CHAPTER 2
REVIEW OF LITERATURE AND RESEARCH
METHODOLOGY

2.1 Review of Literature

They will be divided into 2 parts as follows:

      2.1.1 To study CMS and RCA models
      2.1.2 To study Japan's import

2.1.1 To study CMS and RCA models

Suthipan Jiratiwat et al (1987) studied on "The analysis of the structure and the system of the export of industrial product of Thailand". This research applied the primary data by using the questionnaire to interview traders on some related matters such as strengths and weaknesses of export products and the competition capability. The secondary data from various institutions were applied in this study also. The analysis shew that the importance of industrial product increased. The results shew the changes on the comparative advantage of the export of industrial product such as textile, clothe, shoes, wood product, etc. This study also revised the monetary policy, market, etc. The study shew the capacity of export was different and depended on types of product. The adjustment by using CMS model shew the capacity of export of industrial product had tendency to be better. Some of industrial products had comparative advantage such as textile, cloth, jewelry, rubber product, plastic, toys and shoes. For the problem of export, it was found that the investment support from the government to private sector was too low. The private sector also lacked of updated data, human resource in both quality and quantity, and way to give confidence to traders. This study gave suggestion that the government should provide more production

support especially for the adjustment of the cost of production. The government should deeply concern in both short-term and long-term

Chalintu Saranya (1997) studied on "A Study of Thai Competitiveness in Rice Export to the World Market". This research studied the performance of Thai rice export to the world market. Focus on the value of rice exporting to the world market from Thailand and the rest of the world and ranging period from 1988 to 1996. This research used Constant Market Share (CMS) model. It is an analytical method for examining a country's export growth with respect to the country's performance.

This studied shew the three major effects that market trading changes as follows: 1. Growth effect 2. Commodity effect 3. Competitive effect. The result was Thai growth effect was positive. In the period 1998 to 1996. Thai could expand export to the world market. The second effect, commodity effect was positive, the increasing of world rice demand. And final effect, competitive effect was positive. Thai had comparative advantage of rice in the world market. This studied gave suggestion that Thai should be 1. Develop production system. transportation and stock in domestic for effective exporting. 2. The improvement and packaging of rice export in order to make believed directly to a customer. 3. Thai government to set the quality standard of rice export in order to compete in the world market. 4. Perfect data and immediately information 5. Trade policy-studying 6. Adjust trade policy and restriction immediately.

Kontein (1996) this studied was to analyze the export performance of Thai manufactured goods to the EU. The studied had tried to pinpoint the factors that may have the impact on the expansion those major export items to the EU.

Seven items among those major export items were identified as the main focus in this study which can be categorized as follows: canned tuna, garments, footwear, computer and part of computers, radio-broadcast receivers, television receivers, vedio, toy and electronic integrated circuits. The Constant Market Share (CMS) model and the Revealed Comparative Advantage (RCA) Index model were the methods used to study the export performance of all these goods.

The CMS model applied in this study would show the effect on the market expansion and price competitiveness in the export markets. Thai exports were rapidly expanded between 1988 to1990 since these exports were able to compete well with its competitors. This expansion had reduced its importance between 1991 to 1993 since its competitive ability had decreased.

This studied shew the anti-dumping and countervailing duty measures were some of the important barriers that the Thai exports. These items would include for example television receiver, microwave oven, etc. Furthermore, the export items under the studied were also face with new competitors i.e. China and Vietnam which start to export their goods to the EU at s lower cost than Thailand because of their low wage.

2.1.2 To study Japan's import

In the Saxon House's work (1988), it mentioned the comparative advantage by analyzing the trade structure of Japan. This research included case study of the same industries. Import and export were applied as dependent variables, and the factor endowment of factor of production was applied as explained variable. Finally, the net trade formula was obtained as the standard for trade between different kinds of industry. It also created the internal trade formula for the same industry.

