

**RAPID APPRAISAL OF THE RICE MARKET
NETWORK IN BANGLADESH**

by

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**International Food Policy Research Institute (IFPRI)
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1. Introduction

Most of the information available on rice markets in Bangladesh is derived from secondary data. Some exceptions are the work by N. Chowdhury (1992) on rice and wheat traders, M. Ravallion (1985), and Q. Shahabuddin (1987) on Dhaka Aratdars, and Crow and Murshid on merchants' capital on grain trade. Information at the market level is more difficult to encounter. This is the type of information that is likely to be obtained with rapid appraisal methods. It involves information about each market and not about each trader in the market. To arrive at information about the market, market participants have to be interviewed, each of them being asked questions about the overall market in which they operate. As an example, instead of asking what is the volume of operation of a specific trader, one is interested in the volume of operations of the overall market, as perceived by each market participant.

Critical information about rice markets in Bangladesh could be obtained through this rapid appraisal method. A survey conducted by the author during a period of 15 days between February and March 1993, towards the end of the Aman season of 1992/93, allowed to elicit information about 27 markets distributed over 19 districts of Bangladesh. By most accounts, these markets are the main wholesale rice markets in the country. Even though the design of the survey was not based on random sampling, the survey was able to give some important information regarding the functioning of rice markets.

The objectives of the survey were to gather information about:

- i. the mode of operation of rice trade, as related to transportation and communication;
- ii. the degree of price information of market participants;
- iii. the process of price transmission from one market to another;
- iv. market size;
- v. export prospects in view of recent price falls;
- vi. trade flows among procurement and dispatch markets.

This paper reports the main results of this rapid appraisal effort. The next six sections will present information related to the objectives of the survey. The last section will give the conclusions.

2. The mode of operation of rice markets: transportation and communication.

How do markets conduct business among themselves? The main interest of this section lies with marketing functions such as transportation and communication. The main questions are: What are the major modes of transportation used by rice traders? What are the major modes of communication in the trade business? Relevant information is contained in table 1.

Transportation

The most common mode of transportation of rice trade is by road, using trucks. Even if Truck Associations exist in all districts in the sample, there is no indication of monopolistic behavior. Neither traders nor millers complained about abuses on the part of the Truck Association. All agree in saying that prices are established on the basis of negotiations that are not characterized by exploitation. Fares for trucks seem to reflect supply and demand in the mind of the respondents. In fact, they also cite the changing behavior of these fares during the year, with the maximum fares occurring during the Aus and Aman season, because of the competing demand for transportation from other crops, such as jute and sugarcane. There is some degree of substitution among different modes of transportation, with railways and water being the two other alternatives. Hand rickshaws, and buses are used mainly for local trade. Wagons are used mainly for long distances, due to their low rates. However, they are not the preferred mode of transportation, due to the long delays involved in a business where information flows very fast, and prompt deliveries are an important determinant of success. Most train transport takes place along the North West-Dhaka, and North West-Chittagong axis. Water shipment are either locally important, such as in the case of Khulna local trade, or used for longer distances, as in the case of Khulna-Chittagong, and in the trade occurring in the southern districts, such as Barisal and

Gopalganj, where the topography and the road infrastructure make transportation by truck more difficult.

Communication

Most communication takes place by telephone. Most of the traders and millers have either a country wide telephone, or a local telephone that can be used to call other parts of the country through an exchange center in the District Headquarter. This last mode of communication is cheaper, but takes longer time, because every call has to be booked through an operator. For small and local markets, personal contacts are the preferred mode of communication. In the case of important markets, personal contacts are essential when high quality rice is involved, because sight inspection is necessary. The vast majority of traders acknowledge the telephone as essential to their business, and when they do not have their own phone, they use the phone of other traders in the same market. The markets where the use of the telephone was most intense were Chittagong, Dhaka, and Naogaon. In the other markets, rarely our interviews were interrupted by phone calls. One gets the impression that the phone is used with great parsimony, basically to finalize a deal. Only the owner, or the highest rank managers are allowed to use the phone.

In summary, most of transportation is by road on trucks, and most communication is by telephone.

3. Price information

Most of the traders appeared to be extremely well informed about prices of different varieties of rice in their market of operations. The reported prices were largely consistent among various traders. The broad ranges that sometimes were encountered were mainly due to large quality differences, as in the case of Pajjam rice. Traders were also knowledgeable about prices in the market with which they had business transactions. This information was readily available either because of telephone calls, or because of continuous contacts with itinerant middlemen, such as farias, and beparis.

