Chapter 3

Export Performance and Instability in Thailand during 1986-1995

In this study, we analysed performance and instability of Thailand rice and rubber exported during 1986-1995. We use this period for the investigation because there were enough available data to be used in this study. Besides, during this period there was not an imminent situation that should lead to some significant influence of Thai rice and rubber export as an external shock.

There were previous studies that examine export performance and export instability of Thai rice and rubber export such as those of Chintana Somsap, Jeerasak Pongpissanupichit, Prasit Suntayodom, Praiphol Koomsup, Piboon Limprapat, Thongchai Suntirumjairux.

Chintana Somsap[31] surveyed "Instability of Export Receipts of Thailand: Measurement, Analysis, Policy: 1950-1967" by using the exponential trend line index. The results of this research showed that instability index of export receipts of rice is 16.3 and rubber is 20.5. When

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[31] Chintana Somsap. "Instability of Export Receipts of Thailand: Measurement, Analysis, Policy: 1950-1967" (1971). cited in Thongchai Suntirumjairux. "The Analysis of Determination Factors of Trade Instability of Thailand: 1967-1982" (Master thesis, Department of Economics, Chulalongkorn University, 1984).

considering the percentage contribution to instability of rice and rubber export instability on total export instability, the results indicated that rice was 44.9% contributed to the export instability while rubber was the secondary contributor to the instability at 24.6% rate.

Piboon Limprapat[32] looked into "Export Instability and Concentration of Thailand 1956-69" and "Thailand's Export Instability and It's Effects, 1956-69". He concluded in this study that the fluctuation in supply of rice export was the major cause of rice export earnings instability. The fluctuation in rubber demand was the major cause of rubber export earnings instability.

Praiphol Koomsup[33] tried to analyze the cause of export instability of some selected commodities of Thailand. The results of this study showed that, in the case of rice export, the fluctuation in demand had been the major cause of export earnings instability. The same reason applied for the rubber export.

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[32] Piboon Limprapat "Export instability and Concentration of Thailand 1956-69" and "Thailand's Export Instability and It's Effects, 1956-69" cited in Thongchai Suntirumjairux. "the Analysis of Determination Factors of Trade Instability of Thailand: 1967-1982" (Master thesis, Department of Economics, Chulalongkorn University, 1984).

[33] Praiphol Koomsup "Export Instability and Export Diversification: A Case Study of Thailand" (Ph.D. Dissertation, Faculty of Economics, Yale University, 1978).

Piboon Limprapat[34] worked on "Major Causes and Effects of Thailand's Export Instability: 1961-1975" by using an average percentage deviation from the least-square trend line. In case of rice export, the results showed that the change in demand caused rice export earnings instability. In case of rubber export, the unit value was the major factor of rubber export earnings instability.

Thongchai Suntirumjairux[35] studied "the analysis of Determination Factors of Trade Instability of Thailand: 1967-1982." From the micro analysis, fluctuation in domestic supply was the main cause of fluctuation in trade of rice. In the case of rubber, demand fluctuation was the reason of fluctuation in rubber trade.

Jeerasak Pongpissanupichit[36] examined the Export Performance of Developing ECAFE Countries, in the case of Thailand. He

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[34] Piboon Limprapat "Major Causes and Effects of Thailand's Export Instability: 1961-1975" cited in Thongchai Suntirumjairux. "the Analysis of Determination Factors of Trade Instability of Thailand: 1967-1982" (Master thesis, Department of Economics, Chulalongkorn University, 1984).

[35] Thongchai Suntirumjairux. "the Analysis of Determination Factors of Trade Instability of Thailand: 1967-1982" (Master thesis, Department of Economics, Chulalongkorn University, 1984).

