CHAPTER 4

ANALYTICAL RESULTS OVER THAILAND EXPORT TO JAPAN

4.1 Describes the Results of Analysis over Thailand Export to Japan

This chapter describes the results of analysis over Thailand export to Japan, which are divided into 4 parts as followings:

- The results derived from Constant Market Share (CMS) Model
- The results derived form Revealed Comparative Advantage (RCA) Index
- Other variables effecting the Thailand export to Japan
- Conclusion of the study

4.2 Analytical Results Over the Potential of Thailand Export to Japan Using the Constant Market Share Model or (CMS)

In this study, the Constant Market Share or CMS Model is applied to analyze the potential of Thailand export to Japan. The analytical results over the potential of Thailand export to Japan by using the CMS model. The data using calculate CMS model from appendices 1-5.

The export growth is divided as follows:

Growth effect – which is derived from the growth of Japanese market.

Commodity effect – which is derived from the Japanese demand of product. If this effect is positive, it means there is high demand in import country, which support the international trade between the import and export country to increase. If this effect is negative, it means there is low demand in import country, which import may be decrease.

Competition effect – which is derived from the competitiveness and the comparative advantage of Thailand in Japanese market. The positive value represents the increase of the mentioned status while the negative value represents the declination of it.

FINDING CMS MODEL

- ## 1. FROZEN SHRIMP (1995-1996)   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1995)	V^2 (1996)	r	V^1_t (1995)	V^2_t (1996)	rV^1_t	r_t	$r_t - r$
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/ (4)	(7)-(3)
1406310	1411039	.00336	50302	43404.5	169.02	-0.13712	-0.14048

(9)	(10)	(11)	(12)	(13)	(14)
$(r_t-r) V^1_t$	V^1_{ij} (1995)	V^2_{ij} (1996)	r_{ij}	$V^1_{ij}r_{ij}$	$V^2_{ij}- V^1_{ij}- V^1_{ij}r_{ij}$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
-7066.43	18594.6	12514	-0.327	-6080.4342	-0.166

UNIT: MILLION BAHT

Merchandise (1995-1996)	Growth Effect	Commodity Effect	Competition Effect	Net Value
1. Frozen shrimp	169.02 (-2.45%)	-7006.43 (101.6%)	-0.166 (0.85%)	-6897.576 (100%)

FROZEN SHRIMP (1997-1998)   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1997)	V^2 (1998)	r	V^1_i (1997)	V^2_i (1998)	rV^1_i	r_i	$r_i - r$
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/ (4)	(7)-(3)
1806682	2248089	0.24432	47183.9	58343.3	11527.97	0.23651	-.00781

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i-r) V^1_i$	V^1_{ij} (1997)	V^2_{ij} (1998)	r_{ij}	$V^1_{ij} r_{ij}$	$V^2_{ij} - V^1_{ij} - V^1_{ij} r_{ij}$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
-368.506	12277.1	12723.7	.03638	446.64089	-0.04

UNIT: MILLION BAHT

Merchandise (1997-1998)	Growth Effect	Commodity Effect	Competition Effect	Net Value
1. Frozen shrimp	11527.97 (103.33%)	-368.506 (3.3%)	-0.04 (0.03%)	11159.42 (100%)

- **2. RUBBER (1995-1996)**   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1995)	V^2 (1996)	r	V^1_i (1995)	V^2_i (1996)	rV^1_i	r_i	r_i-r
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/ (4)	(7)-(3)
1406310	1411039	.00336	61260.7	63373	205.84	0.03448	-0.03112

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i-r)V^1_i$	V^1_{ij} (1995)	V^2_{ij} (1996)	r_{ij}	$V^1_{ij}r_{ij}$	$V^2_{ij}- V^1_{ij}- V^1_{ij}r_{ij}$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
1906.43	20646.3	18339.1	-0.11175	-2307.224	0.03

UNIT: MILLION BAHT

Merchandise (1995-1996)	Growth Effect	Commodity Effect	Competition Effect	Net Value
2. Rubber	205.84 (9.74%)	1906.43 (90.25%)	0.03 (0.01%)	2112.3 (100%)

RUBBER (1997-1998)   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1997)	V^2 (1998)	r	V^1_i (1997)	V^2_i (1998)	rV^1_i	r_i	r_i-r
		$[(2)-(1)]/$ (1)			$(3)*(4)$ Growth Effect	$[(5)-(4)]/$ (4)	$(7)-(3)$
1806682	2248089	0.24432	57540	55406.5	14036.18	-0.03557	-0.27989

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i-r)V^1_i$	V^1_{ij} (1997)	V^2_{ij} (1998)	r_j	$V^1_{ij}r_{ij}$	$V^2_{ij}-V^1_{ij}-V^1_{ij}r_{ij}$
$(8)*(4)$ Commodity Effect			$[(11)-(10)]/$ (10)	$(10)*(12)$	$(11)-(10)-$ (13) Competition Effect
-16079.68	18003.6	15711.5	-0.12731	-2292.0383	-0.07

UNIT: MILLION BAHT

Merchandise (1997-1998)	Growth Effect	Commodity Effect	Competition Effect	Net Value
2. Rubber	14036.184 (-686.85%)	-16079.68 (786.8%)	-0.07 (0.05%)	-2043.566 (100%)

● **3. SUGAR (1995-1996)**   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1995)	V^2 (1996)	r	V^1_i (1995)	V^2_i (1996)	rV^1_i	r_i	$r_i - r$
		$[(2)-(1)]/$ (1)			(3)*(4) Growth Effect	$[(5)-(4)]/$ (4)	(7)-(3)
1406310	1411039	.00336	28768.6	32081.4	96.66	0.11515	0.11179

