

THE PATTERN OF PADDY PRICE MOVEMENTS DURING 1957-1967

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SECTION I

INTRODUCTION

This study is a continuation of the writer's work on the *Paddy Price Movements and Their Effects on the Economic Situation of Farmers in the Central Plain of Thailand*.¹ It is a continuation in the sense that the writer's previous work concentrates on the paddy price movements during 1950-1965; whereas the present study confines itself to the pattern of price movements of paddy during the years 1957-1967.

The objective of this research project is to study the pattern of paddy price movements in the Bangkok-Thonburi Market. In this study, the writer used the trend to represent normal prices of paddy. The purpose of computing the cyclical relatives is to show the cyclical fluctuations around the trend values. The calculation of the stable seasonal index is to determine the generalized pattern of the month-to-month variations of paddy prices.

The data used in this study were collected from the Market Division, Internal Trade Department, Ministry of Economic Affairs. Other related information was obtained through the perusal of past studies. This research is exclusively restricted to the prices of 100-5 percent grade A paddy.²

¹A dissertation written at the Indiana University, Bloomington, to partially fulfil the requirements for the degree Doctor of Philosophy in the Department of Economics.

²100-5 percent grade A paddy means that paddy of this grade will turn into 100 percent head white rice, or head rice with 5 percent brokens when it is milled.

The writer presents the study in three sections. The first section states the purposes and the scope of the study. Section two discusses the trend, the cyclical movements and the seasonal variations of paddy prices. The last section contains the conclusion and the writer's comment in the light of the findings of the study.

SECTION II

THE TREND, THE CYCLE AND THE SEASONAL MOVEMENTS OF PADDY PRICES

The Trend

The trend is a long—run movement of an economic time series. To establish a trend line that is significant for a time series, the period must be sufficiently long. The trend has little influence upon month—to—month variations of economic series;¹ it also disregards the ups and downs of cyclical fluctuations.² In this study, the writer utilized the Least Squares Arithmetic Straight—Line trend³ to determine normal prices of paddy in the Bangkok—Thonburi Market. The computation of the trend values showed that prices of 100—5 percent grade A paddy had been rising steadily. The trend equation and the trend values for the aforementioned prices are as follows :

$$\frac{Y}{1/7/1957} = 1001.22 + 10.56 X$$

(Origin: July 1, 1957 ; time unit (X) 1 year ; Y, prices of paddy per ton, 1957—1967)

¹J. Shiskin, *Electronic Computers and Business Indicators* (New York : Columbia University Press, 1957), p. 223.

²Ya-lun Chou, *Applied Business and Economic Statistics* (New York : Holt, Rinehart and Winston, 1957), p. 473.

³*Ibid.*, pp. 503 — 509.

TREND PRICES OF 100-5 PERCENT GRADE A PADDY

y m	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
	Jan.	995.9	1006.5	1017.1	1027.6	1038.2	1048.7	1059.2	1069.8	1080.3	1090.9
Feb.	996.8	1007.4	1017.9	1028.5	1039.1	1049.6	1060.1	1070.6	1081.2	1091.8	1102.3
March	997.7	1008.3	1018.8	1029.4	1039.9	1050.5	1061.0	1071.5	1082.1	1092.6	1103.2
April	998.6	1009.1	1019.7	1030.3	1040.8	1051.4	1061.8	1072.4	1083.0	1093.5	1104.1
May	999.5	1010.0	1020.6	1031.1	1041.7	1052.3	1062.7	1073.3	1083.8	1094.4	1105.0
June	1000.3	1010.9	1021.5	1032.0	1042.6	1053.1	1063.6	1074.2	1084.7	1095.3	1105.8
July	1001.2	1011.8	1022.3	1032.9	1043.5	1054.0	1064.5	1075.0	1085.6	1096.2	1106.7
Aug.	1002.1	1012.7	1023.2	1033.8	1044.3	1054.9	1065.4	1075.9	1086.5	1097.0	1107.6
Sept.	1003.0	1013.5	1024.1	1034.7	1045.2	1055.8	1066.2	1076.8	1087.4	1097.9	1108.5
Oct.	1003.9	1014.4	1025.0	1035.5	1046.1	1056.7	1067.1	1077.7	1088.2	1098.8	1109.4
Nov.	1004.7	1015.3	1025.9	1036.4	1047.0	1057.5	1068.0	1078.6	1089.1	1099.7	1110.2
Dec.	1005.6	1016.2	1026.7	1037.3	1047.9	1058.3	1068.9	1079.4	1090.0	1100.6	1111.1

The trend equation showed that paddy prices had been on the ascendent at the rate of Baht 10.56 per ton per year.

