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Rice Marketing System in Thailand

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Abstract

The paper is to provide essential information for a comparative study of the rice marketing systems of Thailand and Taiwan. It reviews findings from selected studies, supplemented by the authors' present research. The results show the total rice production has increased by 56% over the past two decades due to government production policies and price interventions. The paddy-rice marketing channel uses a long path to reach final buyers. Most activities were handled by private businesses. Returns to millers were substantial and out-weighed other intermediaries despite the existence of farm-wholesale price efficiency. Improvement in Drying and Warehousing is required so as to alleviate paddy quality and price problems.

This paper is to provide essential information for a comparative study of rice marketing systems of Thailand and Taiwan. The paper reviews findings from selected studies and supplemented by the authors' experiences gained from an undergoing research on Hom Mali Rice study. We aim to present background on production and marketing system and highlight key policy changes in marketing as well as selected aspects of efficiency of the marketing system.

1. Production

Rice history can be traced back to the prewar period. As reviewed by Efferson (1952) most of rice was produced on small farms where about one-half of the production was for family consumption. The surplus was sold in the market through traveling buyers who collected traveling paddy and moved down the canals to Bangkok, the central and terminal market for all crops.

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Prior to World War II, Thailand was the principal competitor to the United States, Burma (Myanmar) and Indochina in supplying long grain rice to the deficit countries in Latin America. Prewar rice production was export led; after the war only surplus rice was export (Ishii, 1978)

However, in the early 1950's, Thailand once again become a major competitor for long grain rice in the world market due to the stable political conditions relative to the neighboring countries. Total planted area during 1976 to 1996 increased from 53.6 to 64.2 million rais (6.25 rais = 1 hectare) or about 0.98% per year. Total production increased by 56.49% over 20 years or 2.8% per year. More rapid increase in the production is remitted from application of high-yielding varieties grown especially in the hot dry season (February to June). During 1990-1996, dry season rice production area accounted for 5.5% to 10% of the wet (main) season (August -December) cultivated land (Table1). Production of dry season, however was 12% to 24% of the main crop production (since the average yield of dry season was more than double). The average rice yield increased from 213 kg/rai (1960) to 365 kg/rai (1996) or 1.98% per year.

Table 1 Planted Area, Total Production, And Average Yield Of Wet Season Rice And Dry Season Rice During 1990/91 – 1997/98

Year	Planted area (1,000 rais)		Total production (1,000 tons)		Average yield (kg/rai)	
	Wet season	dry season	wet season	dry season	wet season	dry season
1990/91	58,205	3,705	14,902	2,291	256	618
1991/92	55,177	4,494	17,518	2,882	317	641
1992/93	56,295	4,158	17,302	2,615	307	629
1993/94	56,153	3,098	16,483	1,964	294	634
1994/95	56,373	4,304	18,161	2,950	322	685
1995/96	57,407	5,946	17,729	4,287	309	721
1996/97	57,291	5,613	17,782	4,064	310	724
1997/98	56,958	6,437	18,789	4,550	330	708

Source: Office of Agricultural Economics, 2000.

Although Thailand is the largest rice exporter to the world market, the largest rice producing country is China. Thailand is ranked sixth with approximately 22 million tons of paddy rice annually.

There are two main growing seasons for rice, the wet season and the dry season. The first crop (or wet season crop) is cultivated from June to August, and harvested during

October to January. Hundreds of rice varieties are grown in Thailand (Chamnts, 1991). The old varieties are being replaced by new varieties and/or hybrid varieties. Generally, traditional varieties are cultivated in the wet season and new varieties high-yielding usually non-photo sensitive can be grown in the wet as well as the second (dry) season. (February to April and harvested during April to June). The production in the wet season is approximately 18 million tons and 4 million tons from the dry season.

Planted area of wet season rice in Thailand slightly declined during 1990-1997. In contrast, total production had a positive trend due to an increase in average yield. The planted area of dry season rice expanded over the same period.

2. Domestic and Export Demand

Rice is the only staple food grain, providing reasonable amount of food nutrients and over half of the calories in the Thai diet. In addition, it is an important raw material for various food industries, for example; noodle, starch, bran, oil, animal feed manufacture and raw material for industrial use. Domestic demand for rice has increased every year due to population growth. The domestic consumption is approximately 65% of rice production annually (Bank of Thailand, 1996). The annual excess supply, 35% of the total production, goes to the world market.

