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Rice in Thailand

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## Rice in Thailand

Delane E. Welsch and Sopin Tongpan\*

### INTRODUCTION

Thailand has been a rice exporter since 1855 when the Bowring Treaty with Great Britain opened Thailand up to international trade on a significant scale. (2, p. 128). By the early 1930's, Thailand was exporting one-half of its annual production. Although World War II greatly disrupted rice production and trade in the region in general, by 1949 Thai rice exports had come back up to 1.2 million metric tons of milled rice, or 27 percent of annual production. Exports reached a peak in 1965, when 1.9 million tons, or 30 percent of total production, were exported. (2, p. 129). Exports since then have declined to about 1 million tons per year, or 10 to 12 percent of production. Although rice exports accounted for 35 percent of total export earnings in the early 1960's, the proportion declined to 20 percent in 1969. One part of the decline is due to population increase of 3.2 percent per year, with per capita consumption of roughly 155 kg per year of milled rice. (4, p. 108-110).

Although rice dominates agricultural production in Thailand, the proportion of rice in planted area of all crops declined from 88 percent in 1950 to 65 percent in 1967. Area planted to rice increased during those 17 years from 5,540,000 to 6,410,000 hectares, but

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area planted to all other crops increased from 752,000 hectares to 3,475,000 hectares. Rice production during that period increased from 6.8 million tons to 9.6 million tons of paddy. (5, p. 46-47).

There has been considerable discussion over whether the expansion of rice output has been due only to expansion of area harvested or whether there has also been an increase in yield per hectare. (7), (8, p. 56-71). The low quality of the data available prevents a definitive answer. It appears that yield per hectare in the mid-1960's was roughly the same as during the period 1900-1930. Yields declined steadily from the earlier period to 1954 when they reached a low of 1.25 tons per hectare. They have since climbed back to about 1.7 tons per hectare. Yields in tons per hectare vary a great deal among regions, with 2.9 in the North; 1.0 in the Northeast; 1.7 in the Central Plains; and 1.3 in the South in 1967/68. These regions accounted for 7, 35, 49, and 9 percent, respectively of planted area in that year.

#### RICE EXPORTING AND THE RICE PREMIUM

The whole rice economy, and because of its dominance, therefore the agricultural sector of Thailand, has been profoundly influenced by events immediately following World War II. The history of these events and their economic effects have been documented by Silcock, so only a brief summary will be presented here. (8, appendix I).

Because of circumstances regarding Thailand's status during World War II, Thailand was required to provide the United Nations

with 1.5 million tons of milled rice at a price considerably below world levels at that time. A Rice Bureau was set up and made the only legal exporter of rice. To avoid heavy treasury costs, domestic prices of rice were kept very low. By the end of 1949, the U.N. allocation of rice ended, but the system was maintained because a rise in domestic prices to world levels at that time would have greatly reduced real incomes of urban consumers to politically intolerable levels. (8, p. 217). The high world prices during the Korean conflict enabled the government to obtain considerable money by buying at the low domestic rice and exporting at world price. However, a spurt in world production resulted in a buyer's market for rice from 1954 onwards and the Rice Bureau had difficulty in exporting, and private traders were allowed to export but were required to pay a premium for the privilege. The rate of that premium was roughly set at the difference between world market price and Thai domestic price. At the beginning of 1955, the government turned all of the rice trade back to the private sector. The "rice premium" was retained as the mechanism for keeping domestic price at the desired level below the world price. It is therefore essentially an export tax. (3)

The level of the rice premium is set by the government as a fixed amount per ton of milled rice loaded aboard ship, and the level varies for different grades of rice. The exporter procures his rice in the domestic market and makes his own sales negotiations abroad. When the rice is loaded aboard ship and certified by customs inspectors, the exporter then pays the premium to the government.

The level of the premium is supposedly flexible to take into account changes in world price levels. In practice, it rarely changes more than once or twice per year, and in fact, remained constant from May, 1963 to January, 1967. (See Table 1). In addition, changes in amount were very small during the period 1956-1966. In 1967 the procedure was changed from a specific rate to an ad valorem rate.