According to the above trend values, the normal price of 100-5 percent paddy for January 1, 1957 was Baht 996 per ton and that for December 1, 1967 was Baht 1,101. It could be easily observed that paddy prices during the past two years had been considerably above the trend prices, the average market prices for 1966 and 1967 being Baht 1,292 and Baht 1,348 respectively.⁴ The factors responsible for the high paddy prices had been in the increase in the general price level of consumer goods⁵ and the increase in both the domestic and foreign demand for rice.⁶

The Cycle

The cycle consists of cumulative and reversible movements characterized by alternating periods of expansion and contraction lasting three to four years or longer.⁷ The computation of the cyclical relatives consisted of adjusting the original time series for the seasonal variations by dividing the stable seasonal adjustment factors⁸ into the original data. The new series obtained was the trend-cycle curve. With a view to smoothening the curve, a five-term moving average was then fitted to the derived trend-cycle curve. The cyclical relatives were then obtained through the division of the smoothed trend-cycle components by the trend values.

As far as the paddy prices in the Bangkok-Thonburi market was concerned the cyclical movements of the prices showed wide fluctuations with the expansion period as well as that of contraction lasting approximately two years. The average

⁴See appendix

⁵Bangkok Bank, *Monthly Review*, June 1967, p. 213.

⁶Government of Thailand, *Foreign Trade News* (Department of Foreign Trade, Ministry of Economic Affairs, October 1967).

⁷Shiskin, *op. cit.*, pp. 223 - 224.

⁸The stable seasonal adjustment factors are identical with the stable seasonal index

duration for the paddy prices to moves from one peak to another was, therefore, about four years. The amplitudes of the cycle seemed to, get greater and greater as time went on. The following is the pattern of the cyclical movements of 100-5 percent grade A paddy prices.

CYCLICAL RELATIVES OF 100-5 PERCENT GRADE A PADDY

<i>y</i> <i>m</i>	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Jan.	99.9	106.7	114.6	89.9	95.2	112.3	109.1	92.2	80.8	98.2	126.4
Feb.	99.8	110.2	111.5	89.3	95.6	115.3	107.4	91.5	80.7	101.7	123.6
March	100.2	113.6	108.0	88.2	96.4	118.1	106.0	90.3	80.1	104.4	121.2
April	100.8	116.2	104.6	87.2	97.2	120.2	105.1	88.9	79.2	108.4	122.2
May	101.6	117.7	101.2	86.8	97.9	121.2	104.7	87.2	78.6	114.0	121.3
June	102.4	118.5	97.8	87.5	98.4	121.2	102.7	85.3	79.4	117.7	121.8
July	102.8	118.8	94.6	89.1	98.9	120.0	102.8	83.4	82.0	119.7	124.3
Aug.	102.8	119.1	91.9	91.1	99.8	118.2	102.3	81.8	84.1	123.1	125.8
Seppt.	102.3	119.4	90.0	93.0	101.9	116.3	101.0	80.7	88.2	126.0	124.7
Oct.	101.9	119.5	89.3	94.3	103.1	114.5	99.0	80.2	92.4	128.0	123.1
Nov.	102.2	118.0	89.4	94.9	106.3	112.7	96.7	80.2	95.6	127.0	123.8
Dec.	103.9	117.2	89.8	95.0	109.2	111.0	94.6	80.5	97.3	127.4	123.7

It could be observed from the table that during the first few months of 1965, cyclical relatives went as low as 78.6 or 21.4 percent below the normal trend prices and as high as 128 or 28 percent above the normal prices during the year 1966. The reasons for wide oscillations in the cyclical movements of paddy prices had been fluctuations in supply and foreign demand. Inappropriate government rice policies were another important factor responsible for wide cyclical fluctuations in the prices of paddy.