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i-r) V^1_i$	V^1_{ij} (1995)	V^2_{ij} (1996)	r_{ij}	$V^1_{ij}r_{ij}$	$V^2_{ij} - V^1_{ij} - V^1_{ij}r_{ij}$
(8)*(4) Commodity Effect			$[(11)-(10)]/$ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
3216.04	4027.7	5064.1	0.25732	1036.3997	0.1

. UNIT: MILLION BAHT

Merchandise (1995-1996)	Growth Effect	Commodity Effect	Competition Effect	Net Value
3. Sugar	96.66 (2.92%)	3216.04 (96.82%)	0.1 (0.26%)	3312.8 (100%)

SUGAR <u>(1997-1998)</u>   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1997)	V^2 (1998)	r	V^1_i (1997)	V^2_i (1998)	rV^1_i	r_i	r_i-r
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/ (4)	(7)-(3)
1806682	2248089	0.24432	31493.2	26611.1	7694.42	-0.155	-0.39932

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i\text{-}r)\,V^1_i$	V^1_{ij} (1997)	V^2_{ij} (1998)	r_{ij}	$V^1_{ij}r_i$	V^2_{ij}- V^1_{ij}- $V^1_{ij}r_i$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
-12575.86	4937.3	6172.2	0.25	1234.325	0.58

                                                        UNIT: MILLION BAHT

Merchandise (1997-1998)	Growth Effect	Commodity Effect	Competition Effect	Net Value
3. Sugar	7694.42 (-157.7%)	-12575.86 (257.6%)	0.58 (0.1%)	-4880.86 (100%)

• 4. AUTOMATIC DATA PROCESSING MACHINES AND PARTS THEREOF

__(1995-1996)__   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1995)	V^2 (1996)	r	V^1_i (1995)	V^2_i (1996)	rV^1_i	r_i	r_i-r
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/(4)	(7)-(3)
1406310	1411039	.00336	131241.8	167673.9	441	0.2776	0.274

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i$-r$) V^1_i$	V^1_{ij} (1995)	V^2_{ij} (1996)	r_{ij}	$V^1_{ij}r_{ij}$	V^2_{ij}- V^1_{ij}- $V^1_{ij}r_{ij}$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
35991.75	10906.2	16138.2	-0.48	5234.976	-0.03

UNIT: MILLION BAHT

Merchandise (1995-1996)	Growth Effect	Commodity Effect	Competition Effect	Net Value
4. Automatic data processing machines and parts thereof	441 (1.2%)	35991.75 (98.8%)	-0.03 (-0.01%)	36432.7 (100%)

AUTOMATIC DATA PROCESSING MACHINES AND PARTS THEREOF (1997-1998)

UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1997)	V^2 (1998)	r	V^1_i (1997)	V^2_i (1998)	rV^1_i	r_i	$r_i - r$
		$[(2)-(1)]/(1)$			(3)*(4) Growth Effect	$[(5)-(4)]/(4)$	(7)-(3)
1806682	2248089	0.24432	220302.7	320526	53824.4	0.45493	0.21061

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i - r) V^1_i$	V^1_{ij} (1997)	V^2_{ij} (1998)	r_{ij}	$V^1_{ij} r_{ij}$	$V^2_{ij} - V^1_{ij} - V^1_{ij} r_{ij}$
(8)*(4) Commodity Effect			$[(11)-(10)]/(10)$	(10)*(12)	(11)-(10)-(13) Competition Effect
46398	20466.4	25897.7	0.2638	5431.3732	-0.07

UNIT: MILLION BAHT

Merchandise (1997-1998)	Growth Effect	Commodity Effect	Competition Effect	Net Value
4. Automatic data processing machines and parts thereof	53824.4 (53.72%)	46398 (46.29%)	-0.07 (-0.01%)	100222.33 (100%)

● 5. ELECTRONIC INTEGRATED CIRCUITS (1995-1996)   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1995)	V^2 (1996)	r	V^1_i (1995)	V^2_i (1996)	rV^1_i	r_i	$r_i - r$
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/ (4)	(7)-(3)
1406310	1411039	.00336	58181.8	58538.6	195.5	0.00613	0.00277

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i - r) V^1_i$	V^1_{ij} (1995)	V^2_{ij} (1996)	r_{ij}	$V^1_{ij} r_{ij}$	$V^2_{ij} - V^1_{ij} - V^1_{ij} r_{ij}$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
161.16	8321.1	6210.4	-0.25366	-2110.7302	-0.3

UNIT: MILLION BAHT

Merchandise (1995-1996)	Growth Effect	Commodity Effect	Competition Effect	Net Value
5. Electronic integrated circuits	195.5 (54.8%)	161.16 (45.28%)	-0.3 (-0.08%)	356.36 (100%)

ELECTRONIC INTEGRATED CIRCUITS (1997-1998)   UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1997)	V^2 (1998)	r	V^1_i (1997)	V^2_i (1998)	rV^1_i	r_i	$r_i - r$
		$[(2)-(1)]/(1)$			(3)*(4) Growth Effect	$[(5)-(4)]/(4)$	(7)-(3)
1806682	2248089	0.24432	75837.7	93833.1	18528.7	0.23729	-0.00703

