTION PATTERN OF CANNED TUNA PRODUCTS  
WITH REFERENCE TO THE TRANSNATIONAL AGRIBUSINESS DEVELOPMENT**

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**ABSTRACT**

Canned tuna is a typical international Agribusiness-based product. The most representative flow of the product is such that the tuna is processed in a firm in the developing country of the tropical area where the canned material, namely tuna and skipjack, is caught and landed. Canned products furnish standardized features in their size, the way of cooking, added flavors and quality so as to be exported either to Europe or North America where they are used as one of the cooking material. In the end of 1990's, however, a new stream of production and consumption pattern emerged in the Philippines and Thailand. Tunas are cooked by local ways with local flavors before they are canned. The products are sold in ready-to-eat styles and consumed in the produced countries. Moreover and more recently, producers started to open up a new market in China as they tries to cook tuna in Chinese way. Transnational Agribusinesses sometimes develops in such a way that a product, that used to be produced solely for the export, gradually disseminates locally as per-capita-income of the producing country increases. On the other hand, such a transformation of consumption pattern could be recognized as a result of the targeted business strategy of transnational firms: they start exploit the market of the less developed countries after the saturation of the market of developed countries. In this paper, we carefully examine the reason of the transformation of production and consumption pattern of canned tuna products referring to the Agribusiness development.

**Keywords: Canned Tuna, Agribusiness, Trade, Indonesia, Philippines, Thailand**

**INTRODUCTION**

In this paper, we explain the development process of Southeast Asian tuna canning industry in the context of the theories of multinational firm and development economics. Countries we survey are mainly Indonesia, The Philippines, and Thailand although we refer other countries from time to time. In sum, tuna canning industries in South-East Asia have taken unique paths but hold common characteristics as well. By applying different theories to different phases of their development, we can make better understanding of current situation and future prospects.

In the first section, we review theories of multinational firm and development economics. They are the theory of product cycle, theory of comparative costs, theory of unbalanced growth and development import (or off-shoring) of Japanese-style. In the second section, we observe a long-term trend of tuna canning industry and identify Southeast Asian countries in the world trend. In the third section, we examine the development process of each country and characterize that of each country as well as the Southeast Asia as a whole. In the fourth section, we shed light on canned tuna with flavor that has been developed and distributed recently in Southeast Asian countries. We categorize them according to the taste and foresee the future direction of such development. In the fifth section, we refer to the possibility of spillover effect of the tuna canning industry that might contribute to the economic growth.

**REVIEW OF THEORIES OF MULTINATIONAL FIRMS AND DEVELOPMENT ECONOMICS**

In this section, we review four theories of multinational firms and development economics. These theories will be referred from time to time in the examination of industry in the following sections.

### **The theory of product cycle**

One of the theories is about product cycle first developed by Vernon (1966)<sup>i</sup>. The theory was devised to explain the behavior of U.S. firms in 1960's when they were establishing firms in foreign countries. According to the theory, a product has its lifecycle: introduction, growth and saturation. A leader country develops a product in the phase of introduction, sells it in the domestic market in the phase of growth but when production capacity exceeds the market demand, it exports the surplus to follower country. In the phase of saturation, imported product substitutes domestic production. In follower country, the product lifecycle starts with phase of introduction over again: it first imports the product, domestic production substitutes the import, export the surplus, and finally it imports.

The theory of product cycle is referred by many scholars and re-interpreted in various ways. Among them, Krugman(1979) extended the theory in such a way that the product cycle is accelerated by endless game between developed and developing country: the former invents a new product and the latter imitates. Such endless game occurs in one product and another.

### **Theory of comparative costs**

The theory of comparative cost is also a well-known theory of trade first introduced by Ricardo(1913)<sup>ii</sup>. It explains that the transformation of producing country occurs because production cost differs among countries. The theory of comparative cost, or often being referred as the principle of comparative advantage, explicitly proved that the difference of production cost is the cause of trade and thus the existence of international division of labor. A country that is endowed relatively abundant factor of production produces the resource intensive product and exports in exchange for the import of a product, which requires a relatively scarce resource. The concept is also named as Heckscher-Ohlin theorem as they re-shaped the theory and clarified that the trade stemmed from the difference of factor endowment.

