

COMPARATIVE ADVANTAGE AND COMPETITIVE STRENGTH OF THAI CANNED TUNA EXPORT IN THE WORLD MARKET: 1982-1998

Thongdee Kijboonchoo ¹ and Kunnatee Kalayanakupt ²

Abstract

This paper attempts to investigate Thailand's comparative advantage and competitive strength in exporting canned tuna to the world market between 1982 and 1998. Revealed comparative indices and market shares of major exporting countries in the world are employed. In addition, these measures are calculated for major exporters in various major markets. The findings show that Thailand, though the largest exporter of canned tuna in the world market between 1982 and 1998, its comparative advantage has been

decreasing in all the studied periods. Its market shares in terms of export volume and value have fallen significantly in the studied periods. The paper also compares Thailand's comparative advantage and competitive strength to other major competitors exporting canned tuna.

INTRODUCTION

This study attempts to measure the comparative advantage and competitive

¹ Thongdee Kijboonchoo, Ph.D., Faculty of MBA, Assumption University

² Kunnatee Kalayanakupt, MBA, Assumption University

strength of Thailand's canned tuna industry in exporting to the world market by comparing with the main competitors. Hence, the export performance index is the most suitable and it is applied to evaluate the comparative advantage of Thailand and its main competitors. However, in evaluating the competitive position, competitive strength and the market trend of the Thai canned tuna in the world market as well as the important export markets, the market share of Thailand and those of the main competitors in each market are calculated. In addition, to correct for year-to-year fluctuations in intertemporal comparisons of indicators

such as RCA index, Market share, the average value of the required figures will be calculated for all periods, such as 1982-1986, 1987-1991, 1992-1995 and 1996-1998.

The revealed comparative advantage is the most widely used model among researchers. Here, the export performance model is applied in order to evaluate the comparative advantage of one country in exporting a particular commodity to the world market. Thus, the model can be stated in an equation form as in Balassa (1977), Chaowagul, *et al.* (1997), and Noiganan (1999):

$$RCA_{ik} = \frac{X_{ik} / X_{wk}}{X_i / X_w} , \quad (1)$$

Where RCA_{ik} = revealed comparative advantage index of country i in exporting product k ,

X_{ik} = country i 's export value of product k ,

X_i = total export value of country i ,

X_{wk} = total world's export value of product k ,

X_w = total world's export value.

In this study, k = canned tuna, and i = the studied countries which are Thai canned tuna's major competitors in the world market and Thailand.

If the value of RCA_{ik} is *greater* than 1, it means that country i will have

comparative advantage in exporting product k to the world market. Further, country i would have a greater comparative advantage in the production and export of product k if the value of revealed comparative advantage of product k is larger or

higher. On the other hand, if the value of RCA_{ik} is *smaller* than 1, it means that country i will have *comparative disadvantage* in exporting product k to the world market. Moreover, country i would have a greater comparative disadvantage in the production and export of product k if the value of revealed comparative advantage of product k is smaller or lower (Balassa, 1989: 45; Pitts and Lagnevik, 1997: 3; Chaowagul, *et al.*, 1997: 2-2; Kijboonchoo, 2000: 126; Noiganan, 1999: 9).

RCA index of a country is bound to be affected by changes in the exchange rate of the country's currency. To avoid or minimize this effect, this study has employed only US dollar values for export in the model to calculate RCA indices of Thailand and other competitors in the period 1982-1998. Thus, by comparing the computed RCA indices of Thailand and other competitors in the world market, the comparative advantage of Thailand in exporting the canned tuna can be evaluated better. In addition, in order to evaluate the competitive positions and

the competitive strength of Thailand and its main competitors in the world market better, the calculation and comparison of each country's market share should be done.

In the case of the world market, the market share can be computed from dividing one country's total export value or volume of the canned tuna to the world market in a particular year by the world's total export value or volume of the canned tuna in the same year. In the case of the particular market, the market share can be computed from dividing one country's total export value or volume of the canned tuna to the particular market in a particular year by the world's total export value or volume of the canned tuna to the same market in the same year. A fraction is then multiplied by 100 for the ease of presentation. However, for this study, the average export volume and export value during the particular period will be calculated to correct the year-to-year fluctuations for each measure of market share. The model can be stated in an equation form below as:

$$\text{Market Share} = \left(\frac{X_{ik}}{X_{wk}} \right) \times 100, \quad (2)$$

Where X_{ik} = country i 's export volume/value of product k to the world market or a particular market during a particular period,

X_{wk} = the world's total export volume/value of product k to the world market or the particular market during the particular period.

