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INTEGRATION OF THE RICE MARKET IN ACEH

ABDUL RAIHMAN LUBIS

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INTEGRATION OF THE RICE MARKET IN ACEH

By

ABDUL RAHMAN LOBIS

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Almarhum Ayahku,
Almarhumah Ibuku,
dan isteriku Anna,
anak-anakku Myrdal dan Erik**

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LIST OF ABBREVIATIONS

- RPAU : Retail Price of Rice in Aceh Utara
RPAB : Retail Price of Rice in Aceh Barat
RPAG : Retail Price of Rice in Aceh Tenggara
RPAP : Retail Price of Rice in Aceh Pidie
RPAT : Retail Price of Rice in Aceh Timur
FPAU : Farm Price of Rice in Aceh Utara
FPAB : Farm Price of Rice in Aceh Barat
FPAG : Farm Price of Rice in Aceh Tenggara
FPAP : Farm Price of Rice in Aceh Pidie
FPAT : Farm Price of Rice in Aceh Timur
DAU : Local Seasonality in Aceh Utara
DAB : Local Seasonality in Aceh Barat
DAG : Local Seasonality in Aceh Tenggara
DAP : Local Seasonality in Aceh Pidie
DAT : Local Seasonality in Aceh Timur
BULOG: Badan Urusan Logistik
DOLOG: Depot Logistik

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By

AEDUL RAHMAN LUBIS

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Supervisor: Associate Professor Dr. Fatimah Mohd. Arshad
Co-Supervisor: Dr. Mad. Nasir Shamsudin
Zainal Abidin Tambi
Faculty: Economics and Management

The study is an attempt to examine and to evaluate the pricing efficiency of the medium quality rice market in Aceh, Indonesia through measuring the degree of market integration.

Secondary data were used in this study. Analysis was carried out on the basis of a priori theoretical, statistical and econometric criteria by using the Time Series Processors (TSP). The study utilises three models to test the efficiency of the rice market in Aceh, namely correlation coefficient, Ravallion's and Sims' models.

The result indicates that the correlation coefficients are vague and spurious. The results produced by Ravallion's model indicate that, except for Aceh Pidie, the central market (Aceh

Utara) appears to take the role as the price leader over that of the other three local markets, i.e., Aceh Barat, Aceh Tenggara and Aceh Timur. Aceh Utara's retail price is statistically significant in influencing retail prices of the three local markets. Seasonality factor is apparently significant only in Aceh Pidie and Aceh Timur.

The results given by Sims' model indicate that, except for Aceh Pidie, the causal relationship between retail prices in the central market and local markets is unidirectional such that retail price in the central market leads retail prices in the local markets. A bi-directional feedback exists among retail prices in the local markets and between farm and retail prices in all sample districts. It can be concluded from these results that rice prices both at retail and farm levels in Aceh's rice market behave interdependently, hence implying an integrated market.

Abstrak tesis yang dikemukakan kepada Senat Universiti Pertanian Malaysia sebagai memenuhi sebahagian daripada syarat-syarat untuk mendapatkan ijazah Master Sains.

INTEGRASI PASARAN BERAS DI ACEH

Oleh

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Penyelia: Associate Professor Dr. Fatimah Mohd. Arshad
Pembantu Penyelia: Dr. Mad. Nasir Shamsudin
Zainal Abidin Tambi
Fakulti: Ekonomi dan Pengurusan

Kajian ini adalah satu usaha untuk menguji dan menilai kecekapan harga pasaran beras yang berkualiti sederhana di Aceh, Indonesia melalui pengukuran darjah integrasi pasaran.

Data sekunder telah digunakan dalam kajian ini. Analisis adalah berasaskan kepada kriteria teoritikal, statistik dan ekonometrik dengan menggunakan TSP (Time Series Processors). Kajian ini menggunakan tiga model untuk menguji kecekapan pasaran beras di Aceh iaitu pekali korelasi, model Ravallion dan Sims.

Kajian ini telah menunjukkan bahawa gambaran yang diberikan oleh pekali korelasi adalah tidak jelas dan palsu. Penemuan yang diberikan oleh model Ravallion menunjukkan bahawa, kecuali untuk Aceh Pidie, harga runcit di pasar pusat (Aceh Utara)

adalah berlaku sebagai pemimpin harga kepada tiga pasaran tempatan yang lain, iaitu Aceh Barat, Aceh Tenggara dan Aceh Timur. Harga runcit di Aceh Utara adalah bererti secara statistik dalam mempengaruhi harga runcit di ketiga pasaran tempatan tersebut. Variasi musim tempatan dalam gerak harga hanya ternyata untuk Aceh Pidie dan Aceh Timur.