For example, white rice 100% is considered as the top quality Thai rice. At the peak in world rice prices in October, 1967, it sold for US\$250 per metric ton, F.O.B. Bangkok. The rice premium on white rice 100% at that time was US\$82 per ton. During the week ending April 5, 1971, for the same grade, F.O.B. price was US\$120 per ton, and the premium was US\$38 per ton. Numerous statistical studies have shown that domestic wholesale prices usually are very nearly equal to F.O.B. prices less the rice premium and exporting costs. (1). There is an additional export tax on rice, a 5.7 percent ad valorem tax which is collected on all agricultural exports.

The Thai Government also exports rice on a G-G basis. The government negotiates the terms with the foreign government, and then calls for bids from the private sector to provide the agreed upon quantity and quality aboard ship. The difference between cost of procurement to the government and what it sells the rice for is also called "rice premium", and is paid to the treasury. Since 1963, the proportion of rice exported under G-G fluctuated from 25 to 50 percent of total exports.

The export markets for Thai rice have remained moderately stable over time. Data from 1957 to 1969 are shown in Table 2. The share going to Southeast Asia ranged from a high of 73 percent in 1961 to a low of 47 percent in 1965 and 1968. West Asia's share has grown from none to 25 percent in 1968. The Middle East has also increased its imports of Thai rice.

Over the years, the rice premium has been discussed, researched, and debated more than any other economic topic in Thailand. The proponents claim 7 benefits to Thailand. They are:

1. Major source of government revenue.
2. Only effective method of taxing agriculture.
3. Promotes agricultural diversification by making the returns from other crops more attractive relative to rice.
4. Maintains domestic food price stability.
5. Aids low income groups by keeping prices of rice low.
6. Promotes industrialization by keeping cost of living and thereby labor costs low.
7. Provides bargaining power in exporting.

The opponents have refuted, sometimes empirically, all 7 arguments. It would appear however that world market forces, and not the debate, will cause the termination of the rice premium in the near future. Present domestic prices for paddy are lower now than at any time since 1946, and farm prices of paddy are lower than the farmers can bear at

the present time. The premium has been abolished on glutinous rice, but F.O.B. export prices still have fallen to \$61.20 per ton of white glutinous rice, 10% long grain. Farm prices for glutinous paddy are reported to be as low as \$25 per ton, and some is being used as livestock feed. The comparable farm price for corn is \$50 per metric ton.

#### PRESENT POLICIES

Because of the dominance of rice in the Thai economy, nearly all government policies either affect or are affected by rice. However, only five policy areas will be discussed in this paper: technology, irrigation, fertilizer, domestic processing and marketing, and exporting.

Thailand has invested in rice research for a considerable period of time. Rice is the only crop to have a separate department in the Ministry of Agriculture. A breeding program was started in the early 1950's. The principle technique was to collect large numbers of selections from farmers' fields, test them under low fertility conditions (resembling farmers' conditions), and then release the best back into the local area from which they came. Many local varieties of traditional types are present in Thailand. Thai people are very discriminating in their taste for rice, and Thailand has long had a reputation in export markets for high quality rice, so emphasis in the breeding was logically on grain quality.



Thailand strongly supported the formation and early programs of IRRI and has participated in nearly all of IRRI activities. Thailand however refused to permit the introduction and release of IR-8 in the Kingdom, solely because of the quality. IR-8 was extensively tested in Thailand, and although yields were high, it was felt that the cost of damaging the export market quality reputation was greater than the benefits of higher yield. However, a crossing program using IR-8 as one parent was initiated, and two new varieties, RD-1 and RD-3, have been released. These varieties appear to be roughly equal to IR-8 in yielding ability, slightly better in disease resistance and local adaptability, and although IR-8 is one parent, the grain quality is high, following the other Thai parent.

About one million of the 6.4 million hectares of rice in the Kingdom are produced in the Chao Phya Delta. A considerable portion (perhaps one-third) of this area is subjected to deep flooding every year, and floating rice is the only crop that can be grown. This presents serious problems in water control and rice breeding.

