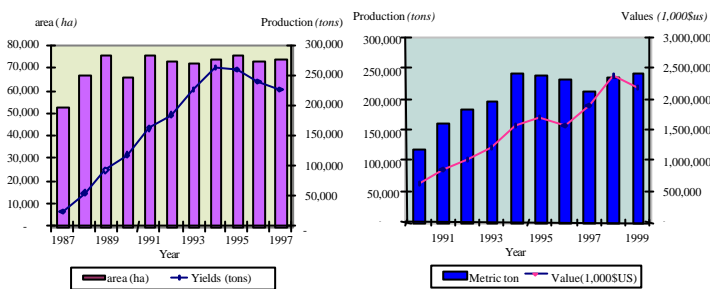


Export Performance of Thai Frozen Shrimps

Introduction

Thailand is now the world's leading exporter of shrimp products, supplying over 20 percent of the world trade in shrimps and prawns. In 1999, export of farmed shrimps earned Thailand US\$2.2 billion (at an exchange rate of 1 US\$= 40baht).

However, the Thai shrimp industry is beginning to face a number of obstacles in the world market, such as stronger competition, trade policies and non-trade policies of major importing countries in particular.



Objective

To reveal Thai shrimp export performance and estimate the degree of comparative advantage of Thai frozen shrimp with those of other competitors in major markets.

Methodology

The two widely used approaches of measurement comparative advantage was selected. First the domestic resource cost (DRC) method was selected to estimate degree of comparative advantage in production. Second the revealed comparative advantage (RCA) method was used to provide insights into the export performance. After then the stability of Thai frozen shrimp export in major markets will be examined by using Instability Index (I).

I. The Domestic Resource Cost: DRC

DRC was calculated by using Policy Analysis Matrix (PAM) of which production inputs are classified as tradable inputs and non-tradable inputs as shown below.

| | Output (1) | input | | Profit (4) = (1)-(2)-(3) |
|-----------|---------------|--------------|------------------|-----------------------------|
| | | Tradable (2) | Non-tradable (3) | |
| Private | Y_P | X_{PT} | X_{PN} | P_P |
| Social | Y_S | X_{ST} | X_{SN} | P_S |
| Different | D_Y | D_T | D_N | D_P |

Source: Modified from Monke and Pearson, 1989

Inputs and output in the first row are calculated at actual market price, and shadow prices are used to evaluate the social opportunity cost of all inputs and output (second row). And the last row is different between the first row and the second row.

$$DRC = \frac{X_{SN}}{Y_S - X_{ST}}$$

The 1994/1995 shrimp production cost of major country producers in Asia Pacific from ADB/NACA (1998) and Ling et al. (1999) was used in this study. All input factors except shrimp feed, are assumed as domestic non-tradable. The conversion factor presented by the International Bank for Reconstruction and Development (1984) was used to normalize the market prices of inputs and output into shadow prices.

II. The Revealed Comparative Advantage: RCA

$$RCA_{ij} = \frac{X_{ij}^c / X_j^c}{M_i^c / M^c}$$

X_i^c = export valued of shrimp product i from country j to country c

X_j^c = export valued of all shrimp products from country j to country c

M_i^c = import valued of shrimp product i from all country of country c

M^c = total import valued of all shrimp products from all country of country c

If

$RCA_{ij} > 1$; the country reveals a comparative advantage in the trade of shrimp product i

$RCA_{ij} < 1$; the country reveals a comparative disadvantage in the trade of shrimp product i

$RCA_{ij} = 1$; the country reveals a comparative neutrality in the trade of shrimp product i