Analysis of Computed RCA Indices and Market Share

From the analysis of computed RCA indices of major countries that exported canned tuna to the world market from 1982-1998, Senegal, Fiji, Solomon Islands, Cote d'Ivoire and Thailand have very high RCA indices in the period 1982-1986. Senegal has the highest RCA index which is 292. Fiji and Solomon Islands are ranked second and third, and their RCA indices are 134 and 127, respectively. Cote d'Ivoire is ranked fourth and its RCA is 64. Thailand is ranked fifth, and its RCA index is 58. Compared to different periods, Thailand's RCA indices show a declining trend. It increased to 70 in the period 1987-91, and it started to fall in the latter periods. It falls to 39 and 27 in the period 1992-95 and 1996-98, respectively; it was ranked tenth in the late 1990's. Obviously, Thailand has been losing its comparative advantage and its rank in all studied periods. Senegal and Fiji have experienced a declining RCA index as Thailand in the same periods; they were ranked fourth and sixth, respectively in the period 1996-98. Except Solomon Islands and Cote d'Ivoire, they had an increasing value of RCA index in the same periods. They were ranked second and fifth, respectively in the period 1996-98.

It is obvious that some canned tuna exporting countries had a declining trend of RCA index in different periods between 1982 and 1998. They were

Fiji, Senegal, the Philippines, Malaysia, Costa Rica and Madagascar and Thailand. Figure 1 shows that Senegal experienced the worst among these countries. Its RCA index fell from 292 in the period 1982-86 to 257 in the period 1987-91 and 145 in 1996-98. Fiji, Thailand, the Philippines show a gradual declining trend. Only Madagascar shows a different trend. It shows a big jump of RCA index in the period 1992-95 and began to fall in the period 1996-98. Critically, the Philippines' RCA indices had declined gradually since the period of 1987-91; nonetheless, it could maintain its comparative advantage in exporting the canned tuna to the world market during all periods. In consonance with the decline of its RCA indices, its RCA index's rank also fell from the seventh rank during the first two periods to be in the eleventh and the twelfth rank during the last two periods. Malaysia experienced a severe decreasing trend; its RCA index shows some disadvantage in exporting the canned tuna to the world market in the period of 1992-95. Not surprisingly, its RCA index's rank also reduced from the eleventh rank during 1982-86 to be the thirteenth and seventeenth rank during the period 1987-91 and 1992-95, respectively.

On the contrary, the competitors experiencing the increases of their RCA indices were Seychelles, Spain, Ecuador, Ghana and Mauritius, among others (see figure 2). These countries were able to maintain their comparative

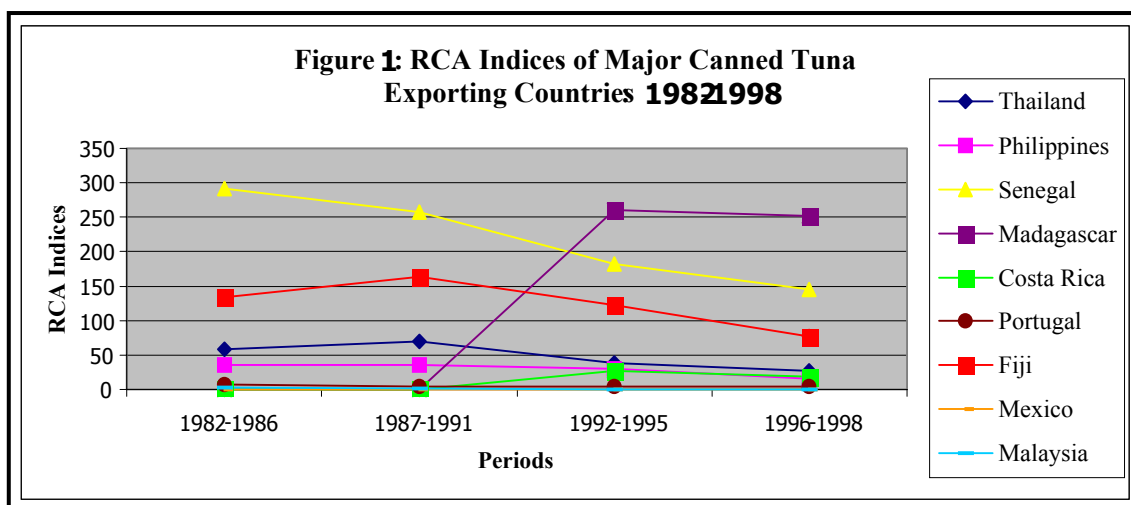
advantage in exporting the canned tuna to the world market during all periods. Among these countries, Seychelles made the most striking example because its RCA indices had increased continuously. They were 638 and 909 in the periods 1987-91 and 1992-95, respectively, and it increased to 1450 in the period 1996-98. Seychelles could maintain its position as the country with the highest value of RCA index in all the studied periods. For Ecuador, its RCA index's rank fell from the eighth rank during 1982-86 to be the ninth and tenth rank during 1987-91 and 1992-95, respectively. It recorded the ninth rank during 1996-98. Similarly, Spain's RCA indices had also grown continuously since the period of 1987-91. However, its RCA index's rank fell from the twelfth rank during 1982-86 and 1987-91 to be the sixteenth rank in the third period 1992-95, and finally moved up to the fourteenth rank during 1996-98. Ghana and Mauritius are the other two countries experiencing an impressive increasing trend of their RCA, and they could maintain their rank of comparative advantage in the studied periods.