Irrigation has received heavy emphasis by the Thai Government for a long time. Some of the structures in the Chao Phya Delta date back to 1924. The biggest push started in 1950. The main policy has been to construct large multi-purpose dams and reservoirs and the main canals and laterals. The farmer has been responsible for constructing farm ditches. In general, the farmer has not done so, and consequently very little of the area under the command of major dams has good water

control. This is mainly due to incomplete and poorly designed systems, rather than lack of interest on the part of the farmer. Part of the difficulty also lies in the multiple purposes for which the dams were built. Electric power generation, navigation, and salt water extrusion seem to have the higher priorities than irrigation. In some cases where there is water in the canal during the dry season, but not enough to permit gravity irrigation, farmers have purchased small pumps and pump the water from the canal onto the fields. In other cases, farm cooperatives have purchased large pumps to pump out of the river. Dry season cropping however probably still covers less than 10 percent of the arable area in the delta. Although charges for water are permitted by law, in practice none have ever been made in large projects.

The situation varies in other parts of the Kingdom. Very little upland rice is grown; what is grown is chiefly in mountainous areas by hill tribes under shifting cultivation. In the far north, where farm size is small (1 hectare), the farmers have developed their own year-round irrigation system. In the Northeast, dams are being built on the larger rivers. Tanks are being built on smaller streams to collect water in the wet season, chiefly for human consumption in the dry season. Nowhere in the Kingdom is groundwater being utilized through tubewells for irrigation, except in a few isolated spots. There has recently been a major shift in government policy, away from massive investment in large projects to investment in better utilization of water from the projects already constructed.

Whereas because of the rice premium the farmer receives considerably less than world price for his rice, because of fertilizer policy he pays considerably more than the world price for fertilizer, and consequently doesn't use very much. There is currently an embargo on importation of ammonium sulfate and urea. The reason is that an investment has been made in an obsolete lignite conversion based fertilizer factory. Because the process is inefficient, cost of production is from 1.5 to 2.0 times the cost in the most efficient modern plant. When free imports were permitted, the plant could not sell anything that it produced. Since finance was by a foreign loan, the government is hesitant to write the plant off as a bad investment. Although fertilizer imports increased exponentially in the early 1960's, by 1969 growth in imports had stopped, and fertilizer use may have actually declined. (11). One major international firm, which had already made a sizable investment in fertilizer market development, closed its agro-chemicals division. Although parts of the rice area, particularly where phosphorus is deficient, use small amounts of fertilizer, the bulk is applied to vegetable crops.

The government has generally followed a policy of letting all processing and domestic marketing to the private sector. An attempt was made to nationalize rice milling in 1949, but met too much opposition to be implemented. The government for a time required that permission be granted for the building of new rice mills,

and attempted to allocate them to different areas on the basis of production in local areas, but this requirement was finally dropped in 1968. In 1950, rice milling was concentrated in Bangkok. Decentralization has occurred until at the present time less than 5 percent of the rice is milled in Bangkok. The mills are generally scattered throughout the country and fairly well allocated on the basis of production. Most mills are of the abrasive stone type, and steam engines burning husks for fuel are a common source of power. A common milling arrangement is for the milling to be done for the bran. The farmer brings the paddy and receives all of the milled rice, with the miller keeping the bran, and sometimes the smallest brokens, as milling fee. Thus, millers frequently also have a pig feeding enterprise on the side. Most mills also have equipment to separate the rice by grade. Japanese type rubber roller mills have been tested but are not economic, because the cost of rollers is greater than added value of whole rice.

Distribution channels are very well developed and technically efficient. Most of the milled rice moves to Bangkok by river barge at low cost. When milled rice is held for more than several weeks before export, it is usually reconditioned and regraded. The grading equipment permits blending grades to specification. Retail shops commonly offer a wide range of grades to consumers.

