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**Effects of Trade Liberalization on
Agriculture in Thailand:
Institutional and Structural Aspects**

Kajonwan Itharattana

The CGPRT Centre

The Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) was established in 1981 as a subsidiary body of UN/ESCAP.

Objectives

In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

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In pursuit of its objectives, the Centre has two interlinked programmes to be carried out in the spirit of technical cooperation among developing countries:

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WORKING PAPER 39

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Acronyms

AGBOT	Balance of Trade in Agricultural Sector
AGEX	Total Agricultural Exports
AGGDP	Gross Domestic Product Originating from Agriculture
AGIM	Total Agricultural Imports
BAAC	Bank of Agriculture and Agricultural Cooperatives
B.E.	Buddhist Era
BOI	Board of Investment
BOT	Balance of Trade
CCCN	Customs Cooperation Council Nomenclature
CIF	Cost, Insurance and Freight
CGPRT	Coarse Grains, Pulses, Roots and Tubers
CSO	Cold Storage Organization
DEP	Department of Export Promotion
DOH	Department of Highways
EU	European Union
EXR	Exchange Rate B / \$ (Thai baht/US dollar)
EXIM	Export - Import
FOB	Free on Board
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GR	Annual Compound Growth Rate
GSP	Generalized System of Preferences
HYV	Hybrid Variety
IEA	Industrial Estate Authority
L/C	Letter of Credit
MOAC	Ministry of Agriculture and Cooperatives
MOC	Ministry of Commerce
MOF	Marketing Organization for Farmers
MOTC	Ministry of Transport and Communications
NFC	National Fertilizers Cooperation
OAE	Office of Agricultural Economic
ORRAF	Office of the Rubber Replanting Aid Fund
PSE	Producer Subsidy Equivalent
SMU	Support Measure Unit
TOTEX	Total Exports
TOTIM	Total Imports
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
VER	Voluntary Export Restraint
WTO	World Trade Organization

Foreword

Responding to the growing concern for the effects of trade liberalization on regional agriculture, the CGPRT Centre started a research project “Effects of Trade Liberalization on Agriculture in Selected Asian Countries with Special Focus on CGPRT Crops (TradeLib)” in March 1997, in collaboration with partners from ten countries: China, India, Indonesia, Japan, Malaysia, Pakistan, the Philippines, the Republic of Korea, Thailand and Vietnam. In all these countries, important issues regarding trade liberalization were investigated with an identical research framework by national experts.

The investigation covers major crops which might receive either favorable or unfavorable effects of trade liberalization both in export and import. I believe that readers of the reports can obtain broad and practical knowledge on institutional aspects of the effects of trade liberalization; moreover, the information will be useful for researchers and policy planners in other countries in the region. A volume, which includes more commodity and location-oriented study on the same subject, will follow. I would like to note that, since this project was conceived and started before the current currency and economic crisis began in the middle of 1997, the analysis handles basically the period before the crisis with possible current information.

I am pleased to publish **Effects of Trade Liberalization on Agriculture in Thailand: Institutional and Structural Aspects** as one of the fruits of the project. I certainly hope this report will be fully utilized for the improvement of agricultural trade and the encouragement of regional agriculture.

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Director
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Kajonwan Itharattana

Executive Summary

Thailand's economy partly depends on the world economy. Thailand has long had an open economic system, which started international trade in 1855. Thailand often experiences a deficit trade balance due to the fact that its imports of goods and services tend to increase, more than exports. The rise in the imports has resulted from the development of the country. Although Thailand has experienced unfavorable trade balances, the agricultural trade account has always been favorable. This indicates that the non-agricultural sector caused the unfavorable balance of trade.

Agricultural commodities have long been Thailand's major exports with a growth rate of 11% during the 1980-1996 period. The increase was due to rising trade of several export items, namely rice, rubber, sugar, and frozen chickens and shrimp products. The export of maize decreased tremendously as a result of increase in the domestic livestock industry requiring feed for raising animals. It declined at the rate of 18.8%

Total export value of agricultural commodities was 16,500 million dollars in 1996 in which rice was a major export commodity since the beginning of the nineteenth century. Rubber became a major export item in the twentieth century. Rice and rubber took turns being in the first rank of total agricultural exports. Furthermore, many agricultural products, namely maize, cassava, shrimps, frozen chicken, etc. were added to the list of important Thailand's export items.

Considering the percentage share of each agricultural commodity to the total export, it was found that the percentage share of rice to total agricultural exports declined from 29.88% in 1960 to 3.59% in 1996. Rubber fell from 30% to 4.5% during the same period. Fisheries products, shrimps and shrimp products in particular became a major source of income.

Thailand's total import has increased along with its development trend with a rate of 17.4% during 1980 to 1996. Pulp and paper products have been a major agricultural import group of Thailand followed by dairy products and soybean products.

Although international trade has played a significant role in the Thai economy as source of national income and agricultural trade is a leading sector, the export statistics of farm commodities show that its value has been dependent on export of a few traditional crops, such as rice, rubber and cassava. However, between 1980-1995, the value of these products showed a declining trend and their percentage shares of the total export decreased. This indicates that there has been an increase in export value of other agricultural commodities. The sectors which become more important are livestock and fisheries, i.e. poultry and shrimps in particular. Nevertheless, statistics also show that the import value of agricultural products increased over time with higher rates relative to the export. If this trend persists, the farm sector may confront trade imbalance in the future.

In the coming age of globalization, Thailand is facing rising competition in the world market. While the free trade concept is endorsed, an adjustment of demand and supply among countries will result. The principle of comparative advantage of countries is brought into consideration. Apart from straight competition, trade policies and measures of trading countries will have influence on production and marketing among countries. Furthermore, the implementation of the WTO agreements is expected to have impact on the production situation in major exporting countries, including Thailand.

Reduction in producer subsidies of the developed countries by 20% of producer income will lead to a downward adjustment of the production area and result in reduction of total export

volume of those countries. The adjustment is projected to have a positive effect on prices. Thus, the change in prices will impact on a large exporting country like Thailand.

By the same token, the adjustment of Thailand is to reduce import duties by an average of 24%. This will open up Thai markets to increased imports of commodities with prices lower than those of local products. In addition, Thailand has to reduce the current producer subsidies on soybean, palm oil, dairy products and sugar. This will affect the production of these commodities.

While the international trade of the agricultural products is being deregulated, it is important that WTO members undertake a study and analysis of the impact of trade liberalization on their major export and import products. These findings will lead to adjustments to cope with changes in the world trade situation.

Introduction

Thailand has long been an open economic system with a free trade policy. Thailand started its first economic and social development plan in 1961, when trade expanded rapidly. From the existing data, the proportion of trade to Gross Domestic Product rose from 30% in 1961 to 75% in 1995. It has been noted since then that the Thai economy partly depends on the world economy. Presently, technology and communication are well advanced. Change in world trade toward greater liberalization is expected to have an impact on the Thai economy and its trade in particular. During the past two decades, Thailand has continually encountered problems of international competitiveness and protection. However, according to the GATT Uruguay Round Agreement, world trade is being adjusted to be greater liberalized and competitive.

In this connection, member countries are adjusting to the commitment for greater trade liberalization, reduction of custom tariffs, cancellation of import restrictions by opening product markets and elimination of agricultural internal support and export subsidies. As a result, regional free trade areas are formulated in many regions around the world to cope with the changes. There will be economic effects, both negative and positive, for each country.

However, the overall effect for the globe is efficiency of resource usage because every country has to produce those commodities for which the country has a comparative advantage and can be competitive in the world market.

Thailand has been a member of the World Trade Organization, WTO (former GATT) since December 22, 1981. As a member of WTO, Thailand has obligations under the GATT Uruguay Round Agreement as follow:

- Thailand must reduce its total tariff by 24% within 10 years starting from 1995 to 2004.
- For market access, tariffication must be used on agricultural commodities instead of any specific non-tariff measures as follows:
 - For products which are normally not imported, Thailand must open its internal markets at a rate of 3% of domestic consumption beginning 1995 and the quantities have to be increased to 5% in 2004 with low taxation.
 - The import quotas for products, which have import restrictions less than 3% of consumption, must be treated the same as above. Where the quantities imported are more than 5% of domestic consumption, such as current import quotas, an existing tariff will have to be used as the basis for the calculation. On the other hand import volumes exceeding the quota have to be taxed at a rate calculated from the difference of foreign and domestic prices of the products.
- Internal support must be reduced by 13.3% within 10 years.
- Export subsidies must be reduced either by 24% of the government budget or 14% of the subsidized export value within 10 years.

As international trade plays a very significant role of bringing in national income and making the economy continue to grow, it is important to analyze the impact of trade liberalization incurred under the commitment, which will affect agricultural products and the Thai economy. This study will look into the implementation under market access commitment and suggest ways and means to adjust to trade liberalization. The commodity study focuses on rice, maize and soybean.

1.1 Objectives of the study

The Objectives of the study are:

- to describe the international trade of Thai agricultural products under further liberalization market condition;
- to characterize the current situation and prospects of agriculture in Thailand with special attention to the effects of trade liberalization;
- to specify policy options for improving farmers' income in the process of trade liberalization;
- to provide concerned policy-makers and researchers with suggestions based on the study findings.

1.2 Outline of the study

The next chapter presents an overview of trade-related policies. Chapter 3 describes infrastructural development affecting Thailand's international trade, which includes physical infrastructure development and infrastructural building. Chapter 4 describes trends of agricultural trade and the overall effects of trade liberalization. Finally, Chapter 5 deals with issues of importance and major findings for the second phase study of the project.

2. Overview of Trade-Related Policies

2.1 History of the trade regime

As mentioned previously, the trade and price systems of Thailand are based on a free trade economy. The importation and exportation of goods to and from Thailand are subject to customs laws and regulations. However, goods which are obscene, dangerous to life or health or harmful to the national economy may be prohibited from import or export altogether. Certain goods may be placed under restrictions where prior government permission must be sought before such goods can be imported or exported. Apart from this, goods may be imported or exported upon completing customs procedures and paying customs duties, if any.

The tariff policies in the farm sector have had considerable impact. They have long been providing major earnings during the National Economic and Social Development Plan I (1960-1965) to Plan III (1972-1977), which were adjusted to promote and support agriculture.

Other fiscal instruments employed in market intervention have been price mechanisms manipulated mainly for the sake of producers and consumers. They include farm purchases in time of over-supply, crop mortgage and price guarantee in times of crisis for rice, kenaf and coffee, etc. Farmers commonly responded to the intervention by increasing their production.

In addition, several control measures were often employed when a domestic shortage was likely to occur. They were an increase in the duty, tax levy and quota allotment.

In the meantime, the Thai farm sector has long been facing trade barriers and protection to its disadvantage. It has to accept whatever world prices are offered. Even worse, most of the Thai price policies were implemented to solve crises rather than being systematically set. During Plan VI (1985-1990) and Plan VII (1991-1996) new public policies were enforced to adjust Thai agricultural production systems, but the sector's performance could not in any way be compared to that of producers in the developed world. However, the GATT agreement may be capable of changing towards a favorable trade environment in the world trade arena. As a result, a section will deal with an assessment of the future taxation system and any likely impact to Thai agriculture.

However, within the agricultural sector, farm product marketing is closely related to changing external trade. This will result in farmers being vulnerable to the unstable world export trade. Furthermore, Thailand faces competition in overseas markets for its export products. As a result and in light of farm income enhancement policy, various policies and measures have been introduced by the government. In order to regulate farm product marketing, consideration needs to be made from production to consumption levels. Thus, the basic elements of marketing control used by the government to regulate agricultural product marketing include control at farm, domestic consumption and export levels.

2.1.1 Marketing measures at the farm level

Price support and price guarantee

These two programs have often been implemented since 1955 and obviously their procedures do not differ. A minimum price level was determined and immediately it was announced as either a support or a guarantee price.

As both policy measures aim for a fair price to the farm producers, the price support scheme is by nature an indirect intervention allowing a designated government agency to buy part of the production supply in a bid to create more demand in expectation of a subsequent higher price of the commodity for the farmers and for an assigned agency to buy all when the

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market price goes below a set value. Commodities often under the two measures include rice, maize, sugarcane, cotton, mungbean, coffee, soybean, groundnut, garlic, shallots, and more recently para rubber. The impact arising out of the price support and guarantee schemes was very similar.

Factors contributing to the success of either of the two programs have been identified. First, the government spending in this regard must be on an increasing trend in order for the scheme to become successful over the years. Otherwise insufficient expenditure will not reach the project target. After receiving an assured price, the producers could be expected to produce more in the next planting season, which also raises an additional burden to the government. Second, the storage facilities need to be adequate and appropriate to maintain the quality of commodities. A successful price guarantee program would inevitably face this difficulty of providing adequate storage in the right locations. Third, the marketing outlets should be sought in advance, otherwise problems of maintaining the facilities and the investment, etc. follow. Furthermore, the staff entrusted with planning, operation and administration must possess the required ability and honesty, while these qualities in general are scarce in any developing country.

Buffer stock

As a two-pronged approach to the major crop price stabilization program, the buffer stock scheme was a second stabilizing measure employed for rice, cassava, certain beans and maize. It operated at both the export level and at central markets in the major producing areas to assemble the crops up to a target, focusing on the beginning of the harvest period when most farm sales are done. Although the purchases were not directly with producers as in the price support/guarantee programs, this intervention was expected to raise the price received by the farmers above the minimum price. Late in the harvest period when the production supply decreases, the price received would rise and it would be time to release the buffer stock in order to raise the supply, so the product price would be adjusted downward and the farm price should be stabilized.

It is notable that the buffer scheme was little more than the price guarantee program with the participation of private business and the intervention was concentrated at the central markets in the producing areas instead. In fact, the measure aims to maintain a stabilized farm price level throughout the year, thus damping down serious price swings.

2.1.2 Marketing measures at the domestic consumption level

Trade measures used at this level aim at stabilizing domestic prices and controlling instability of the local markets. The measures include quantitative restriction of imports and determination of a higher administered price.

Quantitative import control

Import restriction is a policy which has an indirect impact on prices of farm commodities. For example, whenever infant local industries and agro-processing industries need assistance at their first stage of operation, protection using quantitative import control was applied.

In 1982, there was a surplus of raw fresh milk over the demand for fluid milk products, while the cost of using imported milk powder was lower than that of fresh milk produced domestically. To support domestic dairy production, the government forced dairy processing firms producing ready-to-drink fluid milk to adhere to a ratio of local raw fresh milk to milk powder import. In this connection, the Ministry of Commerce, with the Importation and Exportation of Product Act B.E.2522, forced firms to apply for import permission. The permission was contingent upon the importing firms stating the purpose for which the milk

powder imports would be used. If it were used for the “ready-to-drink” fluid milk production, they must guarantee to purchase a set volume of raw fresh milk for each kilogram of skim milk powder imported for the fluid milk. The ratio of purchase was administered by the government. This law started in March 1983 and continues to be effective up to now.

In addition to the dairy import control, other commodities such as coffee, onion seeds, onion, tea, rice, palm oil, soybean meal, copra, potatoes, garlic and silk also have import restrictions. The importers must request permission to import with specific rates of tariff. The measure aims to assist farmers and infant industries in the country.

Import tariff measures

Historically tariffs have been powerful pricing policy instruments imposed on farm exports and on imports later. The taxes in most cases have been aimed to reduce local price swings. For the imports, both taxation and restrictions have been employed to protect segments of manufacturing industries. Some imports are banned; others require permission. The controls on rice and sugar aimed at preventing re-importing when these products have been exported. To protect the producers, such products as kenaf, soy oil, milk and milk products, tea and palm oil have been put under import control.

Reserve requirement program

Another measure to stabilize domestic consumption is the commodity reserve requirement. The rice reserve requirement program first came into existence in a time of rice shortage in 1973 and it terminated in 1982. The program required exporters to sell a portion of their rice supplies to the government at lower than local prices. The underlying policy was to allow the latter to get inexpensive rice for resale to local consumers. Thus it was similar to an ad valorem tax which also kept down the farm prices.

2.1.3 Marketing measures at the export level

Export taxes

As mentioned previously, tariffs have been powerful pricing policy instruments imposed on farm exports and imports. Rubber, in addition to rice, was much taxed too. Since around 1982, the heavy taxes on exportable supplies began to decline. Almost all export taxes on rice were abolished in 1986 and taxing rubber was steadily reduced and finally removed in 1989.

Rice, a main foreign exchange earner, had long been taxed several ways, namely; the premium, an export duty (ad valorem tax) and a requirement for rice reserve (tantamount to an ad valorem tax). When the international prices for rice were too low to keep the export premium and to keep stabilized domestic and farm prices, the rice premium was abolished. The export tax had depressed farm paddy prices and simultaneously rural incomes.

Quantitative export control

Quantitative restriction on exports is imposed to assist domestic consumers and control export quantities consistent with the importers’ purchase contract.

The government was involved in allocation and distribution of maize contracts to Thai exporters in 1967. Only qualified and registered exporters were chosen to obtain quotas. However, the quota system was abolished in 1981 due to a rapid expansion of the domestic market for animal feed and an increase in export opportunity to other markets. In addition, the world price of maize was declining. So since 1981, export of maize was really liberalized.

For cassava, the EC has imposed a Voluntary Export Restraint (VER) on Thailand since 1982. By this Thailand received a cassava quota as a restraint agreement with the EC. The VER benefit to exporters is higher prices in the quota controlled by the EC market. However, this restriction led to a domestic surplus. Since 1984, the government has encouraged exports to

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non-EC markets by rewarding the exporters with an additional export quota to the EC market. This action raised the cassava pellet demand and prices.

Trade policy measures since Plan I (1960-1965) have been used to set the pace industrialization, and the most commonly used measure has been different protecting tariff rates on imports. For some commodities, the import tax rates are ad valorem, for others, specific. However, many import items are set with both ad valorem and specific rates of tax. The rate to be used in any given year may differ from one commodity type to another. Further it may also differ over time. Customs tariff decrees to adjust the tariff schedule are issued. Other instruments have been quantitative restrictions, credit assistance to exporters, and tax refunds on exports. These measures have more impact than the investment promotion program, which has also been employed largely as a trade policy measure benefiting only the companies granted the privileges, while protection has been granted to all those involved in the international trade concerns.

2.2 Tariff structures and their development

Revenues from tariffs, duties and charges collected from imports and exports of various types of products were and still are an important source of government income. However, as the country becomes more economically developed, the major dependence on tariffs is diminishing, relatively if not absolutely. In 1994, the contribution from customs duties declined to 16% from 50% in 1961.

With regard to the structures used in 1960-1987 for the purpose of product identification, imports were classified into groups and headings according to the Brussels Tariff Nomenclature (Customs Cooperation Council Nomenclature: CCCN) such that imports were first classified into 21 major groups or sections according to similarities in character, origin, or use. Selected sections are shown in Table 2.1:

Table 2.1 Selected CCCN sections.

Section	Description
1.	Live animals and animal products
2.	Vegetable products
3.	Animal and vegetable fats
4.	Processed food, alcoholic and non-alcoholic beverages, and tobacco
5.	Chemical products and derivatives
6.	Synthetic rubber and plastic products
7.	Leather and leather products
8.	Wood and wood products
9.	Paper and paper products
10.	Textiles
11.	Machinery, electrical equipment and parts

Each section consisted of one or more chapters where imports were further classified, starting from chapter 1 of live animals and animal products to chapter 99 of art objects. Finally, in each chapter, finer classification of imports was made through the use of a two decimal number system after the chapter number, e.g. imports classified under chapter 87 were land vehicles, of which item 87.01 was tractors. Therefore, for practical purpose, each imported item would be identified by the 4-digit system.

For export, only 7 groups of products including rice, rubber, teak, etc. were subject to export duty which remained in 1982-1986.

In 1987, the tariff system was restructured, among other things, to provide a new instrument that could handle and update the system according to the changing international economic and trade policies. The new customs tariffs employed product classification and

customs codes according to the International Convention on the Harmonized Commodity Description and Coding System, which was further developed from CCCN.