Information provided by officers of the Department of Agricultural Marketing was also consistent with the traders. The availability of this information, however, was never mentioned by traders.

Even if prices are by and large quoted in Taka per Maund, there are a few markets where prices are quoted in the metric system (Taka per quintal). A few markets blend the two systems considering Maunds of 40 kilograms, instead of the traditional Maunds of 40 seers.

The consistency of price quotations among various traders suggests that the price collection of the Department of Agricultural Marketing is a reliable source of information. This is good news, given that the Department of Agricultural Marketing is the only consistent source of price information for different qualities of rice. The concept of a representative price for a certain quality of rice is relatively well defined.

In summary, market prices are well defined and well known by traders and officers of Department of Agricultural Marketing.

4. The process of price transmission

Shocks in prices are transmitted rapidly from one market to another, especially between each market and its main procurement and dispatch location (moukam). By and large, the time period to adjust is perceived to be less than a week. However, the adjustment is less than complete, implying that a 10 percent increase in the moukam is reflected in less than 10 percent increase in the market under consideration (see table 1). Moreover, this adjustment is not symmetric. The asymmetry is characterized by bigger flexibility downward than upward, implying that a 10 percent decrease of prices in the moukam is transmitted to a greater extent than a 10 percent increase. Another source of asymmetry of the price adjustment has to do with the position of the market in the rice trade network. A market may be mainly a procurement market such as Dinajpur, Bogra, Naogaon; or dispatch market, such as Dhaka, Chittagong, Faridpur; or it may be both procurement and dispatch, such as Rajshahi, and Khulna. The perception of most

respondents is that shocks originating from dispatch markets (demand shocks) are more important than shocks originating from procurement markets (supply shocks).

In summary, prices are perceived to be transmitted within one week from one market to another; the transmission is less than complete, and is asymmetric. Demand shocks originating from dispatch markets are perceived to be more important than supply shocks originating from procurement markets.

5. Market size

Two dimensions of market size were considered. The first relates to the number of participants in the market. The second relates to the volume of transactions. Whereas the first dimension gave a relatively straightforward answer, the second was sometimes a very sensitive issue. Relevant information is contained in table 2.

Number of Participants

Two types of market participants were interviewed: aratdars and rice millers. Both types together represent the most important actors in the wholesale market. Aratdars are major wholesale brokers.

With respect to the number of aratdars involved, the major markets are those of Dhaka, Chittagong, Bogra, Dinajpur, and Khulna. With respect to the number of millers, Bogra, Dinajpur, Sherpur, Pabna, and Khulna are the most important districts. With the exception of Khulna, the major milling centers are concentrated in the major producing areas.

The number of participants has increased tremendously in the past 10 years. The greatest increase has been that of rice millers. That is particularly the case for the past three years, due to growth of production, availability of cheap engines for electric mills, and, especially in major producing areas, active procurement by the government. It is thought by most participants that this enormous growth of rice mills will be corrected starting already from 1993, due to lower incentives to operate. The biggest mills, that have started their activities in the past two years, will be the ones most severely affected, because of reduced government procurement. The

smallest ones, having the possibility of operating at smaller scales could survive better, even though many of them will also have to get out of business. The number of aratdars has also increased considerably in the past 10 years. Whereas for millers annual growth rates of 10 percent are not uncommon, for aratdars the growth rates are around 5 percent.

Volume

The markets are much more active during the Boro season than during the Aman season. The exception is given by markets that are specialized in particular Aman qualities, such as Nawabgonj with Chinigura rice. Major markets are those with an activity of about 100 trucks per day, namely Dhaka, Rajshahi, Chittagong, Dinajpur, Bogra, Shantahar, Naogaon, and Khulna. The information about the volume of trade of the market is regarded as confidential by most traders, so that it is likely that the figures are underestimated. This was particularly the case in Dhaka and Chittagong markets, where respondents showed an extreme suspicious attitude towards the interviewers.

In summary, after the tremendous increase of rice millers and aratdars in the past 10 years, a lower growth is expected in the future. The sector appears to be very competitive, as judged by the absence of concentration of market power in most of the major markets.

6. Export prospects in view of recent price falls

Price fall

The generalized fall in prices of this Aman season (1992/93), subsequent to a generalized fall of prices during the Boro season of 1991/92, is commonly perceived as a big loss for both traders and farmers. Traders claim that farmers cannot cover their cost of production at such low market prices. Two main explanations are presented for such a precipitous fall: the lower procurement of paddy by the government, and the high cost of production, particularly fertilizer. Interestingly, most of the responses did not consider the possibility that supply may have grown faster than demand. However, some respondents pointed out that even traditionally deficit regions have now become self-sufficient, so that dispatches to those markets have consequently

been reduced. Moreover, the capacity of processing rice has also increased tremendously in the past five years as the increase in rice mills suggests.