Table 2 depicts recent distribution of rice production, export for 1993 and 1997, When domestic utilization and stock were rather stable. Stock ran down and piled up in response to production harvested to unusual decline and rise of per capita utilization.

Ito et al. (1989) studies rice consumption in Asia during 1961-85. In the case of Thailand, annual per capita consumption has declined from 191 kg of rice (1961-65) to 164 kg (1981-85)^{1/} while per capita GDP growth has risen 121% over the period i.e. from 6,938 to 15,303 baht. Estimated income elasticity was 0.237 in 1961 decreasing to - 0.437 by 1985. (Taiwan, also a rice exporter then, has experienced rapid economic growth; income elasticity ranged for 0.015 in 1961 to - 0.594 in 1984)

^{1/} Ito and OAE estimated slightly different value

Table 2 Production, Domestic Utilization and Export of Milled Rice ^(a)

Year	Production (1) (1,000 tons)	Export (2) (1,000 tons)	Domestic (3) use & stock	Per capita (4) (kg / yr)
1981 – 1985 ^(b)	12,177	3,773	8,404	169.1
1986 – 1990 ^(b)	12,433	4,999	7,434	136.9
1991	13,161	4,333	8,828	156.0
1992	12,850	5,117	7,733	134.9
1993	11,901	4,987	6,914	119.2
1994	13,620	4,859	8,761	149.2
1995	14,204	6,198	8,006	134.8
1996	14,408	5,460	8,948	149.1
1997	15,213	5,567	9,646	160.8

Sources: Office of Agricultural Economics, 1984, 1988, 1991, 1994, and 1999

Notes: (a) conversion ratio: paddy = 1 : 1.55

(b) five year average.

(3) = (1) – (2) and (4) = (3) / population.

Thais normally prefer long grain and good quality rice. Translucent grain, long shape and fragrance appear to have significant influence on domestic price (Unnevehr, 1986). This evidently supports the notion why traditional varieties are still cultivated despite low yields. However, more and more farmers become market-oriented. Consequently, Khaw Dok Mali 105 (traditional variety) and RD15 (radiated KDM105) are major Hom Mali (fragrant) varieties widely grown in various parts of the country. Hom Mali rice has been promoted to replace poorer quality to serve domestic and export markets.

The Thai government earned more than 50 million baht from exporting rice in 1996 an increase from 30 million baht in 1991. The exporting value increased approximately 10% per year. About half of the total rice exports to Asian countries, 20% Middle East and 15% of Africa. World rice export was around 17 million tons a year. Thailand is the leader in fragrant and high quality rice as well as in parboiled rice. (73%, 40% and 60% of market share respectively): Shares in medium and low quality rice market are moderate (15% and 23%).

From the total Thai rice export, 47% was Hom Mali rice and white rice 100%. Parboiled rice accounted for 14%; the remainders are broken white, glutinous rice, and brown rice.

3. Rice Policy

Since rice is the most important crop in Thailand and involves the majority of farmers on the one hand and all consumers on the other, rice sector received top attention from the government. Various policy measures have been implemented since World War II. Policy impacts were analyzed especially the export premium by a number of economists. This section lists selected policies and highlight effects of some measures.

The overall objectives of Thailand rice policy have long been to raise rice production to meet increasing domestic consumption and to maintain an exportable supply (at least up to the 5th Economic and Social Development Plan (1982-86)). Production policy and marketing as well as trade policies are interwoven in their impacts on the price which return affect production and export. The recent policies are the following.

In 1965, "Farmers' Aid Committee" (FAC) were appointed and chaired by the then prime minister. The FAC was to accelerate the support to farmers in 3 aspects i.e. (1) to increase rice yield, (2) to support rice prices and (3) to support agricultural credit to farmers (La - lad, 1988).

In 1966, The Bank for Agriculture and Agricultural Cooperatives (BAAC) was established to provide farm credit as well as to serve price support programs e.g. Warehouses and Pledging Scheme.

During 1974-83. The government intervened the market directly through the Marketing Organization of Farmers (MOF) and indirectly through the buffer stock operations of the Public Warehouse Organization (PWO) to maintain farm price above the target levels. The rice target price policy, however, was suspended in 1983. In 1985, a minimum farm price scheme was introduced. The scheme was to provide millers with low interest rate-loans in order to encourage buying paddy at the minimum price (as determined by the government).