The major export policy, the rice premium, has already been described. A system of multiple exchange rates was also in effect

from 1946 to early 1955. The structure of the exporters is difficult to determine. Most have been in business a long time, and most also export other agricultural commodities. There are between 80 and 120 registered rice exporters, but it appears that most of these are exporters in name only. Exports seem to be concentrated in 20 to 25 major firms, who frequently invite other smaller firms to join in on a particular contract. This is apparently a device to make the number of firms appear to be large, so that the large firms are not charged with monopoly or oligopoly power. Most sales within the region, to Hong Kong, Singapore, and Malaysia, in particular, are based on personal or family contacts with orders placed by telegram or long distance telephone calls.

One of the most striking features of the Thai rice trade is the very fine and carefully controlled system of 38 grades. This system of grades was developed by the private traders themselves, and adherence to system is also maintained by the traders, not the government. Most traders belong to one of the national chambers of commerce (Thai, Chinese, etc.), to the Thai Rice Trade Association, and to the Board of Trade of Thailand, although membership is not compulsory.

#### FUTURE ISSUES

There has been a great deal of discussion in Thailand during April, 1971, about the rice problem. Unfortunately, much of the

discussion is based upon opinion and very little is based upon facts. The purpose of this paper is to present some facts and the conclusions that can be drawn from them, and to point out areas in which more facts are needed before the problems can be solved.

First, although rice is still a very important part of the Thai economy, very little is known about the quantities produced, marketed, consumed, and carried over from year to year. Export data, except for that smuggled out of the country, are known; production is roughly estimated by both an obsolete village headman reporting system and a sample survey with an error too large to be tolerated; and everything else, including stocks on hand, is "guestimated". It is impossible for an exporting country to operate in today's highly competitive buyers' rice market with such faulty information. A modern and accurate rice data program is long overdue. A statistical crop reporting service, vested with the sole responsibility and authority for all rice data should immediately be established in the Ministry of Agriculture. Budget and personnel now engaged in rice data collection of some type or other and spread out over at least 7 different departments, divisions, sections or offices should be transferred to the new service. Full access wherever needed to the NSO computer should be included. The technology and the expertise are available, they simply need to be utilized in one central program.

Second, the internal conflict between the policy of keeping domestic prices low and the policy of improving farm income must be

resolved. At the present time the farm floor support price program and the rice premium are in direct conflict. Trying to push prices down via the rice premium and pull them up via price supports is akin to a man standing in a basket and trying to lift himself off of the ground. With great exertion he can jump and actually raise the basket off of the ground, but when he lands he is likely to break both the basket and his feet.

The stated procedure of stabilizing domestic prices by manipulation of the premium rate has not been followed. When F.O.B. prices were \$250 per ton (100% grade 2) the premium was \$82 per ton. When F.O.B. prices fell to \$120 per ton, the premium was only reduced to \$38 per ton. Its effectiveness as a bargaining tool in exporting has not only been lost, but it in fact has hurt exporting, because of frequent rumors and statements in the press, and indecisiveness about changing the level of the premium. While the premium does keep consumer prices low, it no longer is an important source of government revenue, it no longer affects diversification, and it is an oppressive taxation of agriculture.

It has recently been suggested that the premium be abolished for lower quality grades of rice but kept for the highest quality grades, namely 100% and 5% white rice. Such a move would be self-defeating for several reasons. One is that Thailand's export reputation is built upon high quality grades. Thai white rice 100% is available nowhere else in the world but in Thailand. But retaining the premium on 100% and abolishing it on lower grades would have the effect of making 100% cheaper relative to lower grades in the domestic market. This would not only encourage increased domestic consumption of 100 relative to lower grades, thereby discouraging export

of this high foreign exchange earner, but it would also serve as a disincentive to producers and millers for producing high quality rice. Another reason is that Thailand faces its stiffest competition in exports in the low quality rice, not in 100% or 5%. It is the 25% and 35% and the parboileds that compete with IR-8 and others being exported by other countries.

Given these facts and the current turmoil and uncertainty regarding Thai government manipulation of the rice premium, there is only one solution. Abolish it totally and across the board.