The Seasonal Index

The Seasonal component consists of movements within a year and follows a more or less regular pattern. There are many methods for calculating a seasonal index, each having its merits and defects. Among the different approaches available, the ratio-to-moving-average method is by far the superior, for a practical point of view as well as for practical considerations.⁹ By virtue of its superiority, the writer utilized the ratio-to-moving-average approach in the computation of the seasonal index. The indexes below are of two types. The first is the moving seasonal indexes¹⁰ showing the seasonal variations from 1957-1967. The second type is the stable seasonal index which is a generalized expression of moving seasonal indexes during the period under study. The following tables show the calculated moving seasonal indexes and the stable seasonal index of 100-5 percent grade A paddy prices in the Bangkok-Thonburi market.

MOVING SEASONAL INDEX OF 100-5 PERCENT GRADE A PADDY

y m	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Jan.	92.0	90.7	88.3	93.7	90.8	90.1	88.5	93.5	98.0	94.6	84.4
Feb.	91.7	92.5	93.0	95.3	90.0	91.8	91.0	93.8	97.8	87.2	91.7
March	92.7	98.2	94.9	93.8	93.3	96.0	91.7	92.3	96.5	90.4	94.6
April	95.3	101.9	94.3	91.6	95.5	99.7	89.6	96.8	95.5	98.6	92.1
May	97.1	102.2	96.3	90.7	99.8	106.3	93.0	98.9	94.1	99.7	96.6
June	98.4	104.5	99.2	97.0	99.9	101.2	100.8	98.8	89.9	103.0	98.6
July	112.2	103.6	100.3	100.9	101.1	104.7	108.7	101.0	89.9	103.3	106.4
Aug.	107.1	104.8	99.5	101.1	100.5	104.8	109.4	101.5	98.8	104.6	112.6
Sept.	102.9	105.8	97.2	110.9	101.7	108.0	106.9	100.9	108.3	106.1	117.3
Oct.	101.1	106.2	97.2	110.1	105.8	108.2	105.2	97.4	110.4	112.6	112.4
Nov.	99.7	109.4	105.4	109.1	110.0	107.0	101.3	98.8	109.8	114.8	98.9
Dec.	98.7	112.9	105.8	107.5	109.5	103.7	97.7	99.6	110.6	112.4	94.2

⁹*Ibid.*, pp. 535 - 548.

¹⁰Shiskin, *op. cit.*, pp. 248 - 254.

STABLE SEASONAL INDEX OF 100-5 PERCENT GRADE A PADDY

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
91.3	92.3	94.0	95.5	97.7	99.2	103.4	104.1	106.0	106.1	105.8	104.8

The computation of the stable seasonal index revealed that prices in the month of January were the seasonal low and those in the month of October, the seasonal high. The index for January was 91.3 and that for October was 106.1. Low prices in January were the result of enormous influx of paddy into the market January being the height of the harvest season¹¹ and farmers lacking storage and credit facilities to hold on to the paddy harvested.¹² High prices during October was largely due to the small quantities of paddy available for sale. High interest and storage costs were the possible explanation for reduced supply of paddy during the off-season months. The reason for the prices tending to decline during the month of December was due to the availability of the new-season paddy in the market, thus increasing the aggregate supply of paddy. Fluctuations in production as a result of changing weather conditions and changes in government rice policies and external prices of rice were chief explanations for the variation of seasonal index from year to year.

SECTION III

CONCLUSION

The years 1966 and 1967 were good years for farmers because paddy prices remained far above the normal trend prices. The trend price of 100-5 percent paddy prices in the month of July 1966 was Baht 1096 per ton and Baht 1107 was the trend value in July 1967; as compared to the average market price of Baht 1,292 in 1966

¹¹FAO of the United Nations, *Commodity Reports, Rice*, No. 9 (Rome: Italy, Sept. 1958), Appendix I

¹²Udhis Narksawasdi, *Pawa Neesin Khong Chaona Lau Karnka Khao* (Bangkok: Ministry of Agriculture, Second Edition, 1964).

and Baht 1,348 in 1967. The reason for high market prices of paddy was the rapid increase in the general price of consumer goods during the past two years and the strong domestic and foreign demand for rice.