Although the factors of production are usually referred to as labor and capital, when we replace one of the factors for a natural resource, it becomes the theory of economic growth. According to Staple theory, when a country holds an export-oriented industry as an leading industry that makes a product utilizing its natural resource, the spillover effect is borne from the industry and overall economy will be developed. Abundance of natural resource is a double-edged sword, however. The famous precedent of Dutch Disease showed us that the abundant natural resource, namely crude oil in this case, adversely affected on manufacturing sector: the sector did not grow as much as otherwise but it suffered a long-term economic decline.

### **Theory of unbalanced growth**

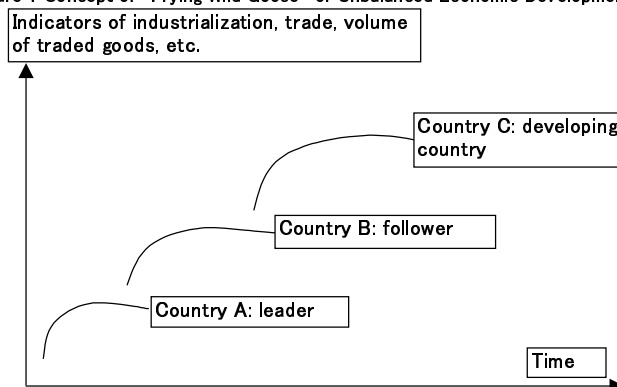
This and the next theories of economic development are the contribution of Japanese scholars. One of these is the theory of unbalanced growth developed by Akamatsu(1965). The theory is well known in Japan under the name of Frying Wild Goose. It describes the state where a variety of goods experience the product cycle of import, domestic production as import substitution, and export<sup>iii</sup>. In the long run, such product cycle occurs in turn, starting from labor-intensive light industry and gradually being replaced by more capital-intensive heavy industry.

The locus of the transformation of products resembles with the frying shape of a group of wild goose as we see in Figure 1. The theory is recognized as another interpretation of the theory of product cycle in the sense it considers longer time span and it examines the process from the follower's side: developing country. It describes the economic growth path of developing country as it catches up with the developed country.

When the theory is succeeded by a number of scholars, it expanded the field of application. For example, when one observes one industry, it explains the transformation of the countries that produce and

export over time. Watanabe(2001, pp.102-103) named the phenomena as multiple catching up process of the industrialization starting from Japan, transformed to NIES then to Southeast Asia.

Figure 1 Concept of "Frying Wild Goose" or Unbalanced Economic Development



### Development import of Japanese-style

Finally, we will review an development import pattern of Japan toward Asian countries. It was argued by Kojima(1981)pp.334-335. Development import or off shoring refers to the foreign presence in developing country for the purpose not to export any product to the developing country but to extract the resource of the developing country out of the country. In the case of Japanese company, according to Kojima, it limits the degree of foreign direct investment at its minimum necessary level, at most 30% of the total investment. Instead, the company normally holds a long-term contract with the local firm in order to secure the stable supply of the resource to Japan.

On the other hand, in the case of a company in Western countries, it establishes its own firm in the developing country for the purpose of captive mine. It does not necessarily supply the natural resource to its home country. Rather, it decides where to sell according to the profit margin. Although the kind of resources it assumes are crude oil and still, it is indicative to agricultural and marine resources.

### TREND OF CANNED TUNA PRODUCTION AND TRADE

In this section, we identify the position of Southeast Asian countries through the observation of the long-term trend of canned tuna production and trade.

Canning industry already has 200 years of history and canned tuna production does for 100 years (Laurs et al.(1992)p.136). As we see in Figure 2, the world demand was still expanding in 1980's but experienced its market stagnation in 1990's. Canned tuna, in the context of the theory of business cycle, is now in the phase of saturation. Let us look at the volume of production by country in Figure 2 and the volume of export by country in Figure 3. We find the a frying wild goose-like shape in both figures. It is apparent from the figure that Southeast Asian countries are caught up by latecomers such as countries in Africa and Middle and South America. Asian giant, China, has yet appeared in the market.