Penemuan yang diberikan oleh model Sims memperlihatkan bahawa, kecuali untuk Aceh Pidie, hubungan sebab-musabab antara harga runcit di pasar pusat dan pasar tempatan adalah satu arah, iaitu harga runcit di pasar pusat memimpin harga runcit di pasar tempatan. Selanjutnya, hubungan timbal balik dua arah wujud di antara semua harga runcit di pasar tempatan dan di antara harga ladang dan harga runcit di semua kawasan sampel. Penemuan-penemuan ini memberi kesimpulan bahawa harga beras samaada pada tingkatan harga runcit dan harga ladang di pasaran beras Aceh adalah saling bergantung antara satu sama lain, bermakna pasaran beras adalah berintegrasi.

CHAPTER 1

INTRODUCTION

The General Background of Aceh Province

Aceh is situated on the Northern part of Sumatera, Indonesia. The total area mass is 55,390 square kilometers with a population of about 3.2 million in 1987, and the average population growth is about 2.79 percent per annum (Table 1). In general 10 percent of the total area of Aceh is under cultivation. About 75 percent of total area is still classified under forest, about 8 percent under swamps and pasture land, 7 percent under lakes, ponds and rivers, and about 1 percent under residential and business used (Table 2).

The low percentage of cropped area is primarily due to hilly areas covered by thick forest, low density of population and the deficiency of moisture. The concentration of rainfall in a short period of three to five months in most parts of Aceh renders it difficult for the crops to obtain adequate moisture throughout the year (Table 3). Aceh has a tropical climate characterized by two seasons which are a dry season from the beginning of January to the end of June and a rainy season from the beginning of July to the end of December.

Table 1
Number of Population by Districts
in Aceh Province, 1980 - 1987

Districts	Year							
	1980	1981	1982	1983	1984	1985	1986	1987
Banda Aceh	72,717	72,300	75,397	79,406	142,818	151,513	161,480	165,952
Aceh Besar	236,414	239,637	248,974	256,207	197,181	203,871	211,987	217,859
Sabang	23,821	24,280	24,253	25,135	25,653	26,621	26,712	27,451
Aceh Pidie	344,345	348,061	357,048	362,982	369,148	383,697	387,759	398,499
Aceh Utara	626,014	637,283	648,412	663,814	696,531	730,868	744,095	764,706
Aceh Timur	424,452	435,055	452,163	464,284	488,938	506,555	534,391	549,193
Aceh Barat	289,246	298,589	313,080	319,753	252,059	337,323	343,141	352,646
Aceh Selatan	275,860	279,660	285,619	292,473	299,682	297,503	317,965	326,772
Aceh Tengah	163,464	164,357	167,428	172,435	177,195	177,664	179,079	184,039
Aceh Tenggara	159,250	160,111	164,916	170,001	175,280	176,586	180,759	185,766
Total	2,615,583	2,659,333	2,737,290	2,806,490	2,824,485	2,992,201	3,087,368	3,172,883

Source: Statistical Office of Aceh Province

Table 2
Total Area and Land Utilization in
Aceh Province, 1987

Land Utilization	Area (ha)	Percentage
Farm agriculture	233,698.0	4.22
Small holder estates	182,959.0	3.30
Estates (Plantations)	124,033.8	2.25
Inland fisheries	16,644.0	0.30
Agriculture area	557,334.8	10.07
Forest area	4,130,000.0	74.56
Towns and villages	55,000.0	0.99
Swamps and pastures	432,000.0	7.80
Lakes, rivers and others	364,665.2	6.58
Total	5,539,000.0	100.00

Source: Aceh in Figures, Statistical Office of Aceh Province, 1987.