During 1983-86, the government intervened in both the white rice and paddy markets. In the white rice market, PWO bought white rice at a higher price when converted to paddy price from MOF and farmers' groups.

Also in 1984 but effectively in 1986, the Warehousing and Pledging scheme (or rice harvest collateral credit) was implemented. It was to provide liquidity to farmers while waiting for a high price with a low interest rate.

Sriboonchitta (2000) evaluated the effectiveness of this rice harvest collateral credit policy during 1986-96 by comparing to the previous period (1979-85). He found that statistically the policy did not help raise farm price.

The major export intervention was implemented during 1960-1985, the policy encompassed 4 measures:

- (1) rice premium collected from rice exporters by Ministry of Commerce
- (2) export duty collected by Ministry of Finance
- (3) compelling rice exporters to sell their rice reserves at the price lower than the market price
- (4) controlling export quantity by limiting export permission to exporters

The burden accrued from these measures accounted for 30% to 40% of the price during 1950-1972, and increased to 50%-60% during 1973-74. The impact of the measure gradually declined to zero in early 1986 when premium and export quota and export stock were cancelled (Siamwalla and Setboonsarng, 1988). The effects of the above measures on foreigners were estimated to be around 25% to 30%. As a consequence, the major impact, 67% to 75%, was born by Thai farmers. Except the second, these measures were suspended in 1985 to encourage export. Furthermore, "packing credit" was provided to exporters along with other financial facilities via the Export-Import Bank.

One of the most recent policies related to rice is the Agricultural Restructure Program which encourages farmers in the marginal areas, to grow other crops in place of rice. The target was to reduce the rice production area by 3 million rais. In addition, farmers are encouraged to use seed and Hom Mali rice varieties.

4. Marketing System

There are various intermediaries involved in the rice marketing system, which have been expanded through the uncoordinated initiatives of private individuals. Since rice producing areas are concentrated and situated at some distance from the main urban consumption centers, the rice marketing system takes a long route to reach consumers. At the local level, intermediaries include local buyers or assemblers, local commission agents, cooperatives, farmers groups, local assembling market centers, millers, wholesalers and retailers. At the regional level, large local assembling market centers and large millers are major intermediaries. The final level, i.e. country level includes commission agents, wholesalers and exporters. Roles and functions of some intermediaries are briefly described below.

4.1 Local Buyers and Assemblers

The local buyers assemble paddy from farmers or local country markets. They normally own trucks and arrange for transportation between farms and mills. At this level, the local buyers are usually village shopkeepers. They sometimes provide farmers credit in cash or production inputs.

Regular assemblers usually contract medium and large millers because of the opportunity to buy large quantities of rice of given types, varieties or grades at one time. Most farmers do not own trucks and thus they choose to sell paddy at the farm to assemblers who offer reasonable price to millers nearby. However some farmers are also local assemblers and millers.

4.2 Farmers' Organisation

There are 2 types of farmers' organization: - Farmers' Group (FG) refers to a group of at least 30 farmers who form a legal unit. Department of Agricultural Extension of Ministry of Agriculture supported farmers through FGs to conduct group effort in marketing activities, hiring or acquiring facilities and raise bargaining power by acting together. Farmers' group may carry out financial transactions, purchase and operate transport vehicles and equipment, provide storage, etc. In addition, they sell their paddy to assemble merchants or rice mill directly.

Agricultural cooperative, is the other form of farmers' organization. In 1998 the number of agricultural cooperatives were 4,507,082 increasing from 3,287,358 in 1994 (OAE, 1994 and 1999). The cooperatives gather paddy from the members at the market price. They deliver paddy to larger agricultural cooperatives and to the rice mills. Some cooperatives mill rice for their members and sell surplus to the market. Only a small number of cooperatives are specialized in milling and marketing rice.

4.3 Central Paddy Market

Central paddy markets are market centers located in main production areas. They are either set up by the business sector or by government agencies. Fifty-two privately owned market places serve assemblers and millers a meeting place to interface, negotiate and make transactions. Facilities provided such as labor, moisture gauges, drying lawns, warehouses and loans, depend on the size of the market centers. The owner of a large center usually does not involve in trading so as to avoid price interference, preferring to earn from fees, rent

and interest charge from loans. Most of the centers are supported by the Ministry of Commerce. They are sometime assemblers and/or millers.