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i - r)\,V^1_i$	V^1_{ij} (1997)	V^2_{ij} (1998)	r_{ij}	$V^1_{ij}r_{ij}$	$V^2_{ij} - V^1_{ij} - V^1_{ij}r_{ij}$
(8)*(4) Commodity Effect			$[(11)-(10)]/(10)$	(10)*(12)	(11)-(10)-(13) Competition Effect
-533.14	6995.9	8522.5	0.21821	1526.58	0.02

UNIT: MILLION BAHT

Merchandise (1997-1998)	Growth Effect	Commodity Effect	Competition Effect	Net Value
5. Electronic integrated circuits	18528.7 (102.96%)	-533.14 (-2.95%)	0.02 (0.01%)	17995.58 (100%)

● 6. RADIO BROADCAST RECEIVES AND PART THEREOF (1995-1996)

UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1995)	V^2 (1996)	r	V^1_i (1995)	V^2_i (1996)	rV^1_i	r_i	$r_i\text{-}r$
		[(2)-(1)]/ (1)			(3)*(4) Growth Effect	[(5)-(4)]/ (4)	(7)-(3)
1406310	1411039	.00336	31589.2	34626.8	106.1	0.09616	0.0928

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i\text{-}r)\,V^1_i$	V^1_{ij} (1995)	V^2_{ij} (1996)	r_{ij}	$V^1_{ij}r_{ij}$	$V^2_{ij}\text{-}V^1_{ij}\text{-}V^1_{ij}r_{ij}$
(8)*(4) Commodity Effect			[(11)-(10)]/ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
2931.48	8509	7985.9	-0.06148	-5231.3332	0.03

UNIT: MILLION BAHT

Merchandise (1995-1996)	Growth Effect	Commodity Effect	Competition Effect	Net Value
6. Radio broadcast receives and part thereof	106.1 (3.4%)	2931.48 (96.5%)	0.03 (0.01%)	3037.61 (100%)

RADIO BROADCAST RECEIVES AND PART THEREOF (1997-1998)

UNIT: MILLION BAHT

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
V^1 (1997)	V^2 (1998)	r	V^1_i (1997)	V^2_i (1998)	rV^1_i	r_i	$r_i - r$
		$[(2)-(1)]/$ (1)			(3)*(4) Growth Effect	$[(5)-(4)]/$ (4)	(7)-(3)
1806682	2248089	0.24432	43578.8	58058.2	10647.2	0.33226	0.08794

(9)	(10)	(11)	(12)	(13)	(14)
$(r_i - r)\, V^1_i$	V^1_{ij} (1997)	V^2_{ij} (1998)	r_{ij}	$V^1_{ij} r_{ij}$	$V^2_{ij} - V^1_{ij} - V^1_{ij} r_{ij}$
(8)*(4) Commodity Effect			$[(11)-(10)]/$ (10)	(10)*(12)	(11)-(10)- (13) Competition Effect
3832.32	935939	9220.9	.-0.015	-140.4	1.4

UNIT: MILLION BAHT

Merchandise (1997-1998)	Growth Effect	Commodity Effect	Competition Effect	Net Value
6. Radio broadcast receives and part thereof	10647.2 (73.5%)	3832.32 (26.48%)	1.4 (0.02%)	14480.92 (100%)

Table 4.1 Empirical Result the Constant Market Share, period **1995-1996**
Agricultural Products

Unit: Million Baht

Merchandise	Growth Effect	Commodity Effect	Competition Effect	Net Value
1. Frozen Shrimp	169.02	-7066.4	-0.17	-6897.58
	(-2.45%)	(101.6%)	(0.85%)	(100%)
2. Rubber	205.84	1906.43	0.03	2112.3
	(9.74%)	(90.25%)	(0.01%)	(100%)
3. Sugar	96.66	3216	0.1	3312.8
	(2.92%)	(96.82%)	(0.26%)	(100%)

Table 4.2 Empirical Results the Constant Market Share,
Period **1997-1998**, Agricultural Products

Unit: Million Baht

Merchandise	Growth Effect	Commodity Effect	Competition Effect	Net Value
1. Frozen Shrimp	11527.97	-368.51	-0.04	11159.42
	(103.33%)	(3.3%)	(0.03%)	(100%)
2. Rubber	14036.2	-16079.68	-0.07	-2043.57
	(-686.85%)	(46.29%)	(-0.01%)	(100%)
3. Sugar	7694.42	-12575.9	0.58	-4882.1
	(-157.7%)	(257.6%)	(0.1%)	(100%)

It using the CMS Model, is divide into each product as follows:

1. Frozen shrimps

According to analysis of this product exported to Japan during 1995-1996 or before the economic crisis, the summation of change values is negative as a matter of facts that the values of commodity effect and competitive effect are negative (Table 4.1). This reflects that the market demand of Japan over frozen shrimps during that time was low and so was the Thailand competitiveness of this product. Even though the value

of growth effect shows positive, in other words, the Japan market grew up during that time, the negative value over demand dominates and turns the net value into negative.

The data of the period from 1997-98, when there was the economic crisis, shows the positive summation of the values. The value concerning change of the market size (growth effect) is positive while the commodity effect and competitive effect values are negative (Table 4.2). These mean that the effect of market growth of Japan was well over the sum between the effect of decreasing demand for frozen shrimps and the effect of lower competitiveness of Thailand.

Comparing between both periods of 1995-1996 and 1997-1998, the sum of changes turns from the negative value in 1995-1996 to the positive value in 1997-1998. The values of growth effect, commodity effect and competitive effect from 1997-1998 increase. They imply the expansion of market size, increased market demand and improved competitiveness of Thailand in Japanese market. Considering each effect from both periods, the values of commodity effect show all negative, which imply the lower market demand of this product. The demand declined at slower rate during the later period. The competitive effect also has negative values in both periods, which imply the declination of Thailand competitiveness, however, it improved during the later period.