[36] Jeerasak Pongpissanupichit. "Export Performance of Developing ECAFE Countries: The Case of Thailand" (The Master's Thesis, Faculty of Economics, Thammasat University. 1974).

tried to undertake a comprehensive analysis and economic evaluation in order to assess the past performance of Thailand's export. The results of this study were as following. By utilising the Revised CMS Approach, the results showed that only rubber export performance was favourable. In contrast, the export performance of rice and maize were unsatisfactory. Generally, the relatively high inflation rate was the cause of poor export performance. However, in many cases, government's policies were the culprit. Since trade prospects of these three commodities were good, the future of Thailand's exports of these three commodities would depend upon the ability of Thailand to compete with its main competitors effectively. Therefore, existing undesirable policies should be eliminated and new policies aimed at improving export competitiveness should be promptly prepared but prudently constructed and implemented.

Therefore, in this chapter we would see the empirical results of this study from the methodology shown in chapter2. We would begin with export performance followed by export instability, performance and instability. The analysis of this results would be discussed in chapter 4.

Export Performance During 1986-1995

Rice Exports Performance

By using the Revised CMS Approach, the change in Thailand's share of rice export over two point in time was divided into three components; the general rise in exports demand, the market distribution effect and competitive effect. Thus, the direction of the change in Thailand's share of rice exports may be described as the net result of various effects. The numerical results are shown in table 13.1 and 13.2.

Table 13.1 showed the past export performance of rice in two different ways, the annual performance and overall performance during 1986-1990. The annual performance figures indicated the difference between Thailand's actual rice export increase and the hypothesis increases if Thailand had maintained it's preceding year's share of rice exports. On the other hand, the overall performance figures indicated the difference between Thailand's actual rice export increase and the hypothetical increase if Thailand had maintained its 1986 share of rice exports.

Table 13.1 : Rice Export Performance during 1986-1990

Units : Metric Tons

Year	r_iQ_i	$\sum (r_{ij} - r_i) Q_{ij}$	$\sum (Q^*_{ij}-Q_{ij}- r_{ij} Q_{ij})$
1986	509132	-146779.03	-504040.68
1987	-15957	-68460.68	15797.43
1988	794927	1157694.79	-786977.73
1989	1093859	-145374.41	-1082920.41
1990	-2335031	-1342978.93	2311680.69
Overall	46930	-545898.27	-46460.70

Source : Author's calculation

Table 13.2 : Rice Export Performance during 1991-1995

Units : Metric Tons

Year	r_iQ_i	$\sum (r_{ij} - r_i) Q_{ij}$	$\sum (Q^*_{ij}-Q_{ij}- r_{ij} Q_{ij})$
1991	303197	64500.39	-300165.03
1992	832874	-170755.83	-824545.26
1993	-181273	-261702.62	179460.27
1994	-165116	-335906.46	163464.84
1995	1368604	-163086.92	-1354917.96
Overall	2158286	-866951.44	-2136703.14

Source : Author's calculation

When r_iQ_i = the general rise in export quantity

$\sum (r_{ij} - r_i) Q_{ij}$ = the market distribution effects

$\sum (Q^*_{ij}-Q_{ij}- r_{ij} Q_{ij})$ = the competitive effects.

If we looked at the general rise in exports effect (r_iQ_i), we could see an annual increase in rice export demand from previous year. It simply meant that there were an increase in import demand for rice in world market which Thailand export to during those year. The general rise in export effects showed a positive term of 46930 metric tons in terms of the overall performance of period 1.

The market distribution effect indicated whether Thailand had been concentrating its exports in markets that were experiencing relatively rapid growth. Table 13.1 shows that this had not been the case. The overall performance depicted unfavorable market distribution of 545898.27 metric tons. Annually, it had been four out of five years in which Thailand unfortunately got "tied up" with the relatively sluggish markets.

Since we had not looked into the details of direction of trade and each market of destination, this results might be implied that Thailand was unable and/or was not trying to find and exploit new market opportunity.

Table 13.2 showed that in period 2 the overall performance of quantity export growth was in the same direction as period1 with 2158286 metric tons. Moreover, the overall performance depicted unfavourable market distribution of 866951.44 metric tons.