The estimation was made by using the data for 41 countries and 61 products and by applying the factor endowment of major factor of production. The factor endowment variable consists of 6 variables, i.e. capital, education, labor, petroleum, coal and land.

The results of estimation from the model of trade for different kinds of industries shew that Japan had no comparative advantage in food and natural resources. This is because Japan had scarcity of land and natural resources. The study also found that Japan was the major industrial product exporter and natural resources importer.

Due to the formula of trade in the same industry, which explained the import ratio for each product to GDP of each country, it shew that the import performance of Japan were stable.

However, Saxon House's work was still unclear on labor endowment. There were no distinction between the highly educated labor and the uneducated labor.

Mullika Limluklert (1993) studied the case of Thailand entry into Japanese market of compared with entering into other countries markets such as the .USA and the countries in European Union. The econometric model and the data of 36 products were used in the study. This model classified the net export as dependent variables. The other 6 variables of factor endowment were classified as independent variables. The generalized least square technique was used in order to resolve the problem of heteroscedasticity.

The study found that the factor endowment variables, the capital stock and low educational attainment labor had statistically significant effect on more products an other factor endowment.

For each product, the ability of the market access to particular markets was different. According to the access to EU market of Thai products there were only 4 items that net exports were influenced by its "market

access" variables. Whereas only 1 of these 4 products may be interpreted as closed in the EU market. The accesses of 21 Thai product items to Japanese market were statistically significant. However, there are 12 products for which the market closed. Most products that the Japanese market was closed for were capital-intensive manufacturing, machinery, and chemical products. In case of U.S.A market, there were 24 products for corresponding market access variables that were found significant. There were 6 products indicate that the USA market was closed for.

Lawrence (1987), the study was applied from the theory of Helpman and Krugman. The first formula was in the form of dependent variable, as the ratio of the market in each industry of each country. It implied the ratio of import to the domestic consumption. The independent variables consisted of distance, the ratio of export. It implied the ratio of export to the foreign consumption. The dummy variable referred to Japan might imply that Japan had trade barrier and unusual different taste in each industries. In order to evaluate both formulas the data of industrial production and trade for the year 1970 and 1983 of 13 countries was applied, by dividing the industrial sector into to 21 sectors.

The result from second formula shew that there were 16 industries out of 21 that differed in consumption and had trade barrier. From resulted the industries had no trade barrier. i.e. automatic data processing machines and part thereof, airplane and part thereof, mine, telephone and part thereof, and aluminum structures and parts of structures

Khaophuthai Patcharee (1994) study was to analyze the import of Japan from Thailand. The study has determined to important the factors. That will be impact on major import items from Thailand.

The major import items are identified as the main focus in this studied as follows: frozen shrimps, sugar, garments, jewelry, and furniture. The resulted from this study shew the effect on the market

expansion and competitiveness of price in export to Japanese market. The market expansion was an important contributing factor to the expansion of Thai export to Japan. The products had trended upward i.e. frozen shrimps, garments, and furniture and part thereof while the products had trended downward i.e. jewelry and sugar

2.2 Research Methodology

In order to cope with the objectives above, the study will be divided into 2 sections as follows:

Section 1

This section will concentrate on:

Analyzing the data with descriptive analysis. In order to study trade relation between Thailand and Japan. The data will cover period 1989 to 1998. The change of currency exchange policy effect to Thai export will also be analyzed.

Section 2

This section will concentrate on:

Analyzing the data by applying the CMS and RCA models.

In order to study the factors of Thai export, the Constant Market Share (CMS) model will be utilized. It will cover the trade between Thailand and Japan in the two periods of time, i.e. first from 1995 to 1996 and second is from 1997 to 1998.

To study on the comparative advantage by using the Revealed Comparative Advantage Index (RCA) model, data of the years 1995 to1998 will be used. The study will also focus on China, Singapore, Malaysia, Philippine, Indonesia compare with Thailand since these countries have trade value with Japan closely to what Thailand have. It can be said that they are the major competitors of Thailand.