Product cycle theory states that domestic demand is fulfilled by import from succeeding country at the stage of saturation. It implicitly assume as if domestic production disappears in the end. The theory of comparative cost also assumes that a labor-intensive product is not produced in a country with relatively abundant capital. The domestic production in some developed countries, however, does not disappear as we see in Figure 2<sup>iv</sup>. As we see in Table 1, some developed countries keep a certain level of self-sufficiency as of year 2000: 71% in the U.S., 67% in Japan, and it exceeds 100% in Spain. In these countries, canned tunas are both imported and exported: intra-industry trade takes place in these countries. Intra-industry trade occurs when a product is not homogeneous. We can also assume that canned tuna are not homogeneous, too. Rather, a market for domestic product and imported product might be segmented to some extent. In Spain, self-sufficiency rate exceeds 100%; it exports more than imports. Exports are

mainly headed to other EU countries. It can be interpreted in such way that canned tuna made in Spain might be identified as “domestic” product in European countries after the market integration.

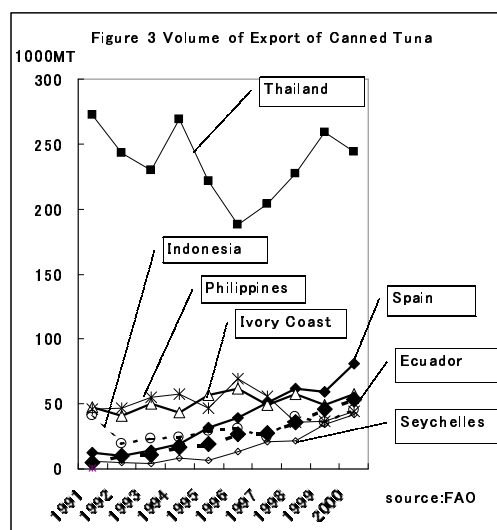
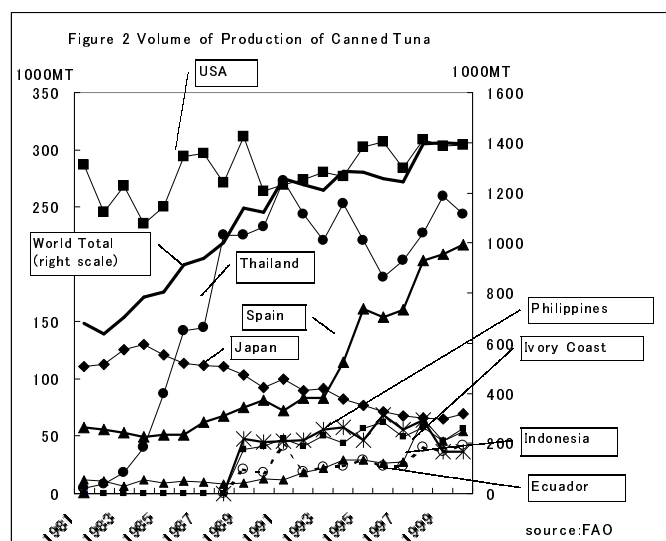


Table 1 Indicators of Production & Trade of Canned Tuna by Countries (2000) (%)

	World Share of Production	World Share of Domestic Supply	Self Sufficiency	Production Dependency to Domestic Demand	Export Dependency
USA	21.82	30.18	70.57	99.56	0.62
Thailand	17.50	0.00	∞	0.00	100.00
Spain	15.55	11.25	134.91	66.55	37.26
Italy	5.74	9.83	56.95	89.25	21.15
Japan	4.98	7.28	66.80	99.49	0.77
Ivory Coast	4.10	0.00	∞	0.00	100.00
Ecuador	3.85	0.00	∞	0.00	100.00
France	3.19	6.29	49.47	58.12	145.65
Indonesia	3.01	0.00	∞	0.00	100.00
Philippines	2.62	0.00	∞	0.00	100.00
Seychelles	2.06	0.00	∞	0.00	100.00
Ghana	1.80	0.00	∞	0.00	100.00
Mauritius	1.31	0.05	∞	3.84	96.16
Portugal	1.20	1.06	110.04	68.01	42.74
Columbia	1.03	0.46	216.79	31.57	100.00
Venezuela	0.72	1.35	51.84	100.00	0.00
Senegal	0.63	0.00	∞	0.00	100.00
Costa Rica	0.31	0.00	∞	0.00	100.00

Source: Calculated from FAO Statistics

Self Sufficiency = Production/Domestic Supply

Production Dependency to Domestic Demand = Domestic supply / Production + Import

Export Dependency = Export / Domestic Production

## CHARACTERISTICS OF INDUSTRY DEVELOPMENT

In this section, we will compare the development path of tuna canning industries in the Philippines, Thailand and Indonesia.