2. Natural rubber

The analysis of the natural rubber product from 1995-1996, the years before the crisis, derives the positive summation of changes. All values of growth effect, commodity effect and competitive effect are positive (Table 4.1), which imply the growth of Japan market, import demand of rubber and the improved competitiveness of Thailand in terms of cost advantage.

Considering the analytical results over the period of 1997-1998, when the crisis was realized, the summation of changes is negative value. The commodity effect and the competitive effect have negative values while the growth effect has positive value (Table 4.2). The sum of both negative values is greater than the positive value. They imply that, during that period, Japan's import demand of rubber and Thailand competitiveness of this product in Japan declined while the market size of Japan expanded. Overall declining effect was greater than increasing effect.

Comparing the analytical results between both periods under this study, the summation of effects turns from positive value during 1995-1996 to the negative value during 1997-11998. This is due to the facts that the values representing the commodity effect and competitive effect change from positive values of 1995-1996 to the negative values of 1997-1998, which imply that Thailand competitive advantage and the import demand of Japan declined over the periods.

3. Sugar

During the period of 1995-1996, before the economic crisis, the analysis shows all positive values from the growth effect, commodity effect and competitive effect (Table 4.1). Definitely the summation of them is positive. The values imply the growth of export of the product to Japan from the effect of growing market and demand for import as well as the increased competitiveness of Thailand during that period.

During the period of 1997-1998 when there was the economic crisis, the results show the negative summation value of changes. This was due to the impact of commodity effect, which its negative value dominates over the combined positive values of growth effect and competitive effect (Table 4.2). In other words, the import demand of

sugar dropped and the impact was well over the combination of expanding market and improved competitiveness of Thailand. As a result, the export of this product from Thailand to Japan declined.

Comparing both periods of the study i.e. 1995-1996 and 1997-1998, the summation value decreases from the positive value of 1995-1996 to the negative value of 1997-1998. This cause of change is mainly the value of commodity effect, which turns from positive value during 1995-1996 to negative value during 1997-1998. Those imply that the Japan's import demand for Thailand sugar dropped down during both periods while the market growth of Japan and the competitiveness of Thailand increased.

Table 4.3 Empirical Results the Constant Market Share, period **1995-1996**

Manufacturing Products   Unit: Million Baht

Merchandise	Growth Effect	Commodity Effect	Competition Effect	Net Value
1. Automatic data processing machines and parts thereof	441 (1.2%)	35991.75 (98.8%)	-0.03 (-0.01%)	36432.7 (100%)
2. Electronic integrated circuits	195.5 (54.8%)	161.6 (45.28%)	-0.3 (-0.08%)	357.13 (100%)
3. Radio broadcast receives, Television receives and parts thereof	106.1 (3.4%)	2931.48 (96.5%)	0.03 (0.01%)	3037.61 (100%)

Table 4.4 Empirical Results the Constant Market Share. period **1997-1998**

Manufacturing Products   Unit: Million Baht

Merchandise	Growth Effect	Commodity Effect	Competition Effect	Total Exchange
1. Automatic data processing machines and parts thereof	53824.4 (53.72%)	46398 (46.29%)	-0.07 (-0.01%)	10022.33 (100%)
2. Electronic integrated circuits	18528.7 (102.96%)	-533.14 (-2.961%)	0.02 (0.01%)	17995.56 (100%)
3. Radio broadcast receives. and parts thereof	10647.2 (73.5%)	3832.32 (26.98%)	1.4 (0.02%)	14480.92 (100%)

Manufacturing Products.

4. Automatic data processing machines and parts thereof

The analysis shows that the summation of changes during the period of 1995-1996, before the economic crisis, is positive. The growth effect and commodity effect derives the positive values (Table 4.3) implying the growth of Japan market of this product and the increased demand for import. The competitive effect is negative implying the loss of Thailand's competitiveness by that time. The positive effect of market expansion and higher demand is well over the negative effect of competitive advantage, which is shown by the net positive value.

The analysis shows the net positive value for the period of1997-1998 when there was economic crisis,. The growth effect and the commodity effect are positive in their values (Table 4.4), which imply the expanding of market size and the increased demand to import this product

into Japan during that period. The competitive effect has negative value, which imply that Thailand lost its competitiveness by then. The summation of positive values on growth effect and commodity effect is higher than the negative value of the competitive effect. The net value then is positive.

Comparing both periods of the study, the summations of changes show both positive. The value of the later period is higher than the value of the former period. The growth effect and the commodity effect are all positive in both periods while the competitive effect has negative values in both periods. Those imply that, during those periods of time, the market size and the demand for import continued to increase while the Thailand's competitiveness continued to decline over the time. Overall impact was that the export of this product to Japan increased due to the net effect of them.

5. Electronic integrated circuits

The analysis shows the net positive value of changes during the period of 1995-1996 or the years before the crisis. The growth effect and the commodity effect are positive (Table 4.3) implying the growth of Japanese market and the increased demand for import during that time. The competitive effect shows negative value implying the decreased competitiveness of Thailand.

During 1997-1998 when the crisis existed, the net value is positive, too. The positive values of growth effect and the competitive effect (Table4.4) imply the market growth of Japan and the improved competitiveness of Thailand. The commodity effect has negative value meaning that the Japanese demand for import reduced during that time. However the positive impact due to expansion of the market and the competitiveness of Thailand was greater than the negative impact from the decreased demand.