Models

Constant Market Share Model (CMS)

Some expected variables and equations will be as follows:

V_{i1} = the value of export of product i of Thailand in year 1

V_{i2} = the value of export of product i of Thailand in year 2

V_{j1} = the value of export to Japan of Thailand in year 1

V_{j2} = the value of export to Japan of Thailand in year 2

V_{ij1} = the value of export of product i to Japan of Thailand in year 1

V_{ij2} = the value of export of product i to Japan of Thailand in year 2

V_1 = the total value of export of Thailand in year 1

V_2 = the total value of export of Thailand in year 2

r = the export growth rate of Thailand during year 1 and 2

r_i = the growth rate of exported product i of Thailand during year 1 and 2

r_{ij} = the growth rate of exported product i of all Thailand to Japan during year 1 and 2

From the above variables:

$$\sum_j V_{ij1} = V_{i1} \quad , \quad \sum_i V_{ij1} = V_{j1} \qquad (1)$$

$$\sum_j V_{ij2} = V_{i2} \quad ; \quad \sum_i V_{ij2} = V_{j2} \qquad (2)$$

$$\sum_i \sum_j V_{ij1} = \sum_i V_{i1} = \sum_j V_{1j} = V_1 \qquad (3)$$

$$\sum_i \sum_j V_{ij2} = \sum_i V_{i2} = \sum_j V_{2j} = V_2 \qquad (4)$$

In order to consider the export that is no difference in product and market, the export was considered that there is the same product to a market. The export country can have the constant market share. The result of export growth is rV_1 (the growth rate of all export countries) or;

$$V_2 - V_1 = rV_1 + (V_2 - V_1 - rV_1) \tag{5}$$

If only export country is considered which related to the increasing of total world export, the following formulas to focus on each export product may be applied.

$$V_{i2} - V_{i1} = r_i V_{i1} + (V_{i2} - V_{i1} - r_i V_{i1}) \tag{6}$$

Or; $$V_2 - V_1 = \sum_i r_i Vi1 - \sum_i (Vi2 - Vi1 - r_i Vi1)$$

$$(rV_{i1}) + \sum_i (r_i - r) V_{i1} + \sum_i (V_{i2} - V_{i1} - r_i V_{i1}) \tag{7}$$

The export of export country will depend on the following variable:

$r Vi1$ which is the increasing of export of all export countries.

$\sum_i (r_i - r) V_{i1}$

It is the increase of quantity export of export country that depends on the type of export product. If the export product is high demand in import country, term $(r_i - r)$ will be positive. But if the product is low demand, term $(r_i - r)$ will be negative.

3. $\sum_i (Vi2 - Vi1 - r_i Vi1)$

If this term is positive, the Thai international trade can grow as the capacity to compete with the competitors, in the factor of price. If this effect is negative, it implies that the Thai export to Japan may lose the competitive capacity.

To include market effect from import country to export country the following formulas may be derived.

$$V_{ij2} - V_{ij1} = r_{ij} V_{ij1} + (V_{ij2} - V_{ij1} - r_{ij} V_{ij1}) \tag{8}$$

$$V_2 - V_1 = rV_1 + \sum_i (r_i - r) V_{i1} + \sum_i \sum_j (r_{ij} - r_i) V_{ij}$$

$$+ \sum_i \sum_j (V_{ij2} - V_{ij1} - r_{ij} V_{ij1}) \tag{9}$$

Equation (9) shows that increasing of export product of export country will depend on the four variables:

1. rV_1 — the growth rate of import of import country (**Growth Effect**).

2. $\sum_i (r_i - r) V_{i1}$ — the effect from the type of product (**Commodity Effect**)..

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.

3. $\sum_i \sum_j (r_{ij} - r_i) V_{ij1}$ — the effect from the market distribution of export country (**Market Effect**).

If the market of export country has higher growth rate than the world average. this term will be positive and vice versa.