The governmental centers were set up by 2 different ministries. Three market centers set up by the bank for Agriculture and Agricultural Cooperatives (BAAC) are located in 3 major rice production areas in 3 regions (North, Northeast and Central).

BAAC's act as a pawnshop for the paddy. Farmers can receive 90% of the sale value. For example, in 1994, when the expected price for 5% paddy was 4,000 baht/ton. (prices for other grades differed by 100 baht/ton in each grade) paddy 10% rice was bought at 3,450 baht/ton by BAAC (Bank of Thailand, 1995). The bank charged only 3% interest rates.

The others, 176 subdistrict paddy centers, belong to the Department of Agricultural Extension, Ministry of Agricultural and Cooperatives. They promote local competition and provide facilities i.e. drying lawns, weighing machines, and warehouses. These government-buying centers accommodate rice price policy measures.

4.4 Commission Agents or Brokers

A broker's main function is to build marketing connections between rice exporters or wholesalers and millers. They search for certain types or quality of rice and quantity to meet the demand of exporters. Except a few large ones, most millers sell rice to wholesalers and exporters through commission agents. The brokerage is 2 –3 % of sale value.

5. Marketing Channel

Marketing systems of rice can be subdivided into 2 levels i.e. paddy markets and rice markets. As for the former, local assemblers play the major role i.e. 43% to 60 % of paddy pass through these merchants before it changes hand to millers. Commission agents handle about 18% to 20 % of paddy. They mainly supply to millers and partly to large local assemblers. It is notable that farmers' organizations such as the farmer's groups and cooperatives handle only a small proportion of paddy.

As for the rice-marketing system, about 40% to 50% of milled rice is for domestic consumption and the remainder is exported. The commission agents play a significant role in matching exporters' orders and millers' supply at this stage. Some large millers have either direct contact with exporters or foreign importers.

Figures 1 and 2 illustrate the flows of paddy and rice which are drawn from 3 studies. The flows of paddy and rice of all varieties were reported by the office of Agricultural Economic Zone 13. The others show the distribution of Hom Mali rice. The OAE's findings report the more recent situation from the survey in 4 regions of Thailand. The third study surveyed only 2 regions (north and northeast) in 1992 (Cheamungphan, 1993) showing a similar pattern of the flows and major players at the market. It can be observed that farmers' organizations (cooperatives or farmers' groups) did not appear at the local market level due to farmer-sampling selections. Apparently, there were only a small number of cooperatives active in buying Hom Mali rice and very few large cooperatives milled, wholesaled and retailed rice (author's survey in 1999 in 3 major Hom Mali Rice production areas in upper north, lower north and northeast of Thailand).

For the Hom Mali rice, some millers are specialized in the high quality variety, and tend to make direct business with the end buyers and be less dependent on commission agents.