III. The Instability Index: I

$$I = \frac{\sum_{t=1}^N |100 (x_t - x_t') / x_t'|}{N}$$

$$x_t' = a + b_t$$

x_t' = export values in the year t

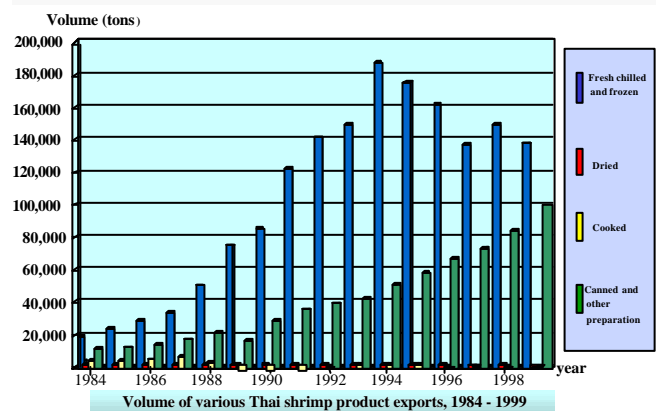
n = no. of years



Results

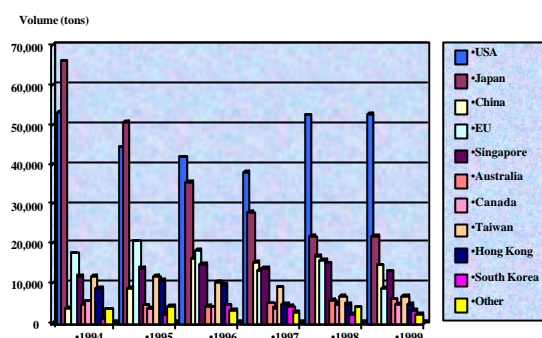
Exports status

Thailand export shrimp in various forms, including fresh chilled and frozen, dried, boiled, canned and other preparation. Fresh chilled and frozen are largest exported account more than 70 percent of all shrimp exports in each year. However, in the last 6 years fresh chilled and frozen shrimp tend to be declined, while other preparation shrimps tend to be increased. Most Thai frozen shrimp exports are Black Tiger Shrimps.



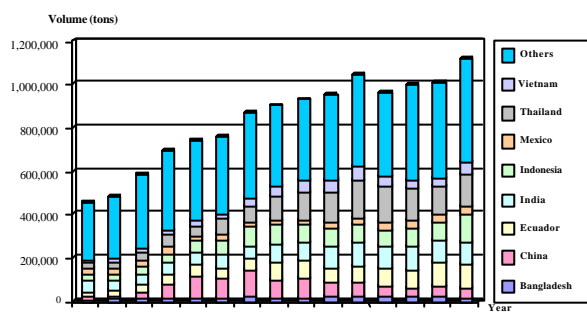
Major Markets

The major export markets of Thai frozen shrimp are USA and Japan, moreover are EU, China and Singapore. According to these 5 markets, Thailand exports around 1,000 million US\$ or around 80 percent of The valued of shrimp products in 1999.



Volume of Thai frozen shrimp exports classified by major markets, 1994 - 1999

The important competitors of Thai frozen shrimp exports in US market are Ecuador, Mexico, India and Indonesia. While, Indonesia, India, Vietnam and China are major competitors in the Japanese.



Volume of frozen shrimp exports classified by major exporters

Shadow price of inputs and outputs and DRC of major shrimp producers calculated by PAM

| Country | X_{SN} | Y_S | X_{ST} | DRC |
|-------------|----------|-------|----------|-----|
| China | 2.1 | 4.8 | 1.7 | 0.7 |
| India | 2.2 | 6.5 | 1.7 | 0.5 |
| Indonesia | 1.9 | 6.4 | 1.6 | 0.4 |
| Malaysia | 1.7 | 7.5 | 2.0 | 0.3 |
| Philippines | 3.0 | 7.0 | 2.3 | 0.6 |
| Taiwan | 4.0 | 12.3 | 1.5 | 0.4 |
| Thailand | 1.6 | 6.8 | 1.7 | 0.3 |
| Sri Lanka | 1.5 | 8.5 | 2.2 | 0.2 |

Source: Songsak et al., 2000

Conclusion

The result of DRC, based on 1994/1995 production year indicated that all 8 major country shrimp producers in Asian had a comparative advantage in producing. Moreover, Thailand, Sri Lanka and Malaysia had stronger comparative advantage relative to the other Asian countries studied. Also the results of RCA during 1991 - 1999 showed that the Thai frozen shrimp had a comparative advantage in exporting into the US market, while lost its in the Japan market during 1994 - 1998. It's a big task for stakeholders to recover this. The last, comparison of Instability Index showed that, in the last 10 years, the US market was a stable market of Thai frozen shrimp exports.