The immediate consequence would be an across the board rise in domestic prices by something less than the current amount of the premium. What does this mean? The current F.O.B. price for 100% grade 2 is Baht 2,400 per ton, the premium is Baht 750 per ton, and the Bangkok wholesale price is Baht 1,530 per ton (week ending 5 April, 1971, as certified by the Rice Committee of the Board of Trade of Thailand). In other words, wholesale price plus premium is Baht 2,280 per ton, leaving Baht 120 to cover cost of exporting, including other taxes, and profit. The wholesale price would rise to something less than Baht 2,280 per ton (perhaps Baht 2,200). Assuming a marketing margin (spread between what Farmer receives and wholesaler receives of 19%), (6, P. 248), this would mean a farm level price of Baht 1,782 per ton of 100% milled rice or Baht 1,157 per ton of the equivalent amount of paddy (1.54 tons) required to obtain 1 ton of milled rice (65% conversion rate).



Although this is less than the desired price support of Baht 1,300 per ton for Special No. 1 paddy, it is close to the goal of Baht 1,150 per ton of Special No. 3 paddy. It is recognized that not all paddy produced will yield 100% milled rice, but somewhere between one-fourth and one-half would, depending upon weather conditions during ripening and harvest, and incentive to millers. The increased domestic price of milled rice would raise the cost of living in Bangkok by 3 percent or less.

A rice price support program (floor prices to farmers) is technically, economically, and administratively unfeasible on several counts. A farm price above domestic equilibrium price is not feasible unless production controls are also put into effect. Limiting the amount of rice each and every rice farmer in Thailand can produce is not feasible. A price support program requires storage space for the rice purchased or, in some cases, the rice against which loans or advances are made. Storage space of a volume sufficient to make the scheme work is not available.

Price supports are not economically feasible for several reasons. How much rice would have to be purchased by the government to raise price to all farmers? If 10 percent of the quantity produced, it would require 1.3 billion baht. The answer is probably nearer 30 percent or 4 billion baht, or 20 percent of total government expenditure in 1969. Such magnitudes might have unmanageable repercussions on monetary and fiscal problems. If 80 percent of the people are farmers, then can the remaining 20 percent be taxed

(probably only 5 to 10 percent are taxable) to operate a rice price support program?

The rice price support program is not administratively feasible at the present time when it handles only 0.5 percent of production. Already it is diverting scarce talent in the government from other pressing problems. A program of the magnitude that could affect farm income is totally unfeasible administratively.

In one sense, Thailand is fortunate to have had the rice premium in the past, strictly in the sense that domestic equilibrium prices are now below world equilibrium levels, even though world prices are at low levels. This means that there are feasible government policies that can affect farm income in the short run, namely abolishing the rice premium and allowing farm prices rise to world levels.

Third, is the management of exports in the short run. Totally abolishing the premium will make exporting freer. There should be no restrictions on exporters, with the objective of maximizing foreign exchange earnings. This means exploiting all natural and comparative advantages, and it also means C-G sales where necessary, and for credit if necessary. The possibilities of some barter with countries such as India, Ceylon, Philippines, etc. should be explored for products now imported, such as steel, railway cars, fertilizers, etc. There also should not be any government effort to maintain a large number of exporters, ostensibly in the name of

competition. In fact, a smaller number of large firms, each with large volumes, should be encouraged. With a small number of large firms, both the supervision to maintain grades and standards and fulfillment of contracts would be easier, and the penalty for violation would be more severe. The goal should be no more than 10 exporting firms, each with a volume of at least 100,000 tons per year.

Fourth, a very deep look must now be taken at Thailand's rice prospects over the next 5, 10, and 20 years. In doing so, the facts are fewer and the informed best judgments and research backed speculations must be more. With respect to production, what natural, absolute and comparative advantages does Thailand have with respect to the rest of the world? Vast areas of the central plains are suited for nothing else but rice production. In some of these areas, Thailand probably has an absolute cost advantage over the rest of the world. In other parts of the Kingdom, there are vast areas currently in rice production that might be better suited to some other crop production if highly productive new varieties of these crops were developed. One basic fact cannot be ignored. Productivity throughout Thai agriculture is very, very low. Thailand has not participated at all in the so-called "green revolution". There cannot be any long run increase in farmers' income until productivity is raised. The past 20 years of gaining increased production through exploitation of new land is at an end.