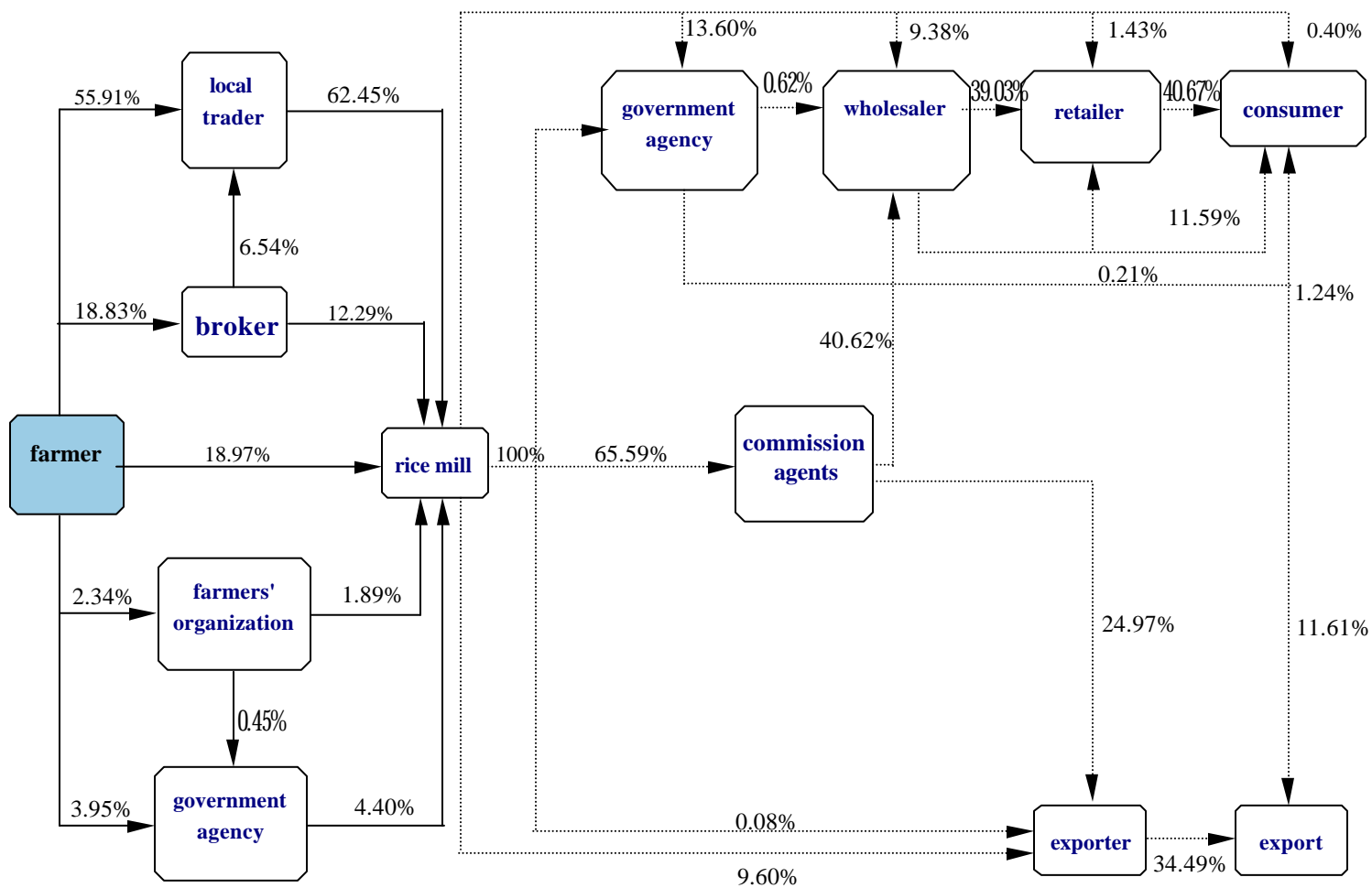
6. Marketing Costs and Margins

Marketing costs and returns to farmers and intermediaries are exemplified by the case of Hom Mali rice as shown in Tables 3 and 4

Farmers' share was 68%, profit to traders was 17% and marketing cost accounted for 16% (Table 3). Beside paddy production cost (67.61%), the major marketing cost items in descending order are transportation, labor and overhead charges, packaging, interest and milling.

According to OAE's findings (1995), millers enjoyed the highest profit rate (21% of the cost and 17% of the price received). Profit gained by farmers was only 9% (or 8.5% of the farm price). Exporters earned about 3% and the least profit rate went to assemblers. When volume of business is taken into account, profits per ton accrued to millers and exporters were substantial but not to farmers. Average profit to millers in 1992 was 2.9% of total cost. The profit varied by region. For the North, profit to the rice millers was 1.5%, but the Northeast millers enjoyed a higher profit at 4.3%. However, the country average found by OAE (1999) was much higher (21%).

The variations in profit to millers (in 1992) are due to the marketing cost (higher in the North) and the price received (lower in the North). The price difference was 130 baht/ton of paddy due to the quality difference of the grain.



Source: Office of Agricultural Economy Zone 13, 1997

Figure 1 Marketing System of Rice in 1996

Table 3 Marketing Costs and Profits Gained by Traders (Hom Mali Rice 1995/1996)

Entry	Baht / ton	%
<u>Price received by exporter (paddy equivalent)</u>	<u>8,101</u>	<u>100</u>
Profit to exporter	235	2.90
Profit to rice miller ¹	4,365	16.85
Profit to local assembler	142	1.75
<u>Marketing cost</u>		
Transportation	358	4.42
Labor cost and overhead	283	3.49
Packaging	148	1.83
Commission	48	0.59
Interest	122	1.51
Milling cost	108	1.33
Inspection fee	15	0.19
Depreciation	21	0.26
Weight loss	28	0.35
Income tax	29	0.36
Warehouse-rent and insurance	67	0.83
Others	65	0.80
<u>Price received by farmers</u>	<u>5,447</u>	<u>67.61</u>
Production cost	5,009	61.83
Profit to farmers	468	8.59

Source: OAE, 1999.