Tariff rates have been recognized as powerful instruments of adjustment in international trade and other economic and social policies. The Customs Tariff Decree provided that, the Finance Minister was empowered to increase or reduce any of the rates for the sake of the economy or public welfare.

The introduction of the Harmonized System and the profound overhaul of the tariff structure resulted in the reduction of applied rates previously set at 39 rates down to 6 rates which are classified by production process (Table 2.2):

Table 2.2 Tariff rates in the Harmonized System.

Tariff Rate (%)	Commodity
0	commodities with tariff exemption policy
1	raw materials
5	primary products and capital goods
10	intermediate goods
20	finished commodities
30	special protected goods

Those 7 groups of export items that were still subject to export duty in 1982-1986 and some as late as 1995 were waived except the 2 groups of wood products and raw hides for the purpose of export promotion. Further, the tariff measures have been important particularly concerning duty drawbacks as well as allowing private business to establish bonded warehouses.

2.3 Tax base

There are two bases for customs duty levy, a specific base and an ad valorem base. In the case of specific duty, the base for tax collection is the unit, length, volume, weight or quantity of the goods in question. As for ad valorem duty, the base is the “true market value” of the goods, which is normally taken to be their CIF prices.

2.4 Real exchange rate

Aside from export tariffs and regulations, the 1984 devaluation in relation to the US dollar was not much versus the exogenous movements in the Thai effective exchange rate. So, despite the devaluation, Thai policy on the exchange rate since before 1984 was in essence fixed in relation to the US dollar. A devaluation was likely to be brought in when other ways of handling a trade imbalance could not be effective, i.e., high tax on import, fiscal contraction, etc.

Although, after 1984 a flexible exchange rate fixing was managed, it was tied to a basket of currencies, so a close tie to the US dollar was kept until late 1997. While the trading system is relatively open, a stable exchange rate has been maintained up to the first half of 1996, backed by secure international reserves and domestic inflation is avoided as a main policy objective. A 30% depreciation of the country’s effective exchange rate from 1986 to 1990 resulted from the baht being pegged to a depreciating US dollar.

2.5 Investment incentives

Under the Investment Promotion Act of 1977 as amended 1981, the Board of Investment can provide tax incentives to support industries which invest in production considered to be important for the country's development and environment conservation.

Criteria for granting tax and duty privileges for promoted projects are based on location of implementing projects. Exemption and/or reduction of export tax, income tax, import tariff on production inputs, products and income in each location vary. In the farm sector, there are many agricultural enterprises eligible for investment promotion. Details on conditions for BOI support and agricultural activities and products are available elsewhere.

2.6 Commitments under WTO agreement on agriculture

Thailand submitted its Schedule of Commitments on Agriculture and its conditional offer on tariffs in trade negotiations on March 1993. The Multilateral Trade Agreements in the Uruguay Round ended in December 1993. Under the Agreement, Thailand has market access commitments and concessions on agriculture specified in Table 2.3, which entered into force on January 1, 1995.

On the market access side, Thailand must open the market for 23 farm commodities which had import controls. In this regard, the switch from non-tariff measures in agricultural trade to tariff measures has to be undertaken.

On internal supports, Thailand has to reduce domestic support of 873 million dollars in 1995 to 761 million dollars in 2004 or 13% within 10 years.

With regard to export subsidies, Thailand has no commitment for this category. However, no more export can be subsidized in the future.

Table 2.3 Market access: Thailand.

Tariff Item Number	Description of Product	In-Quota			Out-Quota	
		Binding Rate (%)	Minimum Access (tons)		Binding Rate (%)	
			1995	2004	1995	2004
0401	Milk and cream	20.00	2,286.00	2,400.00	46.00	41.00
0402.10.0007	Milk powder	20.00	45,000.00	55,000.00	240.00	216.00
0701	Potatoes	27.00	288.00	302.00	139.00	125.00
0703.10	Onion and shallots	27.00	348.00	365.00	158.00	142.00
0703.20.0007	Garlic	27.00	62.00	65.00	63.00	57.00
0712.90.0115						
0712.90.0128						
0801.10.0106	Coconut	20.00	2,312.00	2,427.00	60.00	54.00
0901	Coffee beans	30.00	5.00	5.25	100.00	90.00
0902	Tea	30.00	596.00	625.00	100.00	90.00
0904.11.0003	Pepper	27.00	43.00	45.00	57.00	51.00
1005.90	Maize	20.00	52,096.00	54,700.00	81.00	73.00
1006	Rice	30.00	237,863.00	249,757.00	58.00	52.00
1201.00.1000	Soybean	20.00	10,402.00	10,922.00	89.00	80.00
1209.91.0106	Onion seeds	30.00	3.00	3.15	242.00	218.00
1507.10.0001	Soybean oil	20.00	2,173.00	2,281.00	162.00	146.00

Note: Surcharge imposed on maize has been 380 baht/ton.

Source: Office of Agricultural Economics.

Continued

Table 2.3 Market access: Thailand (continued).

Tariff Item Number	Description of Product	In-Quota			Out-Quota	
		Binding Rate (%)	Minimum Access (tons)		Binding Rate (%)	
			1995	2004	1995	2004
1511	Palm oil and kernel	20.00	4,629.00	4,860.00	159.00	143.00
1513.21						
1513.29						
1513.11.0008	Coconut oil	20.00	385.00	401.00	58.00	52.00
1701	Sugar	65.00	13,105.00	13,760.00	104.00	94.00
2101.10	Instant coffee	40.00	128.00	134.00	55.00	50.00
2304.00.0008	Soybean meal	20.00	219,580.00	230,559.00	148.00	143.00
2401	Tobacco leaves	60.00	6,129.00	6,435.00	80.00	72.00
5002.00.0003	Raw silk	30.00	460.00	483.00	257.00	226.00
0813.40	Dried longans	30.00	5.00	8.00	59.00	53.00
1203.00.0005	Copra	20.00	694.00	1,157.00	40.00	36.00

Note: Surcharge imposed on maize has been 380 baht/ton.

Source: Office of Agricultural Economics.

2.7 Trade policies on farm inputs

2.7.1 Fertilizer policies of Thailand

Fertilizer policy of Thailand has been dominated by a program known as the National Fertilizer Corporation (NFC). It was a national project to produce fertilizer domestically. The project was not successful due to the high cost of local natural gas and lack of competition with the international price for fertilizer. Thus, the project was terminated in 1991.

Apart from the NFC project, government policies on fertilizers mainly involve distribution of fertilizer at fair prices or at lowered costs. Government enterprises involved in fertilizer distribution are the Marketing Organization of Farmers (MOF), the Bank of Agriculture and Agricultural Cooperatives (BAAC) and the Office of the Rubber Replanting Aid Fund (ORRAF). The ORRAF deals only with distribution of fertilizers to rubber producers.

The MOF is a government enterprise under the Ministry of Agriculture and Cooperatives. A fertilizer subsidy program was started in 1977 by the MOF. The objective of the program is to supply at least one third of the total fertilizer requirements of paddy farmers. However, actual sales of the fertilizer have mostly fallen short of the annual targets, due to relatively late acquisition of fertilizers by the MOF in the growing season. By the time the MOF fertilizers are delivered, farmers have already acquired fertilizers from other sources. It can be seen here that the government budget is not a limiting factor.

Before 1988 the price charged to farmers for the MOF fertilizer, was 8 dollars per ton below the market price. This practice was made possible by inexpensive loans provided by the Farmers' Aid Fund and fertilizer grants from the government of Japan. In 1988, the Cabinet decided that the MOF should charge farmers the acquisition price but that the transport costs were to be fully subsidized. However, the Cabinet was able to decide later, at the suggestion of the MOAC, to lower fertilizer prices. Generally the MOF supplies fertilizer below market prices. Net price differences were in many cases more than 8 dollars per ton. This is due to the free provision of fertilizers to farmers. Starting from August 1, 1995 prices of fertilizer decreased from the acquisition prices of 16 dollars per ton.

Since domestic market prices closely follow international prices and as there are no import duties for agriculturally used fertilizers, the price difference plus transport cost equals the economic subsidy. The MOF operation succeeds in terms of creating a dual pricing system, but fails to affect the marginal price to farmers.

The BAAC started to intervene in the fertilizer market in 1981 primarily to insure that farm loans were used for investment purposes and to reduce fertilizer costs. In 1983, the BAAC adopted a consignment system, under which, farmers have to inform the BAAC of the amount

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and formula of fertilizer in advance in order to know the total demand. The BAAC charges customers 2% of the actual cost for margin plus transport costs.

Fertilizer distributed by BAAC reached a peak in 1988 at 452,898 tons, accounting for 68% of the public distribution. During 1991/92, there was no acquisition of fertilizers by the BAAC. However, the MOAC in 1993 to 1995 acquired fertilizers, formulae 16-20-0, 16-16-8 and 15-15-15 and distributed these to farmers through MOF, BAAC and the Agricultural Cooperative Federation of Thailand. In this period, the BAAC obtained 100,000, 39,820 and 57,500 tons of the fertilizers of the above formula to distribute to farmers (Table 2.4).

Table 2.4 Fertilizer distributed by BAAC and MOF.

Year	BAAC (tons)	MOF (tons)
1985	205,597.00	221,698.00
1986	291,278.00	139,590.00
1987	287,699.00	183,382.00
1988	452,898.00	124,896.00
1989	306,831.00	135,166.00
1990	251,956.00	169,637.00
1991	-	144,458.00
1992	-	107,779.00
1993	100,000.00*	140,901.00
1994	39,820.00*	133,557.00
1995	57,500.00	207,494.00

Source: Bank for Agriculture and Agricultural Cooperatives.

* Volume acquired.

2.7.2 Farm machinery

The types of farm machinery used include of tractors, water pumps, sprayers, farm threshing machines, etc. The numbers of farm machine inputs have been increasing rapidly because they are key elements in improving the efficiency of crop production and in changing from traditional to modern agriculture (Table 2.5). Farm mechanization is considered to be beneficial not only for saving human labor and time but also for increasing land utilization intensity. The degree of mechanization is higher in the most advanced irrigated areas. In addition, an increase in the degree of mechanization is related to modern agricultural inputs, namely, utilization of water, land consolidation, fertilizer use, improved seeds, etc. These combined production inputs have contributed significantly to the adoption of new technology, especially multiple cropping practices. However, it is observed that over the past two decades farmers have adopted more mechanization. In relation to the above discussion, the utilization of machinery inputs, namely, sprayers, water pumps, tractors has increased considerably in the past decades. Irrigation pumping and multiple cropping in irrigated areas show the intensifying mechanization. The import policy in this regard has not been restricted and local machinery production not protected.

2.7.3 Pesticides

Pesticide imports have risen along with the adoption of HYVs and expanded vegetable and fruit production. The imports rose to 133 million US dollars in 1990 and 129 million US dollars in 1994. Only 5% of the imported pesticides are used outside of the agricultural sector.

The area share under pesticide use is 75%, the highest for field maize, 30% for rice and 20% for soybeans.

Some constraint is faced for importing agro-chemicals; for instance the import of poisonous substances requires a permit. Imports detrimental to national security are also checked. For almost all, prices and usage are determined by market forces, as the subsidy has not been large enough.

Table 2.5 Number of machines and equipment used in agriculture, 1977-1995.

Year	Two-Wheel Walking Tractors	Large Tractors	Water Pumps	Threshing Equipment
1977	151,504.00	22,826.00	31,7328.00	4,962.00
1978	192,004.00	28,987.00	35,9308.00	5,557.00
1979	230,591.00	33,285.00	47,3975.00	6,224.00
180	280,591.00	37,177.00	51,7975.00	18,394.00
1981	284,351.00	50,044.00	60,3548.00	20,601.00
1982	323,846.00	61,840.00	78,0610.00	30,091.00
1983	364,948.00	45,092.00	85,8671.00	33,100.00
1984	360,243.00	28,340.00	56,4915.00	28,243.00
1985	402,028.00	31,415.00	61,4791.00	29,735.00
1986	450,033.00	34,823.00	66,9095.00	33,352.00
1987	515,075.00	40,750.00	76,8328.00	34,884.00
1988	282,753.00	45,544.00	85,1349.00	37,028.00
1989	660,685.00	51,276.00	94,3387.00	39,352.00
1990	750,542.00	57,739.00	110,1850.00	41,876.00
1991	845,279.00	65,101.00	122,0726.00	44,626.00
1992	984,530.00	79,801.00	138,7529.00	49,637.00
1993	1,135,742.00	98,096.00	157,7220.00	55,240.00
1994	1,311,426.00	120,751.00	179,2953.00	61,510.00
1995	1,515,693.00	148,841.00	203,8314.00	68,527.00
Annual compound growth rate (%) 1997-1995	13.65	10.98	25.90	15.70

Source: Office of Agricultural Economics.

2.7.4 Seeds and breeding animals

The use of good seeds suitable to soil fertility both in rainfed and irrigated areas is an important factor to increase farm production or crop productivity. However, the change from native to high-yielding varieties requires intensive labor and machinery. At present the production of high quality seed with high germination rate and high breeding rate is still inadequate to meet farmers' requirements.

For rice the Ministry of Agriculture and Cooperatives can currently make available 3% of total demand for seeds due to limited budget. As a result, the rice yield per rai remains low. However, the private sector contributes with the profitable production of seeds of maize, sorghum and vegetables, etc., but they remain insufficient (Table 2.6).

The plan, to be supported annually by government, is to produce stock seeds with multiplication programs, to train the farmers and to guarantee the seed producers' income. The funding from 1993 to 1996 is shown in Table 2.7.

Breeding livestock have also been in short supply for a long time, especially dairy and beef cattle, broilers and layers. Thailand has to import a lot year by year (Table 2.8).

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Table 2.6 Seed production and percentage of seed requirement, 1989-1991.

Crop	Quantity Used (tons)	Seed Production (tons)	Producer	Production Share in Seed Requirement (%)
Rice	626,000.00	19,981.00	Government	3.00
Soybean	31,884.00	4,628.00	Government	14.00
Mungbean	17,976.00	2,356.00	Government	13.00
Cotton	1,240.00	195.00	Government	16.00
Propagation cassava crops (million saplings)	4,933	14.00	Government	0.30
Maize	36,942.00	28,150.00	Government and Private	76.00
Sorghum	4,922.00	2,014.00	Government and Private	41.00
Vegetables	1,102.00	1,252.00	Government and Private	surplus

Source: Office of Agricultural Economics.

Table 2.7 Operation budget in million dollars for stock seed production under the Agricultural Reform Plan.

Year	Stock Seed Production	Training	Compensation to Producers	Propagation Crops	Total
1993	3.31	3.42	23.20	5.07	35.00
1994	6.18	6.17	58.86	7.79	79.01

Source: Office of Agricultural Economics.

Table 2.8 Import of breeding animals (head), 1987-1991.

Item	1987	1988	1989	1990	1991
Dairy cattle	4,285.00	4,750.00	4,716.00	5,078.00	3,966.00
Beef cattle	846.00	1,111.00	2,015.00	6,084.00	14,884.00
Laying hen parent stock	318,639.00	398,805.00	296,815.00	393,201.00	389,257.00
Chicken grand parent stock	133,002.00	191,056.00	179,458.00	269,376.00	259,174.00
Chicken parent stock	1,234,000.00	2,006,705.00	1,720,159.00	1,422,925.00	1,522,349.00

Source: Office of Agricultural Economics.

3. Infrastructural Development Affecting International Trade

Thailand has considered the basic infrastructure to be crucial in national development since the First National Economic and Social Development Plan (1960 - 1966) to the current eighth one (1997-2001). The objective of such investment does not emphasize any specific area. It is multi-purposed investment.

3.1 Communication and transportation

The government has emphasized communication and transportation in various sectors. Various projects on land, water and air transportation together with communication projects were set up since the period of Plan I. The communication sector includes postal services, telegram, telephone, radio, telex and tele-communication development.

National highways

Initially, Thailand had about 9,000 kilometers of roads connecting provinces, 2,500 kilometers of which were asphalt and concrete roads. The rest were gravel and laterite roads, which could be used only in the dry season. Most roads had a narrow traffic surface and were not strong enough to support heavy lorries. Moreover during the rainy season, some passages were damaged. This obstructed transport of commodities and communication.

The implementation of the first National Plan emphasized improvement of the existing roads and expansion of traffic surfaces so that the roads could support heavy lorries and could be used all year round. By the end of the first plan, about 6,100 kilometers of roads were reconstructed and about 720 kilometers of new roads were built.

In the second Plan period, seventeen roads continued to be developed as private companies were granted the awards, while the length of the new state roads under the plan was 1,945 kilometers. The budget came from international loans. During the first phase of construction, there were problems concerning the lack of construction materials, selection of construction companies under international loan conditions and heavy rains. This often resulted in work delays. However, twenty routes were constructed with a distance of 1,388 kilometers and 814 kilometers of road were restored.

During the fifth Plan, the total length of highways was expanded to 104,000 kilometers, which comprised 14,000 kilometers of the national highways, 30,600 kilometers of provincial highways and 60,000 kilometers of local and rural highways. However, in the fifth Plan, building of highways, except rural roads, was intentionally brought to a standstill. Four peripheral freight terminals were built at the Bangkok outskirts and one each for Khon Kaen, Chiang Mai and Songkhla to ease the congested freight traffic.

During the sixth Plan, rehabilitation and maintenance of the priority highways and local roads were attended. In the major road network, building of the main sectors was stressed and the missing sectors were filled in to provide linkages to the producing areas, the marketing centers and the commodity terminals in support for exports.

Expressway networks between cities to promote efficient transport systems were developed in Plan VII.

The land transport network including a better rail system to be linked with neighboring countries was developed to ensure low transport costs across borders.

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Provincial highways

Prior to the first Plan, the provincial roads totaled 5,802 kilometers and these could be used only in the dry season. However, the construction of new roads was done under limited budget. Thus, the roads were substandard.

During the first Plan an engineering and economic survey of route feasibility and priority to construct roads suitable to local conditions was undertaken. Economic considerations were made with the objective of linking agricultural areas to cities for marketing. By the end of Plan IV, the provincial highway was expanded to 30,600 kilometers.

Rail transportation

In the first Plan period, rail transportation emphasized service improvement, both passenger and freight transport. This improvement concentrated on facilities, efficiency, safety and sufficiency, while the expansion of new railways was slight.

The railway from Gang Koy to Bua Yai with a distance of 250 kilometers was constructed following of the first Plan. In other developments, the second possible route, Denchai-Chiangrai-Chiang Saen route was surveyed, while the Klong Bang Phra - Laem Chabang - Satahib route was economically surveyed to cope with a deep-sea port project. For freight service, twenty diesel locomotives and forty freight locomotives were purchased.

The development in Plan III period was set on improving the existing rail services with a view to efficiency and adequacy. Any new railroad development was selected based on maximum economic benefit. However, the railway system remained the same by the end of Plan IV, i.e., 3,800 kilometers in 1981.

In the fifth Plan, expansion of the rail freight service was remarkable. It carried 6.3 million tons of the freight in 1980, which rose to 13.0 million tons in 1986.

Selected railway stations favouring export services were improved for better integrated shipping services during the sixth Plan.

Water transportation

Water transportation is divided into two categories, domestic and international transportation. For domestic water transportation, approximately 80% of rice freight used water transportation. In addition, 75% of commodity shipments from the central to southern regions were done by coastal shipping. Thus, the coastal and inland water transportation played an important role during the first Plan period.

For international water transportation, the first Plan period aimed to develop Bangkok port to handle large ships. Dredging water channels in the shipping routes and conducting maintenance were carried out. Surveys for constructing new ports were also done in this period.

In the second Plan, a waterway survey for Pattani port construction was conducted with the aim of having a new port to absorb the heavy traffic at Bangkok port. Further investment in designing 6 piers for the new port together with storage facilities was also organized in this period. Foreign assistance for engineering and economic surveys of a deep seaport on the eastern seacoast was requested. There were also improvements of the Bangkok port and construction of warehouses, buildings, roads and shipping facilities. Two large ships were purchased for the state-owned Thai Maritime Co.

Emphasis was given to inland water transport by the conduct of surveys and dredging of major water channels with an aim increasing the role associated with other types of the transport systems during third Plan.