Considering the analytical results from both periods, the summations of change are both positives, which imply continued growth of export to Japan. In the former period, the growth and commodity effects were positives while the competitive effect was negative. In the later period, the growth and competitive effects were positives while the commodity effect was negative. All in all, the market of Japan grew up over both periods. The Japan's import demand declined while Thailand's competitiveness increased over the periods.

6. Radio-broadcast receivers. Television receivers and parts thereof

The analysis shows the summation of changes during the period of 1995-1996, before the economic crisis, is positive value due to the facts that all the values representing the growth effect, commodity effect and competitive effect are positive (Table 4.3). They imply growing market, improved Thailand's competitive advantage and higher demand for import of this product into Japan.

The results of the period during 1997-1998, the years there was economic crisis, are similar with the previous period i.e. all values of growth effect, commodity effect and competitive effect are positive (Table 4.4). Definitely the summation of them is positive too. The implication of them is the same as the previous period.

Comparing both periods of analysis, the net values of changes are positive in both periods. The value of the later period (1997-1998) is higher than that of the former period (1995-1996). The individual values of growth effect, commodity effect and competitive effect all increase in the later period. Those imply the continued growing of the market in Japan, the continued increase of demand for import and the continuous improvement of Thailand's competitive advantage over other competitors during those periods.

4.3 The Analytical Results Over the Potential of Thailand Export to Japan Using the Revealed Comparative Advantage Index Model (RCA)

The analysis of competitiveness using the Comparative Advantage Index or RCA Model involves other countries in Asia such as China, Singapore, Malaysia, Philippines and Indonesia. They exported to Japan worth as similar value as Thailand. They were considered the comparable exporting competitors and the RCA index could imply that on which product each country had comparative advantage over other countries. If the RCA value is over 1, it implies that the country has comparative advantage over that product. If below 1, the country has no comparative advantage over that product. The data using calculate RCA model from the appendices 6-7.

Table 4.5 Empirical Results Revealed Comparative Advantage (RCA), Period 1995-1998,

Agricultural Products

1. Frozen Shrimp

Year	China	Singapore	Malaysia	Philippine	Indonesia	Thailand
1995	0.36	0.02	0.34	4.7	6	7.2
1996	0.3	0.002	0.38	2.8	5.8	5.1
1997	0.3	0.02	0.4	2.1	5.9	4.2
1998	0.23	0.004	0.43	2.9	6.3	3.4

2. Rubber

Year	China	Singapore	Malaysia	Philippine	Indonesia	Thailand
1995	0	0.11	29.3	0	0.07	2.24
1996	0	0	26.6	0	0.17	3.12
1997	0	6.5	23.1	0	0.35	3.2
1998	0	0	29	0	0.32	2.9

3. Sugar

Year	China	Singapore	Malaysia	Philippine	Indonesia	Thailand
1995	4.9	0	0	4.2	0.3	11.65
1996	5	0	0	1.8	0.25	10.6
1997	4.25	0	0	1.1	0.23	11.54
1998	3.3	0	0	0.7	0.37	15.67

Agricultural products

1. Frozen shrimps

The RCA index from the study shows that 3 countries had comparative advantage in exporting to Japan during 1995-1996, or before the economic crisis. They were Philippine, Indonesia and Thailand. China, Singapore and Malaysia had no advantage (Table 4.5). Thailand was the most advantageous country in exporting frozen shrimps to Japan in 1995 and Indonesia came the second. However in 1996, the comparative advantage of Indonesia ranked top while Thailand fell to the second position.

The RCA analysis of the period during 1997-1998 when there was the economic crisis, shows that Philippines, Indonesia and Thailand were comparatively advantageous (Table 4.5) while China, Singapore and Malaysia had no comparative advantage in exporting frozen shrimps to Japan. In 1997, Indonesia was the most advantageous while Thailand and Philippines followed.

Comparing both periods i.e. before and during the economic crisis, the RCA values from the study show that Thailand got highest comparative advantage over those countries in 1995. In 1996-1998,

Indonesia was most advantageous over others. Its advantage increased every year while Thailand and Philippines lost their comparative advantage each year. China, Singapore and Malaysia did not have comparative advantage over others in exporting frozen shrimps to Japan during both periods.

2. Natural rubber

From the results of analysis over natural rubber exported to Japan during 1995-1996, the period before the crisis, Malaysia got highest comparative advantage while Thailand was after (Table 4.5). Indonesia and Singapore were not advantageous. China and Philippines had no export of rubber to Japan. Singapore did not export rubber to Japan in 1996.

Considering 1997-1998 when there was economic crisis, the analysis over that period shows that Malaysia continued to be most advantageous over other countries in 1997 (Table 4.5). Singapore was the second and Thailand was the third in the ranking. China and Philippines had no export of rubber to Japan in that year. In 1998, Malaysia continued to be at the top while Thailand got to the second. The comparative advantage of Malaysia increased while that of Thailand declined. Singapore, China and Philippines did not export rubber to Japan by then.

Comparing both periods under the study i.e. 1995-1996 and 1997-1998, Malaysia was the most advantageous country. Thailand ranked second except in 1997 when Singapore had more advantage over Thailand. The export from Thailand trended upward except in1997 when its comparative advantage declined. Malaysia increased its comparative advantage over the time. China and Philippines had no export of rubber to Japan while Singapore did not export to Japan in 1996 and 1998

3. Sugar

The analysis shows that Thailand was most advantageous over other exporting countries during 1995-1996 (Table 4.5), before the economic crisis, in exporting sugar to Japan. The countries that came after Thailand were China and Philippines. Singapore and Malaysia did not export sugar to Jan. The comparative advantage of Thailand declined over the period from 1995-1996 while Indonesia had no comparative advantage in exporting sugar to Japan.