The study of the cyclical movements of paddy prices showed wide fluctuations with the expansion period as well as that of contraction lasting about two years. Cyclical relatives were all-time low during the first four months of 1965 and all-time high during the second quarter of 1966. The cycle of paddy prices during 1967 was still very high, the cyclical relative being about 124 percent or 24 percent above normal prices. The chief explanation for wide oscillations in the cyclical prices of paddy was the fluctuation in supply and foreign demand. In appropriate rice policies of the government were another important cause for wide cyclical movements of paddy prices.

The calculated stable seasonal index revealed that the prices in the month of January were the seasonal low. During the month of October, paddy prices reached the seasonal high. Low prices in January were caused by large supply of paddy made available by farmers who had no money and storage facilities to hold on to the stock of paddy harvested, January being the period during which the bulk of the harvest taking place. High interest and storage costs explained the small supply and, therefore, high prices during October. The decline in paddy prices during December was due to the availability of the new season paddy in the market. The pattern of the seasonal movements of prices was, however, affected by fluctuations in production and demand. Changes in the rice policies on the part of the government also caused the seasonal pattern of price movements to vary from year to year.

It is gratifying to note that high paddy prices above the trend values would be an excellent economic incentive for farmers to work hard, to make investment on farms and to improve their productive techniques. Knowledge of agricultural techniques and investment on farms would in turn create productive capacity in the long run. The high profits as a result of increased productivity could then be ploughed back into gradual industrialization, thereby constructing a permanent base for further growth in income.*

*The writer is fully aware that, in addition to the problem of oscillating agricultural prices, there are such other problems as agricultural indebtedness, inappropriate pattern of land tenure, shortage of storage facilities, and high rates of interest. If agricultural improvement is to take place within a short period of time, the aforementioned agricultural problems have to be tackled simultaneously.

BIBLIOGRAPHY

- Bangkok Bank, *Monthly Review*, June 1967.
- Chou, Ya-lun, *Applied Business and Economic Statistics*, New York: Holt, Rinehart and Winston, 1963.
- FAO of the United Nations, *Commodity Reports, Rice*, No. 9 Rome, Italy: Appendix I (September 1958).
- Government of Thailand, *Foreign Trade News*, Department of Foreign Trade, Ministry of Economic Affairs (October 1967).
- Government of Thailand, *Average Monthly Prices of Paddy in the Bangkok—Thonburi Market*, Bangkok: Department of Commercial Intelligence, Ministry of Economic Affairs.
- Krisanamis, P., *Paddy Price Movements and Their Effect on the Economic Situation of Farmers in the Central Plain of Thailand*. Bangkok: National Institute of Development Administration, 1967.
- Narksawasdi, Udhis, *Pawa Neesin Khong Chaona Lae Karnka Khao*, Bangkok: Ministry of Agriculture, Second Edition, 1964.
- Nelson, L. B., *Elements of Modern Statistics*, New York: Appleton-Century-Crofts, inc., 1961.
- Shiskin, J., *Electronic Computers and Business Indicators*, New York: Columbia University Press, 1967.
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APPENDIX

WHOLESALE PRICES OF 100-5 PERCENT PADDY THE IN
BANGKOK-THONBURI MARKET (BAHT/TON)

y m	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Jan.	895	940	960	815	850	990	985	910	820	1005	1185
Feb.	890	965	995	825	850	1025	1005	895	813	968	1255
March	895	1035	995	810	890	1090	1005	865	805	1038	1303
April	915	1090	965	800	915	1150	970	890	808	1165	1268
May	930	1110	960	810	965	1240	990	890	813	1218	1313
June	945	1155	965	860	980	1185	1055	875	795	1300	1320
July	1085	1165	950	900	1008	1220	1120	885	818	1402	1360
Aug.	1040	1180	930	905	1013	1225	1120	880	913	1368	1473
Sept.	1005	1195	895	995	1040	1260	1085	870	1015	1413	1563
Oct.	1000	1195	880	995	1100	1255	1055	835	1055	1525	1522
Nov.	1000	1220	940	995	1165	1225	1010	840	1083	1563	1347
Dec.	1005	1245	930	995	1185	1165	965	840	1128	1540	1290