Table 3
The Average Rainfall in Aceh Province,
1982 - 1987

Month	Average Rainfall	
	Number of days	Intensity (mm)
January	10	162
February	7	123
March	9	171
April	10	160
May	11	211
June	7	106
July	8	141
August	9	119
September	12	219
October	13	215
November	13	225
December	14	285

Source : Aceh in Figures, Statistical Office
of Aceh Province, 1986 and 1987

Agriculture is the most important occupation for the major part of the population in the region, as evidenced by three out of four who are directly dependent upon it for their livelihood (Buku Caroueng Dolog Aceh, 1986). In 1987, agriculture contributed about 46 percent to Gross Regional Domestic Product (excluding gas and fuel) which was higher than the other contributors (Table 4), and most the regional product of Aceh province originated from Aceh Utara. Although the economy of Aceh is based on the agricultural sector, the percentage of the population engaged in agriculture is higher than the income originating from agriculture (Buku Caroueng Dolog Aceh, 1986). In the industrial sector, on the other hand, a smaller proportion of the population receives a higher proportion of income.

Rice Sector in Aceh Province

Rice Production

Rice is the most important food crop for the people of Aceh. About 57 percent of the whole farm area is devoted to rice farming with 56 percent for wet land paddy and 1 percent for dry land paddy, and the remaining 43 percent is available for other crops (Table 5).

Table 4
Percentage Distribution of Gross Regional
Domestic Product (Non Gass and Fuel) at Current Market
Prices by Industrial Origin of Aceh Province,
1980 - 1987

Economic Sectors	Year							
	1980	1981	1982	1983	1984	1985	1986	1987
1. Agriculture	54.67	52.84	49.39	52.64	50.83	45.09	45.31	45.95
2. Mining	0.45	0.47	0.48	0.35	0.29	0.21	0.23	0.14
3. Industry	4.67	4.15	4.30	4.75	5.36	11.44	11.21	11.58
4. Electricity and Water Supply	0.20	0.19	0.25	0.26	0.34	0.29	0.31	0.32
5. Construction	5.38	5.75	5.27	4.04	3.35	3.03	2.66	1.45
6. Wholesale and Retail Trade	13.41	12.33	14.78	15.20	15.19	15.48	15.30	15.31
7. Transport and Communication	8.02	11.02	12.83	12.29	13.52	13.35	13.20	13.44
8. Banking and other Financial Intermediaries	0.65	0.96	0.97	0.73	0.79	0.80	0.81	0.97
9. Rent	1.93	1.74	1.53	1.34	1.63	1.29	1.26	1.21
10. Public Administration and Defense	9.31	9.07	8.66	7.01	7.19	7.34	7.92	7.91
11. Services	1.31	1.48	1.54	1.39	1.51	1.68	1.79	1.72
GRDP at Current Market Prices	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Sources: 1. Statistical Office of Aceh Province
2. Regional Development Planning Board (BAPPEDA) of Aceh Province

Table 5
Land Utilization of Farm Food Crops
in Aceh Province, 1987

Land Utilization	Area (ha)	Percentage
Wet land paddy	281,376	55.92
Dry land paddy	6,140	1.22
Maize	16,088	3.20
Cassava	7,227	1.44
Sweet potatoes	2,156	0.43
Peanut	18,128	3.60
Soyabean	103,635	20.59
Small green pea	5,404	1.07
Vegetables	6,018	1.19
Fruits and others	57,093	11.34
Total farm agriculture area	503,265	100.00

Source : Agriculture Service of Aceh Province

Although 10 percent of the total land area is under cultivation, Aceh is known as a rice producing area of the western gate to Indonesia. In 1987, about 67 percent of the rice area was situated on the Northern and Eastern Coasts, 21 percent was located on the Western Coast, and 12 percent was situated in the middle part of Aceh province (Table 6). During the period 1980-1987 the average harvested area in Aceh was 261,857 hectare and the average rice production was 635,125 tonnes with the average yield per hectare was about 2.42 tonnes (Table 7). The average rice production in Aceh during the same period contributed about 13.5 percent of the Sumatera's rice production and 2.75 percent to national rice production (Table 8).

Rice production patterns in the selected districts vary across districts and time (Figure 1). Table 8 shows the relative position of the different districts in the total provincial production of rice in Aceh. During the period 1980-1987, the districts of Aceh Pidie and Aceh Utara (Northern Coast) produced about 47 percent of the total provincial output of rice, and the remaining 22 percent, 20 per cent and 11 percent produced by the districts on the Eastern Coast, Western Coast and the middle part of Aceh respectively.

Generally the reasons for variations in rice production from district to district and from year to year are : (1) differences in climate, soil and topography; (2) differences in