The study still shows that, during 1997-1998 when there was the economic crisis, Thailand was the most comparatively advantageous while China and Philippines followed (Table 4.5). Philippines had no advantage in 1998. Singapore and Malaysia did not export sugar to Japan. Thailand got the comparative advantage increased though it was suffered from the economic crisis. Indonesia had no comparative advantage.

Considering both periods of the study, Thailand was most advantageous among the exporting countries. The advantage declined during the former period but improved during the later period though there was economic crisis. China ranked the second in both periods. The comparative advantage of Philippines declined and, in 1998, it became disadvantageous. Indonesia had no advantage during both periods while Singapore and Malaysia had no export of sugar to Japan.

Table 4.6 Empirical Results Revealed Comparative Advantage (RCA),
Period 1995-1998,

Manufacturing Products

1. Automatic data processing machines and parts thereof					
Year	China	Singapore	Malaysia	Philippine	Indonesia	Thailand
1995	0.2	4.16	0.12	0.02	0.02	0.34
1996	0.26	12.1	0.01	0.08	0.002	0.5
1997	0.12	14.8	0.07	1.2	0.1	0.7
1998	0.17	9.25	0.54	9.28	0.003	0.2

2. Electronic integrated circuits					
Year	China	Singapore	Malaysia	Philippine	Indonesia	Thailand
1995	0.04	4.7	8.15	1	0.012	0.21
1996	0.14	5.15	5.76	1	0.001	0.25
1997	0.1	5	4.57	15	0.05	0.4
1998	0.09	6.32	5.16	18.3	0.004	0.44

3. Radio broadcast receives. Television receives and parts thereof					
Year	China	Singapore	Malaysia	Philippine	Indonesia	Thailand
1995	0.78	4.54	9.55	2.64	0.0003	6.8
1996	1	5.57	8.97	2.62	0.03	6.9
1997	1.17	4.68	9.3	2.64	1.24	7.63
1998	1.68	1.31	10	2.6	2.48	6.4

Manufacturing Products

4. Automatic data processing machines and parts thereof

The study shows that, over the period of 1995-1996 or the years before the economic crisis, Singapore ranked top on the comparative advantage of this product while other countries of origin such as China, Malaysia, Philippines, Indonesia and Thailand had no advantage over this product. Singapore was then the only country having comparative advantage. The RCA index of Thailand increased over the time but was still disadvantageous.

Considering the period from 1997-1998 when there was the economic crisis in Thailand, Singapore was the most advantageous country in 1997 and was followed by Philippines while other countries including Thailand got no advantage. In 1998, Philippines ranked top while Singapore fell to the second place. Other countries including Thailand were still not having comparative advantage. The RCA index of Thailand dropped due to the impact of economic crisis.

Considering the both periods of the study i.e. before and during the economic crisis, Singapore had highest comparative advantage over other countries during the former period, 1995-1996, while others including Thailand had no comparative advantage. However, the RCA index of Thailand increased. The situation changed in the later period from 1997-1998, Singapore was the most comparatively advantageous in 1997 then lost it to Philippines in 1998. Other countries such as China, Malaysia, Indonesia and Thailand did not have comparative advantage of this product in Japan. The index of RCA for Thailand dropped during encountering the economy problem.

5. Electronic integrated circuits

The analytical results show that in 1995-1996, there were only 3 countries that had comparative advantage over other competitors. They were Malaysia, Singapore and Philippines. The countries that had no advantage were China, Indonesia and Thailand. Ranking in order, Malaysia was at the top while Singapore and Philippines followed. Thailand had its RCA index increased but did not reach the level of advantage over other countries in this product.

During 1997-1998 when there was the economic crisis, Philippines was the most advantageous over other countries and was followed by Singapore and Malaysia. China, Indonesia and Thailand had no comparative advantage. The RCA index of Thailand increased despite it faced the problem of economy. However Thailand had no comparative advantage anyway.

Considering both periods of the study, Malaysia had highest comparative advantage over other countries during 1995-1996 and was followed by Singapore and Philippines. Other countries got no advantage and so did Thailand. The situation changed in the later period when Philippines became most advantageous over others while Singapore followed. Malaysia ranked third instead of top place in the previous years. China, Indonesia and Thailand got no advantage in both periods of the study. Thailand no comparative advantage because of the quality of this Thai product lower than competitors. Although the value of this product trended upward

6. Radio-broadcast receivers, Television receivers and parts thereof

The result of the study shows that Malaysia got highest comparative advantage over other countries in exporting this product to Japan during 1995-1996. Thailand, Singapore, Philippines and China

followed it. Indonesia was the only country that had no comparative advantage in both years. China got no advantage in 1995 but become advantageous in 1996. The RCA index of Thailand increased over the years.

During 1997-1998 when Thailand got the economic recession, Malaysia ranked the top among all countries under comparison. The following orders of countries were Thailand, Philippines, Indonesia, China and Singapore. Singapore got its comparative advantage dropped significantly. The value of RCA for Thailand declined due to the impact of the economy problem.

Considering both periods, Malaysia was at the top and was followed by Thailand in both periods. Indonesia got the comparative advantage increased significantly while Singapore had a big drop. The RCA value of Thailand dropped due to the economic crisis. Even though the comparative advantage of Thailand declined, Thailand remained the second rank among those countries under the study.