The overall performance of competitive effects in period 2 pointed out the same results as period 1 that Thai rice export to the world market was still uncompetitive with 46460.70 metric tons in period 1 and 2136703.14 metric tons in period 2.

The general rise in export effect and the market distribution effects can be inferred roughly as external factors, which are presumably beyond the control of Thailand. On the other hand, the competitive effect is very much an endogenous factor. By this it is meant that Thailand's domestic policies could play an important role in improving or impairing the competitiveness of its export. It was obvious from the results that Thailand's rice exports had not been competitive. It was hoped that regression analyses of the competitiveness residual would shed some light on this matter.

Rice Competitiveness of Thailand Compare to the Major Competitors in the World Market

From the overall performance of Thai rice export in the world market, it showed that the competitive effect was negative. Therefore, it was rational that we should take a look into the competitiveness residual of Thailand comparing to its major competitors, Vietnam and USA. We should start with Vietnam, then moved on to USA respectively.

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Rice Competitiveness of Thailand Compare to Vietnam in the World Market

Regression results are shown as follow.

Period1

1. CR_i = (1.1517737e+08) + (4.0685123e+08) [$(P_i^*/P_{ic}^*) - (P_i/P_{ic})$]

(4.307893) (4.680554)

- (1.0863848e+08) PST_{ik} - 50263.338 SA_i

(-6.419111) (-2.540397)

R^2 = 0.976478 D.W. = 1.285927

2. CR_i = 91441954 + (2.8520645e+08) [$(P_i^*/P_{ic}^*) - (P_i/P_{ic})$]

(1.890850) (2.036482)

- 94853612 PST_{ik}

(-3.065006)

R^2 = 0.824677 D.W. = 1.722699

3. CR_i = 68488117 - 51268987 PST_{ik}

(1.017361) (-1.602225)

R^2 = 0.461122 D.W. = 1.512936

Period 2

4. $CR_i = -48498817 + (1.8383077e+08)\,[\,(P_i^*/P_{ic}^*) - (P_i/P_{ic})\,]$

(-1.833530) (1.456600)

$R^2 = 0.414255$ D.W. = 0.9597

5. $CR_i = -20148248 + 4949579.5\ PST_{ik}$

(-0.726164) (1.702609)

$R^2 = 0.491429$ D.W. = 2.038800

6. $CR_i = -23266956 + 243560.18\ SA_i$

(-0.891177) (1.792847)

$R^2 = 0.517243$ D.W. = 2.193077

In period 1, the index of export price stability was the most important dominant variable and significant at 20 percent level. Moreover, the results suggested that the change in relative price ratios with the index of price stability together could have been major explanatory of the competitiveness residual as in equation 2. The overall results were so overwhelming with $R^2 = 0.976478$ and significant at 20 level.

The empirical results above illustrated the price stability index was the dominant factors of competitiveness residual of rice export in period1 where t-statistic was 1.602 and F-statistic was 2.567124 in equation 3. Price stability index with change in relative price ratio could explain CR_i

better than price stability index alone with R^2 = 0.824677. Moreover, all three variables can explain the competitiveness residual of rice export in period 1 with the highest R^2 (0.976478) as shown in equation 1.

In period 2, the index of price stability was still the dominant variable of rice competitiveness residual. However, there one more domination factors in this period. The supply availability index was that mentioned factor with a little higher R^2 and level of significant than price stability index.

Rice Competitiveness of Thailand Compare to USA in the World Market

Period 1

1. CR_i = 13929856 - 33919995 PST_{ik} + 4368955.6 SA_i

(0.249461) (-1.993795) (2.026683)

R^2 = 0.744235 D.W. = 2.192120

Period 2

2. CR_i = 8561833.9 - 9927819.4 PST_{ik} + 309018.9 SA_i

(0.522576) (-4.593567) (2.758376)

R^2 = 0.918262 D.W. = 1.065252

3. CR_i = -15212884 - 7761957.2 PST_{ik}

(-0.610070) (-2.153948)

R^2 = 0.607304 D.W. = 1.996546

The regression results above showed that in period 1 the dominant variable that has highly correlated with the competitiveness residual was the index of price stability together with supply availability.