Côte d'Ivoire and Solomon Island's RCA indices were also able to maintain the comparative advantage and their RCA indices also showed an upward trend. Côte d'Ivoire could maintain its position as the country having the fifth highest value of RCA index in all periods since the period of 1987-1991. Similarly, Solomon Islands could maintain its position as the country

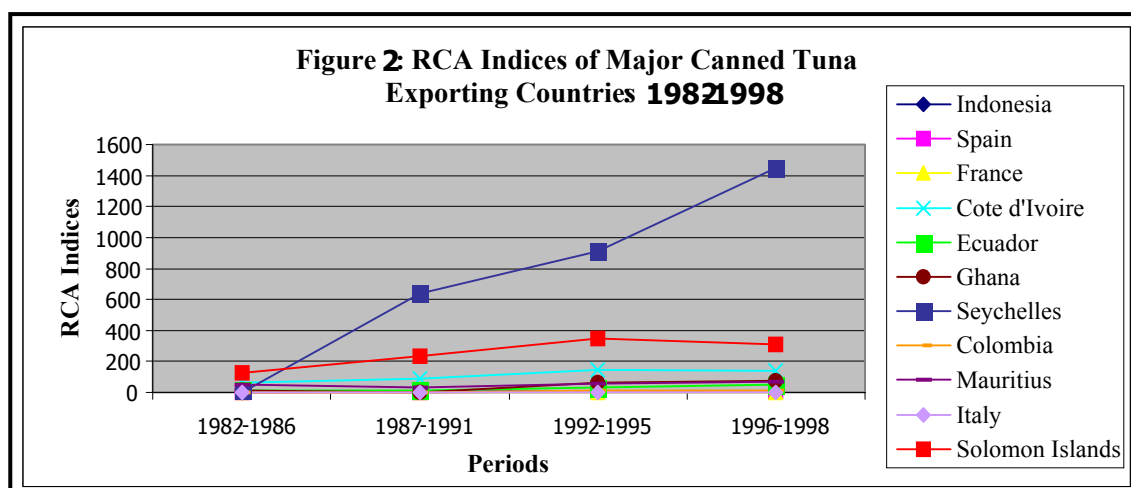
having the second highest value of RCA index, which it held for two periods since the period of 1992-1995.

Portugal, Indonesia and Colombia were the countries having unstable trend of their RCA indices; nonetheless, they were all able to maintain their comparative advantages. Indonesia could improve from having comparative disadvantage in the first period of 1982-1986. Since the period of 1987-1991, it began to have the comparative advantage, and its RCA indices did not fluctuate much during the last three periods. Similar to Indonesia, Colombia had the comparative disadvantage during 1987-1991; but its RCA index grew dramatically until it gained comparative advantage in the period of 1992-1995.

France, Italy and Mexico were the countries having the comparative disadvantages in all studied periods. However, both France and Italy's RCA indices showed the increasing trend. Mexico's RCA indices were the lowest in all studied periods (see figure 1 and 2).



Source: Calculated from International Trade Statistics from 1982-1998.



Source: Calculated from International Trade Statistics from 1982-1998.

There are four largest exporting countries, in terms of export volume, that accounted for a large proportion of the global export. They are Thailand, Philippines, Côte d'Ivoire and Senegal (see figure 3). It is found from the study that Thailand remained the world's

largest exporting country of canned tuna in terms of export volume in all studied periods. On an annual average, Thailand exported more than 200,000 metric tons between 1987 and 1998. However, its market share in terms of export volume declined consecutively

for two periods since the period of 1992-1995. Its market share fell from 9.37% during 1982-1986 to 2.83% during 1996-1998. Furthermore, in consonance with the decline of its market share, its position also fell from the fourth rank during 1982-86 to the eighth rank during 1996-98. Fiji is another country whose market share had declined gradually since the period of 1987-1991, and its position fell from being the fifth rank during 1982-1986 with a market share of 1.88% to the seventeenth rank during 1996-1998 with the market share of 0.95%. Similar to Fiji, Malaysia's market share fell gradually from 1.76% during the period of 1982-1986 to only 0.56% during the period of 1992-1995. Moreover, its position also fell from the eighth rank during 1982-86 to the nineteenth rank during 1992-95. Another competitor experiencing the downward trend of their market shares like Thailand, Senegal, Fiji and Malaysia was Madagascar.