In addition, a large investment was required for improving and building a deep seaport under the Eastern Sea Board Development and in the South corresponding to national economic needs. Dredging of water channels was carried out at other coastal and fishery piers.

Infrastructural Development Affecting International Trade

Private shipping lines were also promoted, while at the same time the government shipping company received more investment based on a feasibility study.

In the fifth Plan, the traditional inland water transport was poorly utilized, only 1,000 kilometers of the waterways were utilized of out of 5,900 kilometers total. In addition, coastal sea lanes of 2,700 kilometers also had not been utilized to the full extent. By then, Bangkok port was becoming saturated and the service capability for large freighters was limiting. The commercial fleet was only 300,000 deadweight tons and the country was largely dependent on the foreign shipping lines for as much as 95% of the combined exports and imports.

With regard to inland water transport, the shipping route in Chao Phya river in the sector of Bangkok - Nakhon Sawan was established. Similarly, shipping was established in the Nan river in the sector of Nakhon Sawan - Tabhanhin and accompanying freight terminals were built to go along during the fifth Plan.

In connection with coastal shipping lanes, Pattani, Krabi and Nakhon Sri Thamaraj coastal piers were built. Regarding international shipping lanes and the national maritime flag carriers, the Satahib seaport was developed in the Eastern Seaboard and the Songkhla and Phuket deep seaports were also constructed in the South. The national maritime fleet was expanded and navigation personnel and mechanics were trained and posted to the fleet.

In the sixth Plan, basic facilities for transport services were improved and constructed. Activities included dredging parts of the water routes and linkages of the different transport systems. In this connection, the development of the deep seaport in the Eastern Seaboard was enhanced. The maritime service also intensified its freight shipping.

In the seventh Plan, a greater utilization of coastal transport and international seaport services were planned.

Air transportation

In Plan I, international and domestic commercial aviation were developed. Commercial airports were built and improved. Communication and air traffic services were also improved. New airliners were purchased to replace the old ones.

In plan II period, Hat-Yai, Pattani, Chiangrai, Pitsanulok and Don Muang airports were developed. There was a purchase of 246 hectares of land for construction of the Nong Ngu Hao second international airport.

During Plan III, Thailand's international airport was better equipped for larger freight business. As a second Bangkok airport was felt needed, a field survey was carried out and a master plan designed in advance. The domestic airport was also upgraded for convenient and safe service.

A number of new airliners were bought. In addition, the regional airports of Songkhla, Chiangmai and Phuket were expanded for the increasing service requirements, while preparations were underway for establishing a second Bangkok international airport in the fifth Plan.

The U-tapao airport in the East was organized for a fuller utilization with adequacy of the facilities, especially for airfreight during the Plan VI. In this respect the related rules and protocols were rearranged for practical use.

During the seventh Plan, standards of regional airports were upgraded and their capability lifted to support air transport development of both national and private airline companies, corresponding to plans of tourism, service and commercial sectors. In addition, public expenditure for the construction of the second Bangkok international airport was allotted.

3.1.1 Development of support facilities in the period of Plan IV

To develop support facilities for international trade, an attempt was made to improve the commercial fleet and enable organization of new shipping lines to facilitate private investment in dockyard business, and to review and revise the laws and regulations concerning commercial navigation.

With respect to farm production and marketing, the plan aimed to build and maintain provincial highways, rural highways and ensure that feeder roads reach the production centres of maize, sugarcane, cassava and the para rubber plantations.

With regard to sea transportation, training programs aimed at developing personnel in the area of commercial navigation. Studies were also planned to determine the location and volume of coastal port services to serve the economic needs.

Economic feasibility studies were made concerning water release from different dams for the benefit of dry season navigation and a second cropping.

Other infrastructure development was planned for regional urban centers. In Chiangmai, improving and expanding air service and roads for freight and other purposes were planned. In Songkhla, development of a deep seaport was planned.

In Nakhon Ratchasima and Ubon Ratchatani, the provincial highway system was to be improved and expanded and linked with the farm producing regions. Udorn Thani and Khon Kaen were to have the same improvements as Nakhon Ratchasima, along with linkages to the cargo terminal and the rail depot.

3.1.2 Government budget for communication and transportation programs

During 1983 to 1997, the Thai government allocated about 50% of the appropriation for economic services in communication programs. The programs in the transportation and communication sector consist of transport administration, railways, water transportation, air transportation, and storage services, telecommunications, highways and waterways. The government budget allocated in transportation and communication programs grew at a rate of 17.88% during the 1983 to 1997 period (Table 3.1). In the past, the development in infrastructure put emphasis on land and water transportation. During the first national plan, construction of the Friendship Highway connecting the Central and Northeastern Regions caused expansion of agricultural production areas. The public investment on construction and improving land transportation connecting regions, provinces and districts led to an improved marketing structure and reduced transport costs. In addition, the connection of internal and external markets improved, which consequently affects the expansion of the agricultural sector.

The government budget allocated for land transportation ranked first in the total budget of the Ministry of Transport and Communication (MOTC). The average share of the MOTC budget was 93% and the average growth rate was 18.06% during the 1983 - 1997 period. The most important programs in land transportation fell into construction and improvement of highways, i.e. national, and provincial highways. Railways, local and rural road construction and maintenance of roads and bridges were the next most important activities in this sector.

In the past the budget allocated for water transportation ranked second. However, during the past decade air transport took second place due to the priority development of airports and improvement of aviation safety and efficiency. The average share of this sector in the MOTC budget was 3.2% while for water transportation it was 2.96%. The average growth rates of the budget allocated for air and water transportation were 20.54 and 9.72%, respectively, during the 1983 to 1997 period.

The government budget allocated for telecommunication programs was very small compared to the other activities. The average share was only 0.38% during the years 1983 to 1997 and the average growth rate was 18.29% (Table 3.1).

Table 3.1 Government budget (million dollars) in transportation and communications programs.

Fiscal Year	Transportation and Communication Administration	Land Transportation	Water Transportation	Air Transportation	Tele-communication	Total
1983	1.02	512.07	18.37	11.20	1.34	544.00
1984	1.08	448.29	25.79	11.48	1.98	488.62
1985	1.28	447.79	20.19	14.12	2.42	485.80
1986	1.91	425.78	19.14	11.57	2.05	460.45
1987	1.52	448.76	20.42	12.27	1.91	484.88
1988	1.80	441.62	18.92	17.52	2.71	482.57
1989	1.87	532.58	25.93	29.90	2.12	592.40
1990	2.56	734.74	22.47	51.94	2.07	813.78
1991	2.60	885.16	36.20	44.36	2.72	971.04
1992	4.67	1,132.90	31.62	69.44	3.12	1,241.75
1993	4.64	1,856.27	35.04	33.94	7.32	1,937.21
1994	15.78	2,021.25	41.36	49.82	9.83	2,138.04
1995	4.71	2,454.91	40.87	70.96	10.55	2,582.00
1996	5.93	3,361.67	65.88	91.51	14.55	3,539.54
1997	8.38	3,285.89	85.38	190.20	14.90	3,584.75
Annual compound growth rate (%) 1983-1997	17.65	18.06	9.72	20.54	18.29	17.88
Av. share (%)	0.46	93.00	2.96	3.20	0.38	100.00

Source: Ministry of Finance.

3.2 Post harvest facilities

Central markets

Fluctuation in agricultural prices occurs especially during the harvesting period due to the large amount of farm output flowing into the market. During the implementation of Plan I to Plan IV, the government intervened in marketing of farm products to alleviate problems of price fluctuation by using price support and/or price guarantee programs. However, the implementation of these programs was considered as a short-term solution.

Thus, the government began developing agricultural markets in the form of central markets in farm producing areas in the fifth Plan period. They were developed to be appropriate and suitable for the topography and the characteristics of commodities. The infrastructure and facilities were also improved in each central market to support its operation. In Plan VI, the implementation of a production and marketing diversification program played an important role in the area of export commodities. In Plan VII, the government attempted to develop regional central markets by facilitating and inducing their operation in various areas. In this connection, the government also promoted investment of the private sector and agricultural institutes in infrastructure and market facilities in order to store and develop the quality of products, e.g. warehouse, silo, cold storage and crop drying machines.

To support such private central markets, the Ministry of Commerce (MOC) has put emphasis in developing central markets and marketing services. Policies and measures to support establishment of agricultural central markets were set up. A promoted market must follow MOC conditions on trade, crop measurement, quality inspection machines, transportation services, finance, etc. At present, there are 76 private central markets which receive grants from the MOC.

Central markets of agricultural institutions, receiving assistance of the Department of Cooperatives Promotion, Ministry of Agriculture and Cooperatives were encouraged to establish their markets under the Tambon (sub-district) agricultural central markets project. The government allocated a budget to assist the cooperatives in constructing marketing facilities for 950 such central markets, e.g. silos, scales, drying machines, etc. The duration of the project is 7 years, from 1994 to 2001. Total budget allocated was about 137.2 million dollars. In 1996, 582 central markets were constructed (Table 3.2).

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In addition, there is a central rubber market, which receives grants from the Department of Agriculture in the Southern region of Thailand. In addition, there are three agricultural central markets receiving grants from the Bank for Agriculture and Agricultural Cooperatives (Table 3.2).

Table 3.2 Number of agricultural central markets classified by operator in 1996.

Operator	Number
Private	76
Rice and upland central market	62
Vegetable central market	12
Fisheries central market	2
Agricultural cooperative	582
Tambon agricultural central market	582
Department of agriculture	1
Rubber central market	1
BAAC	3
Agricultural central market	3

Source: Office of Agricultural Economics.

Silos

With the ruling of the Cabinet on January 2, 1991, the Department of Agricultural Extension was assigned to implement a project on paddy silo establishment for farmer groups. The major objective of the project was to provide silos for paddy storage in periods of surplus and/or low price, which was expected to increase bargaining power of rice farmers. The target of the project was construction of 300 silos with 500 tons of capacity, together with 12x24 drying lots during 1993-1996. The total budget allocated to the project was 2.59 million dollars. Details of the project target are shown in Table 3.3. At present, all silos have been constructed according to the target. Between 1993 to 1996, farmers' groups stored paddy ranging from 83 to 143 tons per silo or 17% to 29% of capacity, according to Department of Agricultural Extension records.

3.3 Target and duration of the paddy silo project.

	1993	1994	1995	1996	Total
Number of silos	70	100	100	100	300
Operating trainees	70	100	100	100	300

Cold storage

The government Cold Storage Organization (CSO) is a public enterprise under the Ministry of Agriculture and Cooperatives. Major activities of CSO are in trading fish and ice and providing cold storage facilities to the private sector. Its main office is located in Bangkok with 9 branches scattered in the provinces, namely Chumporn, Samut-Prakan, Rayong, Phuket, Pattani, Khon Kaen, Nakorn Ratchasima, Chiangmai and Hat Yai with a total cold storage capacity of 16,920 tons. The cold storage activity was first launched with Cabinet approval on September 23, 1953. It became a public enterprise under the Government Cold Storage Organization Act B.E 2501 with an initial investment of 2.4 million dollars. The policy of the organization was to distribute fish from production areas to consumers all over the country. A second plant was constructed in Chumporn in 1965, and Chiangmai followed in 1971.

In 1976, the Asian Development Bank provided a 20 million dollar loan to the Thai government for fisheries development, and the government launched a project on provision of fishing boats and construction of cold storage facilities and ice plants. Thus, five additional cold storage facilities and ice plants were constructed in Phuket, Pattani, Samut-Prakan, Rayong and Khon Kaen. Thirty-two trucks with cold storage containers were also purchased. However, a

delay in cold storage construction caused higher expenses than expected, and consequently, the CSO experienced financial problems and imbalance on its accounts for 18 years from 1977 up to now. At present, the government is attempting to privatize it because the cold storage service is an attractive business for the private sector.

3.3 Infrastructural arrangements

3.3.1 Export promotion

The Department of Export Promotion (DEP) was set up by the Commerce Ministry to deal directly with enhancement and promotion of exports to achieve policy targets. Its major activities are:

- Trade missions. Thai trade missions were often arranged for overseas visits, and foreign trade missions were invited so Thai manufacturers and exporters could meet with the prospective foreign importers on trade issues.
- Trade exhibitions. Organizing the export exhibitions by the DEP is divided into activities, i.e. domestic trade shows which are normally aimed to familiarize Thai consumers with standards and quality products, in an attempt to stimulate purchase of domestic products, and overseas Thai trade shows to promote Thai manufacture and goods. These shows usually include trade exhibitions, publications, information services, demonstrations and go-between services.
- Permanent showrooms. These serve the government intention to act as collection and display centers of standard and quality products for export.
- Information services. The published brochures include selected lists of exporters, industrial brochures, information on planning a business trip to Thailand, DEP brochures, DEP activities and lists of exhibitors in the permanent showrooms.
- Arrangement of appointments with individual foreign importers to meet Thai businessmen. Prospective importers were mostly recommended by Thai commerce centers located overseas. Some came in trade missions, while others personally made contact with the DEP. Still others were recommended by Thai embassies and attached commerce counselors.
- DEP information systems consist of 8 subsystems of exporter registered profiles, foreign importer profiles, country profiles, product profiles, import regulations, tariff and trade preference profiles, trade references and trade statistics.
- Training in export. The educational service provides knowledge and experience in marketing and its techniques to exporters.
- Overseas commerce centers. These centers act as intermediaries for importers and Thai manufacturers and exporters. There are now 17 such centers and 36 commerce counselors.

Export credit

A new exporter or one who wants to increase his scale of investment may need more funding. He may borrow either from commercial banks or the Bank of Thailand. Such an exporter who is reliably accredited may borrow before shipping his freight. Further, when the consignment is already forwarded, he can borrow more. The export credit is thus classified as pre-export finance or post-export finance.

Pre-export finance is detailed first. An exporter can borrow for his purchase of raw materials, manufacturing practices and payment for the shipping. This type of credit is further classified as:

- Packing stock. To be eligible for this type of finance, an exporter may already possess a quantity of goods and needs an additional lot to fulfill a purchase order. In this

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respect, the exporter may want a loan for the additional purchase or for his shipping costs or he may borrow by mortgaging his cargo with the bank. Thus, he is eligible to borrow 50% of the value of his available goods.

- Packing credit. Having no letter of credit in hand but desiring money, an exporter may submit his sales contract or purchase order for an advance payment by the bank. In this case, he is permitted to borrow 70% of the cargo value for a period not beyond the shipment date plus 10 days but not more than 180 days.
- Rice premium credit. This is credit acquired by an exporter in an attempt to pay the rice premium to the government. Here, the exporter requests the bank to issue a promissory note repayable within 45 days at an interest rate of 2%.
- Sugar premium credit. This is the same as the rice premium credit, except that this credit is to pay for the sugar premium.
- Bid bond or performance bond credit. The bank, upon request by an importer issues a bid bond to guarantee the bidding of a large commodity lot where and when an export guarantee is required by the importer. Alternatively, the importer may ask the bank to issue a performance bond not over 5% of the goods under bid.

Post-export financing is an effort by the bank to support an exporter by allowing him a constantly revolving fund by offering its credit service after an export activity. The service is thus classified as follows:

- Advanced bill under L/C. After shipment, an exporter is expected to obtain export documents such as invoice, certificate of the goods' origin, etc. He then would prefer to sell it, even in the payment is in sight or within a time period. In the event of no bank confirmation, the exporter has to wait for the payment to be made by the bank which issued the L/C, causing a delay. It follows that a credit provision is often made by the bank which buys the documentary right which amounts to an advance payment to the exporter.
- Advanced bill of exchange. An exporter who desires this type must have good credibility in order to ask the Bank of Thailand for this type of credit service through a commercial bank. In such event, he is required to pay a low interest rate of 7% per annum.

Export - Import Bank of Thailand

The Export - Import Bank of Thailand was established under the Export - Import Bank of Thailand Act B.E.2536, which became effective in September 7, 1993. The objectives of the establishment are to provide financial services to support exports, imports and investment related to development of the Thai economy, such as:

- providing export refinancing services through commercial banks,
- providing short-term and long-term credit directly to exporters,
- providing medium-term credit for export business expansion,
- providing short-term and medium-term credit to foreign banks to finance the import of goods from Thailand,
- providing financial services as well as equity participation to support overseas investments of Thai investors,
- providing export insurance services to Thai exporters, and
- providing credit to overseas projects which benefit Thailand.

The Export - Import Bank of Thailand began full operation in 1994 and established two branches. The first branch is located in Hat Yai, Songkhla province. The second, which started operation in 1996, is located in Bangkok to provide full banking services.

In 1996, the third year of its operation, the Export - Import Bank of Thailand continued its growth momentum. The pre-shipment financing facilities have been very well received by

exporters. Its business volume doubled in 1996, especially for the US dollar financing version of the facility, which offers finance with low interest rates and avoids exchange risk for the export proceeds. Now the Eximbank still puts emphasis on providing pre-shipment financing facilities, which are the services that the Thai exporters and investors commonly need.

3.3.2 Quality standardization

There have been many agencies, both public and private, providing services on quality standardization. However, they were diverse in their methods, establishments, staffing and equipment. Overall their services were not unique, often creating chaos to those seeking facilitation and efficiency. Consequently, these circumstances did not favor Thailand's international trade.

Product examination and certification

Briefs of the service providers in the examination and certification of food and other farm products are provided below:

- Department of Agriculture. The Divisions of Agricultural Regulatory and Agricultural Chemistry deal with the inspection and analysis of many plant commodities. Eventually their laboratories issue a certificate, an inspection report and an analysis report. Both divisions also inspect and analyze several farm imports too.
- Fisheries Department. The National Inland Fishery Institute, Brackish Fishery Division, Marine Fishery Division and Songkhla Coastal Aquaculture Institute of this department are in charge of inspection and certification of live fishes for export purposes including issuing of the quality and sanitary conditions of the seafood canning plants for export conducted by the Fishery Technological Development Institute.
- Medical Science Department. This department deals with such food products as chilled seafoods, canned foods, etc. It operates a laboratory, inspects, analyzes and certifies product for export purposes.
- Food and Drug Administration. This agency is in charge of all food products. Its function is based on a complete system of inspection and regulation of both local food manufactures and food imports.
- Thai Industrial Standards Institute. This institute works on industrial standards on an international basis of foods and other farm products with public and private cooperation.
- Foreign Trade Department. This department inspects and certifies primary and other farm products and deals with designating a commodity on the list of standard commodities and overseeing it on the basis of physical inspection.
- Department of Science Service. This department is a service provider for standards examination and certification of farm products intended for export, with the cooperation of the Office of Atomic Energy for Peace.
- Customs Department. This department is involved in inspection and import and export permission of the commodities that must adhere to standards and quality requirements.

Current issues on standardization

The basic infrastructure of the system of inspection, analysis, designation, promotion, regulation and certification of the standards and qualities of farm products is not comprehensive and up-to-date. The diversity of agencies involved, their methods, locations, professional capabilities and equipment used often cause delays and chaos. Staffing is inadequate for efficient operation and recommendation for both farm producers and manufacturers. The

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development of standards and qualities is not sufficiently integrated to examine the vast array of farm products within the major agencies to achieve international acceptance in standardization and quality classification. Thus, they cannot represent themselves in international negotiations about standardization and quality inspection that would favor a better Thai export potential.

Several laws authorize either jointly or individually responsibilities over a specific subject, thus barring a complete system of inspection, and creating redundancy and delays.

The characteristics of some products under examination do not allow easy and distinct determination of whether they are farm products, food or manufactured goods. So far, there is no single agency directly responsible for farm and food products.

Therefore, it is time now to set up an organization specifically designed to take charge of the inspection, analysis, promotion and regulation of the standards and certification of food and farm products in a systemic, comprehensive manner with the objective of standard product development and promotion for competitiveness.

4. Trends in Agricultural Trade and the Overall Effects of Trade Liberalization

4.1 Study on agricultural trade liberalization

During the period of the Uruguay Round GATT negotiation (1987 - 1990), the Economic Business Department with the cooperation of Kasetsart University studied the impact of subsidy policies and measures on the Thai agricultural sector. The first part of the study was to investigate the policy measures used and to calculate the producer subsidy equivalent (PSE) of 19 farm commodities during 1979 - 1987. The second part of the study was to analyze the impact of subsidy reduction, both domestic and export, and import protection elimination on the farm products.