Export prospects

The possibility of exports is still judged quite unlikely by most respondents. Some large aratdars and automatic rice mills are aware of the interest of the government, and are looking for possible opportunities. However, the general impression is that the government should do much more to give the right signals, and information to traders. Common to almost all participants is the idea that Bangladesh should export only high quality rice. The concern of many is that the current qualities available in Bangladesh are not yet of the required level to compete in international markets. Many respondents mentioned that large capital is necessary to enter the export business, so that most of the traders in Bangladesh would be excluded.

In summary, recent price falls are attributed to government policy; export prospects are still uncertain, even though some traders perceive it as a real possibility, depending on the support offered by the government. The vast majority of traders think only of high quality rice, as a viable exportable item.

7. Trade Flows

Most of the rice is procured in the major production centers, namely Rajshahi, Bogra, Rangpur, and Dinajpur. Sherpur and Mymensingh serve Dhaka almost exclusively. Chittagong and Dhaka are the main dispatch centers, followed by Khulna, and Faridpur. Even if some important parts of the country are not represented in the survey, notably Sylhet, Comilla, and Noakhali, they still appear as either procurement or dispatch areas (see table 3). A few conclusions can be derived even from this limited survey.

First, major centers, be they procurement or dispatch centers, are connected to the rest of the country by quite an extensive network. To get a visual idea of these linkages, figure 1 and 2 related to Rangpur and Chittagong would be illustrative of trade flows originating from a major production and consumption center, respectively.

Second, most of these flows are in the hands of the private sector. The government used to intervene by procuring large quantities during the Aman and Boro season in the past two years. However, it has basically stopped these operations during the current year. Even though prices are quite low, still a huge amount of production is marketed, estimated around 50 percent of total yearly production by N. Chowdhury (1992). This has important implications for market reforms. Differently from other developing countries, a withdrawal of the government from the market would not leave a vacuum in the marketing system. Many participants are already there, and will continue to stay there, given that alternative employment opportunities are limited.

In summary, rice trade is characterized by a complex network of flows controlled by private sector.

8. Conclusions

The general impression is that rice markets are well integrated, judging from the complex web of relations and the network of trade flows existing among them. Participants in the market are well informed of the level of prices both in their own market of operation and in other related markets. Most of the external communications take place by telephone, and the adjustment in price is quite rapid leading to a prompt dispatch by truck. Railways are used occasionally, either to supply to the government or when large distances (such as Dinajpur-Chittagong) are involved, or when there is a crisis in truck availability, mainly during the season when other important crops are harvested. The extent of price response depends on several factors, particularly if the market is a central one such as Dhaka, or a surplus market such as Bogra, Naogaon, or Dinajpur. Dhaka is the leading market that all surplus areas look at. However, it seems that there is an asymmetry of response. Prices are reported to react downward much more than upward. It is not clear if this is a feature of surplus periods, or if it is present even in scarcity periods such as 1988/89. The recent price decline during the Aman season of 1992/93 is attributed to the policy of stopping public procurement and the high cost of fertilizer. Prospects for exports are still uncertain, but are considered a feasible option.

Policy Issues

Vital to trade activity and marketing efficiency is the reliability, low cost, and availability of a good transportation and communication system. Central to these two systems are a good telephone connection country wide, and a good road network. Both these two types of improvement would speed up trade flows and lower their cost, and move the marketing system towards a more modern outlook.

Production is clearly improving, up to the point that domestic demand cannot absorb it sufficiently enough to counter a fall in prices. However, the experience of the past 10 years will induce numerous adjustment in the foodgrain system. Many farmers, as well as many traders, and rice millers are going to be eliminated from the rice business. That will generate inevitable unemployment in the sector (on top of the large underemployment). Unless new activities are generated in other sectors, the prospects for the employment in the rice marketing sector are rather dim. The result for the marketing system as a whole is likely to be an improvement in efficiency, and it may conceivably be accompanied by an increase in the average size of business. The most severe problems lie with the opportunities open to farmers in the short term. Many of them will not find a profitable opportunity in the rice business. The short term prospects are quite bleak. In the medium term, many will diversify, as the relative price of non rice crops is becoming more and more attractive. From a political point of view, rice millers associations, especially in surplus districts may organize themselves and put pressure on the government. Rice exports should be facilitated by the government, providing the necessary marketing infrastructure. Export promotion would generate much needed foreign exchange and add to total demand for rice.