## Philippines

Philippines is one of the typical country where development import of Western style was carried on. As early as 1950's, it was developed as an fish unloading and exporting site for suppliers to U.S. canning factories. A U.S. owned purse-seine fishing company was then established although it was withdrawn shortly. In 1970's, locally operated tuna canning company started its production and the country's tuna canning industry grew as large as that occupied 70% of the total import of the U.S. at its peak time (Aprieto(1996)p.168, Thomas(1999)p.23). Up to this point, Staple theory can be applied.

In the late 1980's, however, such export market was taken over by Thailand as Thai started its production. Although the Philippines then released the import of tuna as an export material in 1986, the volume of canned tuna could not exceed that of Thailand thereafter. Tuna had not been eaten in the Philippines except a certain area. As we see in the next section, canning industry started to exploit domestic market in the late 1990's. The supply to domestic market is still nil as it does not appear in the statistics as we see in Table 1.

## Thailand

After the second oil crisis, Thai government decided to target several industries for export promotion. In 1984, Tuna canning industry was nominated as one of the targeted industry along with shrimp farming and chicken broiler (Suehiro(2000)p.18). In Thailand, tuna fishing itself had not been existed nor being nominated as targeting industry. The country instead purchased raw fish from the Philippines and Indonesia to produce canned tuna. As we see in Table 2, the production exceeded that of Philippines within a couple of years to become the second largest producer following to the U.S. It has been the world largest exporter since 1987.

Thai consumers did not eat tuna, too. The industry had been concentrated for exporting. Any of the theories that we reviewed in the first section is not applicable to such unique development path as that of Thailand<sup>v</sup>. The theory of comparative cost will explain that Thailand is comparatively advantageous in labor-intensive canning production. Such context, again, is only applicable to Thailand although most of the developing countries, including the Philippines and Indonesia, are equally advantageous in labor-intensive production. It is often stressed that Thai people are clever with their fingers. It is proved by the fact that there are a lot of export-oriented food processing factories located in Thailand, other than tuna canning, whose product being exported to Japan. Such examples will prove the existence of comparative advantage of Thailand in food processing to other Southeast Asian countries.

According to Suehiro(2000, pp.18-19), Tuna canning factories in Thailand and Japan are different in terms of the degree of labor and capital intensity: Japanese factories are heavily dependent on automatic machines in order to save labor as much as possible. As a result, it requires material fish brought to the factory at one time have to be homogeneous in terms of the size and quality. On the other hand, labor is heavily used in the factories in Thailand so that the variety of fish size does not affect the productivity of the production line. They also accept the variety in fish quality since burned meat and spots can be found by human eyes and eliminated. Suehiro's observation implies that one product can be produced in both labor-intensive and capital-intensive ways. In the case of canned tuna, labor intensive way of production reveals to be comparatively advantageous.

## Indonesia

Indonesian government recognizes the importance of its marine resources. Tuna canning companies as well as the fishing boats that supply raw materials are operated under the government's plan. It makes difficult for private companies to locate and operate the businesses (Yamashita(2001)p.220). Tuna canning factory started its operation in 1984. They are located in five cities around the country such as Bali and Bitung where tunas are unloaded. Tuna canning Factories, however, often face shortage of

material (RBI(2000)p.12). Tuna resource is abundant and tuna fishing industry is active in Indonesia. According to RBI(2000, p.12), however, canning factory fails to acquire necessary amount of raw material when the price is high. It implies that the domestic factories are not competitive in the international market. As a result, the country is forced to take a role as a supplier of raw material to the rest of the world. RBI(2000, p.12) regret the fact that it merely exports raw material and only 1% of the catch is delivered to domestic factory for canning although a higher value is added by processing than a mere export of raw material. In fact, a value is added by the importing country: Thailand.

Such situation of Indonesia can be explained as Dutch disease that we reviewed in the first section where domestic manufacturing sector shrinks in a country with abundant natural resource. Indonesia is endowed with a variety of natural resources such as crude oil and forests as well as marine resources. Dutch disease might attack such country.

Indonesian people did not eat skipjack and tuna except small skipjack. As we see in the next section, canned tuna products forwarded to domestic market are flavored by many different ways. The quality of meat, in our impression, fulfilled international standard<sup>vi</sup>.