In period 2, The dominant variable that has highly correlated with the competitiveness residual was price stability index. However, the index of price stability together with supply availability still was the important variables as in the first period. Therefore, when we run the price stability index together with supply availability the R^2 became higher to be 91% at 10% level of significant.

Rubber Exports Performance

As can be seen from table 14.1 and 14.2, rubber export had performed relatively well in comparison with rice exports in period 1. In all five years the general rise in export effect was positive. However, the overall performance of general rise in quantity export growth was quite the same direction as rice export. The negative of market distribution effects pointed out the inability of Thailand to find new markets when its traditional markets became stagnant. Moreover, the competitive effect was negative

both in period 1 and period 2. Therefore, we could conclude that Thai rubber export to the world market was still uncompetitive.

Table 14.1 : Rubber Export Performance during 1986-1990

units : metric tons

Year	$r_i Q_i$	$\Sigma (r_{ij} - r_i) Q_{ij}$	$\Sigma (Q^*_{ij} - Q_{ij} - r_{ij} Q_{ij})$
1986	70365	146533.61	-508428.35
1987	119198	-47024.46	17148.98
1988	21843	962879.80	-794708.57
1989	193849	400007.70	-1091920.51
1990	37989	-1547336.19	2335410.89
Overall	443244	-84939.53	-42497.56

Source : Author's calculation

Table 14.2 : Rubber Export Performance during 1991-1995

units : metric tons

Year	$r_i Q_i$	$\Sigma (r_{ij} - r_i) Q_{ij}$	$\Sigma (Q^*_{ij} - Q_{ij} - r_{ij} Q_{ij})$
1991	84376	106008.40	-302353.24
1992	200211	-125798.76	-830871.89
1993	-21844	-264786.71	181054.56
1994	241245	-368327.14	167528.45
1995	-4626	-452267.44	-1368650.26
Overall	499362	-1105171.65	-2153292.38

Source : Author's calculation

When $r_i Q_i$ = the general rise in export quantity

$\Sigma (r_{ij} - r_i) Q_{ij}$ = the market distribution effects

$\Sigma (Q^*_{ij} - Q_{ij} - r_{ij} Q_{ij})$ = the competitive effects.

Rubber Competitiveness of Thailand Compare to the Major Competitors in the World Market

The competitors which we would compare with in this study are Indonesia and Malaysia.

Rubber Competitiveness of Thailand Compare to Indonesia in the World Market

Period 1:

1. $CR_i = (1.1034631e+08) + 39509135 [(P_i^*/ P_{ic}^*) - (P_i /P_{ic})]$

(1.755909) (1.537374)

$+ 36214250 PST_{ik} - 55064758 SA_i$

(2.687589) (-2.434543)

$R^2 = 0.912240$ D.W. = 1.745999

2. $CR_i = 37434685 + 35137832 PST_{ik} - 55410971 SA_i$

(0.700115) (2.013555) (-1.889204)

$R^2 = 0.704817$ D.W. = 2.530886

Period 2:

3. $CR_i = -48221626 + 4041225.2\ SA_i$

(-1.639696) (1.113922)

$R^2 = 0.292590$ D.W. = 2.696645

In period 1, the above empirical results showed that the dominant variable that has highly correlated with the competitiveness residual is the index of price stability together with supply availability. And in period 2, the dominant variable was supply availability.

However, the regression results of the competitiveness residual for Thai rubber compared with Indonesia showed that all the three independent variables were not significant at reasonable signification level. This might suggested us that Indonesia was not compete with Thailand in the world rubber market. However, that was not true. In fact, Indonesia concentrated on block rubber export when Thai concentrated on rubber smoked sheets. Therefore, the regression results showed no significant correlation between the competitiveness residual and the three independent variables. This was because the data used this study was not specify enough. However, the result in period 1 was higher significance than in period 2. The reason should be that during 1986-1990 Indonesia exports rubber sheets more than during 1991-1995.