However, for DRC it should be noted that, this measurement did not take into account of the environmental costs of shrimp production. Whether and how the comparative advantage would change if it did. This offers an issue for future research.

Revealed Comparative Advantage Indices of major frozen shrimp exporters in US market

| Year | Ecuador | India | Indonesia | Mexico | Taiwan | Thailand |
|------|---------|--------|-----------|--------|--------|----------|
| 1990 | 0.9320 | 1.0065 | 0.9501 | 0.9164 | 0.7722 | 0.8943 |
| 1991 | 1.1447 | 1.1861 | 1.1978 | 1.2017 | 0.7136 | 1.1441 |
| 1992 | 1.0613 | 1.0552 | 1.0906 | 1.0976 | 0.6902 | 1.0555 |
| 1993 | 1.0453 | 1.0044 | 1.0390 | 1.0926 | 0.6399 | 1.0708 |
| 1994 | 1.0822 | 0.9802 | 1.0735 | 1.1016 | 0.6854 | 1.0833 |
| 1995 | 1.0930 | 1.0501 | 1.0420 | 1.0852 | 0.6942 | 1.0715 |
| 1996 | 1.0932 | 1.0537 | 1.0516 | 1.0837 | 0.5275 | 1.0804 |
| 1997 | 1.0955 | 1.0607 | 1.0588 | 1.0775 | 0.6510 | 1.0820 |
| 1998 | 1.0955 | 1.0193 | 1.0735 | 1.0892 | 0.4921 | 1.0850 |
| 1999 | 1.0409 | 0.9557 | 1.0065 | 0.9426 | 0.2817 | 1.0580 |

Source: Songsak et al., 2000

Revealed Comparative Advantage Indices of major frozen shrimp exporters in Japan market

| Year | China | Indonesia | India | Philippines | Thailand | Vietnam |
|------------------------------|--------|-----------|--------|-------------|----------|---------|
| Fresh, chilled frozen | | | | | | |
| 1994 | 1.0021 | 0.9955 | 1.0255 | 0.9823 | 0.9534 | 1.0194 |
| 1995 | 1.0184 | 0.9969 | 1.0437 | 0.9800 | 0.9169 | 1.0322 |
| 1996 | 1.0137 | 1.0017 | 1.0452 | 1.0064 | 0.8600 | 1.0320 |
| 1997 | 0.9944 | 0.9975 | 1.0575 | 1.0302 | 0.8089 | 1.0362 |
| 1998 | 0.9554 | 1.0145 | 1.0678 | 1.0593 | 0.7234 | 1.0321 |
| Cooked | | | | | | |
| 1994 | 0.6317 | 1.2619 | 0.0775 | 0.0000 | 2.9247 | 0.0000 |
| 1995 | 0.4224 | 1.1741 | 0.0000 | 0.0000 | 3.1484 | 0.0000 |
| 1996 | 0.2010 | 1.0668 | 0.0000 | 0.0000 | 4.5219 | 0.0000 |
| 1997 | 0.6267 | 1.1688 | 0.0000 | 0.0000 | 4.9355 | 0.1414 |
| 1998 | 1.2246 | 0.8526 | 0.0000 | 0.0000 | 5.6280 | 0.2335 |

Source: Songsak et al., 2000

Instability Index of Thai frozen shrimp in major import markets

| Markets | Instability Index | |
|---------|-------------------|-------------|
| | 1984 - 1998 | 1989 - 1998 |
| USA | 56.0 | 14.2 |
| JAPAN | 33.4 | 17.2 |
| EU | 40.4 | 14.7 |

Source: Songsak et al., 2000



Source : Sriboonchitta S., A. Wiboonpongse, P. Gypmantasiri and K. Thongngam (2000b). *Thai shrimp Export*. Research Report, Multiple Cropping Centre, Chiang Mai University.

Researchers : Songsak Sriboonchitta Aree Wiboonpongse, Prek Gypmantasiri Kuson Thongngam and Akrapong Untong, Multiple Cropping Centre, Chiang Mai University.