- Other variables effecting the Thailand export to Japan

1. Frozen shrimps

1) Import regulations

-. The imported goods into Japan were regulated under the Food Sanitation Law. The regulations required the imported goods associated with the certificate of inspection, which was endorsed by Thailand's governmental agencies or any agencies qualified by the Japanese Government. The Public Health officials would also take samples and assessed the quality at the ports in Japan.

- No tolerance of contamination in frozen shrimps. In other words, the Food Sanitation Law required no any contamination of antibiotic in any food.

2)   Competitiveness of Thailand in Japanese market

- Market share of Thailand product was 10%, which was the 4th after Indonesia, India and Russia in 1998. Note that the market share of Vietnam trended upward.

3)   Problems

- In term of quality, the shrimps smelled muddy and contained 2 chemical residues i.e. Oxytetracyclin and Oxolynic acid.

- Japan remained the key export market of Thailand. The cost of production was high. Strong competition was expected from the newcomers such as Vietnam, Indonesia and India where natural resources were abundant.

4)   Solution/expanding market

        Short term

- Educate the producers on the correct use and proper dosage of antibiotic and chemicals.

- Improve the efficiency of production to reduce cost.

- Develop more types of ready-to-cook products to add more value.

- Control use of coastal land by registering all the producers (already completed).

Accredit the private firms' laboratories to assess quality under agreement with the importing countries.

2.Natural rubber

1)   Import regulations

- The import of natural rubber and the rubber products was not controlled.

2) Competitiveness of Thailand in Japan market

- Thailand was competitive over other countries such as Malaysia and Indonesia, in term of production cost especially the labor cost of latex collecting

- Market share of Thailand product in Japan grew up to 8.4% and ranked second in the market place. The competitors were Malaysia, Indonesia in 1998, etc.

3) Problems

- The market prices fluctuated due to high level of speculative trading in Japanese market.

- The Japanese buyers applied strictly control over the product quality.

- The harvest was seasonal and the peak of availability was during the end of the year/beginning of the following year. The export outlet especially Japan could not serve the mentioned oversupply.

- The market was the buyer's market and the product was dealer directly between the buyer and the seller. The buyer was thus the price maker.

- The level of market price was not higher than the previous year due to the competitive synthetic rubber.

- As Japan was the key export market that shared 30% of total export, the possible risk of export market was high.

4) Solution/expanding market

Short term

- Improve the quality of latex by extending use of new varieties and appropriate cultivating practices.

- Pricing the product on the basis of global demand and supply.

-      Upgrade the types of products from smoked sheet to others that are required by the world market. For instance, the rubber block is demanded by Japanese customers.

-      Speed up export and seek for the opportunity in the new markets, for instance, the Eastern Europe, etc.

-      Extend use of rubber as an input factor for other industries in Thailand.

3.Sugar

1)   Import regulations

-      The import of sugar was not controlled and there was no quota of the import.

-      40 private firms were authorized by the government to import sugar under the mechanism of the control laws.

-      The Price Stabilization Law was exercised by The Ministry of Agriculture, Forestry and Fishery, The sugar Council and Price Stabilization Agency to regulate the prices at various levels. This brought into effect of import limitation.

-      Price Stabilization Fund was established to support the activities of price stabilization. For example, the government could reduce the import tariff of sugar.

2)   Competitiveness of Thailand in Japanese market

-      Thailand could extend its market of raw sugar in Japan as price was competitive, quality was consistent and delivery was reliable.

-      Thailand shared 45.5% of total market and ranked first of all supplying countries. Other players were Australia, Philippines and Cuba in 1998

3) Problems

- Since the sugar consumers were more health-conscious, they switched to other alternatives of sweeteners. Total consumption of sugar in Japan therefore declined.

- The recession of Japan economy had adverse effect to the overall consumption of sugar.

- The competition was strong. Key competitors were Australia and Cuba. Vietnam also had high potential on production and export.

3) Solution/expanding market

Short term

- Improve the production efficiency to gain cost advantage over the competitors.

- Maintain high quality of product and reliability of delivery.

Manufacturing Products

4. Automatic data processing machines and parts thereof

1) Import regulations

- The import tariff under WTO Rate ranged between 2.9-6.9%.

- The import tariff under General Duties were 0% and 5.2%

2) Competitiveness of Thailand in Japan

- Thailand got the market share extended to 1.27% and ranked number five after USA, Singapore, Taiwan, and UK in 1998.

3) Problem

- The technology of production was developed and changed quickly over the period of time. Product life of each model was then very short. The competition over price and quality was quite strong.

4)   Solution/expanding market

Short term

-   Encourage and support the R&D over technologies that would help improving commercially the production efficiency and cost reduction. Since this industry is mostly the joint ventures between Thailand and Japanese firms, the parent companies in Japan thus directed the production planning and export.

-   Facilitate more investment of supporting industries in Thailand.

Long term

-   Establish the long term development plan for the industry. The plan should include the follow-up actions and the on-going evaluation of the progress.

5. Electronic integrated circuits

1)   Import measures

-   The import tariff under WTO Rate was 3.4%

-   The import tariff under General Duties was 0%

2)   Competitiveness of Thailand in Japan

-   The market share of this product from Thailand 1.3%. It ranked the sixth after USA, South Korea, Singapore, Taiwan, and Malaysia in 1998. It was expected that the growth of Thailand production and export of this product to Japan would diminish as the cost advantage over labor was declining.