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Table I__ Communication, Transportation, and Transmission of Prices in Rice Markets.

Market	ID	Type	Telephone Percent	Owning Tel. Percent	Truck Percent	Train Percent	Water Percent	From Procurement	To Dispatch
SATKHURA	1	A	50	80	90			E	M
KHULNA	2	A					100	L	M
	3	M	Most		100				L
	4	A	0					E	E
FARNA	5	M	Least	3	100			E	E
	6	M	Least	4	100				
NAWABGONJ	7	A	100	100					
RAJSHAHI	8	A	100	27	100				E
	9	A	Least		100				
NAOGAON	11	M	Most		80	5	15		
	12	A	100	95	85	8	7		E
BOGRA	Kabaloo	13	A	Most		90	10		L
	Kabaloo	14	A	85	0				E
	Dubchachia	15	M	Most		100			
	Dubchachia	16	A	Most	0	100			E
	Thakura	17	A	Most	0	95	4	1	L
	Shantabar	18	M	20		79		21	E
	City	19	A	100	100	100			L
RANGPUR	20	A	100	22	95	5			L
	21	A	100	30	100				E
	22	A	100		95	5			L
DINAJPUR	Birganj	23	M	100	0	85	15		L
	Birganj	24	M	50	0	100			L
	City,Boll	26	A	50	80	80	20		E
	City,boll	27	A	100	100	80	20		E
	City,Ans	28	A	25	100	80	20		L
DHAKA	Badamtoli	29	A	50	60	70	10	20	M
	Badamtoli	30	..	25	58	75	20	5	
	Badamtoli	31	A	10	80	85	5	10	
	Badamtoli	32	A	25		65	5	25	L
	Badamtoli	33	A	40	40	65	25	5	

Market	ID	Type	Telephone Percent	Own'g Tel. Percent	Percent	Truck	Train Percent	Water Percent	From Procurement	To Dispatch
SHERPUR	34	M	40	30		100				L
	35	M	40	75		100				L
	36	M	5	16		100				E
	37	M	80	62		100				L
	38	M	100	16		100				
MYMENSIN	City	A	0	0						
	Trihal	M	0	0		100				
	Trihal	M	0	0		100				
GAZIPUR	42	M	0	22		100			M	L
	43	M	5	40		100			L	L
MADARIPUR	44	A	0	0		60		40		M
BARISAL	45	A	80	68		60		40	E	
	46	A	90	91		60		40	L	
	47	A	100	79		60		40	E	
	48	A	0	0		20		80	M	
GOPALGANJ	49	A	25	80		70	30		E	
FARIDPUR	50	A	80	80		80	20		E	
	51	A	80	80		72	28		L	
CHITTAG	Bahartoli	A	75	80					L	
	Bahartoli	A	Least	80		95	5		L	
	Bahartoli	A	75	80		60	35	5	E	
	Chaktai	A	100	80					L	
	Chaktai	A	0	80		75	20	5	L	

Source: IFPRI survey February-March 1993.

Note:

The type of respondent is denoted by either A (Araida) or M (rice miller).

The transmission of price is denoted by E if it induces the same percentage change in prices; M denotes that it induces a more than 100 percentage change in prices, and L denotes a less than 100 percentage change. For example, a one percent increase in prices in the major procurement market of Khulna induces less than a one percent increase in Khulna prices; a one percent increase in the prices of Khulna induces more than one percent increase in the price of its major dispatch market.

Table 2__ Size of the market: volume and number of participants.