Major competitors experiencing a larger market share in terms of export volume and also gained better rank were Spain, Indonesia, Ecuador, France, Seychelles, Ghana, Mauritius, Costa Rica, Italy and Mexico (see figure 4). Among these, Spain, Indonesia, Ecuador and France had made the most progress. Spain's market share climbed up in all periods; it increased from 1.85% during the period 1982-1986 to 7.75% during the period of 1996-1998. Subsequently, its position moved up from the seventh

rank during 1982-86 to the fourth rank during the period 1996-98. Ecuador's market share also climbed up gradually during the last two periods of 1992-1995 and 1996-1998; its position moved up from the ninth rank during 1982-86 with the market share of 1.48% to be the sixth rank during 1996 with the market share of 4.59%. Interestingly, Indonesia could increase its market share from only 0.78% in the first period to 4.84% during the last period. In addition, its position also moved up from the thirteenth rank during the first period to the fifth rank during the last period. Similarly, France's market share also climbed up gradually during the last two periods; however, its position moved up from the tenth rank during 1992-1995 to the seventh rank during 1996-1998. Seychelles and Ghana had a gradual increase in market share as well as gaining in their rank.

The Philippines Côte d'Ivoire, Colombia, Portugal and Solomon Islands were the countries experiencing the unstable trend of their canned tuna's market shares in terms of export volume. The Philippines could maintain its position as the world's second largest exporter of canned tuna in terms of export volume in all periods. However, its market share declined from 11.09% during 1982-1986 to 9.63% during 1996-1998. Côte d'Ivoire remained the world's third largest exporter of canned tuna in terms of export volume during all periods. However, its market share also declined

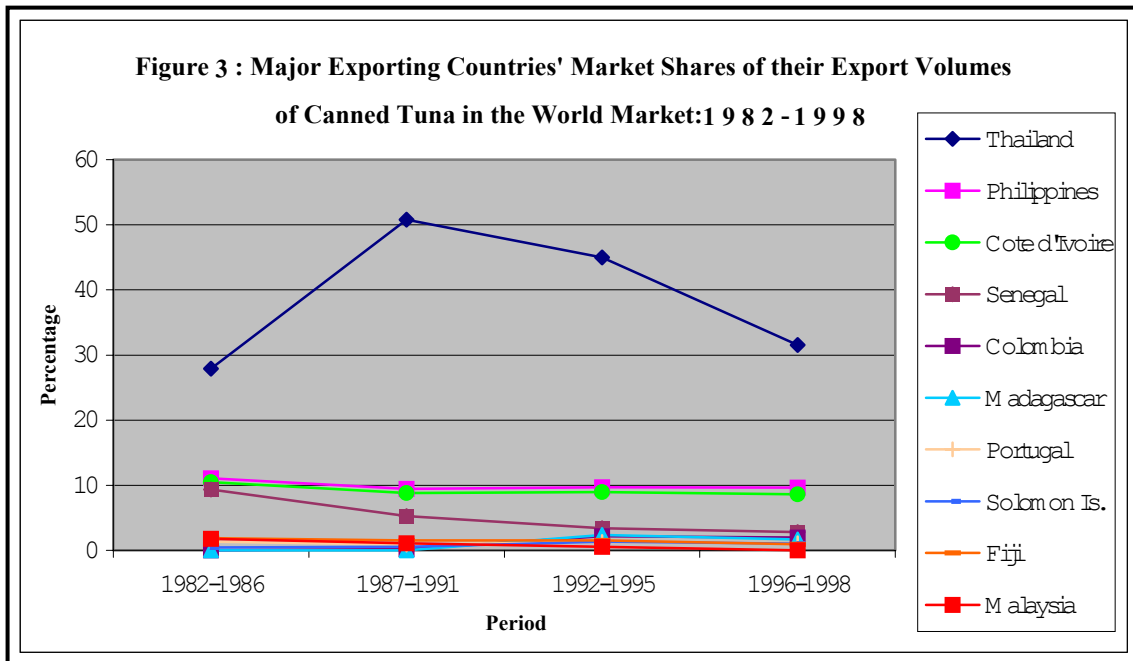
from 10.47% during 1982-1986 to 8.61% during 1996-1998 (see figures 3 and 4).

When the market share in terms of export value is considered, the study shows that Thailand, Côte d'Ivoire, the Philippines and Spain are the four largest exporting countries. Thailand could maintain its position as the largest exporter of canned tuna in all periods (see figure 5). Nevertheless, its market share started to decline in the period of 1992-1995. Its market share declined from 45.72% during 1987-1991 to 28.38% during 1996-1998. Other countries experiencing the downward trend like Thailand were Senegal, Costa Rica, Madagascar, Fiji and Malaysia. Senegal's market share had declined consecutively for the last three periods; its market share fell from 9.40% in the period of 1982-1986 to 2.56% during the period of 1996-1998. Its position also fell considerably from the second rank during the first period to be in the ninth rank during 1996-98. Fiji's market share also decreased continuously from 2.39% in the first period to be only 0.90% during 1996-98; its rank in the world market also fell from the sixth largest exporter of canned tuna during 1982-1986 to the seventeenth largest exporter of canned tuna during 1996-1998.