Note: ¹ including sales of by-product 410 baht / ton of paddy

Table 4 Profits Earned by Farmers and Traders (Hom Mali Rice)

Enterprise	Price received (baht/ton)		Total cost (baht/ton)		Profit					
					Baht / ton		% to cost		% to price received	
	1995 ^a	1992 ^b	1995	1992	1995	1992	1995	1992	1995	1992
Farmers	5,477	4,060	5,009	2,770 ^c	468	1,290	9.34	46.5	8.59	31.77
Assemblers	5,798	4,070	5,656	4,116	142	19	2.51	0.46	2.45	0.45
Millers	7,798	5,222	6,433	5,075	1,365	147	21.22	2.89	17.50	2.81
Exporters	8,101	7,096	7,866	6,018 ^d	235	1,078	2.98	17.9	2.90	15.20

Source: OAE, 1999.

Notes: ^a OAE, 1990

^b Cheamuangphan, 1993

^c Not income fixed cost

^d Only grading, packaging, brokerage and labor cost

7. Marketing Facilities

The rice industry is deeply established in Thailand and thus facilities are expected to be above those serving other agricultural marketing systems, with rice mills performing the main processing activity. Small millers mainly serve farmers and village level consumption while the medium and large millers serve local, regional and even export markets. In 1997 there were 43,275 mills scattered all over the country including Bangkok. The number declined over time from 46,125 in 1989 (OAE, 1994, 1999). Millers (unviewed by authors) indicated that existing technology employed by most mills is inefficient especially when energy costs rise. Modern technology is only used by large millers cum exporters to reduce broken grain, to increase milled rice quality and to produce better packaging.

Grading and standardization have been well established. However, there is a need to categorize rice by groups of rice varieties. Apart from glutinous and nonglutinous rice, Hom Mali has recently been branded for export, namely "Thai Hom Mali Rice". At present, paddy is basically graded in 2 aspects i.e. by variety and by percentage of broken grain. By variety, in many production areas, paddy is carefully separated by a number of varieties. By percentage of broken grain, it is highly associated with moisture level; in some cases late harvesting also causes a higher broken percentage and darkens the color. Grading paddy now is becoming more reliable than in the past (when buyers' judgement based on their own experiences.)

Facilities in rice marketing systems are inadequate in many respects. To name a few, 2 major limiting factors occurred at the local level are storage and drying facilities. Despite of having warehouses and Pledging scheme, warehouses provided by BAAC, cooperatives and Subdistrict-Agricultural Extension's program are insufficient to hold paddy for later sales. In addition, most of these warehouses are not equipped with dryer which is especially needed for the dry season crop (harvested in rainy season).

8. Price Determination and Price Transmission

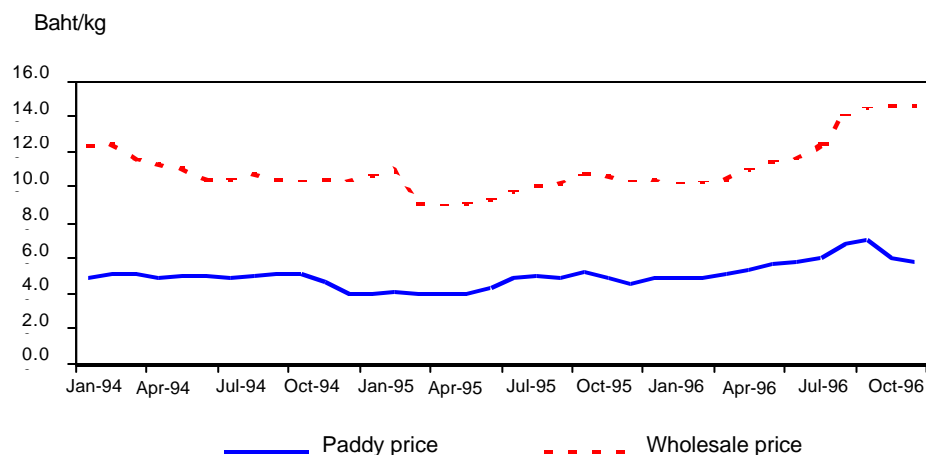
The common question is where and how the price of a commodity is determined. For agricultural produce, it is often proven that price is determined in the retail market and then transmitted to farm gate. As for paddy in Thailand, local prices are not only determined by local demand and supply but also demand from other deficit areas and demand for export. The existence of commission agents reflects high competitiveness since there are large number of sellers and buyers and large volume of business. Commission agents or brokers in Bangkok acquire information on demand and prices from exporters for specific quality and types of rice. At the other end, millers can delay their sales if price offered is found unsatisfactory.