The results of the first part of the study were used as guidelines in the Uruguay Round Negotiation. They indicated weak and strong points for adjusting such policy measures.

The results of the second part of the study revealed that the value of total subsidy on net exportable goods of Thailand in terms of producer support equivalent (PSE) and support measure units (SMU) imported using data from 1985 to 1989 did not exceed 2% of the total farm production value.

The agricultural products imported with some import restriction conditions included soybean meal, palm oil, dairy products and tea. It was found that these products have had a high level of subsidy. The measures were intended as border protection to control the impact of increased local prices and at the same time to protect any domestic infant industries.

The findings on reduction or abolishment of the subsidy measures can be categorized into three groups as follows:

- For net export commodities, i.e. rice, maize, cassava, canned and fresh pineapple, chicken meat, coffee, frozen shrimp and squid, canned tuna, fishmeal and tobacco leaves, the reduction or abolishment of the subsidy had little negative effect on production, consumption and export. In the case of rice, which has a higher level of subsidy, the impact of the reduction is almost the same as for the other commodities in this group.
- For imported commodities, the reduction or abolishment of domestic subsidy had more impact on local production. A somewhat reduced production will still be sufficient for local consumption. However, if the measure of import restriction were also imposed at the same time, the importation would need to rise to compensate for a decrease in production in the country.
- The third group involves commodities which have a special measure, i.e. sugar. The domestic price of sugar has long been administered to be constant. If this measure were to be abolished, the local production will decline to the level of self-sufficiency; i.e. the production decrease would be 30%. There will be a greater negative impact on the production if the government abolished the import restriction together with the domestic subsidy.

A second review of the literature 'Impact of the General Agreement on Tariffs and Trade upon the Thai Agricultural Economy' is based upon a model employing computable general equilibrium jointly built by the Office of Agricultural Economics and Pacific and Asia Studies of the National University of Australia.

The study discloses that full commitment would generate both production and price adjustments with the net shared production effects of 11.1, 8.1, 7.1, -2.2, 2.6, -0.02, 0.4 and -

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0.05 for milled rice, sugar, maize, soybeans, sorghum, coffee beans, rubber and milk, respectively, and with the corresponding share of net price effects of 4.4, 10.2, 4.7, 0.3, 1.9, 0.4, 1.8 and 0.35, respectively.

These conform with the assumption of Thailand having a comparative advantage for many of its farm commodities. Consequently the economy will take steps to enlarge its farm production in a bid to absorb the accessible regional marketing opportunities. Apparently this includes rice, sugar, sorghum, and rubber. The farm use of chemical fertilizers will rise as a result. The trade agreement is expected to make prices favorable for both fertilizer import and domestic production.

The commodities including soybeans and palm oil that have been enjoying promotional subsidies and protection will certainly be disadvantaged as Thailand reduces its subsidy and protection rates and simultaneously opens the market.

Dairy production is expected to be affected although the primary effect will not be great according to the computation with reference to the GATT binding. However, compliance will certainly affect the domestic promotional dairy policy, since Thailand can no longer selectively implement its existing import control measure.

The livestock and fishery subsectors are not seen to be substantially affected by the WTO rules. Fisheries, although not under the farm commodity category, are occasionally hit by other sanitary measures. The talks on sanitary measures, especially if these measures are relaxed, coupled with quality control efficiency on the part of Thailand, will open more export markets for both livestock and fishery product groups.

The overall agreement effects are computed to yield net benefits for farm trade from better mutual exchange among the GATT members. In this connection, Thailand might have an export growth of 2.3% and an import growth at the same time of 1.0%.

The study also discloses that rural income will be enhanced while the middle income group in urban areas might have its income reduced.

4.1.1 Impact on Thai farm export items

The potential net benefits to arise out of farm trade, at full commitment, would be 234 million dollars of export value and 36 million dollars of farm import value to be opened by the binding. A bright export outlook may be seen for milled rice, sugar, maize, sorghum, rubber, cassava products, broilers and fertilizers, the last of which will have lower import prices. The affected items will be soybeans, palm oil, coffee beans, dairy products and mungbeans.

Comparison of the farm production of Thailand and such major producers as the EU, US and Japan was made and it was found that the foreign farm subsidies were, in 1988, 6.56, 38 and 140 million dollars, respectively. These were 39.0, 21.3 and 32.1% of their national farm production value respectively. At the same time Thailand exercised only 2% subsidization of its farm production earning. Obviously, this suggests its vast production potential over the major world producers. In contrast, such developing countries as China and Indonesia, being very rich in their resource bases and with very low production costs, have to feed many more mouths domestically. As a result, they are not expected to be very competitive.

4.1.2 The overall effects of trade liberalization

The GATT rules require the developed country members to reduce their domestic subsidies by 20%. Consequently, the earnings received by farm producers would be proportionately lowered, as would the production supplies in response to these price conditions. In this respect, the prevailing exporting countries whose internal subsidies have been quite high will automatically experience reduced export. Those countries that have been self-sufficient with large subsidies will have falling supplies, too. Their resulting shortages will prompt substituting imports. The subsidy reduction behavior among the GATT member countries will

trigger a world price hike. An UNCTAD study suggests that the 20% subsidy reduction will trigger 18.0, 4.8, 10.6, 0.4 and 0.0% rises in prices for rice, maize, sugar, coffee beans and soybeans, respectively.

To comply with the GATT agreement, Thailand has to lower its tariffs by 24%. By this the potential imports would gain more market access. On the subsidy reduction of 13.3% especially on items with subsidized production and protection above the GATT exception, Ampon Kittiampon et al. in 'Impact of the General Agreement on Tariffs and Trade upon the Thai Agricultural Economy' found 4 farm items enjoying high subsidies of 54, 46, 36 and 27% PSE, namely soybeans, palm oil, raw milk, and sugar. Again in the event of the 13.3% reduction, the prices received by producers would drop by 9.0, 10.3, 7.7 and 5.4%, respectively.

4.2 Overview of the Thai economy and the agricultural sector

Over the past twenty-four years the Thai economy has performed well with an average growth of 7.6%. It has been a period of transformation of the economy. In the 1960s Thailand had an agrarian, less-developed economy. Its infrastructural facilities were relatively poor. Per capita income was very low. Gross domestic product (GDP) per capita was about 175 dollars. Agriculture contributed almost twice as much to GDP as manufacturing. Export goods were based mainly on a few primary products, namely, teak, rice, rubber, maize and tin. The development strategy emphasized import-substitution. Economic growth was mainly domestic demand-led. In the mid 1970s, economic policies shifted to greater export-orientation and economic growth was about 6.6%. During 1987-1991, Thailand had one of the fastest growing economies in the world with a growth rate of 11.4%. By the early 1990s the development strategy became more outward-oriented due to increasing costs and infrastructure constraints. This led to a shift in investment incentives away from export promotion and further opening of the economy, increasing the exposure of Thai industry to international market forces and thus promoting efficiency. The growth rate during 1992-1996 decreased to 8.5% (Table 4.1).

Table 4.1 Growth rate of GDP (%) for agricultural and non-agricultural sectors.

Sector	Development Plan				
	3 (1972-1976)	4 (1977-1971)	5 (1982-1986)	6 (1987-1991)	7 (1992-1996)
Agriculture	5.24	4.15	3.69	4.58	2.51
Crops	6.02	4.01	4.02	5.07	2.34
Livestock	6.51	1.95	4.41	4.52	2.11
Fishery	(0.90)	(2.43)	0.50	6.80	1.37
Forestry	4.36	2.65	1.92	(20.59)	(12.28)
Service and simple processing	4.87	2.50	4.75	7.34	4.03
Non-agriculture	7.04	6.91	5.73	12.61	9.18
GDP	6.62	6.33	5.34	11.38	8.50

Source: Office of Agricultural Economics.

The agricultural sector has long had a major role in the Thai economy in terms of production, population and foreign exchange earning. However, the change in the composition of the sectoral shares to GDP illustrates the transfer from an agrarian-based economy to one which can be called semi-industrialized. The percentage share of the agricultural sector to GDP has declined steadily. It fell from 25.08% during 1972-1976 to 19% during 1982-1986 and 11.4% during 1992-1996. At the same time, the percentage share of the non-agricultural sector increased considerably, indicating a relatively rapid advance of industrialization in the country (Table 4.2). Within the agricultural sector itself, there has been no significant change in structure. The crop sub-sector is the largest component in GDP originating from agriculture. During 1992-1996, the value-added generated from the crop sub-sector was 61.31% while that

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from fisheries and livestock was 11.73 and 10.66%, respectively (Table 4.3). As the agricultural sector declined its importance, the role of non-agriculture rose considerably. This indicates that the past performance of national development has shown positive linkages to other industries not just agriculture.

Table 4.2 Percentage of GDP for agricultural and non-agricultural sectors during Plan 3 - Plan 7.

Sector	Development Plan				
	3 (1972-1976)	4 (1977-1971)	5 (1982-1986)	6 (1987-1991)	7 (1992-1996)
Agriculture	25.08	21.39	19.01	14.88	11.37
Crops	15.24	12.98	12.00	9.20	6.36
Livestock	2.20	2.12	1.80	1.58	1.02
Fishery	2.46	2.07	1.84	1.59	2.06
Forestry	2.60	1.65	1.02	0.50	0.15
Service and simple processing	2.59	2.57	2.35	1.95	1.78
Non-agriculture	74.92	78.61	80.99	85.12	88.63
GDP	100.00	100.00	100.00	100.00	100.00

Source: Office of Agricultural Economics.

Table 4.3 Percentage of GDP of major commodities in the agricultural sectors.

Sector	Development Plan				
	3 (1972-1976)	4 (1977-1971)	5 (1982-1986)	6 (1987-1991)	7 (1992-1996)
Crops	60.80	60.70	63.20	61.90	61.31
Rice	33.90	29.60	28.70	23.80	22.85
Rubber	5.80	6.00	6.80	9.60	13.22
Cassava	2.50	3.80	3.70	3.60	2.76
Sugarcane	2.10	2.50	3.10	3.40	3.90
Maize	2.70	2.90	3.50	2.60	2.58
Soybean	0.50	0.40	0.80	1.30	1.11
Others	13.30	15.50	16.60	17.60	14.89
Livestock	8.80	9.90	9.50	10.60	10.66
Fishery	9.80	9.70	9.70	10.70	11.73
Forestry	10.40	7.70	5.30	3.20	0.56
Service and simple processing	10.20	12.00	12.30	13.60	15.74
AG.GDP	100.00	100.00	100.00	100.00	100.00

Source: Office of Agricultural Economics.

Considering the composition of the crop sector, rice remains the most important crop. Its percentage share to GDP originating from agriculture was 33.9% during 1972-1976 and 22.85% during 1992-1996 (Table 4.3). Although the decline in sectoral share of the agricultural sector is a positive indicator of structural change of the economy, there are various aspects which do not predict bright prospects for this sector, namely weak farm prices, slow growth in the sector, continued dependency on a few primary export commodities, reduced rate of export expansion and share of total export, and low productivity.

4.3 Farmgate price of agricultural products

Prices of agricultural products fluctuate widely within each month and each year. They are at the lowest after harvesting and then rise again when most products are well off farmer hands. It can be noted that most farmers do not have storage facilities for their products, therefore losses due to mold, insect, birds, rats or spoilage occur. It is believed that such losses are relatively high. In addition, the need of cash for family consumption and paying back debts is another reason pushing farmer to sell their products as soon as possible. This will affect

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prices in certain months. Therefore, the prices received by farmers are low and this results in low farm income and weak purchasing power.

Prices of agricultural products also fluctuate from year to year (Table 4.4), depending on the amount of production in the previous year, carryover stocks and market demand both domestic and international.

Generally speaking, the decision of Thai farmers to plant crops responds to price changes from the previous year. If the farm prices received were high in the previous year they will increase their production in the coming year. As a result, the prices will be depressed due to increased supply. In contrast, if the farm receipts were low in the previous year, the farmers will decrease their production in the coming year. Then the price will be high due to a short supply. This results in instability of farm prices and farm income.

Farm prices are usually determined locally based on prices in the market system, especially the Bangkok wholesale market. The local middlemen are well informed of the market situation, price movements and market information. However, access to market information by farmers has been limited. Farmers usually obtain the information from buyers; therefore, farmers are always at a disadvantage, and no bargaining can be made in selling their products. They sell their products unwillingly at unfair and low prices.

4.4 Trend in total foreign trade

International trade has played an important role in the Thai economy. It is a major source of foreign exchange earning. The percentage share of export goods and services in GDP was 18.0% in 1960, increasing to 24.1% in 1980 and to 39.3% in 1996. The proportion of imports to GDP was slightly higher, i.e. 19.0% in 1960, 30.4% in 1980 and 45.1% in 1996 (Table 4.5).

Export performance increased at a rate of 18.37% during the period of 1980-1996. The export value rose from 5.33 billion dollars in 1980 to 56.48 billion dollars in 1996. The trend in the export sector combined agricultural and industrial products, where a progressive movement of industrial product was greater than that of agricultural products. This has been particularly true since 1988 as the value of industrial exports was higher than the agricultural export value. In 1993, the value was more than double that of agriculture (Table 4.6).

Export earning in 1996 increased only 0.41% above the previous year when agriculture contributed 29.21% of the total exports, while non-agriculture accounted for 70.79% (Table 4.6). The percentage share of agriculture in total exports decreased due to world trade conditions, adjustments of demand and supply situations of the export markets, changes in policies of the importing countries, and less favorable prices in the world market.

The import of merchandise in Thailand has risen considerably at a rate of 17.41% during 1980-1996. An increase in imports usually results from national development. The imports had increased from 7.74 billion dollars in 1980 to 34.12 billion dollars in 1990, and to 73.31 billion dollars in 1996 (Table 4.6). Imports of capital machinery and industrial inputs have increased in response to the growth needs of the economy. The quantity of oil imported continued to rise each year due to increase in the demand for oil. In 1990, the oil import value increased significantly by 33.6% due to rising oil prices and higher domestic consumption. At the same time the import of raw materials and intermediate goods rose considerably due to usage in export-oriented manufactures. Consumer goods imports also accelerated at a rate of 37.4%.

Table 4.4 Farmgate price index (%) for selected commodities.

Year	Rice	Maize	Cassava	Sugarcane	Mungbean	Soybean	Groundnut	Cotton	Kenaf	Rubber
1982	72.67	77.71	131.93	93.04	81.98	60.56	92.78	92.17	91.67	76.47
1983	69.34	94.90	117.65	105.22	82.56	71.67	96.67	105.42	77.50	67.23
1984	57.55	89.17	71.43	92.17	75.00	71.11	68.89	107.23	190.83	67.65
1985	56.70	69.47	65.57	71.82	74.51	71.99	92.22	77.51	86.70	67.78
1986	58.85	61.07	127.87	87.27	68.57	72.70	64.72	109.96	70.17	71.69
1987	92.62	94.66	145.90	99.39	92.43	94.68	90.66	116.91	96.35	83.46
1988	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1989	88.22	111.83	91.80	116.36	74.04	86.64	103.89	130.62	143.35	78.95
1990	91.59	93.51	101.64	107.88	72.18	86.64	104.41	129.43	93.99	78.86
1991	95.11	104.96	136.07	101.52	120.14	92.91	11.80	101.19	149.57	76.93
1992	77.74	129.77	126.23	106.06	95.93	87.94	128.79	97.81	142.27	73.53
1993	91.62	107.25	93.44	148.48	106.98	95.27	112.19	111.15	104.72	73.76
1994	90.03	111.45	188.52	131.82	113.15	92.43	117.64	145.34	121.46	103.86
1995	119.70	154.58	181.48	116.62	137.02	96.86	133.68	140.26	209.29	142.93

Source: Office of Agricultural Economics.

Table 4.5 Gross domestic product originating from agriculture and non-agriculture at current prices.

Year	Gross Domestic Product		Proportion to GDP		Total Trade	
	million US dollars		%			
	Agriculture	Non-agriculture	Export	Import		
1960	859.00	1,301.00	2,160.00	18.00	19.00	37.00
1970	1,526.52	4,368.88	5,895.40	15.00	20.00	35.00
1980	6,158.40	20,340.88	26,499.28	24.10	30.40	54.50
1981	6,495.60	23,918.64	30,414.24	23.80	30.10	53.90
1982	6,243.92	27,418.84	33,662.76	22.90	24.60	47.50
1983	7,390.08	29,449.48	36,839.56	20.10	27.30	47.40
1984	6,945.68	32,577.12	39,522.80	21.90	26.20	48.10
1985	6,681.04	35,578.80	42,259.84	23.20	25.90	49.10
1986	7,101.48	38,234.40	45,335.88	25.60	23.60	49.20
1987	8,180.84	43,815.68	51,996.52	28.90	28.30	57.20
1988	10,093.84	52,298.32	62,392.16	33.00	34.40	67.40
1989	11,197.88	63,081.80	74,279.68	34.92	37.49	72.41
1990	10,917.40	76,424.40	87,341.80	34.13	41.65	75.78
1991	12,683.40	87,582.00	100,265.40	35.96	42.51	78.47
1992	13,925.08	99,311.48	113,236.56	36.97	40.98	77.95
1993	13,195.12	113,639.20	126,834.32	37.81	41.55	79.36
1994	15,609.32	129,622.88	145,232.20	38.79	43.18	81.97
1995	18,566.84	148,990.32	167,557.16	41.75	48.01	89.76
1996	20,293.56	163,637.96	183,931.52	39.28	45.11	84.39
Annual compound growth rate (%) 1980-1996	7.68	14.31	13.28			

Source: National Economic and Social Development Board.

Table 4.6 Value (million dollars) of exports, imports, their respective shares and trade balance.

Year	Agriculture				Non-Agriculture				Total				
	Export	%	Import	%	Trade Balance	Export	%	Import	%	Trade Balance	Export	Import	Trade Balance
1960	305.00	88.66	10,700	27.79	198.00	39.00	11.34	278.00	72.21	(239.00)	344.00	385.00	(41.00)
1970	437.00	74.19	209.00	19.35	228.00	152.00	25.81	871.00	80.65	(719.00)	589.00	1,080.00	(191.00)
1980	3,258.00	61.15	958.00	12.37	2,300.00	2070.00	38.85	6,787.00	87.63	(4,717.00)	5,328.00	7,745.00	(2,417.00)
1981	4,059.00	66.32	1,115.00	12.73	2,944.00	2061.00	33.68	7,646.00	87.27	(5,585.00)	6,120.00	8,761.00	(2,641.00)
1982	4,313.00	67.51	992.00	12.61	3,321.00	2076.00	32.49	6,873.00	87.39	(4,797.00)	6,389.00	7,865.00	(1,476.00)
1983	3,867.00	66.00	1,256.00	13.27	2,611.00	1992.00	34.00	8,209.00	86.73	(6,217.00)	5,859.00	9,465.00	(3,606.00)
1984	4,505.00	64.27	1,405.00	14.33	3,100.00	2505.00	35.73	8,402.00	85.67	(5,897.00)	7,010.00	9,807.00	(2,797.00)
1985	4,599.00	59.46	1,530.00	15.23	3,069.00	3136.00	40.54	8,517.00	84.77	(5,381.00)	7,735.00	10,047.00	(2,312.00)
1986	5,377.00	57.59	1,685.00	17.45	4,018.00	3959.00	42.41	7,969.00	82.55	(4,010.00)	9,336.00	9,654.00	(318.00)
1987	6,160.00	51.36	2,142.00	16.02	4,639.00	5834.00	48.64	11,231.00	83.98	(5,397.00)	11,994.00	13,373.00	(1,379.00)
1988	7,768.00	48.13	3,129.00	15.24	5,131.00	8,372.00	51.87	17,396.00	84.76	(9,024.00)	16,140.00	20,525.00	(4,385.00)
1989	9,221.00	44.69	4,090.00	15.43	3,939.00	11,412.00	55.31	22,417.00	84.57	(11,005.00)	20,633.00	26,507.00	(5,874.00)
1990	8,67.00	38.01	5,028.00	14.74	4,526.00	14,639.00	61.99	29,091.00	85.26	(14,466.00)	23,592.00	34,119.00	(10,527.00)
1991	10,241.00	35.29	5,715.00	14.89	5,061.00	18,776.00	64.71	32,662.00	85.11	(13,886.00)	29,017.00	38,377.00	(9,360.00)
1992	11,377.00	34.56	6,338.00	15.34	4,790.00	21,586.00	65.44	34,992.00	84.66	(13,406.00)	32,985.00	41,330.00	(8,345.00)
1993	11,186.00	29.72	6,396.00	13.66	6,259.00	26,448.00	70.28	40,438.00	86.34	(13,990.00)	37,634.00	46,834.00	(9,200.00)
1994	13,446.00	29.55	7,187.00	13.12	7,739.00	32,058.00	70.45	47,574.00	86.88	(15,516.00)	45,504.00	54,760.00	(9,257.00)
1995	16,281.00	28.94	8,542.00	11.64	7,826.31	39,971.00	71.06	64,869.00	88.36	(24,868.00)	56,252.00	73,381.00	(17,129.00)
1996	16,499.58	29.21	8,673.27	11.83	6.53	39,984.86	70.79	64,639.73	88.17	(24,654.87)	56,484.44	73,313.00	(16,828.56)
Annual compound growth rate (%) 1980-1996	10.98		17.19		6.53	25.58		17.44		11.07	18.37	17.41	15.72

Source: Customs Department.