The task is now to increase productivity on the land now under cultivation. And this can come about only through well organized, adequately financed, and problem oriented research programs focused on the crops with the greatest potential. (10). The consequences of a failure to do so are severe. If Thailand doesn't improve productivity, it will not need to worry about exporting rice, for in 10 years it will be a rice importer. (9).

Another fact is currently being ignored in the public debate on the rice problem. One must distinguish between two different causes of reduced exports, namely between demand constraints and supply constraints. F.O.B. export prices in October, 1967, were the highest in Thai history. Yet exports in 1967, 68 and 69 were 1.48, 1.03, and 1.02 million tons, respectively. Exports for 1964, 65 and 66 were 1.9, 1.9, and 1.5 million tons, respectively. Bad weather, excessive carryover stocks, smuggling, and other causes have all been blamed. But the real reason is probably that population is increasing faster each year than is production. The conclusion is that Thai rice faced a supply constraint before it faced a demand constraint. The current emphasis on policy measures to combat a demand constraint are diverting attention from the supply constraint.

Resolving the supply constraint involves a number of policies that have been discussed elsewhere. Briefly they include water control, research on new varieties, and a rational fertilizer policy. (11).

The question is, should Thailand increase rice production? It has no choice, unless it wants to become a rice importer. The real question is strategy. All production must come from a land area of probably no more than one-half of the current area planted to rice. Which means something on the order of doubled yields on the land best suited to rice or without an alternative use than rice. Diversification as presently being expounded is an empty phrase. Land cannot and will not be diverted from rice to other crops unless rice yields or other crop yields or both increase substantially. Slogans don't diversify production, but good research and rapid adoption of its results could.

There are other questions involved as to what long-run level of rice production should be sought. One question is whether the current world situation is the result of a permanent increase in the trend of world rice production, or whether it is just a temporary shift in the level of the old trend. Will production continue to increase faster than population, or will the countries now climbing towards self-sufficiency be massive importers again in 5 or 10 years?

What will be the nature of the Thai domestic demand in 10 or 20 years? The number of Thai people will double in the next 17 years, and if the present level of consumption remains at 155 kg. per capita, massive increases in production will be necessary for Thailand to remain self sufficient. The alternative is a large shift in tastes and preferences from rice to wheat. Income elasticity of demand for rice in Thailand is still positive, although low, and wheat cannot be produced in commercial quantities, so a shift to wheat doesn't seem likely. Thailand has got to be a major rice producer for a long time.

Table 1. Premium Rate on White Rice 100% Exported from Thailand,  
December 1955 to April 1971.

<u>Period</u>	<u>Baht per Metric Ton</u>
12/55 - 12/56	935
1/57 - 6/57	840
7/57 - 7/59	935
8/59 - 8/59	750
9/59 - 12/59	935
1/60 - 3/63	890
4/63 - 12/66	950
1/67 - 2/67	1,010
3/67	1,090
4/67	1,240
5/67	1,300
6/67	1,320
7/67	1,470
8/67	1,640
9/67	1,520
10/67 - 2/68	1,640
3/68	2,070
4/68 - 5/68	1,960
6/68 - 10/68	1,830
11/68 - 5/69	1,450
6/69 - 11/69	1,100
12/69 - 10/70	1,000
11/70 - present	750

Source : Department of Foreign Trade, Ministry of Economic Affairs

Table 2. Thai Rice Exports by Country of Destination, Percent of Total Quantity Exported Each Year, 1957-1969