Rubber Competitiveness of Thailand Compare to Malaysia in the World Market

Period 1:

1. CR_i = -54759606 - (1.1617035e+08) [$(P_i^*/ P_{ic}^*) - (P_i /P_{ic})$]

(-2.731168) (-4.945188)

+ 17029215 PST_{ik} + (1.8154175e+08) SA_i

(6.777130) (8.725646)

R^2 = 0.987841 D.W. = 1.747643

2. CR_i = 438495.09 + 74122006 SA_i

(0.007976) (1.410014)

R^2 = 0.398573 D.W. = 2.327610

3. CR_i = 16541121 + 10437212 PST_{ik} + (1.0919092e+08) SA_i

(0.332787) (1.373507) (2.069070)

R^2 = 0.690506 D.W. = 1.408898

Period 2:

4. CR_i = -58954639 + 7456076.2 SA_i

(-1.783650) (1.059577)

R^2 = 0.272322 D.W. = 2.605201

The regression results above showed that the supply availability was the only significant variable which explained a major proportion of the variation in the competitiveness residuals in both two period. Besides, the regression results clearly showed that this was the same case as when compared with Indonesia. That is the results were not significant at reasonable level. Therefore, the reason for Malaysia should be the specification of data as the case of Indonesia.

Export Instability during 1986-1995

As we can see from the table 15, the average level of instability of rice export value declined from 36.136 in period1 to 25.97 in period2. That meant Thai rice export had more stability in the second period.

Table 15: Rice Export Instability during 1986-1995

Period	Export Value Instability Index
1986-1990 (1)	36.136
1991-1995 (2)	25.97
Change	-10.166

Source: Author's calculation

Table 16: Rubber Export Instability during 1986-1995

Period	Export Value Instability Index
1986-1990 (1)	70.18
1991-1995 (2)	138.92
Change	68.74

Source: Author's calculation

In table 16, the instability index of Thai rubber export value increase from 70.18 in period 1 to 138.92 on period 2. The results suggested that Thai rubber export in period 2 have higher instability than in period1.

The Contribution of Price and Quantity to Earnings Instability

Table 17 showed the contribution of price and quantity fluctuations to earnings fluctuations by using the method outlined earlier.

The contribution of price and quantity to export instability indicated that either volume fluctuations or price fluctuations were the larger contributor to earnings instability.

Table 17: The Contribution of Price and Quantity to Export Instability

	Rice		Rubber	
	Period 1	Period 2	Period 1	Period 2
CP	41.32711051	23.21302309	125.4837612	51.943184
CQ	28.5544207	48.47429334	67.59849571	15.97136651
Dominant Variable	Price	Quantity	Price	Price

Source: Author's calculation

During 1986-1990, the contribution of price instability to earnings instability was greater than that of quantity instability in both rice and rubber export. In the year of 1991 to 1995 quantity fluctuation was the dominant component of rice export while price fluctuation was still the dominant variable of rubber export.

These results advised that in the case of rice export the contribution of price fluctuations to earnings fluctuation was greater than that of quantity fluctuations in 1986 to 1990. During 1991-1995, the contribution of quantity instability to rice export value turned to be greater than that of price instability.

The same calculation has been performed for the rubber exports. Price fluctuation had clearly been the major contributor to earnings instability in both periods.

The Important of Supply and Demand Variations in Earnings Instability

Table 18: The Important of Supply and Demand Variations in Export Instability

	Rice		Rubber	
	Period 1	Period 2	Period 1	Period 2
COV[CP,CQ]	0.013900991	0.004079692	-0.015073525	0.012312905
Sign	Positive	Positive	Negative	Positive
Dominant Variable	Demand	Demand	Supply	Demand

Source: Author's calculation

Fluctuation in price and quantity traded did not arise randomly but reflect underlying changes in demand and supply. Movements in the demand schedule would results in price and quantity variations in the same direction. Shifts in the supply schedule would lead to price and quantity variations in opposite direction.