Table 4.7 Selected trade indicators.

Year	BOT/GDP %	AG BOT/ AG EX %	AG EX/GDP %	AG EX/AG GDP %	AG EX/ TOT EX %	AG IM/ GDP %	AG IM/AG GDP %	AG IM/ TOT IM %	EXR Baht/ Dollar	Buying	Selling
1970	(8.33)	52.18	7.41	28.63	74.19	3.55	13.69	19.35	-	-	-
1980	(9.12)	70.59	12.29	52.90	61.15	3.62	15.56	12.37	20.38	20.53	20.53
1981	(8.68)	72.53	13.35	62.49	66.32	3.67	17.17	12.73	21.68	21.78	21.78
1982	(4.38)	77.00	12.81	69.08	67.51	2.95	15.89	12.61	22.92	23.04	23.04
1983	(9.79)	67.52	10.50	52.33	66.00	3.41	17.00	13.27	22.93	23.04	23.04
1984	(7.08)	68.81	11.40	64.86	64.27	3.55	20.23	14.33	23.54	23.69	23.69
1985	(5.47)	66.73	10.88	68.84	59.46	3.62	22.90	15.23	27.06	27.21	27.21
1986	(0.70)	68.66	11.86	75.72	57.59	3.72	23.73	17.45	26.20	26.35	26.35
1987	(2.65)	65.52	11.85	75.30	51.36	4.12	26.18	16.02	25.64	25.79	25.79
1988	(7.03)	59.72	12.45	76.96	48.13	5.02	31.00	15.24	25.19	25.34	25.34
1989	(7.91)	55.64	12.41	82.35	44.69	5.51	36.52	15.43	25.60	25.75	25.75
1990	(12.05)	43.93	10.27	82.13	38.01	5.76	46.05	14.74	25.49	25.64	25.64
1991	(9.34)	44.20	10.21	80.74	35.29	5.70	45.06	14.89	25.42	25.57	25.57
1992	(7.37)	44.40	10.07	81.86	34.56	5.60	45.51	15.34	25.32	25.46	25.46
1993	(7.25)	42.80	8.82	84.77	29.72	5.04	48.47	13.66	25.22	25.37	25.37
1994	(6.37)	46.55	9.26	86.14	29.55	4.95	46.04	13.12	25.05	25.20	25.20
1995	(10.22)	47.53	9.72	87.69	28.94	5.10	46.01	11.64	24.82	24.97	24.97
1996	(9.15)	47.43	8.97	81.30	29.21	4.72	42.74	11.83	25.27	25.39	25.39
Annual compound growth rate (%) 1980-1996	(2.60)	(3.72)	(2.06)	2.79	6.10	3.45	8.57	(0.19)			

4.5 Trend in trade balance and agricultural trade

Thailand has always experienced a balance of trade deficit ranging from 1 to 12% of GDP (Table 4.7). In 1960 the trade account showed a deficit of 41 million dollars, which increased to 16.83 billion dollars in 1996. During 1985-1987, the trade balance showed improvement resulting from increase in exports. Exports expanded according to the world economic recovery and competitiveness of Thai export products. However, after 1987, there was a rapid growth of imports of capital goods and raw materials, while the trade deficit was widening rapidly. The structure of trade has changed rapidly from that of an exporter of agricultural products to manufactured goods and services. However, Thailand's balance of trade in agriculture has always been favorable since 1960, whereas the trade account of the non-agricultural sector was always a deficit (Table 4.6).

The balance of trade in agriculture was as high as 70.59% of total agricultural exports in 1980. The large trade balance continued to 1983 and tended to decrease unsteadily at a rate of 3.72%. The decrease was due to higher imports than exports of agricultural products. The share of Thai agriculture exports in total exports was larger than its share in GDP. This indicated that the agricultural sector was important in earning foreign exchange. The surplus of many agricultural products was traded in international markets increasing over time according to ratios of agricultural exports to GDP originating from agriculture. This ratio rose from 52.90% in 1980 to 81.30% in 1996 (Table 4.7).

Thailand is self-sufficient in several agricultural products, and the share of agricultural imports in total imports was only 11.83% in 1996.

4.6 Trend in agricultural trade of selected commodities

4.6.1 Exports of agricultural commodities

Agricultural commodities have long been Thailand's major export. In the period of 1980 - 1996, the annual growth of Thai agricultural exports was 11%. The increase was due to the rising trade of several export items, i.e. rice, rubber, sugar, frozen chicken and shrimp products, but the export of maize decreased tremendously as a result of the boom in the domestic livestock industry requiring the product for feed. It decreased at a rate of 18.8% during 1980 to 1996 (Table 4.8).

The total export value of agricultural products was 16,500 million dollars in 1996 of which rice has been a major export commodity since the beginning of the nineteenth century. In the twentieth century, rubber became a major export item. Furthermore, many agricultural products, i.e. maize, cassava, shrimps, frozen chicken, etc. were added to the list of important export commodities. Table 4.8 shows the percentage share of the principal export commodities in total exports. It should be noted that the percentage share of rice declined from 33.70% in 1960 to 12.30% in 1996, while rubber's share fell from 33.82% in 1960 to 15.36% in 1996. Over the past two decades, fishery products, shrimp and its products in particular, have become a major source of foreign exchange.

Thailand has faced serious economic problems since 1996 and continues to face these up to the present time. Initially the agricultural sector of Thailand was expected to grow at 3% in 1996 according to Plan VIII. After the baht devaluation on July 2, 1997, it is expected that Thai exports of agricultural products will be much enhanced to curb the rising trade deficit.

Rice

Thailand's rice trade is currently liberalized. Rice can be exported by requesting an export permit from the Foreign Trade Department. For a long time Thailand has been a leading rice exporter. During 1980-1996 its exports ranged from 2.8 to 6.3 million tons of milled rice

(Table 4.9) with an average world market share of 32%. Rice for export was categorized by quality and type, i.e. superior, medium and inferior quality. For the high quality rice, the US has been a major competitive producer while Vietnam, Pakistan, China and Myanmar compete with Thai inferior quality rice (Table 4.10).

During 1980 to 1996, the export volume and value of Thai rice grew at rates of 3.6 and 5.4%, respectively (Table 4.9). Presently Thailand exports superior, medium and inferior quality rice. Most are of the types 100% white rice, parboiled and 15% white rice which accounted for 37,19 and 13% of the total rice export, respectively. The major export markets for all these types are in Asia, the Middle East, Africa and Europe. In 1996, major importing countries of Thai rice were China, Malaysia, Iran, Nigeria, Singapore and Hong Kong (Table 4.11).

However, when the importing countries are characterized by region, they can be grouped as Asia, the Middle East, Africa, America and Oceania. From Table 4.12 it is evident that there has been a small change in the proportion of Thai rice imports by region. The distribution of Thai rice to the Asian market increased during 1991 to 1996 because China, Malaysia and Indonesia raised their imports. In addition, the volume of rice imports to Japan increased tremendously while fluctuating among the other major importing countries depending on their imports from other competitive suppliers. In 1996, among the total agricultural exports, rice ranked second with a volume of 5.460 million tons and a value of 2,029 million dollars. The quantity exported decreased by 11.9% over the previous year, whereas the value increased by 4.33% (Table 4.9). Anyway the export for 1997 was projected at 5.3 million tons, which will be less than in 1996, but the price was expected to rise.

Maize

Maize began to assume an important role in the Thai economy in 1950, when it became an important source of foreign exchange earning. In 1950, Thailand exported 12,630 tons of maize valued at 0.42 million dollars, which rose to 514,941 tons, i.e. 95% of the total production valued at 22 million dollars in 1960. By 1986, the export increased to 3,980 million tons, worth 367 million dollars (about 82% of the total production), which was the peak period of exportation (Table 4.13). The rapid expansion of export has brought maize into one of the top four major agricultural exports of Thailand. Between 1980 to 1991, the export share of the market averaged 75%. However, the on-going expansion of the livestock industry, poultry in particular, led to an increase in domestic demand for feeds. Therefore, the demand for maize as a raw material in the feed industry increased considerably, which consequently reduced the export.

Following the livestock industry boom from 1992 to 1996, the export of maize had a decreasing trend, i.e. declining from 145,742 tons in 1992 to 56,047 tons in 1996, at a rate of 23% (Table 4.14). As domestic production did not meet the local demand during this period, Thailand had to import about 445,217 tons of maize in 1991/92 and 472,000 tons in 1995/96. Most imports were from China and Argentina.

In the past, Japan was a major export market of Thai maize. Now, Malaysia, Singapore, Taiwan and Hong Kong have become the major importing countries. However, in 1991 Japan imported only 453 tons of Thai maize, which decreased to 61 tons in 1996. Reasons for the decrease were unacceptable quality together with high demand in the country (Table 4.14).

Table 4.8 Export of principal agricultural commodities and percentage share of agricultural exports.

Year	Rice		Rubber		Maize		Cassava		Frozen Chicken		Shrimp		Other		Ag. Export million \$
	million \$	%	million \$	%	million \$	%	million \$	%	million \$	%	million \$	%	million \$	%	
1960	102.80	33.70	103.16	33.82	22.04	7.23	11.52	3.78	-	-	0.12	0.04	65.36	21.43	305.00
1970	100.64	23.03	89.28	20.43	78.76	18.02	49.32	11.29	-	-	8.96	2.05	110.04	25.18	437.00
1980	780.30	23.95	494.04	15.16	288.03	8.84	595.49	18.28	26.24	0.81	86.00	2.64	987.90	30.32	3,258.00
1981	1,054.66	25.98	433.64	10.68	329.43	8.12	657.86	16.21	47.48	1.17	94.00	2.32	1,441.93	35.52	4,059.00
1982	900.38	20.88	379.61	8.80	329.24	7.63	790.08	18.32	52.40	1.21	127.00	2.94	1,734.29	40.21	4,313.00
1983	806.29	20.85	471.47	12.19	335.47	8.68	615.48	15.92	37.85	0.98	144.00	3.72	1,456.44	37.66	3,867.00
1984	1,037.28	23.03	520.16	11.55	401.99	8.92	664.02	14.74	56.79	1.26	171.00	3.80	1,653.76	36.71	4,505.00
1985	900.97	19.59	542.68	11.80	304.36	6.62	598.66	13.02	58.72	1.28	200.00	4.35	1,993.61	43.35	4,599.00
1986	812.59	15.11	604.64	11.24	367.05	6.83	762.09	14.17	124.85	2.32	249.00	4.62	2,459.78	45.69	5,377.00
1987	908.12	14.75	821.57	13.34	154.66	2.51	824.73	13.39	160.80	2.61	333.00	5.41	2,957.12	48.01	6,160.00
1988	1,387.06	17.86	1,087.55	14.00	152.40	1.96	873.82	11.25	194.80	2.51	456.00	5.87	3,616.37	46.55	7,768.00
1989	1,818.49	19.72	1,056.91	11.46	163.50	1.77	958.99	10.40	235.19	2.55	720.00	7.81	4,267.92	46.28	9,221.00
1990	1,110.78	12.39	945.29	10.51	165.65	1.85	925.47	10.32	303.44	3.38	1,026.00	11.44	4,493.37	50.11	8,967.00
1991	1,220.63	11.92	998.12	9.75	156.53	1.53	927.00	9.05	410.98	4.01	1,345.00	13.13	5,182.74	50.61	10,241.00
1992	1,448.55	12.71	1,156.99	10.15	21.24	0.19	1,103.71	9.68	415.83	3.65	1,599.00	14.06	5,653.68	49.60	11,399.00
1993	1,317.86	11.78	1,167.26	10.44	28.76	0.26	782.08	6.99	355.40	3.18	1,920.00	17.16	5,614.64	50.19	11,186.00
1994	1,567.49	11.66	1,672.8	12.44	23.36	0.17	664.38	4.94	393.87	2.93	2,526.00	18.79	6,598.07	49.07	13,446.00
1995	1,945.07	11.95	2,450.43	15.05	21.66	0.13	615.76	3.78	386.23	2.37	2,584.00	15.87	8,277.85	50.84	16,281.00
1996	2,029.39	12.30	2,534.83	15.36	17.09	0.10	683.74	4.14	363.31	2.20	2,508.00	15.20	8,363.22	50.69	16,499.58
Annual compound growth rate (%) 1980-1996	5.35		11.61		(18.83)		1.16		20.17		27.57		13.75		10.98

Source: Customs Department.

Table 4.9 Volume and value of milled rice export (Jan-Dec) of Thailand.

Year	Tons	Million Dollars
1980	2,799,724.00	780.30
1981	3,031,783.00	1,054.33
1982	3,784,143.00	900.38
1983	3,476,480.00	806.29
1984	4,615,803.00	1,037.28
1985	4,062,240.00	900.97
1986	4,523,597.00	812.59
1987	4,443,301.00	908.12
1988	5,952,458.00	1,387.06
1989	6,311,410.00	1,818.49
1990	4,017,090.00	1,110.78
1991	4,333,015.00	1,220.63
1992	5,117,604.00	1,448.51
1993	4,987,464.00	1,317.86
1994	4,858,637.00	1,567.49
1995	6,197,990.00	1,945.07
1996	5,460,219.00	2,029.39
Annual compound growth rate (%) 1980-1996	3.59	5.35

Source: Customs Department.

Table 4.10 Quantity (tons) of world milled rice exports.

Country	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Thailand	3,476,480	4,615,803	3,962,240	4,523,597	4,443,301	5,701,458	6,311,410	4,017,090	4,333,015	5,117,604	4,987,464	4,858,638	6,197,989
USA	2,384,790	2,141,320	1,939,970	2,392,010	2,471,510	2,259,750	3,061,100	2,473,950	2,242,950	2,164,460	2,679,730	2,821,730	3,083,610
Vietnam	46,000	160,006	-	124,700	153,000	91,200	1,420,000	1,624,000	1,033,000	1,945,800	1,764,500	1,970,000	2,308,200
Pakistan	904,800	1,265,000	718,690	1,316,020	1,270,400	1,210,200	854,320	743,890	1,204,580	1,511,840	1,032,130	984,330	1,852,270
China	1,112,620	1,369,750	1,045,850	1,122,620	1,261,770	802,250	383,500	405,380	817,610	1,034,240	1,506,990	1,630,310	235,730
Australia	404,900	245,590	341,410	177,890	185,530	297,480	339,280	424,290	424,900	518,670	481,620	584,920	541,850
Myanmar	200,000	200,000	250,000	252,860	350,000	349,560	421,700	505,030	678,240	580,400	767,680	890,590	5,512,300
India	858,400	720,800	452,300	-	485,900	47,800	168,200	213,600	173,900	204,500	262,500	933,810	391,590
Others	2,048,220	1,957,661	2,475,860	2,994,720	2,324,900	1,85,880	2,347,160	2,074,970	2,231,670	2,967,370	3,300,730	3,270,320	3,306,920
Total	11,436,210	12,675,930	11,186,320	12,904,417	12,946,311	13,612,578	15,306,370	12,482,200	13,139,865	16,044,884	16,783,344	17,944,648	23,430,459

Source: Customs Department.

Table 4.11 Export volume of milled rice and percentage share by importing country.

Year	Iran		Malaysia		Singapore		China		Indonesia		Other		Total tons
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	
1980	182,219	6.51	152,755	5.46	182,187	6.51	19,627	0.70	-	-	2,262,936	80.82	2,799,724
1981	324,162	10.69	235,652	7.77	157,426	5.19	215,267	7.10	198,029	6.53	1,901,247	62.72	3,031,783
1982	317,615	8.39	407,505	10.77	177,338	4.69	337,579	8.92	185,308	4.90	2,358,798	62.33	3,784,143
1983	400,884	11.53	250,572	7.21	176,393	5.07	21,104	0.61	258,852	7.44	2,368,945	68.14	3,476,480
1984	412,048	8.93	359,794	7.79	216,718	4.70	104,703	2.27	19,926	0.43	3,502,614	75.88	4,615,803
1985	312,825	7.70	343,141	8.45	209,606	5.16	73,723	1.81	48,423	1.19	3,074,522	75.69	4,062,240
1986	192,575	4.26	238,576	5.27	158,463	5.71	284,035	6.28	21,493	0.48	3,528,455	78.00	4,526,597
1987	604,090	13.60	193,154	4.35	256,683	5.78	304,144	6.85	20,575	0.48	3,064,655	68.96	4,443,301
1988	288,652	4.85	369,535	6.21	320,412	5.38	381,027	6.40	37,740	0.63	4,555,098	76.53	5,952,458
1989	464,026	7.35	436,394	6.91	358,784	5.68	837,477	13.27	-	-	4,214,729	66.79	6,311,410
1990	373,864	9.31	282,388	7.03	245,374	6.11	13,250	0.33	22,313	0.56	3,079,901	76.66	4,017,090
1991	106,726	2.46	324,131	7.48	228,204	5.27	65,921	1.52	102,636	2.73	3,505,397	80.54	4,333,015
1992	505,740	9.88	177,265	3.46	217,378	4.25	85,245	1.67	384,694	7.52	3,747,282	73.22	5,117,604
1993	439,046	8.80	221,705	4.45	248,392	4.98	130,161	2.61	15,761	0.32	3,923,399	78.84	4,987,464
1994	172,413	3.55	142,926	2.94	278,568	5.73	553,365	11.39	561,056	11.55	3,150,309	64.84	4,858,637
1995	421,852	6.81	260,343	4.20	276,188	4.46	1,227,970	17.81	873,072	14.09	3,138,565	50.63	6,197,990
1996	389,839	7.14	486,781	8.92	303,149	5.55	656,809	12.03	485,247	8.89	3,138,394	57.47	5,460,219
Annual compound growth rate (%) 1980-1996	0.83		0.30		3.22		11.95		6.16		2.76		3.59

Source: Customs Department.

Table 4.12 Distribution (%) of Thai rice exports among regions.

Region	1980	1991	1992	1993	1994	1995	1996
Asia	46.36	26.47	26.12	30.12	49.37	69.18	65.13
Middle east	16.79	18.36	26.85	23.24	12.18	15.59	13.33
Africa	21.37	33.14	25.53	31.29	24.36	13.82	17.39
Europe	12.22	9.01	12.80	7.92	5.43	2.20	1.55
America and Oceania	3.25	12.75	8.70	7.43	8.66	1.94	2.88
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Faculty of Agricultural Economics and Resources, Kasetsart University.

Table 4.13 Volume and value of maize export of Thailand.