3)   Observation

-   Most of this industry was the joint ventures between Thailand and Japanese firms. The parent companies in Japan directed the planning of production and marketing outlets.

4)   Problems

-       Thailand competed with China and Malaysia on pricing.

-       The quality of this product

5)   Solution/expanding market

-       Improve efficiency of production to gain cost advantage over competitors.

6. Radio-broadcast receivers, Television receivers and parts thereof

1) Import regulations

-       The import tariff under WTO Rate ranged from 0-3%

-       The import tariff under General Duties was 0%

2) competitiveness of Thailand in Japan

-       The market share of this product from Thailand was 17.4% of total Japanese market. Thailand ranked number three after Malaysia (26.1% share), China (21.5% share) in 1998.

-       It was expected that Thailand export of this product would grow but at the relatively lower rate, compared with Malaysia and China.

3) Problems

-       Thailand competed with China and Malaysia on pricing.

-       Even though the components were locally produced in Thailand, it was all exported under BOI conditions. The producers of this product could not get them locally and had to rely mainly on import .

4) Solution/expanding market

        Short term

-       Develop technology of production to get cost advantage over the competitors.

-       Conduct market survey to understand the Japanese demand concerning product type, quality and pricing. The information would help improving the products to meet the market requirement.

- Supporting the investment of parts and components locally. These supporting industries require high level of technology, high capital and high volume in order to meet the break-even point.

• Conclusion of the study

From the study, the products exported to Japan are divided into 2 categories i.e. agricultural products and industrial products. The key agricultural products that Thailand exported to Japan, listed in prioritized orders, are sugar and natural rubber. The orders of key industrial products are firstly the radio-broadcasting receivers, television receivers and parts thereof, secondly the automatic data processing machines and parts thereof, and thirdly the electronic integrated circuits. The export of both sectors trended upward as Thailand extended its market shares, except frozen shrimps trended downward because of quality of Thai frozen shrimps lower import standard of Japan and lost its competitiveness over other exporting countries.

Agricultural products

1. Frozen shrimps

The export of Thailand's frozen shrimps to Japan during 1995-1996 dropped as the Japanese demand for import declines. Thailand competitiveness became lower and the market growth was marginal (Table 4.1). During 1997-1998, the export to Japan increased as the market expanded significantly. The import demand of the product grew at a certain extend and Thailand gained more competitiveness (Table 4.2). Regarding the comparative advantage of Thailand over other countries, Thailand was the second after Indonesia, which was most advantageous

country under this study. The comparative advantage of Thailand trended downward each year (Table 4.5).

2. Natural rubber

The export of rubber from Thailand to Japan from 1995-1996 declined while Japanese market grew up. The import demand increased, and, Thailand competitiveness improved (Table 4.1). The reasons of less export might be due to problem of production inputs or others. During 1997-1998, the export continued to shrink as the import demand of Japan dropped, and Thailand lost its competitiveness (Table 4.2). During the periods of the study, Malaysia had the most comparative advantage while Thailand placed the second. In the former period, 1995-1996, Thailand's comparative advantage increased while it declined in the later period during 1997-1998 when there was the economic crisis (Table 4.5).

3. Sugar

The export of sugar to Japan during 1995-1996 increased as a result of growing market size, increased demand for import and higher competitiveness of Thailand (Table 4.1). From 1997-1998 the export of Thailand sugar to Japanese market increased further due to the expanding market of Japan and more competitiveness of Thailand but lower demand (Table 4.2). Regarding the comparative advantage of Thailand over other countries, Thailand was number one and was followed by China and Philippines in both periods under the study (Table 4.5). The comparative advantage of Thailand declined during the former period and regained during the later period.

Manufacturing products

4. Automatic data process machines and parts thereof.

During 1995-1996, Thailand exported more of this product to Japan. This was due to the growths of market size and the import demand of destination market though the competitiveness of Thailand product declined (Table 4.3). The export grew further in 1997-1998 due to the continued growing of market and its import demand while Thailand still lost its competitiveness over other exporting countries (Table4.4). Considering the comparative advantages among the exporting countries, Singapore was in the top rank during 1995-1996 while Philippines became the most advantageous in 1997-1998. Thailand gained more comparative advantage in 1995-1996 but lost it in 1997-1998 (Table 4.6).

5. Electronic integrated circuits

The competitiveness of Thailand to Japan dropped in 1995-1996. Though the Japanese market and demand for import grew up slightly by that time (Table 4.3), the export of this product from Thailand to Japan declined. In 1997-1998, Thailand gained more export due to the market growth and improved competitiveness of Thailand while the import demand decreased (Table 4.4). Regarding the comparative advantages among exporting countries, Thailand had no advantage in both periods over its competitors. Malaysia was the most advantageous in 1995-1996 while Singapore ranked top in 1997-1998 (Table 4.6). Thailand no comparative advantage because of the quality of this Thai product lower than competitors. Although the value of this product trended upward

6. Radio Broadcast Receives, Television Receives and Parts Thereof.

The export of this product from Thailand to Japan during 1995-1996 and 1997-1998 declined while the market expanded slightly, the demand for import of this product increased and the competitiveness of Thailand improved (Table 4.3 and 4.4). There were some other reasons that caused the drop of Thailand export. They could be the problem over product quality, which did not meet the Japanese standard or the problem of production inputs or others. Regarding the comparative advantage over other countries, Thailand ranked second after Malaysia, which was at the top in both periods of the study. The comparative advantage of Thailand increased during the former period but declined during the later period due to the economic crisis (Table 4.6).