We observe the following characteristics from the comparison of tuna canning industries in three countries. First, it was common to all countries that production started as an export-oriented industry where there were no significant domestic consumption existed. Second, tuna canning industry in the Philippines and Indonesia emerged as a way of utilizing its natural resource and related industry: tuna resource and tuna fishing. While in Thailand, it purchases raw material from these countries. Third, Thailand became the world largest exporter in absence of fishery sector. It proved that inexistence of an upstream industry does not work as an disadvantage for the development of tuna canning industry.

## **DEVELOPMENT OF FLAVORED CANNED TUNA PRODUCTS**

When we visit supermarkets in big cities of these countries, we are surprised by the variety of canned tuna, particularly the variety of their flavors. Judging from the observation of the shelves of supermarkets in these countries, more than a half of spaces for canned tuna is occupied by ready-to-eat flavored tuna cans. We purchased eighty-four different cans in a number of countries including the Philippines, Indonesia and Thailand during the period 1999 to 2004. Since we could not purchase all varieties from all over the world, we enforced our information by referring websites of producers. We classified canned tunas as Table 2. The following analysis is only made for home use cans since we could not purchase cans for catering.

### **Canned tuna as cooking material**

Canned tuna will be divided in two categories according to the degree of flavor: Canned tuna as a cooking material and ready-to-eat food that contains tuna. Canned tunas as cooking material have some varieties. Tuna used for canning are Yellowfin tuna, albacore and skipjack. They are in the state of solid, chunk or flake. They are put in cans with oil, brine, water or vegetable soup. Although some tuna is flavored with salt and/or artificial flavor, they are not suitable for eating without any treatment. Rather, they are intended to mix with mayonnaise in many cases and add vegetables to become fillings of sandwiches or topping of salad. In the U.S. and Europe, this kind of tuna is mainly sold. It is the same in Japan.

### **Ready-to-eat tuna, local flavor, targeting domestic market**

In supermarkets of major cities in Southeast Asia, we see a variety of ready-to-eat tuna cans that are flavored by local cuisine. Varieties we listed in Table 2 is a mere example. They are cooked with local seasonings, vegetables and beans. As to the number of manufacturers, at least three brands exist in each country. For example in the Philippines, Tuna Adobo is produced under the three different brand names: Century, 555 and Swift Blue Bay. These are the products that were developed by tuna canning

manufacturers solely targeting domestic consumers. If they were imported products that gradually disseminated in the domestic market, we would have been able to apply the theory of product cycle. Flavored canned tuna in Southeast Asia are not in the case. As we see later, domestic market is exploited in order to utilize non-exportable meat. It is a unique development process that cannot be explained by any theories we reviewed in the first section. If we identify such ready-to-eat tuna cans as a product independent from canned tuna as cooking material, we will be able to call it as a new product that is developed by a country that is not supposed to develop a new product but to imitate as a follower, according to Krugman.

Unfortunately, international statistics does not prove that any significant domestic supply exists, as we see in Table 1. We can see, however, these products on the shelves of major supermarkets in Southeast Asian countries<sup>vii</sup>.

There are several steps and reasons that brought ready-to-eat canned tuna into the domestic market. For the first place, meats used for domestic market were those that were not suitable for export<sup>viii</sup>. Even if the fish is fresh and good, dark parts of meats are eliminated before being exported. Even if it is white meat, meat with many spots or burning are not suitable for export. If a fish is not fresh, it is not exportable. In Thailand, these meats were utilized as cat food and then exported. While in the Philippines, they tried to utilize it for human supply: meats had to be cooked with dark source with strong flavors in order to mitigate the color and smell of meat<sup>ix</sup>. Such way of utilization started in the late 1990's, at least prior to September 1997.

Later, two other economic reasons forced manufacturers to go forward domestic market. One is a driving force from supply side. The follower countries of Southeast Asia, namely countries in Africa and Middle and South America, started their production and export to Western countries. They have advantage both in terms of production cost and preferential import duties so that producers in Southeast Asian countries had to develop domestic market for export substitution.