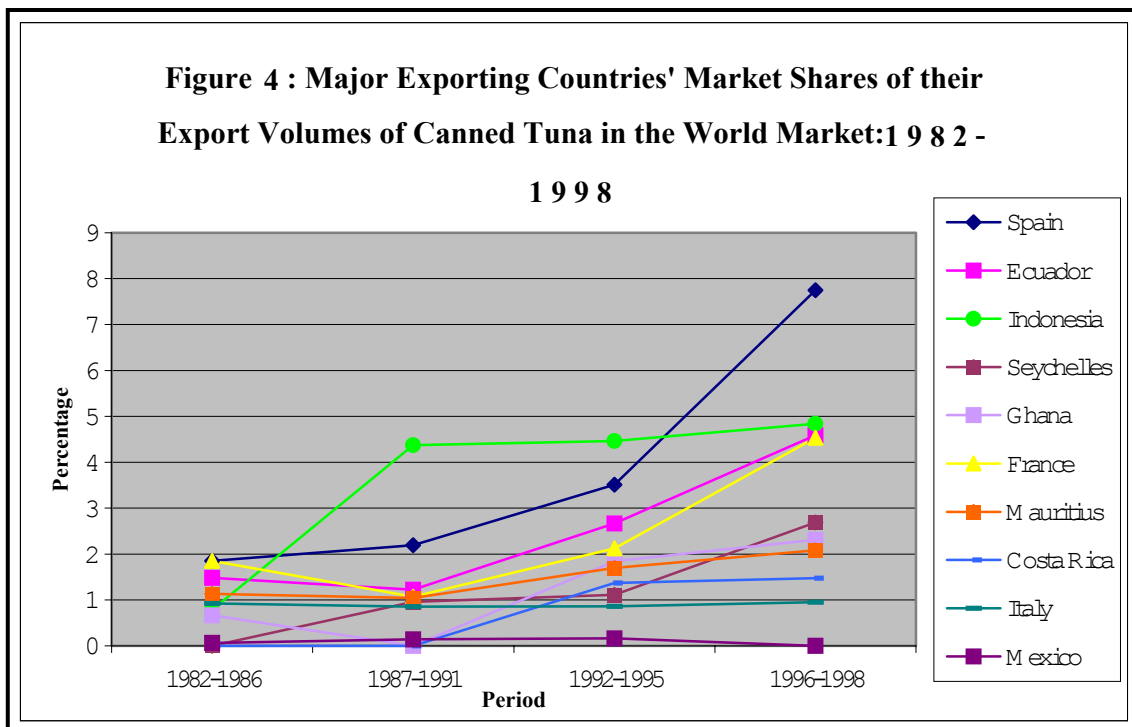
In contrast to Thailand, Côte d'Ivoire, Spain, Ecuador, France, Indonesia, Seychelles, Ghana, Mauritius and Mexico were the countries experiencing an increasing

trend of their market share (see figure 6). For Côte d'Ivoire, unlike its export volume, its market share in terms of export value had grown consecutively for the last two periods of 1992-1995 and 1996-1998. Its market share climbed up from 8.32% in the period 1987-1991 to 10.96% during 1996-1998; its position in the world market remained the world's second largest exporter. Spain could increase its market share in all the studied periods; its market share climbed up significantly from 2.69% during 1982-1986 to 10.50% during 1996-1998. Its position in the world market moved up from the fifth rank during the period 1982-86 to the third rank during 1996-98. For France, its market share had increased consecutively during the last two periods of 1992-1995 and 1996-1998; its market share climbed up considerably from 1.42% during 1987-1991 to 4.86% during 1996-1998. Its position in the world market also moved up from the tenth rank during the second period to the fifth rank during the last period.