Year	Tons	Million Dollars
1980	2,175,331	288.03
1981	2,547,416	329.43
1982	2,801,242	329.24
1983	2,630,045	335.47
1984	3,116,483	401.99
1985	2,752,417	304.36
1986	3,979,891	367.05
1987	1,627,097	154.66
1988	1,207,162	152.40
1989	1,180,821	163.50
1990	1,235,129	165.65
1991	1,232,131	156.53
1992	145,742	21.24
1993	212,921	28.76
1994	144,461	23.36
1995	106,887	21.66
1996	56,046	17.09
Annual compound growth rate (%) 1980-1996	(21.57)	(18.83)

Source: Customs Department.

Table 4.14 Export volume of maize and percentage share by importing country

Year	Malaysia		Hong Kong		Singapore		Taiwan		Japan		Others		Total tons
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	
1980	414,438	19.05	163,928	7.54	289,536	13.31	165,246	7.60	111,011	5.10	1,031,172	47.40	2,175,331
1981	448,052	17.59	131,217	5.15	365,070	14.33	99,908	3.92	20,520	0.81	1,482,649	58.20	2,547,416
1982	556,576	19.87	258,267	9.22	464,830	16.59	190,958	6.28	185,617	6.63	1,144,994	41.41	2,801,242
1983	518,729	19.72	262,022	9.96	379,681	14.44	7,263	0.28	10,580	0.40	1,451,770	55.20	2,630,045
1984	625,288	20.06	40,764	1.31	406,298	13.04	50,658	1.63	5,856	0.19	1,987,619	63.77	3,116,483
1985	883,344	32.09	88,701	3.22	368,400	13.38	4,622	0.17	26,065	0.95	1,381,285	50.19	2,752,417
1986	937,749	33.56	171,017	4.30	339,615	8.53	36,786	0.92	-	-	2,494,727	62.69	3,979,891
1987	772,972	47.51	143,578	8.82	218,004	13.40	29,854	1.83	-	-	462,689	28.44	1,627,097
1988	422,308	34.98	99,427	8.24	91,504	7.58	4,169	0.35	-	-	589,754	48.85	1,207,162
1989	710,066	60.13	100,185	8.48	128,177	10.85	9,683	0.82	890	0.08	231,820	19.64	1,180,821
1990	736,644	59.64	103,877	8.41	144,464	9.27	3,448	0.28	583	0.05	246,113	22.35	1,235,129
1991	800,603	64.98	89,379	7.25	129,425	10.50	8,833	0.72	2,008	0.16	201,883	16.39	1,232,133
1992	77,141	52.93	30,889	21.19	18,750	12.87	8,198	5.63	453	0.31	10,311	7.07	145,742
1993	155,962	73.25	16,704	7.85	19,701	9.25	7,461	3.50	143	0.07	12,950	6.08	212,921
1994	85,238	59.00	9,658	6.69	11,567	8.01	28,232	19.54	67	0.05	9,699	6.71	144,461
1995	74,088	69.31	4,150	3.88	13,939	13.04	7,804	7.30	122	0.11	6,784	6.36	106,887
1996	30,419	54.28	290	0.52	7,700	13.74	7,163	12.78	61	0.11	10,413	18.57	56,046
Annual compound growth rate (%) 1980-1996	-13.67		-23.78		-23.06		-14.83		-36.34*		-32.25		-21.57

Source: Customs Department.

* Annual compound growth rate, 1989-1996.

Table 4.15 Thai import volume of maize and import by source country.

Year	China		USA		Argentina		Laos		Other		Total million \$
	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$	
1991/92	417,884	66.63	1,063	0.70	25,235	3.68	100	0.01	935	0.12	445,217
1992/93	7,642	1.08	976	0.60	-	-	486	0.03	205,896	32.61	215,000
1993/94	8,338	1.18	1,582	0.87	-	-	150	0.02	14	0.01	10,084
1994/95	-	-	103,583	18.55	176,028	28.06	460	0.04	134	0.13	280,205
1995/96	-	-	260,609	54.85	4,195	8.45	35	0.01	207,161	0.05	472,000

Source: Office of Agricultural Economics.

Trade year = July - June.

Table 4.16 Export volume and value of Thai rubber products.

Year	Smoked Sheets		Block		Concentrated Latex		Crepe		Others		Total	
	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$
1980	343,931	375.26	87,035	96.28	*	*	21,993	20.82	2,107	1.68	455,006	494.04
1981	366,645	340.54	75,797	69.16	*	*	28,324	22.98	1,356	0.36	472,122	433.64
1982	433,562	303.04	79,148	56.56	*	*	30,166	19.09	1,611	0.91	544,487	379.61
1983	451,074	381.65	70,805	63.22	988	0.63	30,211	24.32	1,982	1.66	550,060	471.47
1984	473,326	420.60	77,150	66.96	2,082	1.36	34,004	27.28	5,357	3.96	591,919	520.16
1985	554,778	435.80	98,203	78.56	642	0.40	29,974	22.64	6,366	5.28	689,962	542.68
1986	610,808	486.00	105,281	84.08	1,967	1.12	29,145	21.12	13,656	12.32	760,857	604.64
1987	715,040	667.80	115,264	106.48	16,613	11.56	23,504	19.80	15,492	15.92	885,913	821.57
1988	687,020	779.80	117,360	130.96	91,477	130.32	28,640	30.12	13,204	16.36	937,701	1,087.55
1989	929,367	863.28	126,650	116.08	44,417	46.92	22,639	19.16	12,440	11.16	1,112,788	1,056.91
1990	913,697	749.48	143,027	116.92	77,053	50.00	15,388	12.44	14,637	13.44	1,163,802	942.29
1991	965,469	777.28	161,585	130.16	103,153	65.88	14,145	11.16	15,024	13.68	1,259,376	998.12
1992	1,071,658	856.00	238,620	196.36	114,518	72.04	12,783	9.88	26,020	22.72	1,463,604	1,156.99
1993	1,020,748	792.76	230,571	184.52	242,553	158.40	13,249	1,044.00	14,326	21.08	1,492,794	1,167.26
1994	1,101,628	1,147.84	337,796	310.28	232,552	165.44	8,087	6.20	31,585	43.04	1,735,391	1,672.83
1995	1,068,008	1,583.92	312,256	466.00	265,804	271.72	7,085	7.52	94,116	121.32	1,747,269	2,450.43
1996	1,131,138	1,588.72	283,508	390.32	259,696	508.72	2,646	2.44	245,054	44.60	1,922,041	2,534.83
Annual compound growth rate (%) 1980-1996	8.34	10.21	10.49	12.12	63.28	69.97	10.69	-10.05	29.13	31.74	10.07	11.61

Source: Customs Department.
* Included in "others" item.

Table 4.17 Export volume of Thai rubber products and percentage share by importing country.

Year	Japan		China		USA		Malaysia		Singapore		Others		Total tons
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	
1982	320,259	58.82	29,924	5.50	48,451	8.90	17,899	3.29	58,178	10.68	69,776	12.81	544,487
1983	319,940	58.16	38,910	7.07	69,052	12.55	17,111	3.11	53,859	9.79	51,188	9.32	550,060
1984	322,071	54.41	41,036	6.93	65,701	11.10	15,350	2.59	71,489	12.08	76,272	12.89	591,919
1985	348,854	50.56	60,296	8.74	81,630	11.83	15,490	2.25	47,319	6.86	136,373	19.76	689,962
1986	377,176	49.57	71,527	9.40	86,437	11.36	21,539	2.83	39,405	5.18	164,773	21.66	760,857
1987	401,892	45.36	135,070	15.25	91,742	10.29	29,600	3.34	59,899	6.76	168,310	19.00	885,913
1988	436,823	46.58	120,786	12.88	89,481	9.54	12,819	1.37	73,191	7.18	204,601	22.45	937,701
1989	454,338	40.84	179,416	16.13	91,210	8.20	24,610	2.21	171,740	15.44	191,174	17.18	1,112,488
1990	421,410	36.21	157,860	13.56	96,875	8.32	43,129	3.71	158,247	13.60	286,281	24.60	1,163,802
1991	471,148	37.41	184,764	14.67	124,014	9.85	18,417	1.46	120,710	9.58	340,323	24.03	1,259,376
1992	494,709	33.80	244,913	16.73	164,444	11.24	27,082	1.85	122,154	8.35	410,302	28.03	1,463,604
1993	480,652	32.20	233,076	15.61	194,526	13.03	71,764	4.81	68,984	4.62	443,792	29.73	1,492,794
1994	226,422	13.05	237,115	13.66	227,130	13.09	113,044	6.51	47,476	2.74	884,204	50.95	1,735,391
1995	548,896	31.41	166,290	9.52	247,223	14.15	131,472	7.52	63,850	3.65	589,538	33.75	1,747,269
1996	521,656	27.14	378,613	19.70	223,702	11.64	152,733	7.95	53,946	2.81	591,391	30.76	1,922,041
Annual compound growth rate (%)													
1982-1996	2.63		17.54		11.57		17.15		1.99		20.01		10.17

Source: Custom Department.

Rubber

Thailand has exported rubber in the form of smoked sheets, block rubber, concentrated rubber latex and crepe. In 1960, rubber was the biggest Thai export item, with a boom during the Korean War when the export price was quite high. However, since 1961, the rubber price went down following a fall in the world price. In 1967, the price was very low and rubber export earnings declined tremendously. Even though its percentage share of total exports decreased, it has remained an important export commodity. In 1996 it ranked first among the total agricultural export values, while the status of rice moved to third place. During 1980 to 1996, the export trend for rubber was a 10 and 12% rise in the volume and value, respectively (Table 4.16). The quantity of rubber exported in 1996 increased at a rate of 10% over the previous year, while its value rose by 3.4%. In 1996 block rubber had a decreased export volume and value of 9.2 and 16.2% over the previous year, because many traders of Thai rubber experienced economic difficulties which caused stagnant industrial activities. In addition, local rubber production is facing a problem of labour shortage and low technological input in latex production. In this regard, research and technological innovation are needed to upgrade the processing facilities.

Japan has been a major market for Thai rubber. From 1982 to 1996, the export trend of Thai rubber to Japan increased at a rate of 2.63%, with an average market share of 39% of the total rubber export of Thailand. China has become the second major market replacing the US market. In 1996, the proportion of rubber exported to these countries was 20 and 12%, respectively. In addition, the export trend to Malaysia has been increasing at a rate of 17% due to higher demand for re-exporting (Table 4.17).

Export of rubber products in 1997, according to the Office of Agricultural Economics, was projected at 2.1 million tons with a value of 2,600 million dollars, higher than the initial targets of 1.8 million tons and 2,480 million dollars.

Cassava

Cassava exports from Thailand have been in the form of chips, pellets, flour and other products. Thailand is a major world exporter of cassava products accounting for approximately 78% of the world trade. During 1980 to 1996, the export trend of cassava was less than 1%. It declined from 5.2 million tons in 1980 to 3.87 million tons in 1996. The growth during this period decreased at a rate of 0.78%. The export value rose from 595.49 million dollars in 1980 to 683.74 million dollars in 1996. The growth during this period was 0.78 and 1.16% in volume and value, respectively (Tables 4.18 and 4.19). Export of the pellets to the European Union (EU), a major importer, has been restricted while that to the non-EU markets often varies, mainly depending on grain prices and feed grain substitution.

Since 1993, Thai cassava exports have been facing stiff market competition from substituting grains, which became cheaper as a result of the reform of the Common Agricultural Policy. The livestock industry in the EU used more domestic feed grains causing a decline of Thai cassava pellet imports.

The export of Thai cassava flour rose at a moderate rate during the past decade. Trading difficulties includes trade restriction with high tariff imposed by importing countries and/or requirement of a special treatment i.e. mixing the product with granulated sugar or vegetable oil. However, the tariff rates started to decline gradually under the WTO agreement. The market potential for cassava flour is positive, even if it has to compete with maize and/or potato flour. However, the prospect of cassava flour export will not be brighter in 1997 compared with 1996.

Table 4.18 Export volume and value of Thai cassava products.

Year	Chip		Flour		Pellets		Others		Total	
	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$
1980	159,191	16.20	246,277	53.42	4,811,225	525.61	1,009	0.26	5,217,702	595.49
1981	334,405	32.14	308,645	58.80	5,620,170	566.34	2,671	0.58	6,265,891	657.86
1982	523,059	48.62	396,754	73.69	6,892,786	667.05	2,857	0.72	7,815,456	790.08
1983	279,913	30.56	359,303	78.03	4,554,332	506.01	3,204	0.88	5,196,752	615.48
1984	137,805	12.01	449,223	78.19	5,975,136	568.84	7,572	1.98	6,569,736	664.02
1985	123,702	11.40	482,335	76.72	6,474,503	508.94	7,744	1.60	7,088,284	598.66
1986	35,699	3.58	435,156	93.19	5,842,468	665.29	5,285	0.03	6,318,608	762.09
1987	72,833	6.30	353,594	77.38	5,777,137	741.03	7,425	0.01	6,210,989	824.73
1988	312,460	14.70	452,199	84.77	7,334,446	772.27	22,622	2.08	8,121,727	873.82
1989	130,201	8.50	501,329	88.21	9,185,466	860.19	9,224	2.09	9,826,220	958.99
1990	210,814	14.38	531,365	114.52	7,318,368	794.26	8,494	2.31	8,069,041	925.47
1991	113,205	8.47	549,022	130.33	6,269,224	785.14	10,122	3.06	6,941,573	927.00
1992	237,205	16.27	583,232	136.06	8,093,753	947.74	11,092	3.64	8,925,282	1,103.71
1993	85,098	4.58	460,596	93.69	6,588,869	680.02	12,888	3.79	7,147,451	782.08
1994	13,458	1.60	750,317	173.75	4,714,610	484.76	13,896	4.27	5,492,281	664.38
1995	184,909	25.49	630,274	200.04	3,039,236	385.17	12,363	5.06	3,866,782	615.76
1996	4,002	0.64	632,553	183.85	3,724,686	793.76	13,504	5.49	4,374,745	683.74
Annual compound growth rate (%) 1980-1996	-7.68	-8.89	4.97	7.33	-0.03	13.44	20.46	29.12	-0.78	1.16

Source: Customs Department.

Table 4.19 Export volume of Thai cassava products and percentage share by importing country.

Year	Netherlands		Korea		Taiwan		Japan		Portugal		Spain		Others		Total
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	
1980	3,666,326	70.27	668	0.01	61,212	1.17	58,683	1.12	2,134	0.04	-	-	1,428,679	27.39	5,217,702
1981	4,907,328	78.32	86,282	1.38	86,010	1.37	78,494	1.25	10	0.00	-	-	1,107,767	17.68	6,265,891
1982	6,379,569	81.36	55,869	0.71	70,103	0.90	79,479	1.02	23	0.00	-	-	1,230,413	16.01	7,815,456
1983	4,362,394	83.94	122,734	2.36	80,849	1.56	60,310	1.16	27	0.00	-	-	570,438	10.98	5,196,752
1984	5,393,867	82.10	134,970	2.05	210,613	3.21	154,501	2.35	48,512	0.74	-	-	627,273	9.55	6,569,736
1985	4,068,459	57.41	283,291	4.00	419,739	5.92	589,280	8.31	392,894	5.54	-	-	1,333,621	18.82	7,088,284
1986	4,258,126	67.39	242,246	3.84	152,624	2.42	240,608	3.81	317,367	5.02	141,679	2.24	965,958	15.29	631,608
1987	4,658,578	75.01	142,670	2.30	128,170	2.06	153,187	2.47	208,945	3.36	358,463	5.77	560,976	9.03	6,210,989
1988	3,971,279	48.90	340,508	4.19	316,765	3.90	429,282	5.29	208,779	2.57	281,464	3.47	2,573,650	31.68	8,121,727
1989	4,714,180	47.98	775,856	7.90	417,387	4.25	431,321	4.39	240,543	2.45	419,532	4.27	2,827,401	28.76	9,826,220
1990	3,944,432	48.88	654,699	8.11	361,836	4.48	340,020	4.21	237,007	2.94	515,557	6.39	2,015,490	24.99	8,069,041
1991	3,955,727	56.99	438,644	6.32	456,206	6.57	305,468	4.40	189,851	2.73	611,695	8.81	983,982	14.18	6,941,573
1992	4,585,332	51.37	1,021,574	11.45	399,919	4.48	308,847	3.46	229,053	2.57	381,085	4.27	1,999,472	22.40	8,925,282
1993	4,276,100	59.86	4,756,616	6.65	218,494	3.06	277,213	3.88	147,907	2.07	695,269	9.73	1,056,852	14.78	7,147,451
1994	3,779,844	68.82	71,660	1.30	248,967	4.53	165,211	3.01	250,647	4.56	528,130	9.62	447,822	8.16	5,492,281
1995	2,447,963	63.31	24,598	0.64	201,167	5.20	71,167	1.84	116,927	3.02	423,718	10.96	581,242	15.03	3,866,782
1996	2,693,190	61.56	477,439	10.91	279,982	6.40	102,436	2.34	184,317	4.21	268,268	6.13	369,113	8.45	4,374,745
Annual compound growth rate (%) 1980-1996	-2.77		17.31		9.33		4.59		64.73		6.05*		-2.78		-0.78

Source: Customs Department.
* Annual compound growth rate 1986-1996.

Chapter 4

In 1996, the total export volume and value of cassava products rose at rates of 19.8 and 34%, respectively. In particular, the pellet export increased by 23% compared with the previous year due to low production of feed grains in the EU. In 1997, it is projected that the export market prospect is not good due to better feed grain production in the EU.

Shrimp

Thailand is a major shrimp producer and exporter. Shrimp products exported include fresh frozen, chilled, salted in brine, dried and cooked shrimp. Fresh frozen and chilled shrimp exports accounted for 98% of the total shrimp export value. From 1980 to 1996, the shrimp export volume and value grew at rates of 19 and 27%, respectively. The export rose from 20,371 tons valued at 86 million dollars in 1980 to 360,859 tons valued at 2,508 million dollars in 1996, which was the highest in terms of export volume, due to a rapid expansion of tiger prawn culture which began in 1988 (Table 4.20).

Table 4.20 Volume and value of Thai shrimp exports, 1980-1996.

Year	Chilled Frozen		Other Prepared Preserved		Total Shrimp Export	
	tons	million \$	tons	million \$	tons	million \$
1980	17,915	78.45	2,456	7.55	20,371	86.00
1981	18,761	85.45	2,746	8.55	21,507	94.00
1982	22,647	110.54	4,973	16.46	27,620	127.00
1983	20,150	126.58	5,524	17.42	25,674	144.00
1984	19,428	111.94	17,866	59.06	37,294	171.00
1985	24,041	137.58	18,156	62.42	42,197	200.00
1986	28,729	175.64	21,193	73.36	49,922	249.00
1987	33,909	229.96	26,306	103.04	60,215	333.00
1988	43,624	393.46	25,716	62.54	69,340	456.00
1989	68,506	642.28	25,816	77.72	94,322	720.00
1990	84,724	818.15	31,713	207.85	116,437	1,026.00
1991	121,240	1,067.24	38,351	277.76	159,591	1,345.00
1992	130,516	1,267.82	41,580	331.18	172,096	1,599.00
1993	148,886	1,513.67	45,975	406.33	194,861	1,920.00
1994	199,476	1,966.22	53,616	559.78	253,092	2,526.00
1995	165,658	2,012.08	56,980	571.92	222,638	2,584.00
1996	161,461	1,692.12	199,398	815.88	360,859	2,508.00
Annual compound growth rate (%) 1980-1996	19.08	26.63	23.97	33.20	20.19	27.57

Source: Customs Department

The major markets of Thai shrimps, fresh frozen and chilled in particular, are Japan and the USA. In 1995, exports of fresh frozen and chilled shrimps to these countries were 36 and 31% of the total of fresh frozen and chilled ones. The other markets are Singapore, Italy, Australia and the UK, which altogether shared 33% of the total frozen shrimps (Table 4.21). Exports in the other forms were mostly to the USA, UK, France, Canada, Australia and the Netherlands.