On the other hand, there is a driving force also in the demand side; nutrition. It is natural that the nation care about the quality of food as per-capita income grows. In response to such demand within the country, for example, labels of cans stress "OMEGA 3" in all countries and low cholesterol and DHA in Indonesia. Apparently, tuna meat furnishes these characteristics compared to other source of protein. Local consumers, nevertheless, will not be able to intake tuna meat unless it is already cooked to be a ready-to-eat style since they have not eaten tuna before. Producers therefore developed ready-to-eat style with flavor that are familiar to local consumers.

### **Ready-to-eat tuna, local flavor, targeting foreign market**

Originated from Southeast Asian countries, canned tuna with local flavors are then exported to overseas. This is the point that the theory of product cycle and the theory of unbalanced growth are well applied. One of such example is the export to China. Based on the experience in domestic market, a tuna canning company of the Philippines intended to step into the China market and it really started<sup>x</sup>. Canned tuna sold in China tested like Chinese food. In China, people do not normally eat tuna, either. According to international statistics, domestic consumption or export has yet started. It is not, therefore, certain as to what extent Chinese people eat canned tuna in the future. If Chinese should start producing ready-to-eat tuna for domestic market, and then start exporting to Southeast Asia as well as Western countries, it becomes an example of a product cycle originated from Southeast Asia as long as flavored tuna concerned.

Another example of exporting ready-to-eat tuna is a product produced in Thailand and sold in Germany. In a supermarket in Frankfurt, tuna chunks in Pikanter dressing was sold under the name of a German cannery, la Perla. For the first place, Germany imports significant volume of caned tuna from Thailand. Therefore, Thailand is exporting some value added product, a flavored tuna, to a country where it used to export standardized product, tuna as cooking material. Such transformation of the exported product is interpreted as the change of traded good to more value added type as the exporting country experience further industrialization<sup>xi</sup>. It can be explained along the theory of unbalanced growth.

**Table 2 Development of Style, Flavor & Trade of Canned Tuna in Southeast Asia**

Style		Flavor	Export Destinations	Domestic Consumption	Other Development Directions
Canned Tuna as Cooking		Oil, Brine, Water	USA, Europe		☆Still remains as major product, particularly for catering ☆Possibility of substituting with universal taste (traditional), even for catering ☆Domestic Consumption in export-oriented countries may not occur since Tuna have not been locally consumed except particular coasts
	Universal taste: Traditional	Mayonnaise, Mayonnaise & Vegetables		Thailand	☆Combined with crackers, drink, napkin and spoon as complete plate for children's snack ☆Development of other type of container, e.g. aluminum pouch ☆Utilization of other material such as Salmon (new fish for Tropical residents) and Chicken (tastes similar but less expensive)
Canned Tuna as Ready-to-eat Food	Local Cuisine	Adobo		Philippine	☆Development of domestic consumption started as the way of selling rejected materials
		Nam prik		Thailand	☆Fishy Dark meat is cooked with colored & spicy sauce to erase meat color and taste
		Sambal Goreng		Indonesia	☆Canned Sardine and Mackerel were preceded, then imitated
		Pikante Dressing	Germany		☆Indonesian cans have many variety including sauce of fried rice.
		Black Beans	China		☆Canned Tuna has not been produced in China
	Universal taste: New	Smoked	Australia, New Zealand		☆An application of smoked salmon
		Healthy food that contains tuna	Australia, New Zealand, USA, Europe		☆Complete, low calorie, nutrition balanced snack or light meal ☆Dry and easy to handle

### Ready-to-eat tuna, universal taste, traditional

Another type of flavor in the classification of ready-to-eat tuna is tuna with mayonnaise. Vegetables are/are not added. Mayonnaise will be the most popular item to be mixed with tuna. This type of can is value added in the sense that it adds in an ingredient in advance to make the product ready-to-eat. We named it as universal taste since tuna with mayonnaise is popular way of cooking universally.

Cans of tuna with mayonnaise were sold in Thailand: some were merely named as sandwich spread but others were packed with crackers and/or crackers and a drink. The package is decorated with bright color and Anime characters being intended as children's snack. Some spreads were packed in a aluminum-laminated pouch. Other spreads use chicken and salmon instead of tuna. We can observe an expansion of variety within the genre of traditional taste.

It is very likely that a similar product is produced and exported to Western countries that eventually substitute, to some extent, tuna as cooking material. It is a natural development that Southeast Asian countries will adopt<sup>xiii</sup>, and if it does, such phenomenon is, again, explainable by the theory of unbalanced growth.