Country	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>Southeast Asia</u>													
Hong Kong	12.3	15.1	14.9	14.9	12.4	17.2	13.5	10.8	10.8	14.2	14.5	12.3	16.9
Malaysia	14.3	17.0	24.4	19.9	15.7	15.6	17.7	15.4	14.3	10.2	13.7	17.8	14.7
Singapore	17.2	19.6	20.0	17.4	12.3	13.5	12.4	12.1	9.1	9.5	8.1	12.3	13.1
Indonesia	11.4	11.6	6.8	11.4	23.8	21.0	23.9	23.8	5.7	11.1	12.0	4.2	7.9
Philippines	6.6	4.1	a	0	8.9	a	5.1	5.7	6.8	3.2	6.7	0	0
Subtotal	61.8	67.4	66.1	63.6	73.1	67.3	72.6	67.8	46.7	48.2	55.0	46.6	52.6
<u>East Asia</u>													
Japan	9.3	6.4	8.5	7.5	3.2	5.0	7.5	6.7	8.1	6.1	9.3	9.3	6.2
Taiwan	0	-	0.4	1.6	4.8	0	0.1	1.2	0	0.1	0.4	a	0.7
Subtotal	9.3	6.4	8.9	9.1	8.0	5.0	7.6	7.9	8.1	6.2	9.7	9.3	6.9
<u>West Asia</u>													
India	0.2	a	a	a	0	a	0	1.8	11.3	12.1	12.4	19.5	11.2
Ceylon	2.9	a	-	0.7	3.9	3.5	2.5	1.6	9.8	7.4	6.5	5.4	3.0
Subtotal	3.1	a	a	0.7	3.9	3.5	2.5	3.4	21.1	19.5	18.9	24.9	14.2
Middle East	5.4	5.9	10.9	9.3	4.6	7.4	6.6	5.5	5.2	4.7	5.5	7.8	7.6
Europe	4.9	7.8	5.0	2.8	2.9	4.4	1.5	2.8	2.0	2.2	0.5	0.4	1.0
Other	15.5	12.4	9.0	14.4	7.4	12.3	9.1	12.5	16.8	19.1	10.4	11.0	17.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

a = less than .05 percent

## REFERENCES

1. Chaiyong Chuchart and Sopin Tongpan, "The Determination and Analysis of Policies to Support and Stabilize Agricultural Prices and Incomes of the Thai Farmers (With Special Reference to Rice Premium," Bangkok, Ministry of National Development and SEATO, May 1965.
2. Corden, W.M. and H.V. Richter, "Trade and the Balance of Payments." Ch. 6 in Silcock, T.H. (Ed.) Thailand: Social and Economic Studies in Development, Canberra, Australian National University Press, 1967.
3. Corden, W.M., "The Exchange Rate System and the Taxation of Trade", Ch. 7 in Silcock, T.H. (Ed.) Thailand: Social and Economic Studies in Development, Canberra, Australian National University Press, 1967.
4. Government of Thailand, National Income of Thailand 1965, Bangkok, National Economic Development Board, 1966.
5. Government of Thailand, Agricultural Statistic of Thailand 1967, Bangkok, Div. of Ag. Econ., Min. of Agric., 1968.
6. Government of Thailand, "Marketing Channels and Price of Agricultural Commodities in the Upper Region of the Chao Phya River Basin 1969, Bangkok, Div. of Ag. Econ., Min. of Agric., 1970.
7. Hsieh, S.C. and V.W. Ruttan, "Environmental, Technological, and Institutional Factors in the Growth of Rice Production; Philippines, Thailand, and Taiwan," Food Research Institute Studies, 7: 307-341, 1967.
8. Silcock, T.H., The Economic Development of Thai Agriculture, Canberra, Australian National University Press, 1970.
9. Van Roy, "The Malthusian Squeeze," The Bangkok Bank Monthly Review, August, 1967.
10. Welsch, D.E. and E.W. Sprague, "Technical and Economic Constraints on Grain Production in Southeast Asia," Agri-Cultural Revolution in Southeast Asia; Vol. I, Impact on Grain Production and Trade, New York, The Asia Society, 1970.
11. Welsch, D.E., "Agricultural Problems in Thailand: Some Policy Alternatives", The Bangkok Bank Monthly Review, Vol. 12, No.3 (March, 1971) pp. 89-104.