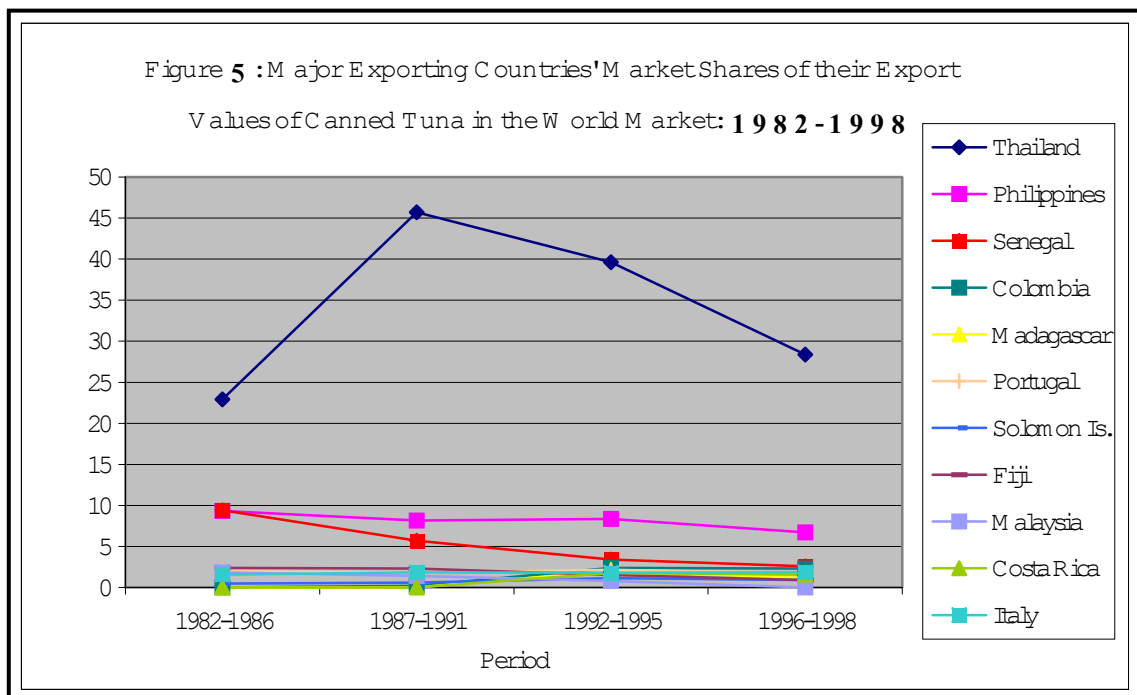
Meanwhile, the Philippines, Colombia, Italy, Portugal and Solomon Islands were the countries experiencing unstable trend of their market shares in terms of export value. After maintaining its position as the world's third largest exporter of canned tuna for three periods since the period of 1982-1986; however, the Philippines' position fell to the fourth rank 6.71% of the world market share during 1996-1998 (see figure 5).



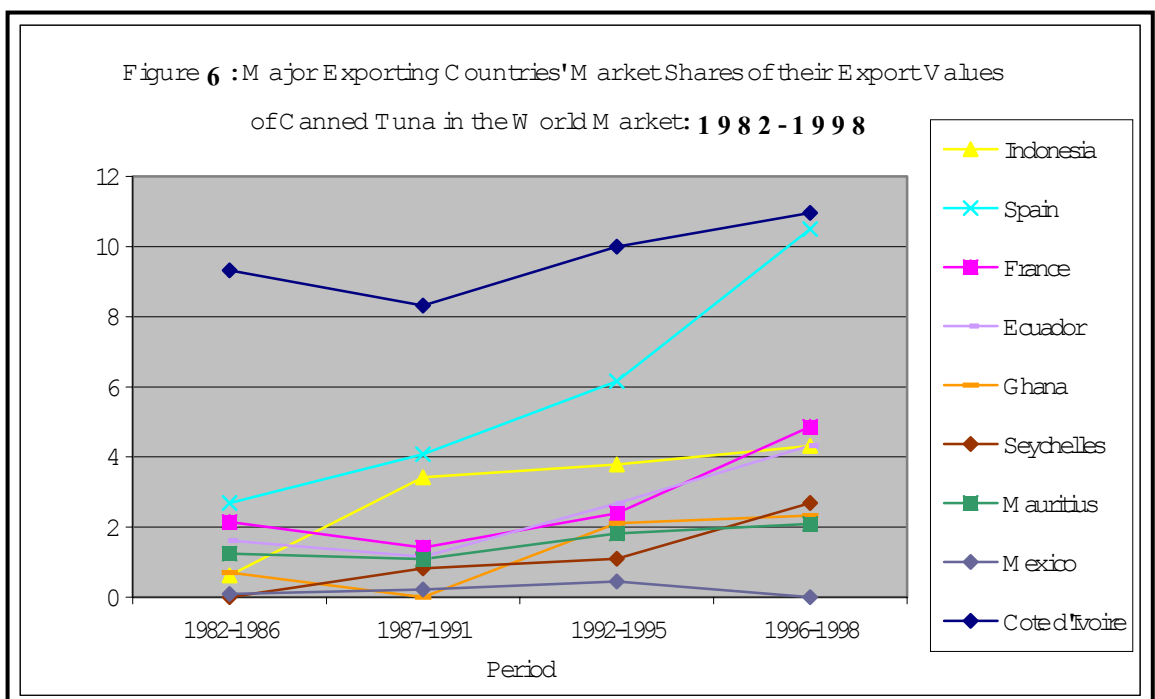
Source: Calculated from International Trade Statistics from 1982-1998.