Although Thailand has obtained an increased opportunity for shrimp exports in the world market, strong competition in the markets still remains in terms of quality of the products and trade restrictions. In addition, some importing countries increased their tariffs under the Generalized System of Preferences (GSP) causing a decline in Thai shrimp exports. Presently, awareness of the environment has more impact on Thai shrimp export to some countries. Thailand is alleged to allow aquaculture to erode the environment and some importing countries try to link trade to the environment resulting in a decline in Thai shrimp exports.

Table 4.21 Export volume of chilled and frozen shrimp of Thailand classified by selected importing country.

Year	USA		Japan		Hong Kong		Singapore		Australia		United Kingdom		Italy		Others		Total
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	
1980	2,921	16.30	10,074	52.23	2,341	13.07	-	2,955	1.65	421	2.35	996	5.56	867	8.84	17,915	
1981	2,474	13.19	10,395	55.44	2,725	14.52	-	417	2.22	689	3.67	584	3.11	1,477	7.85	18,761	
1982	3,458	15.27	12,312	54.36	3,431	15.15	-	418	1.85	718	3.17	740	3.27	1,570	6.93	22,647	
1983	6,149	30.52	7,662	38.02	2,503	12.42	-	1,002	4.97	894	4.40	157	0.78	1,783	8.89	20,150	
1984	5,941	30.58	7,053	36.30	1,862	9.58	-	1,062	5.74	1,116	5.74	58	0.30	2,336	12.03	19,428	
1985	7,097	29.52	7,651	31.82	1,907	7.93	3,362	13.90	852	3.54	1,350	5.62	116	0.48	1,706	7.19	24,041
1986	7,964	27.72	9,385	32.67	1,882	6.55	3,357	11.69	1,202	4.18	1,994	6.94	555	1.93	2,390	8.32	28,229
1987	6,878	20.28	12,391	36.54	2,371	6.99	4,303	12.69	1,275	3.76	1,818	5.36	1,568	4.26	3,305	10.12	33,909
1988	7,077	16.22	22,108	50.68	2,027	4.65	797	1.83	954	2.19	1,590	3.64	6,026	13.82	3,045	6.97	43,624
1989	14,567	21.26	40,198	58.68	2,500	3.65	2,270	3.31	1,943	2.84	1,350	1.97	2,121	3.10	3,557	5.19	68,506
1990	14,941	17.63	43,486	51.33	3,869	4.57	6,696	7.90	1,642	1.94	2,666	3.15	3,213	3.79	8,211	9.69	84,724
1991	31,036	25.60	56,194	46.35	5,455	4.50	7,178	5.92	1,902	1.57	2,555	2.11	3,699	3.05	13,221	10.90	121,240
1992	37,150	28.46	51,177	39.21	5,072	3.89	9,068	6.95	2,227	1.71	2,815	2.16	3,138	2.40	19,869	15.22	130,516
1993	46,034	30.92	53,873	36.18	4,596	3.09	10,013	6.73	2,597	1.74	2,664	1.79	-	-	29,109	19.55	148,886
1994	53,331	26.74	78,489	39.35	8,827	4.43	11,670	5.85	4,735	2.37	2,362	1.18	2,204	1.10	37,858	18.98	199,476
1995	44,308	26.75	50,587	30.54	10,473	6.32	8,270	4.99	4,391	2.65	-	-	-	-	47,629	28.75	165,658
1996	41,811	25.90	35,574	22.03	9,623	5.96	14,546	9.01	4,119	2.55	2,682	1.66	2,572	1.59	50,534	30.46	161,461
Annual compound growth rate (%) 1980-1996	22.18		15.90		9.79		18.31		16.79		12.27		6.11		24.94		19.08

Source: Customs Department.

Table 4.22 Export of the frozen chicken classified by selected importing country.

Year	Japan		Germany		Singapore		Netherlands		Hong Kong		Other		Total		
	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$	tons	million \$	
1980	17,430	24.22	-	-	-	-	-	-	-	-	1,073	2.02	18,503	26.24	
1981	26,402	47.10	-	-	-	-	-	-	197	0.04	170	0.34	26,769	47.48	
1982	31,976	50.70	-	-	683	0.68	-	-	170	0.21	388	0.81	33,217	52.40	
1983	20,862	35.00	-	-	1,362	1.49	-	-	102	0.18	600	1.18	22,926	37.85	
1984	30,571	51.80	-	-	2,815	3.60	-	-	140	0.08	691	1.31	34,217	56.79	
1985	33,147	52.10	92	0.19	3,611	5.06	-	-	605	0.67	385	0.70	37,840	58.72	
1986	57,688	113.97	897	2.00	4,314	6.38	-	-	1,254	1.20	643	1.30	64,796	124.85	
1987	75,055	149.83	802	1.67	3,889	6.21	-	-	1,164	1.03	811	2.06	81,721	160.80	
1988	85,695	179.50	1,284	2.60	4,102	6.59	642	1.25	2,980	2.76	1,081	2.10	95,784	194.80	
1989	90,533	202.80	3,556	8.27	4,146	7.64	2,295	5.22	5,011	5.86	2,548	5.40	108,089	235.19	
1990	108,131	237.60	9,218	24.32	5,314	10.38	6,185	16.88	7,446	7.72	2,651	6.54	138,945	303.44	
1991	137,306	341.60	11,227	39.21	4,532	10.56	2,178	6.94	4,446	4.21	4,487	8.46	164,179	410.98	
1992	145,557	342.05	12,581	45.40	4,214	7.83	2,240	6.78	5,129	4.63	5,108	9.14	174,829	415.83	
1993	124,002	275.14	10,970	41.36	5,181	9.83	3,731	12.66	5,152	3.90	5,045	12.51	157,081	355.40	
1994	119,730	302.89	12,054	47.32	5,610	11.92	3,520	14.87	3,662	2.82	8,467	14.05	153,043	393.87	
1995	115,235	302.98	9,675	33.84	6,015	13.38	3,217	10.59	4,315	3.90	11,478	21.54	149,935	386.23	
1996	101,681	269.62	11,508	36.91	4,581	10.52	7,354	20.62	1,184	1.22	10,906	24.42	137,214	363.31	
Annual compound growth rate (%) 1980-1996	13.93		45.99		11.78		18.49		28.06		27.42		15.73		20.17

Source: Customs Department.

Chickens

Thailand first started exporting frozen chicken to the world market in 1975. At that time, the value of exports was only 0.36 million dollars. The export products included whole chicken and chilled parts including boneless breast, fillet, leg, thigh, drumstick wing, wingstick and tulip. Most exports are in the form of frozen dressed cuts which are composed of either parts or boneless parts. Most boneless parts were shipped to Japan, the major market of Thai boneless cuts, which shared 80% of total frozen broilers. Other markets are the Netherlands, Germany, Singapore, Hong Kong and the Middle East. Thailand took a market share of 6% of the total world export.

The export volume and value of frozen chicken during 1980 to 1996 grew at the rate of 16 and 20% respectively. The volume of exports ranged from 18,503 tons valued at 26 million dollars in 1980 to 137,214 tons valued at 363 million dollars in 1996 (Table 4.22). A rapid increase in export was due to the yen appreciation together with the baht devaluation, which drove down Thai frozen chicken export prices. In addition, Japan reduced its import levies on boneless cuts from 18% to 14%, presently to 12%. As a result, the cost of frozen chicken to exporters decreased. Thailand also exports live chickens for breeding and other purposes, but the quantities exported were low and most was shipped to neighboring countries. From 1980 to 1996 the volume and value of breeders rose at rates of 26 and 35% annually, respectively. The export of chicken for other purposes grew at a rate of 25% during the same period (Table 4.23).

Table 4.23 Export volume and value of live chicken.

Year	Breeders		Other Purposes	
	Heads	US Dollars	Heads	US Dollars
1980	541,467	375,840	3,414,730	1,232,880
1981	217,845	185,280	2,941,520	1,279,920
1982	4,000	1,120	3,814,189	1,478,000
1983	37,613	6,840	2,139,237	1,123,000
1984	34,929	66,280	1,321,046	1,264,600
1985	31,991	64,640	2,201,715	1,532,680
1986	237,018	293,080	1,567,868	1,373,560
1987	776,356	1,406,440	737,419	412,280
1988	699,144	902,480	79,848	20,560
1989	919,356	1,079,480	201,941	95,120
1990	1,061,332	1,182,720	61,913	44,960
1991	984,562	1,298,760	37,660	25,920
1992	1,050,951	1,650,920	215,606	47,320
1993	1,272,395	1,373,680	83,439	46,960
1994	1,160,731	1,847,160	105,573	113,520
1995	1,299,173	2,234,600	124,642	223,440
1996	955,679	1,311,520	91,387	113,000
Annual compound growth rate (%) 1980-1996	26.45	35.11	(24.76)	(21.03)

Source: Customs Department.

4.6.2 Imports of agricultural commodities

Thailand's total import has increased along its trend. The value of imports rose from 7,745 million dollars in 1980 to 73,381 million dollars in 1995. Table 4.24 presents the value of selected import agricultural commodities and their percentage share of the total imports. The existing data show that the total import value of agricultural products tended to rise at a rate of 17.4% during 1980 to 1996. Pulp and paper have been a major agricultural import group of Thailand followed by fertilizer, dairy products, and soybean products.

Table 4.24 Value of import agricultural commodities and percentage of total imports.

Year	Soybean Products		Dairy Products		Pulp + Paper Products		Cotton Raw and Linters		Other		Ag Import million \$
	million \$	%	million \$	%	million \$	%	million \$	%	million \$	%	
1980	51.62	5.39	52.60	5.49	114.04	11.90	101.54	10.60	638.20	66.62	958.00
1981	49.16	4.41	87.00	7.80	146.72	16.16	128.21	11.50	703.91	63.13	115.00
1982	54.83	5.53	65.99	6.65	112.20	11.31	81.37	8.20	677.61	68.31	992.00
1983	55.97	4.46	85.61	6.82	129.90	10.34	146.79	11.69	837.74	66.70	1,256.00
1984	101.05	7.19	83.39	5.94	147.12	10.47	173.17	12.33	900.28	64.08	1,405.00
1985	41.72	2.73	87.84	5.74	204.16	13.34	190.00	12.42	1,006.28	65.77	1,530.00
1986	45.95	2.73	83.95	4.98	192.20	11.41	182.22	10.81	1,180.68	70.07	1,685.00
1987	53.60	2.50	97.70	4.56	278.56	13.00	280.13	13.08	1,432.01	66.85	2,142.00
1988	74.16	2.37	130.68	4.18	333.60	10.66	327.27	10.46	2,263.29	72.33	3,129.00
1989	61.02	1.49	131.55	3.22	392.60	9.60	390.86	9.56	3,113.97	76.14	4,090.00
1990	81.83	1.63	167.21	3.33	484.60	9.64	513.43	10.21	3,780.93	75.20	5,028.00
1991	96.12	1.68	161.24	2.82	589.92	10.32	650.68	11.39	4,217.04	73.79	5,715.00
1992	210.53	3.32	222.81	3.52	673.60	10.63	576.61	9.10	4,654.46	73.44	6,338.00
1993	183.61	2.87	206.55	3.23	756.68	11.83	468.68	7.33	4,780.48	74.74	6,396.00
1994	240.78	3.35	248.06	3.45	878.13	12.22	571.80	7.96	5,248.20	73.02	7,187.00
1995	240.40	2.81	329.72	3.86	1,299.79	15.22	677.67	7.93	5,994.42	70.18	8,542.00
1996	387.56	4.47	374.85	4.32	1,071.51	12.35	702.91	8.10	6,136.17	70.75	8,673.00
Annual compound growth rate (%) 1980-1996	12.67		11.26		17.50		14.58		18.16		17.19

Source: Customs Department.

Soybean products

In the past, soybeans were produced as a source of supplementary farm income and also to fertilize soil. In 1967/1968, the planted area of soybean was 0.064 million hectares with 52,800 tons of output. When the National Plans were introduced during 1972 to 1981, the area planted, output and yield rose modestly by 2.67, 3.41 and 0.72%, respectively. From 1982/83 to 1994/95, the production of soybeans rose rapidly.

Although the production of soybeans tended to rise rapidly because of the production acceleration policy, domestic utilization has been growing much faster. Thus, Thailand has imported soybean products for animal feed and home consumption. The import of soybean products rose from 51.62 million dollars in 1980 to 387.56 million dollars in 1996 or an average annual increase at of 12.67% (Table 4.25). The imports were in the form of soybean grains, meal and oil.

By regulation, the import of soybean grains can be made upon request by the factory which uses the grains as raw material. This has been regulated since 1982. However, the quantity of grains that can be imported is very small. The volume of imports in 1992 was 158,047 tons valued at 39.88 million dollars, which rose to 418,811 tons valued at 136.85 million dollars in 1996 (Table 4.25). Major exporting countries are Brazil and Argentina.

Table 4.25 Import volume and value of soybean products.

Year	Soybean Grain		Soybean Meal		Soybean Oil		Total Value
	tons	million \$	tons	million \$	tons	million \$	million \$
1980	15,297	4.02	154,782	39.36	14,232	8.24	51.62
1981	15	0.00	142,997	41.12	14,676	8.04	49.16
1982	3,218	0.71	208,470	48.80	10,444	5.32	54.83
1983	*	0.00	191,479	44.80	20,512	11.16	55.97
1984	107	0.02	296,237	69.74	46,710	31.28	101.05
1985	1	0.00	155,023	30.44	13,657	11.28	41.72
1986	*	0.00	205,915	42.83	3,892	3.12	45.95
1987	*	0.00	239,564	51.08	2,687	2.52	53.60
1988	33,277	10.64	225,416	59.88	6,741	3.64	74.16
1989	9	0.08	171,602	55.82	7,601	5.12	61.02
1990	16	0.12	340,031	77.67	5,499	4.04	81.83
1991	34	0.32	428,245	92.00	3,826	3.80	96.12
1992	158,047	39.88	633,868	162.88	7,299	7.76	210.52
1993	44,689	12.72	598,844	163.01	7,453	7.88	183.61
1994	97,998	28.12	902,708	202.58	11,360	10.08	240.78
1995	203,156	60.27	688,516	165.37	13,920	14.76	240.40
1996	418,811	136.85	790,148	238.68	10,738	12.03	387.56
Annual compound growth rate (%) 1980-1996	22.98	24.67	11.74	12.25	(4.01)	0.43	12.67

Source: Customs Department.

* Small quantity.

The import of soybean meal was regulated upon request since 1984 until it was abolished in 1990, and a surcharge system was brought into operation. The import quantity of soybean meal has been rising at a rate of 11.7% during 1980 to 1996 due to expansion of the domestic livestock industry. In 1994, the import reached the highest peak at 902,708 tons valued at 202.58 million dollars, a rise of 51% from the previous year. Thailand imported soybean meal from China, USA, Argentina, Brazil and India. During 1980 to 1996, about 50% of the total meal was imported from China, followed by 19% from India and 13% from Brazil (Table 4.26).

Table 4.26 Import volume of soybean meal of Thailand and percentage share by exporting country.

Year	China		India		Brazil		Argentina		USA		Other		Total tons
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%	
1983	94766	49.49	2,533	1.32	-	-	-	-	21,876	11.42	72,304	37.77	191,479
1984	109,713	37.04	3,494	1.18	-	-	65,790	22.21	17,712	5.98	99,528	33.59	296,237
1985	105,086	67.79	1,083	0.70	-	-	23,065	14.88	-	-	25,789	16.63	155,023
1986	162,533	78.93	1,069	0.52	-	-	10,175	4.94	28,044	13.62	4,094	1.99	205,915
1987	209,811	87.58	5,263	2.20	-	-	15,855	6.62	8,600	3.59	35	0.01	239,564
1988	213,144	94.56	-	-	-	-	-	-	-	-	12,272	5.44	225,416
1989	142,100	82.81	4,592	2.68	24,908	14.50	-	-	-	-	2	0.01	171,602
1990	270,969	79.69	59,234	17.42	-	-	-	-	-	-	9,828	2.89	340,031
1991	298,910	69.80	106,583	24.89	-	-	-	-	-	-	22,752	5.31	428,245
1992	162,198	25.59	253,331	39.97	162,604	25.65	-	-	9,100	1.44	46,635	7.35	633,868
1993	65,311	10.91	406,301	67.85	85,803	14.33	-	-	30,273	5.06	11,156	1.85	598,844
1994	183,879	20.37	252,892	28.01	405,823	44.96	9,000	1.00	37,800	4.19	13,314	1.51	902,708
1995	-	-	266,163	38.66	345,789	50.22	4,125	0.60	59,146	8.59	13,293	1.51	688,516
1996	-	-	276,880	35.04	203,316	25.73	203,762	25.79	106,100	13.43	90	0.01	790,148
Annual compound growth rate (%) 1980-1996	3.22		43.49		34.98		9.88		12.92		(12.68)		13.72

Source: Customs Department.

Table 4.27 Import volume of soybean oil of Thailand and percentage share by exporting country.

Year	USA		Netherlands		Singapore		Other		Total
	tons	%	tons	%	tons	%	tons	%	
1980	81	0.57	-	-	1,260	8.85	6,712	47.16	14,232
1981	5,573	37.97	-	-	896	6.11	7,547	51.42	14,676
1982	2,550	24.42	-	-	698	6.68	7,193	68.87	10,444
1983	3,443	16.79	-	-	959	4.68	16,110	78.53	20,512
1984	3,976	8.51	-	-	4,783	10.24	37,682	80.67	46,710
1985	8,000	58.58	-	-	161	1.18	5,495	40.23	13,657
1986	2,686	69.01	282	7.25	-	-	924	23.74	3,892
1987	984	36.62	431	16.04	-	-	1,272	47.34	7,687
1988	2,430	36.05	436	6.47	1,387	20.58	2,488	36.90	6,741
1989	1,142	15.02	532	7.00	2,702	35.55	3,225	42.43	7,601
1990	1,489	27.08	502	9.13	1,924	34.99	1,584	28.80	5,499
1991	233	6.09	720	18.82	1,880	49.14	993	25.95	3,826
1992	262	10.44	927	12.70	4,457	61.06	1,653	15.80	7,299
1993	464	6.23	882	1.83	4,516	60.59	1,591	31.35	7,453
1994	155	1.36	904	7.96	7,481	65.85	2,820	24.82	11,360
1995	811	5.83	721	5.18	7,741	55.61	4,647	33.38	13,920
1996	902	8.40	24	0.22	7,571	70.51	2,241	20.87	10,738
Annual compound growth rate (%) 1980-1996	(10.13)		(5.69)		11.89		(10.40)		(4.01)

Source: Customs Department.

Chapter 4

Soybean oil import regulations have been implemented since 1982 upon request. Factories using soybean oil as raw material in their production and the Public Warehouse Organization were allowed to import. The import trend of soybean oil declined continuously at a rate of 4% during 1980 to 1996 (Table 4.25). However, the annual imports depend on domestic production of vegetable oil, which consists of soybean oil, groundnut oil, coconut oil, palm oil, etc. In the past, most soybean oil was imported from Malaysia. However, Singapore has become a major Thailand supplier since 1989 up to present followed by the USA (Table 4.27).

Dairy products

Thailand currently imports milk and milk products worth more than 300 million dollars per year. The trend of imports of dairy products, both quantity and value increased considerably, from 41,634 tons costing 52.60 million dollars in 1980 to 141,660 tons or 374.85 million dollars in 1996 at rates of 9 and 11%, respectively. Skim milk powder has been an important import item accounting for 50% of total dairy products. Processing firms utilized the imported skim powder for their processing of ready-to-drink milk, condensed milk, ice cream, candies, etc. The volume and value of milk and cream exports expanded at rates of 7 and 11%, respectively, while the growth rate of butterfat, cheese and curd was 13% annually (Table 4.28). Most dairy products were imported from New Zealand, Australia and Europe. In 1996, Thailand imported about 31% of the milk products from Australia and 21% from New Zealand (Table 4.29).

Table 4.28 Import volume and value of dairy products.