Table 18 showed that the covariance was positive in both periods in the case of rice exports. This implied that in these cases it was the demand fluctuation that was the dominant cause of instability. On the contrary, in the case of rubber exports, supply fluctuation had been the dominant cause of instability in period1. But some how in period 2, demand change was once again become the major element.

The analysis of the covariance term for the rubber export suggested a different emphasis in the explanation of earnings instability. In the earlier period supply fluctuations was the more important cause of earnings instability, but in the later period there was an equal split between supply- and demand-dominated instability.

The contribution of price and quantity to export instability shown above indicated that volume fluctuation or price fluctuation were the larger contributor to earnings instability. While table told us on which side of the export market (supply or demand) the source of instability lied.*

The results for the rice exports showed that in period 1 price fluctuations were the larger contributor to earnings fluctuations while the demand side was the source of instability. In 1991-1995, the larger contributor changed to be quantity fluctuations while the demand side was still the source of rice export instability. Because of in both periods the source of rice export instability was still the demand which normally leads to price stability, we could conclude that rice export instability was lower in period2. This was because the contributor to earnings instability was the quantity fluctuation while the instability came from the demand side and affected rice export instability through price stability.

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* It is often asserted that price stability is caused by instability in foreign demand.

For the same reason, the rubber export instability of period 2 was higher than period1 because during 1986-1990 instability of rubber export came from supply variable while price fluctuations were the larger contributor to earnings instability but during 1991-1995 source of instability came from the demand side variable and price stability was still the larger contributor.

Export Performance and Instability

From the framework of Revised CMS model used in this study, we could separate export growth into three compositions. The general rise in export quantity growth would be discussed first. Followed by the market distribution growth and the competitiveness growth.

The general rise in export quantity or demand for Thai rice was positive in the period 1986-1990 and even more positive in the second period, while comparing with period 1. The results should imply that the demand for Thai rice in the world market increased from the period 1986-1990 to 1991-1995 with more stable growth.

On the contrary, in case of rubber export, the general rise in export quantity growth increased in the same results as rice exports.

However, the instability index of rubber export in period 2 is higher than in period 1. Therefore, the demand for Thai rubber from the world market increased with more uncertainty in export quantity.

Table 19: The General Rise in Export Quantity and Export Instability Index between 1986-1990 and 1990-1995

	Rice	Rubber
Change in General Rise in Export Quantity Growth	Higher Growth	Higher Growth
Change in Instability Index	Lower Instability	Higher Instability

For the part of market distribution growth, rice and rubber export reached the same result which was the negative growth in period 1 and more negative in period 2. However, as mention above, export instability index of rice in period 2 was less than period 1. Thailand had been concentrating its exports in markets that were experiencing relatively sluggish markets and was unable to find new markets. Moreover, the negative growth of the market distribution of Thai rice export was more stable. This implied that Thailand export still maintain focused only in its old markets which considered sluggish market.

On the other hand, rubber export still concentrated in the relatively sluggish market with more instability.

Table 20: The Market Distribution Effects and Instability Index between 1986-1990 and 1991-1995

	Rice	Rubber
Change in Market Distribution Growth	Lower Growth	Lower Growth
Change in Instability Index	Lower Instability	Higher Instability

Table 21: The Competitive Effects and Instability Index between 1986-1990 and 1991-1995

	Rice	Rubber
Change in Competitiveness Growth	Lower Growth	Lower Growth
Change in Instability Index	Lower Instability	Higher Instability

The last component of growth in export was the competitive growth. Table 21 clearly shows that Thai rice and rubber export was negative in period 1 and higher negative in period 2. As the same reason about the change in instability index of export that mentioned earlier, Thai rice exports had been unable to compete effectively with other competitors in the world market in both periods with more stability in the value of rice export. On the other hand, Thai rubber export had been unable to compete effectively with the other source of supply in the world market.