Source: Calculated from International Trade Statistics from 1982-1998.



Source: Calculated from International Trade Statistics from 1982-1998.



Source: Calculated from International Trade Statistics from 1982-1998.

The study also attempts to measure and evaluate Thailand's competitive strength in important export markets; namely, the United States, the European Union as a whole, United Kingdom, Germany, Japan, Canada, Australia and Egypt, by calculating the market shares of the Thai canned tuna and comparing with competitors in each market. The periods covered in this section are during 1995-1998 due to the availability of statistical data. The measurement and analysis are done on a year-on-year basis.

From the computation, it is found that the United Kingdom, Germany as well as the whole European Union are the markets against which the Thai canned tuna's competitive strength has been declining gradually due to intense tariff and non-tariff barriers in these markets. As more intense tariff and non-tariff barriers exist in these markets, Thailand's export of canned tuna to these markets have been decreasing continuously. The Thai canned tuna's competitive strength and potential in the Japanese market is also decreasing while the competitive strength of Indonesia in the Japanese market is increasing and it has become Thailand's major competitor. For the US market, the competitive strength of Thai canned tuna started to increase. In addition, the market growth of the Thai exporters has been increasing. Thus, this indicates that competitive strength and potential of the Thai tuna export is increasing. Markets in Canada, Australia and Egypt are dominated by

the Thai exporters, Thai competitive strength and potential are very strong in these markets.

However, as the **Free Trade Area of the Americas** or **FTAA** will complete negotiations for the agreement by 2005 (www.alca-ftaa.org), there is a high probability that Ecuador and Mexico, the two main tuna producing and exporting countries in America continent, will be able to increase their canned tuna exports to other American countries like the United States and Canada. Therefore, it is wise for the Thai canned tuna exporters and/or producers to spread their finished products to other markets besides the United States and the European Union; for example, Middle East countries, Eastern European countries, South American countries and South Africa.

Conclusion and Recommendation

Thailand could maintain its position as the world's largest exporter of canned tuna in terms of both export volume and value in all the studied periods: 1982-98. It had comparative advantage in exporting the canned tuna to the world market in all periods; its RCA indices were on the decreasing trend. Its market shares both in terms of export volume and export value also declined gradually in all periods. Thus, Thailand's competitive strength and potential decreased as well whereas Spain and Ecuador, Thailand's major

competitors, recorded a continual growth of their comparative advantages and market shares in all periods. Competitive potential of the Philippines and Indonesia were lower. Côte d'Ivoire, Mauritius, Ghana, Seychelles and other ACP countries have become Thailand's crucial competitors; their competitive potentiality is relatively high in the European Union. As a consequence of tariff and non-tariff barriers, particularly in the European Union, the Thai canned tuna lost its market share in the European Union to the ACP countries. They have the privilege of tariff exemption. Former colonies of the European countries pay lower tariff of 18%; whereas Thailand has to pay as much as 25%. Meanwhile, most competitors possess better tuna resources and efficient high-sea fleet for catching tunas which help lower production cost. The study finds that Thailand's comparative advantage, competitive strength and competitive potentiality in exporting the canned tuna to the world market have been declining continuously.

Possible ways to solve the Thai canned tuna's problems and obstacles should be done by both the government sector and private sector. This paper has made the following suggestions.

First, the problem of the lack of domestic raw material should be eliminated or reduced and the Thai government and private sector should join hand to improve the efficiency of

the Thai tuna industry. The Thai canned tuna exporters and/or producers should upgrade their fleets and form ventures with foreign companies who have expertise in the field of deep-sea fishing (www.thailand.com/IndustryOutlook/Seafood). The government should also establish the domestic deep-sea tuna fishing industry to replace imports. Both the government and private sectors should cooperate with local investors in countries, whose marine-water territories around Thailand, such as Indonesia, the Philippines, Vietnam and Myanmar, so the Thai fishermen can catch tunas in these countries legally and conveniently. A training program should also be provided to the Thai fishermen to increase the efficiency of Thailand's deep-sea tuna fishing industry.

Secondly, Thailand may not gain comparative advantage from low labor cost anymore. Hence, it is wise for the Thai canned tuna producers to upgrade their plants and production procedure to reduce their cost. The relocation of the production facility to other countries where there are a lot of tuna resources and having lower labor costs than Thailand should be encouraged. The ACP (African, Caribbean and Pacific) countries are the most interested countries for the Thai canned tuna producers to invest there, as these countries are currently entitled to the privilege of tariff exemption from the European Union. Moreover, these countries' marine-water territories also possess sufficient tuna resources and

they also have relatively cheaper labor cost.

Thirdly, the Thai canned tuna producers and/or exporters should build up their own brands (National brand) and trademarks in order to create brand awareness, brand recognition and brand loyalty. Thus, they can add more value to the product as well as increase the potentiality in competition.