Year	Milk and Cream		Butter Fat, Cheese + Curd		Others		Total	
	tons	million \$	tons	million \$	tons	million \$	tons	million \$
1960	50,858	14.35	238	0.23	1,576	1.90	52,672	16.48
1970	38,815	12.31	6,909	3.58	4,739	1.67	50,463	17.56
1980	36,927	45.04	4,705	7.56	2	0.00	41,634	52.60
1981	45,659	76.69	4,631	10.30	20	0.01	50,310	87.00
1982	31,058	58.30	3,133	7.58	104	0.11	34,295	65.99
1983	47,712	75.24	4,685	10.31	17	0.06	52,414	85.61
1984	50,555	74.99	4,238	8.34	49	0.06	54,842	83.39
1985	45,460	78.54	4,948	8.86	853	0.44	51,261	87.84
1986	53,398	74.12	5,968	9.68	389	0.15	59,755	83.95
1987	61,188	85.58	8,040	12.00	240	0.12	69,468	97.70
1988	66,405	113.19	9,388	14.51	3,656	2.98	79,449	130.68
1989	46,716	104.79	9,868	22.11	6,396	4.68	62,950	131.55
1990	64,952	133.62	11,117	25.04	12,517	8.55	88,858	167.21
1991	69,282	125.76	13,220	26.27	14,033	9.21	96,535	161.24
1992	86,986	180.86	15,637	31.83	11,390	10.12	114,013	222.81
1993	77,152	167.58	13,692	26.90	14,523	12.07	105,367	206.55
1994	102,897	194.91	20,296	37.36	5,462	15.82	128,655	248.09
1995	12,147	266.81	19,058	44.92	6,036	17.99	146,565	329.72
1996	117,836	299.84	18,013	49.67	5,811	25.34	141,660	374.85
Annual compound growth rate (%) 1980-1996	7.44	10.69	12.16	13.23	63.95	71.50	8.75	11.26

Source: Customs Department.

Pulp and paper products

The production of pulp and paper products has not been sufficient to cope with domestic demand. The quantities demanded have increased more rapidly. Therefore, the trend of total imports rose considerably during 1980 to 1996 with a rate of growth at 18% per annum in value terms. The total volume imported increased from 348,001 tons costing 114.04 million dollars in

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1980 to 1,466,358 tons costing 1,071.51 million dollars in 1996 (Table 4.30). The import consists of two major items, i.e. an average of 28% of paper pulp and 72% of paper products.

The major suppliers of wood pulp have been the USA and Canada. In 1996, Thailand imported 499,832 tons of paper pulp, and 50% of the total wood pulp was imported from USA and 8% from Canada (Table 4.31). The Thai government realized the problem of trade balance deficit and foreign currency outflow. Thus, the import - substitution production program of wood pulp was set up during the Sixth Plan period (1987-1991) aiming at reducing the trade balance problem and the outflow of foreign currency and raising farm income in the rural areas.

Fertilizers

Use of chemical fertilizers in Thai agriculture in the period of 1977 to 1995 increased by 9.8% annually (Table 4.32). Domestic prices for the fertilizers closely follow international prices as the fertilizer use has long relied on imports. The import statistics for 1977 show fertilizer imports of 918,222 tons at a value of 78 million dollars. The computed plant nutrients were 168,406, 120,080 and 36,517 tons of N, P₂O₅ and K₂O. In 1995 they became 3,640,600 tons with a value of 714.41 million dollars with the nutrients 728,600, 453,400, 326,200 tons of N, P₂O₅ and K₂O (Table 4.33). The types of major fertilizer imports were ammonium sulfate, urea, formulae 16-20-0, 15-15-15, 16-16-8, and diammonium phosphate, with about 150 total formulae that were usually imported.

Countries exporting fertilizers to Thailand are scattered around the globe in Europe, America, Africa, the Middle East and Asia. To be more specific, Thailand's major fertilizer suppliers have been Korea, the Philippines, the USA, Germany, Japan, Norway, Malaysia and Indonesia (Tables 4.34 and 4.35). The acquisition was usually worked out through about 70 importing companies. The fertilizers were imported mainly in bulk; the fertilizer was then packed or blended into around 150 formulae. The countries of origin of the main formulae are summarized in Table 4.35.

The fertilizer import in 1986 was 1,513,793 tons valued at 207.6 million dollars, which rose to 3,640,000 tons in 1995 with a value of 714.4 million dollars, at rates of 9.4 and 13.4%, respectively.

Most recently, the imports during the past five years of 1991 to 1995 were ammonium sulfate (21-0-0), urea (46-0-0), formulae 16-20-0, 15-15-15 and 16-16-8. The import growth was highest for the 15-15-15 and 16-16-8 formulae as shown in Table 4.36.

Currently during 1990 to 1996 the whole of Asia saw its fertilizer production below its annual demand of 16.5 million tons. Hence, dependence on imports from other regions of the world is inevitable, especially since the demand in China, India and Vietnam was greatly increased. Consequently, fertilizer prices in Thailand in 1995 were driven higher. That is, the prices for 21-0-0, 46-0-0, 16-16-8, 15-15-15 and 13-13-21 were 3-52% higher in 1995 over 1994 (Table 4.37).

Nevertheless, global fertilizer demand and consumption is projected gradually downward. Therefore, the future world prices for fertilizers will be driven down too.

Table 4.29 Import volume of dairy products and percentage share by exporting country.

Year	Australia		New Zealand		Netherlands		Denmark		Others		Total tons
	tons	%	tons	%	tons	%	tons	%	tons	%	
1982	3,710	10.82	15,229	44.41	2,836	8.27	4,261	12.42	8,259	24.08	34,295
1983	9,677	18.46	15,762	30.07	5,618	10.72	5,185	9.89	16,172	30.86	52,414
1984	14,312	26.10	11,526	21.02	5,456	9.95	5,740	10.47	17,808	32.46	54,842
1985	13,897	27.11	12,129	23.66	5,359	10.45	5,949	11.61	13,927	27.17	51,261
1986	18,862	31.57	13,590	22.74	6,701	11.21	5,836	9.77	14,799	24.71	59,755
1987	21,221	30.55	12,765	18.38	7,854	11.31	4,490	6.46	23,138	33.30	69,468
1988	15,685	19.74	14,128	17.78	10,071	12.68	3,382	4.26	36,183	45.54	79,449
1989	12,183	19.35	17,084	27.14	6,365	10.11	1,786	2.84	25,532	40.56	62,950
1990	22,783	25.27	23,179	26.17	6,824	7.70	1,948	2.20	33,852	38.66	88,586
1991	24,202	25.07	18,730	19.40	7,187	7.44	2,442	2.53	43,974	45.56	96,535
1992	38,878	27.08	23,798	20.87	9,331	8.18	3,539	3.10	38,467	40.77	114,013
1993	30,854	29.28	18,214	17.29	8,220	7.80	4,482	4.25	43,597	41.38	105,367
1994	35,203	27.36	27,088	21.05	9,986	7.76	3,308	2.57	53,070	41.26	128,655
1995	35,233	24.04	29,328	20.01	11,400	7.78	3,193	2.18	67,411	45.99	146,565
1996	44,178	31.16	29,615	20.91	10,411	7.30	5,021	3.54	52,465	37.09	141,660
Annual compound growth rate (%) 1982-1996	13.55		6.34		6.83		(2.65)		13.57		9.71

Source: Customs Department.

Table 4.30 Import volume and value of pulp and paper products.

Year	Wood Pulp		Paper Products		Others	
	tons	million \$	tons	million \$	tons	million \$
1960	-	-	47,783	7.24	47,783	7.24
1970	-	-	57,188	8.36	57,188	8.36
1980	80,738	37.72	267,263	76.32	348,001	114.04
1981	113,637	52.52	266,758	94.20	380,395	146.72
1982	92,152	36.76	222,046	75.44	314,198	112.20
1983	124,144	49.05	257,386	80.85	381,530	129.90
1984	68,646	32.92	289,975	114.20	358,621	147.12
1985	125,947	48.36	302,109	155.80	428,056	204.16
1986	105,421	48.02	289,849	144.18	395,270	192.20
1987	113,864	59.66	449,974	218.90	563,838	278.56
1988	112,107	79.76	448,862	253.84	560,969	333.60
1989	138,456	117.59	445,012	275.01	583,468	392.60
1990	169,160	126.06	582,050	358.54	751,210	484.60
1991	249,326	154.91	702,701	435.01	952,027	589.92
1992	270,438	162.71	808,846	510.89	1,079,284	673.60
1993	371,793	188.40	933,852	568.28	1,305,645	756.68
1994	389,451	216.25	1,019,565	661.88	1,409,016	878.13
1995	416,896	364.91	1,128,835	934.88	1,545,731	1,299.79
1996	415,810	273.42	1,050,548	798.09	1,466,358	1,071.51
Annual compound growth rate (%) 1980-1996	11.67	15.64	11.57	18.35	11.55	17.50

Source: Customs Department.

Table 4.31 Import volume of pulp and percentage share by exporting country.

Year	USA		Canada		New Zealand		Swaziland		Others		Total tons
	tons	%	tons	%	tons	%	tons	%	tons	%	
1982	39,171	42.51	7,427	8.06	352	0.38	2,035	2.50	42,897	46.55	92,152
1983	20,874	16.81	11,157	8.99	6,587	5.31	528	0.43	84,998	68.46	124,144
1984	10,194	14.85	17,004	24.77	4,462	6.50	1,505	2.19	35,481	51.69	68,646
1985	24,286	19.28	26,004	20.65	6,332	5.03	4,306	3.42	65,019	51.62	125,947
1986	16,032	15.21	34,864	33.07	3,144	2.98	15,043	14.27	36,338	34.47	105,421
1987	10,962	9.63	27,498	24.15	5,719	5.02	17,221	15.12	52,464	46.08	113,864
1988	15,921	14.20	32,939	29.38	4,895	4.37	19,219	17.14	39,133	34.91	112,107
1989	21,469	15.51	32,529	23.49	13,401	9.68	18,748	13.54	52,309	37.78	138,456
1990	24,810	14.67	22,717	13.43	19,061	11.27	27,727	16.39	74,845	44.24	169,160
1991	47,926	19.22	40,630	16.30	25,389	10.18	40,308	16.17	95,073	38.13	249,326
1992	31,192	11.53	50,604	18.71	26,241	9.70	49,320	18.24	113,081	41.82	270,438
1993	56,088	15.09	55,126	14.83	23,077	6.21	54,395	14.63	183,107	49.24	371,793
1994	306,826	36.10	64,414	7.58	31,969	3.76	56,975	6.70	70,733	45.86	389,451
1995	424,355	41.38	71,641	6.99	21,879	2.13	18,088	1.76	119,067	47.74	416,896
1996	499,832	50.09	78,737	7.89	22,499	2.25	13,773	1.38	199,031	38.39	415,810
Annual compound growth rate (%) 1982-1996	24.66		14.90		24.80		27.33		9.57		13.57

Source: Customs Department.

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Table 4.32 Use of chemical fertilizer (tons) in Thai agriculture.

Year	Fertilizer Use	Nutrients		
		N	P ₂ O ₅	K ₂ O
1977	792,024	134,156	102,361	40,637
1978	785,433	133,040	101,510	40,298
1979	827,204	140,115	106,908	42,442
1980	786,341	133,194	101,627	40,345
1981	894,542	151,140	116,265	45,763
1982	1,042,503	174,765	134,229	57,648
1983	1,272,041	233,388	154,044	83,701
1984	1,246,688	227,712	142,623	67,916
1985	1,250,000	252,900	124,999	55,663
1986	1,400,000	319,927	137,409	72,930
1987	1,548,765	342,784	148,344	96,245
1988	1,992,633	439,720	200,833	137,456
1989	2,297,733	494,923	188,823	117,793
1990	2,648,910	576,517	318,337	148,937
1991	2,487,082	525,825	272,318	164,016
1992	2,806,784	600,176	325,713	191,858
1993	3,195,576	769,098	430,233	250,147
1994	3,387,804	720,211	412,273	263,434
1995	3,313,313	663,345	412,159	288,949
Annual compound growth rate (%) 1977-1995	9.83	11.83	9.10	12.59

Source: Office of Agricultural Economics.

Table 4.33 Fertilizer imports by volume value and nutrient, 1977-1995.

Year	Fertilizer Import		Nutrients (tons)		
	(tons)	Million Dollars	N	P ₂ O ₅	K ₂ O
1977	918,222	77.67	168,406	120,080	36,517
1978	753,990	97.67	139,451	113,801	28,004
1979	638,748	79.81	113,762	96,325	40,542
1980	734,168	116.46	135,923	96,139	40,320
1981	889,787	154.66	156,676	127,050	48,134
1982	959,826	140.93	178,082	115,228	45,135
1983	1,362,974	178.75	250,072	165,056	89,684
1984	1,355,743	193.94	247,634	155,100	73,858
1985	1,310,820	193.94	265,205	131,081	58,371
1986	1,513,793	207.55	354,931	148,578	78,858
1987	1,722,164	223.28	403,548	165,374	106,011
1988	2,087,095	309.22	454,502	208,155	129,867
1989	2,485,690	376.88	553,515	240,898	122,467
1990	2,650,535	417.27	573,835	301,290	167,575
1991	2,368,475	439.79	494,942	259,104	173,090
1992	2,856,116	487.16	609,480	338,320	184,021
1993	3,337,976	554.26	727,343	396,773	233,599
1994	3,173,545	523.55	687,113	381,157	245,093
1995	3,640,600	714.41	728,600	453,400	326,200
Annual compound growth rate (%) 1977-1995	14.27	12.37	12.16	10.36	14.12

Source: Customs Department, importers and Office of Agricultural Economics.

Table 4.34 Fertilizer imports ('000 tons) classified by major exporting country, 1982-1990.

Country	1982	1983	1984	1985	1986	1987	1988	1989	1990
S. Korea	188.70	326.70	360.20	288.20	309.60	241.50	445.80	540.50	583.80
Japan	212.10	219.00	374.60	309.50	344.10	350.40	310.30	307.10	265.50
The Philippines	-	-	-	42.90	29.70	129.50	108.40	227.90	269.60
Malaysia	-	-	-	-	79.90	122.00	128.40	191.20	203.30
Norway	49.20	73.50	58.50	89.10	78.00	93.70	143.20	189.50	239.00
Russia	69.70	33.50	71.50	89.40	78.30	88.70	62.40	93.50	136.10
Germany	182.90	218.00	62.20	121.70	89.50	68.60	108.00	132.60	131.20
Indonesia	-	5.80	19.60	69.60	156.40	159.80	119.00	117.20	103.40
USA	77.30	109.10	88.10	67.90	93.00	85.90	90.90	97.80	107.10
Qatar	10.60	21.80	5.90	-	30.80	76.80	76.10	101.40	92.40
Romania	42.20	167.10	129080	95.20	79.40	119.40	138.00	185.90	67.50
Netherlands	13.70	35.30	5.80	5.20	10.50	8.90	43.00	53.40	49.90
Others	113.40	153.20	179.50	132.10	134.60	175.00	313.60	247.70	401.70
Total	959.80	1,363.00	1,355.70	1,310.80	1,513.80	1,720.20	2,087.10	2,485.70	2,650.50

Source: Office of Agricultural Economics.

Table 4.35 Import sources of main fertilizer formulae, 1993-1995.

Countries of Origin	Main Formulae
Korea	16-20-0, 21-0-0, 15-15-15
The Philippines	16-20-0, 16-16-8
USA	46-0-0, 18-46-0, 11-52-0
Germany	21-0-0, 13-13-21, 15-15-15
Japan	21-0-0
Norway	13-13-21, 15-15-15
Malaysia	46-0-0
Indonesia	46-0-0

Source: Office of Agricultural Economics.

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Table 4.36 Imports (tons) of main fertilizer formulae, 1991-1995.

Year	21-0-0	16-0-0	16-20-0	15-15-15	16-16-8	Others	Total
1991	464,014	364,695	452,693	336,887	131,462	618,724	2,368,475
1992	541,815	463,536	574,093	298,680	188,954	759,038	2,856,116
1993	504,987	592,697	646,137	378,009	324,205	891,941	3,337,976
1994	428,055	594,745	639,961	324,236	268,497	918,051	3,173,545
1995	559,578	524,553	586,763	575,799	288,402	1,105,505	3,640,600
Annual compound growth rate (%) 1977-1995	1.40	9.57	6.48	12.23	21.02	14.47	10.13

Source: Office of Agricultural Economics.

Table 4.37 CIF, Bangkok wholesale and regional retail prices (dollar/ton) of main fertilizer formulae, 1991-1995.

Formulae	Prices	1991	1992	1993	1994	1995	Growth (%)
21-0-0	CIF						
	bulk	73.45	77.83	82.57	87.91	107.22	9.18
	bag	86.82	93.98	100.30	-	-	7.48
	Bangkok regional	98.17	99.50	108.17	118.50	141.00	7.41
	regional	123.80	115.33	119.47	127.00	177.60	8.53
46-0-0	CIF						
	bulk	181.42	161.63	134.23	151.61	230.24	4.21
	bag	203.66	125.88	-	158.97	289.59	9.20
	Bangkok regional	207.17	184.67	166.67	175.17	262.17	4.27
	regional	217.20	215.00	203.93	196.00	288.00	4.83
16-20-0	CIF						
	bulk	171.80	163.99	145.31	154.25	188.92	1.30
	bag	179.49	174.34	151.82	-	188.45	1.23
	Bangkok regional	195.50	185.17	169.00	178.33	215.67	1.60
	regional	210.94	209.33	201.87	197.67	248.00	2.70
16-16-8	CIF						
	bulk	182.13	178.74	152.59	166.13	197.97	0.94
	bag	-	183.39	159.66	179.39	-	1.10
	Bangkok regional	206.33	200.33	189.33	187.33	224.75	1.04
	regional	218.10	215.60	214.80	214.33	266.40	4.02
15-15-15	CIF						
	bulk	203.91	207.54	189.19	204.80	224.02	1.76
	bag	200.48	198.98	214.78	191.24	221.97	1.65
	Bangkok regional	226.00	224.00	212.00	214.67	242.71	1.02
	regional	255.74	257.60	256.80	251.40	280.00	1.58
13-13-21	CIF						
	bulk	214.07	210.71	198.07	223.75	231.14	2.16
	bag	-	-	-	-	-	-
	Bangkok regional	225.64	224.00	212.00	214.67	242.83	1.05
	regional	253.46	254.00	253.60	251.60	280.00	1.92

Source: Office of Agricultural Economics.

5. Conclusions and Recommendations

International trade has played a significant role in the Thai economy as a source of foreign exchange earning, and agricultural trade is the leading sector. A review of the value of agricultural exports shows that its value has been dependent on export of a few traditional crops, such as rice, rubber and cassava. During 1980-1995, the value of these commodities showed a declining trend with a ratio of total export value decreasing from 35% in 1980 to 9% in 1995. This indicates that there was an increase in the export value of other agricultural commodities. The sectors which have increased their importance are livestock and fisheries, poultry and shrimp in particular. However, statistics also show that the import value of agricultural items has increased over time with a higher rate compared to that of exports. If this trend persists, the agricultural sector may face a trade imbalance in the future.

In this age of globalization, Thailand is facing increasing competition in the world market of agricultural commodities. Endorsement of the free trade concept results in adjustments of demand and supply among countries. The principle of comparative advantages of countries is brought into consideration. Apart from straight competition, trade policies of trading countries will influence production and marketing among countries. In addition, implementation under the WTO agreement is expected to have an impact on the production situation in major exporting countries, including Thailand. Reduction in producer subsidies of developed countries by 20% of producer income will lead to a downward adjustment of the production area and result in reduction of total export volume of those countries. The adjustment is projected to have a positive effect on prices. Therefore, the change in prices will impact on a large exporting country like Thailand.

In the meantime, Thailand is to reduce import duties by an average of 24%. This will, in effect, open up the Thai market to increased import of those commodities priced lower than domestically produced goods. In addition, Thailand has to reduce producer subsidies. This will affect major commodities which are subsidized, such as soybeans, palm oil, dairy products and sugar.

While international trade in the agricultural sector is being regulated, it is important for the WTO members to study and analyze the impacts of trade liberalization on their major export and import products. The findings will lead to adjustments to cope with changes in the world trade situation.

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