DISTRICT	Market	ID	Type	Unit	VOLUME		PARTICIPANTS		PARTICIPANTS		YEARS AGO
					Aman	Boro	NOW		PAST		
							A	M	A	M	
#ATKJHRA		1	A	Truck	28	18	11	60	6	10	10
KHULNA		2	A	Md	9000	23000	60		30		5
		3	M	Md	9000	25000	55	175	25		5
JESSORE		4	A	Q	1500	1500	20	50	18		5
FABNA		5	M	Truck	18	50		200		100	5
		6	M	Truck	50	100		160		50	5
NAWABGONJ		7	A	Truck	18		5		30		10
RAJSHAHI		8	A	Truck	125	100	35		15		10
		9	A	Truck	60	60	32				
NAOAGAN		11	M	Md	20000	20000					
		12	A	Truck	70	70	15		5		10
BOGRA	Kabaloo	13	A	Truck	11		45		18		10
	Kabaloo	14	A	Truck	18	18	60		20		10
	Dubchachia	15	M	Truck	50	50	25	300			
	Dubchachia	16	A	Truck	50	25	23		6		10
	Thakira	17	A	Md	9000	11000	9		18		10
	Shantihar	18	M	Truck	200	150					
	City	19	A	Truck	13	100	12		5		10
RANGPUR		20	A	Truck	2	2	22		10		10
		21	A	Truck	4	2	18		7		10
		22	A	Truck	3	5	22		6		10
DINAJPUR	Birgonj	23	M	Truck	23	35		50			
	Birgonj	24	M	Truck	25		7	30	6	18	10
	City,Boil	26	A	Truck	90	75	50	300	30	150	10
	City,boil	27	A	Truck			45	360	30	150	10
	City,Atto	28	A	Truck	100	15					
DHAKA	Badamtoli	29	A	Truck	225	300	260		100		10
	Badamtoli	30	A	Truck	200	255	250		125		10
	Badamtoli	31	A	Truck	100	100	220		110		10
	Badamtoli	32	A	Truck	200	100	250		170		7
	Badamtoli	33	A	Truck	150	200	250		100		10
SHERPUR		34	M	Truck	38	43		300		100	10
		35	M	Truck	55	55		260		50	150
		36	M	Truck	25	70		325		150	10

DISTRICT	Market	ID	Type	Unit	VOLUME		PARTICIPANTS		PARTICIPANTS		YEARS AGO
					Aman	Boro	NOW		FAST		
							A	M	A	M	
		37	M	Truck	33	38		200		43	10
		38	M	Truck	60	82		315		50	10
MYMENSIN	City	39	A	Md	600	600	8				
	Tribal	40	M	Truck	8	7		45		3	10
	Tribal	41	M	Truck	10	9		14		1	10
GAZIPUR		42	M	Truck	4	4		11		3	10
		43	M	Truck	10	20		23		7	10
MADARIPUR		44	A	Md	100	150	3	1			
BARISAL		45	A	Truck	2	6	22		15		10
		46	A	Q	1300	1200	22				
		47	A	Truck							
GOPALGANJ		48	A	Md	300	250	3		0		10
FARIDPUR		49	A	Truck	15	25	15		11		10
		50	A	Truck	10	8	13				
		51	A	Truck	9	15	20		14		10
CHITTAG	Bahartoli	52	A	Truck	15	25	100		40		10
	Bahartoli	53	A	Truck	30	30	100		35		10
	Bahartoli	54	A	Truck			105		33		10
	Chaktai	55	A	Truck	75	75	80		35		10
	Chaktai	56	A	Truck	55	55	75		33		10

Source: IFPRI survey February-March 1993.

Note: The type of respondent is denoted by either A (Arazdar) or M (rice miller).

Table 3__ Procurement Trade Flows

	Khu	Raj	Pab	Bog	Ran	Din	Db	She	Mym	Bar	Chi	Far	Jes	Com	Noa	Total
Khulna	58	33		9												100
Rajshahi		100														100
Pabna		20		42.5	7.5	30										100
Bogra		25		75												100
Rangpur					73	27										100
Dinajpur						100										100
Dhaka		9.2	1.7	12.5	4.5	37.5		23	11.6							100
Sherpur								100								100
Mymens									95							95
Barisal		23.3	13.3							63.3						99.9
Chittag		23		20	1.5	30		2						20	1.5	98
Faridpur		15.3			25.8	39.2						1.7	18			100

Source: IFPRI survey February-March 1993

Table 4__ Dispatch Trade Flows

	Khulna	Rajshahi	Pabna	Bogra	Rangpur	Dinajpur	Dhaka	Sherpur	Mymensingh	Barisal	Chittagong	Faridpur	Jessore	Comilla	Noakhali	Total
Khulna	30						3				23	4		40		100
Rajshahi	2.5	24	8				37.32				12.82			5.17	7.5	97.31
Pabna							55			4.17		12.5	14.17			85.84
Bogra			3.4				68.5				22			3	0.3	97.2
Rangpur	3.3		3.3				60		3.3		20			3.3	6.6	99.8
Dinajpur							48				25				5	78
Dhaka							100									100
Sherpur							90		1		5				2	98
Mymensingh							88		12							100
Barisal										10						100
Chittagong											100					100
Faridpur												100				100

Source: IFPRI survey February-March 1993