Fourthly, as a result of emerging regional integration and international organizations, there are ever more intense tariff and non-tariff barriers in today's international trade. Therefore, the Thai canned tuna exporters and/or producers should adjust their plants, their products and their production procedures to meet the importing countries' standards and import regulations.

Fifthly, the related government unit should provide more information to the Thai canned tuna producers and/or exporters regarding markets, competitors, the new production technology, among others. In addition, the government should be the representative of the Thai canned tuna exporters and/or producers in negotiating with the importing countries in order to provide the Thai exporters with fair trade.

Sixthly, it is wise for the Thai canned tuna exporters and/or producers to have the web site in order to provide information or even B-to-B utility to

customers. The advance of Internet and E-Commerce technologies can help them achieve a wider distribution channel and can access to untapped markets easier and quicker. This is a great opportunity for them to sell more via Internet. Additionally, the government should provide support to the exporters regarding training or even giving services, such as Web Development, E-Commerce service.

All in all, the Thai canned tuna exporters and/or producers should improve their operations to provide high quality and reasonable priced products, including new innovations such as "tuna in a pouch" for consumers. Furthermore, expanding market to other regions, such as Middle East, Eastern Europe, South America and South Africa would help decrease the dependency on the US market.

REFERENCES

1. Balassa, B. (1989), *Comparative Advantage, Trade Policy and Economic Development*. New York: Harvester Wheatsheaf, pp. 1-104.
2. Boonmasu, A. (1998), "An Analysis of Export of Thailand's Canned Tuna," An Individual Study, Kasetsart University, Thailand.
3. Carbaugh, R. (1998), *International Economics*. Cincinnati, OH: South-Western College, pp. 8-22.
4. Chaowakul, M. et al. (1997), "Strengthening Competitiveness of Thai Food Processing Industry," Research, Chulalongkorn University, Thailand.
5. Deardorff, A. (1994), "Exploring the Limits of Comparative Advantage," *Weltwirtschaftliches Archiv*, Vol. 130 (1), pp. 1-19.
6. FAO Fishery Statistics: Commodity & Catches and Landing, 1990-1998.
7. Hillman, A. (1980), "Observations on the Relation between 'Revealed Comparative Advantage' and Comparative Advantage as Indicated by Pre-trade Relative Prices," *Weltwirtschaftliches Archiv*, Vol. 116 (1-2), pp. 315-321.
8. Husted, S. and M. Melvin (1997), *International economics*. MA: Addison-Wesley, pp. 60-102.
9. *International Financial Statistics Yearbook*, 1982-1998.
10. *International Trade Statistics Yearbook*, 1982-1998.
11. Kijboonchoo T. (2000), "Revealed Comparative Advantage and the Thai Exports in the Year 2000," *Aphait Journal*, Vol. 7 (1), pp. 118-140.
12. Kotler P. (1994), *Marketing Management: Analysis, Planning, Implementation, and control*. New Jersey: Prentice-Hall International, pp. 70-78 & 744-746.
13. Lindert, P. and T. Pugel (1996), *International economics*. Chicago: Irwin, pp. 27-51 & 95-107.
14. Magee, P. et al. (1981), "Trade Theory and Canada's Comparative Advantage," in Dhawan, K.C., H. Etermad and R.W. Wright (ed.), *International*

- Business: A Canadian Perspective, Ontario: Addison-Wesley Publishers, pp. 18-47.
15. Noiganan, M. (1999), "Comparative Advantage of Thai Commodities Export during 1988-1996," Master's Thesis, Assumption University, Thailand.
 16. Pitts, E. and M. Lagnevik (1998), "What Determined Food Industry Competitiveness?," in Traill, B. and E. Pitts (ed.), *Competitiveness in the food industry*, London: Blackie Academic & Professional, pp. 1-16.
 17. Porter, M. (1998), *On Competition*. Boston: Harvard Business School Pr., pp. 21-38.
 18. Pudnot, S. (1994), "Domestic Resource Cost of Canned Tuna Industry in Thailand," Master's Thesis, Kasetsart University, Thailand.
 19. Rugman, A. and R. Hodgetts (1995), *International Business: A Strategic Management Approach*. New York: McGraw-Hill, pp. 6-185.
 20. Salvatore, D. (1995), *International economic*. London: Prentice Hall International, pp. 23-46 & 109-175.
 21. Statistics Report of Department of Business Economics, Ministry of Commerce, 1990-2000.
 22. UN Microfilms, 1995-1998
 23. United Nations Industrial Development Organization(1982), "Changing Patterns of Trade in World Industry: An Empirical Study on Revealed Comparative Advantage," Vienna: United Nation Publication, pp. 3-30.
 24. www.atuna.com
 25. www.foodmarketexchange.com
 26. www.globefish.org
 27. www.fao.org