In various studies, farmers, local assemblers and millers indicated that they were price takers. The Millers' buying price was their expected selling price deducted by their handling cost and a certain profit (i.e. mark-down pricing method). However, millers also take prices offered by other millers into consideration. As discussed earlier, rice prices are not free from government intervention. However, pricing of each intermediary is still based on the aforementioned method.

Siamwalla et al. (1981) believe that local price is determined by local demand and supply which plays a significant role in price formation since two-thirds of rice are locally consumed. Previous studies (Siamwalla et al., 1981; Cheamuangphan, 1993 ; Daipium, 1998) and the present study, as well as others show significant price relationships between different pairs of market levels. The present study by Wiboonpongse et al., (2001) proves backward and forward price transmission using 1 specific grade of rice i.e. Hom Mali rice. The price movements of both price series are illustrated in Figure 3.

Monthly paddy prices and Bangkok wholesale prices during January 1994 to December 1997 are employed and tested for cointegration (Engle and Granger, 1987). Then long-run

and short-run price transmission for forward and backward linkage are presented in Tables 5-9.



Source: Office of Agricultural Economics, 1999.

Figure 3 Price Movements of Hom Mali Rice

The long-run forward price transmission model is:

$$\ln P_t^W = \alpha_1 + \alpha_2 \ln P_t^F + e_t^W \quad (1)$$

The long-run backward price transmission model is:

$$\ln P_t^F = \beta_1 + \beta_2 \ln P_t^W + e_t^F \quad (2)$$

where P_t^W = wholesale rice price at t^{th} month (baht/kg)
 P_t^F = paddy farm price at t^{th} month (baht/kg)
 e = error term
 α, β = parameters

The short-run forward price transmission model is:

$$D\ln P_t^W = a_1 + a_2 D\ln P_t^F + a_w e_{t-1}^W + a_{11} D\ln P_{t-1}^F + a_{12} D\ln P_{t-1}^W + e_{1t} \quad (3)$$

The short-run backward price transmission model is:

$$D\ln P_t^F = a_1 + a_2 D\ln P_t^W + a_f e_{t-1}^F + a_{11} D\ln P_{t-1}^W + a_{12} D\ln P_{t-1}^F + e_{1t} \quad (4)$$

The OLS estimates of the models in (1) and (2) show that prices were transmitted in both directions (as a_2 and b_2 are highly significant). The estimated coefficient, a_2 (1.0825) is almost identical to but statistically different from 1; that of b_2 equals .8169 which is (statistically) insignificantly different from 1. The values of coefficients imply that in the long-run the market is slightly less efficient in sending the price signal from farm to wholesale market than vice versa.

The coefficients of the lagged-error terms in the short-run models imply the speed of price adjustment to price shocks. The speed of farm price adjustment is almost twice as faster as the wholesale price adjustment. This is not surprising since wholesalers usually try to maintain the price but adjust quality of rice accordingly (Wiboonpongse et al., 2001).

Table 5 Statistics of the Price Variables

Variable	N	Min	Max	Mean	SD
$\ln P^F$	48	1.3752	2.2472	1.7168	0.2400
$\ln P^W$	48	2.1972	3.1755	2.5404	0.2890

Table 6 Estimated Coefficients of Long-Run Forward Price Transmission Model

Variable	Coefficient	t-statistic
Const	0.6710	6.7631**
$\ln P_t^F$	1.0852	18.9584**
$R^2 = 0.8865$		

Note: ** Significance at the 1% level

Table 7 Estimated Coefficients of Long-Run Backward Price Transmission Model

Variable	Coefficient	t-statistic
Const	-0.3533	-3.217**
$\ln P_t^W$	0.8169	18.958**
$R^2 = 0.8865$		