### Ready-to-eat tuna, universal taste, new flavor

We expect that a new flavor will be developed by manufacturers of Southeast Asian countries forwarded to Western nations as the market for canned tuna as cooking material is taken over by succeeding countries. Examples of ready-to-eat tunas other than mayonnaise that we named as new flavor are such as smoked tuna, drained tuna flake mixed with vegetables and rice. These canned tunas we purchased were all made in Thailand under the Australian brand and German brand. Although they are produced in



Southeast Asia and flavored to be ready-to-eat, it does not use any exotic flavor but rather it use light flavor familiar to everyone in the world. We identify such new flavor as universal taste but different from mayonnaise.

It is because they are apparently intended to be low calorie, nutrition balanced, appealing as healthy food and sophisticated package and appearance. The development of new product in such direction foresees the world market thus will be qualified as agribusiness that furnishes the potential to lead the country's food processing sector, food design as well as agriculture. The theory of unbalanced growth explains that some export product has spillover effect to related industry, then stimulates economic growth of the country. Further research and development of the universal taste with tuna will facilitate the growth path.

## SUMMARY AND CONCLUSION

In this paper, we examined the development process of canned tuna industry of three countries in Southeast Asia from a number of viewpoints. The development pattern of tuna canning industries can be well explained by the theories of multinational firms and economic development. According to the context, production in Southeast Asian countries once substituted that of Western countries but faced the competition and possible substitution by countries in Africa and Middle and South America.

Instead, they developed a new genre as ready-to-eat canned tuna. They exploited domestic market with the locally and universally flavored tuna and then started to exploit foreign market through the exploitation of a new market and replacement for less value added product. Flavor is also two directional. One is a local taste targeting on particular nation and the other is an universal taste targeting world consumers. The food developed in different ways; new containers as Aluminum laminated pouch, combination with crackers and crackers with drink, and a line of product using the same flavor but replacing tuna to chicken and salmon. Such multi-directional development is a symptom that Southeast Asian countries are stepping forward to establishing a self-domain where they research and develop new products by themselves: the stage of imitation is passed through.

Even though the analysis we made is limited to a small domain such as food processing industry that uses tuna as main ingredient, it has a potential to lead internal growth through a spillover effect. Continuous challenge to international competition works as one of the driving force for internal economic growth of the country.

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## ENDNOTES

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<sup>i</sup> We refer Hoogvelt(1987)p.179, Kojima(1981)p.236, Kimura(2000)p.228.

<sup>ii</sup> We refer Kojima(1981)pp.33-34, Kimura(2000)pp.48, 50, and 224.

<sup>iii</sup> We refer Akamatsu(1965)pp.170-172, Kimura(2000)pp.218-220, Kojima(1981

<sup>iv</sup> In some country such as Australia, it disappeared.

<sup>v</sup> It is an accepted opinion that Japanese economic growth was let by MITI (Ministry of Industry and Trade)'s industrial promotion policy targeting on the specialized industry. Promotion and the growth of Thailand's tuna canning industry may be another example of such policy oriented growth path although we do not further discuss it in this paper.

<sup>vi</sup> The quality of tuna for sashimi forwarded to Japan is also appreciated well. It can be verified by the fact that average price of Yellowfin tuna of Indonesia is higher than the average.

<sup>vii</sup> According to Thai statistics, 10% of production is allocated to Thai market.

<sup>viii</sup> On the can labels of company C in the Philippines targeting on domestic market, it states as "Export Quality". This is a reversal way of proof implying that some product for domestic market is not reaching export quality.

<sup>ix</sup> Based on the interviews from V. Aprieto(September 1997) and a manager of a company S (September 1999) in the Philippines. It is uncertain yet whether similar development path was taken in Indonesia and Thailand.

<sup>x</sup> When author visited company S in September 1999, the manager showed us a sample can that they were suggesting to German client. When author visited a supermarket in Beijing in August 2003, the product, tuna with black bean, was sold although the manufacturer was not S but C. This can and other ready-to-eat canned tuna are flavored like Chinese dishes.

<sup>xi</sup> In terms of price of a can, however, it is not value added. A canned tuna as cooking material of the same bland costs as much as a flavored tuna.

<sup>xii</sup> It may have already existed although we did not have opportunities to observe in Western countries.