4. $\sum_i \sum_j (V_{ij2} - V_{ij1} - r_{ij} V_{ij1})$

It is the capability for sharing the market of export country in the foreign market (**Competition Effect**). If this term is positive, the Thai international trade can grow as the capacity to compete with the competitors, in the factor of price. If this effect is negative, it implies that the Thai export to Japan may lose the competitive capacity.

In this study, the concentration will be on the export of Thailand to Japan. So the result of the calculation from the CMS model will be use to explain the Thai export to Japan. In the CMS model, formula (9) will be

applied according to those four factors, which the study will show the three main solutions because in third factor, Market Effect, as study on a export country export to many markets but this study will be study Thai export to Japan market which is a market so "Market Effect" no necessary on this study.

Three main factors as follow;

The growth import of Japan. *(Growth Effect)*

Effect from the type of product. *(Commodity Effect)*

The result of the competition in the market. *(Competition Effect)*

The formula can be written as follow;

$$V_{ij2} - V_{ij1} \;=\; r_{ij} V_{ij1} + (V_{ij2} - V_{ij1} - r_{ij} V_{ij1}) \tag{10}$$

$$V_2 - V_1 \;=\; rV_1 + \sum_i (r_i - r) V_{i1} + \sum_i \sum_j (V_{ij2} - V_{ij1} - r_{ij} V_{ij1}) \tag{11}$$

Where:

$V_2 - V_1$ is the total value of the difference of Thai export value during year 1 and 2

1. rVi_1 is the growth Japanese market.

2. $\sum_i (r_i - r) V_{i1}$ is the commodity effect.

This effect may support the trade to increase or decrease which depend on the Japanese market would have high or low demand for the product on the Japanese market. If the demand is high, this term will be positive but if the demand is low, this term will be negative.

3. $\sum_i \sum_j (V_{ij2} - V_{ij1} - r_{ij} V_{ij1})$ is the competition effect

If this term is positive, the Thai international trade can grow as the capacity to compete with the competitors, in the factor of price. If this effect is negative, it implies that the Thai export to Japan may lose the competitive capacity.

- ## Revealed Comparative Advantage Index Model (RCA)

Idea of the Comparative Advantage

According to the theory of Comparative Advantage, the international trade occurred when each country has the commodity in the different level from the level of production factors. On the other hand each country produced the same product with the different factors of production. However, the production factors of each country have different relative productivity. The country that can produce product with the lower cost than the other will produce that product and the others will produce another product. The study of the comparative advantage by using this theory is quite difficult. So, the economist name Bela Balassa suggested the *"Revealed Comparative Advantage"*. (Bela Balassa, 1965) It is suggested to observe the ratio of the export product of a country when compared with the average ration of that product in the world market. The formula is

$$RCA = \frac{(X_{ij} / X_j)}{(W_i / W)}$$

Where;

RCA	=	the Revealed Comparative Advantage
X_{ij}	=	the value of export of product i from country j
X_j	=	the total value of export of country j
W_i	=	the value of export of product i in the world market
W	=	the total value of export in the world market

If the value of RCA is more than 1, it implied that the country has comparative advantage in that product. But if it the value is less than 1, the country would be no comparative advantage in that product.

In this study, the RCA model will be applied to study the Thai export to Japanese market. The formula could be as follow:

$$RCA = \frac{(T_{ij} / T_j)}{(M_i / M)}$$

Where;

T_{ij}	=	the value of export product i from Thailand to Japan.
T_j	=	the value of total export of Thailand to Japan.
M_i	=	the value of world export of product i to Japan market.
M	=	the value of total world export to Japan market.

The study Thai export to Japan, the RCA model will be applied export to Japan market so that the variables, W_i as the value of export of product i in the world market change to M_i as the value of world export of product i to Japan market, and W as the total value of export in the world market change to M as the value of total world export to Japan market because of this study is not study Thai export to the world but study specifically Thai export to Japan.

In the RCA calculation, the value of export did not show the production system and the trade barriers. The value of RCA cannot show the effect of trade barriers either.