Note: ** Significance at the 1% level

Table 8 Estimated Coefficients of Short-Run Forward Price Transmission Model

Variable	Coefficient	t-statistic
Const	0.0051	0.9722
$\Delta \ln P_t^F$	0.4391	5.4041**
e_{t-1}^W	-0.2635	-3.6603**
$\Delta \ln P_{t-1}^F$	-0.3122	-2.9303**
$\Delta \ln P_{t-1}^W$	0.3126	2.4047*
$R^2 = 0.5432$	D.W. = 1.9578	F-test = 12.1865

Notes: ** Significance at the 1% level and

* at the 5% level

Table 9 Estimated Coefficients of Short-Run Backward Price Transmission Model

Variable	Coefficient	t-statistic
Const	-0.0043	-0.5907
$\Delta \ln P_t^W$	1.0108	6.1675**
e_{t-1}^F	-0.4822	-4.0654**
$\Delta \ln P_{t-1}^W$	0.4817	3.3820**
$\Delta \ln P_{t-1}^F$	-0.0817	-0.4413
$R^2 = 0.5526$	D.W. = 1.9313	F-test = 12.6593

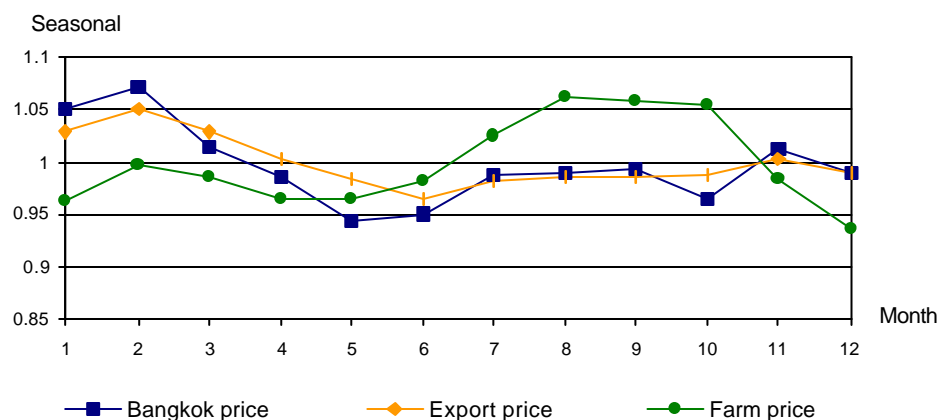
Note: ** Significance at the 1% level

9. Seasonal Price Variations and Return to Storage

Seasonal price variations of rice do exist despite of having a double – or triple production in several areas. Farm prices appear to have high variations over prices at other market levels as shown in Figure 4. (Daipium, 1998). Seasonal price patterns are important in marketing decision especially when to sell and store, as well as for government policy implementation to assist farmers.

In the past, storing paddy for future sales during the 1970' s did not provide a substantial gain to merchants. Timing to procure stock was important. The right decision was much dependent on information available to local merchants. Bangkok merchants on the other hand made profit in most cases (Tubpun, 1974).

Wiboonpongse and Kellogg (1979) found that storing paddy was profitable to merchants for 2 months (July and August) for RD variety in one year and more profitable for several months in the other 2 years. For another variety (Yellow rice) it was less (and un-) profitable to hold storage during the same observed period. Analysis for the present should be done to show if there is any improvement in temporal price-efficiency.



Source: Daipium, 1998.

Figure 4 Seasonal Price Movements of Rice (1975 – 1994)

10. Conclusion

The role of farmers' organizations in rice marketing is not outstanding. Instead, the private sector has been important in carrying out most marketing activities. Thus the marketing system of paddy-rice in Thailand takes a long route before reaching final purchasers except for the local consumption. At the local level, the market is highly competitive since farmers could choose where and how to sell their produce. Nonetheless it is difficult to prove if the price paid to farmer reflect real value. It is possible that the price is over-discounted for any given moisture level or other grading criterion. This problem is well recognized and partly alleviated by cooperatives, BAAC and others in several of the government's supporting programs. Returns to millers out-weighed other intermediaries. However, inefficient millers, usually medium size, gradually closed down their business.

Services in rice marketing systems are inadequate and needs improvement especially drying and warehousing. Packaging is becoming more important since Thailand plans to concentrate on high quality rice for export and changing shopping habits of domestic consumers from unpacked to packed rice.

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