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**REPORT ON THE RAPID RURAL APPRAISAL
ON PRIVATE FOODGRAIN STOCKS
IN BANGLADESH 1993/94**

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OBJECTIVES

- a) To estimate the size and composition of private rice stocks during 1992 and 1993;
- b) To create a better understanding of the reason(s) for the changes in the level of stocks;
- c) To formulate simple behavioral models of the changes in the stocks decisions of millers and traders.

Why is a study of stocks important?

Private rice stocks more recently account for about three fourths of the matched aggregate at any given point in time (Chowdhury, 1992). Farmers have adequate grain storage capacity (IFPRI Farm Survey, 1989/90). Amid rice prices collapsing in 1993 upon 1992 by apparently disastrous margins, how did the farmers cope? Were they able to limit their losses by withdrawing from the market when prices were forlornly low? Or, were their cash requirements so inflexible downward, both --- amount-wise and time-wise --- that they simply had to market, regardless? Knowledge of farmlevel stocks is imperative if a more hardheaded welfare evaluation of the recent changes in rice prices has to be made.

Points Estimates of Private Rice Stocks, 1992, 1993

Methods

Data from 884 farms drawn from sixteen new districts of the country, and 412 mills from thirteen districts underlie this exercise. As would be befitting for a stocks survey, districts generating rice surpluses were oversampled, as were medium and larger farms within each district. The rice economy was divided into "surplus" and "deficit" class of districts. Ensuing average stocks (per farm), when "blown up" by corresponding weights (i.e. total number of farms) to yield aggregate farm stocks. Similarly, millers' economy was divided off into (a) those establishments who had a "millgate contract" in the 1992 boro season; and (b) those that did not. For those two groups, average stocks at end of October was blown up by the total number of millgate contract (1700) units and the rest.

Results¹

From approximately 3.1 million metric tons (MMT) in October 1992, private rice stocks fell to 2.3 MMT a year on (Table 1). This represents a decline of some 26% overall. The steepest decline in stocks of all classes of marketing agents was for the millgate contractors (MGCs), followed by other millers and ordinary traders, in that order.

¹These estimates are final.

Table 1 – Estimates of Private Stocks in Bangladesh Rice Economy, 1992, 1993

Stock categories	(MMT)		% change in 1993 upon 1992
	O C T O B E R 31		
	1992	1993	
On Farm stocks	2.3	1.7	-26.1
Trade/Mill stocks	0.82	0.42	-48.7
Millgate contractors	0.10	0.02	-80.0
Other millers	0.47	0.24	-49.0
Traders	0.25	0.16	-36.0
Total	3.12	2.12	-32.0

Source: Estimates are from IFPRI/FPMU Rapid Rural Appraisal on Private Stocks, 1993.

Interpretation

Following the liberalization of agricultural input markets, especially for minor irrigation equipment and fertilizer, during 1988 and 1989, rice production in Bangladesh has had a good run (Table 1). During four years to September 1993, rice production increased by 2.7 million metric tons (MMT) --- by about 17% upon the average during the previous four years. During these four years, rice production grew at 4% per year, well above population growth. According to the World Bank, production growth rate for rice between 1985 and 1990 has been 5.4%, as against 3.8% for India, while the ranking had been just the reverse in the quinquennium immediately past (World Bank, 1993).

Gains in production have favourably impacted upon the quantity marketed and, more important for present purposes, upon farm rice stocks (Chowdhury, 1992). It can be said with some conviction that during the year to November 1990, private rice stocks accounted for some 79% of total rice stocks in the economy. More than three quarters of private stock is on the farm at any given point in rice consumption needs of the country as a whole. The capacity of rice markets to play a major, indeed the pivotal, role in keeping consumers, across spatial and temporal divides, supplied with rice at keen prices was accepted as empirically valid.

The findings of the present RRA lend further credence to the role and significance of private rice stocks.

The central finding of this RRA is that (a) in the year to October 1993, private rice stocks have declined, in the aggregate and for each of the components; (b) the largest proportionate decline has been registered by the mills that had Millgate-Purchase contracts in 1992; (c) between 1989/90 and 1992/93, the capacity of rice markets to meet consumption demand has remained virtually unchanged

Table 2 – Rice output by season, and in the aggregate

(000 MT)

Year(s)	Rice production			Total	Absolute change upon a year ago
	Aman	Boro	Aus		
1980/81-1984/85	7728	3317	3126	14171	n.c.
1985/86-1987/88	8207	4163	3016	15386	n.c.
1988/89	6967	5925	2902	15794	-846
1989/90	9004	5970	2488	17462	+1668
1990/91	9167	6357	2328	17852	+390
1991/92	9269	6804	2179	18252	+400
1992/93	9680	6740	2075	18495	+243

Source: Bangladesh Bureau of Statistics, Statistical Yearbook, various issues

Notes: n.c. denotes not computed

Table 3 — Selected Geographical Features of Rice Output Change, 1989-1992

Name of districts	Absolute change upon a year ago			
	1988/89	1989/90	1990/91	1991/92
Dinajpur	899.9	111.4	39.7	-54.97
Rangpur	1500.3	188.9	30.7	33.88
Bogra	783.8	132.8	67.7	22.39
Rajshahi	958.1	292.3	130.4	8.21
Pabna	416.6	84.8	20.8	-7.07
Rajshahi Division	4560.7	810.2	288.1	1.64
Jessore	975.3	52.1	8.6	151.22
Khulna Division	3107.2	485.1	-91.8	184.68
Dhaka Division	3871.4	513.3	-80	72.12
Chittagong Division	4004	502.7	-121	143.29
Bangladesh	15543.3	2313.3	-4.7	401.73

Source: Bangladesh Bureau of Statistics

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**Table 4 -- Economy-wide-end-of-month private rice stocks,
1989/90, 1992/93**

(MMT, rice)

Month	1989-1990			1992-1993		
	Farm stocks	Trade stocks	Total	Farm stocks	Trade stocks	Total
(1)	(2)	(3)	(3)	(5)	(6)	(7)
October	0.86	0.5	1.36	2.30	.82	3.10
November	5.73	1.44	7.17	6.52	1.03	7.55
December	5.79	2.02	7.81	6.21	1.99	8.20
January	4.73	2.04	6.77	4.73	2.38	7.11
February	3.69	1.64	5.32	3.33	2.26	5.58
March	2.71	.66	3.37	1.90	1.64	3.54
April	3.32	1.06	4.38	1.62	2.98	4.60
May	4.66	1.66	6.32	5.25	1.39	6.64
June	3.67	1.68	5.35	4.14	1.47	5.62
July	2.99	1.34	4.33	3.72	1.04	4.76
August	3.36	.94	4.3	2.81	1.70	4.51
September	2.43	.72	3.15	2.25	.55	2.80
October	1.44	.40	1.84	1.70	.42	2.12

Source: For cols (2)-(4), adapted from Chowdhury, 1992. For cols (5)-(7), IFPRI/FMPU Private Stock RRA, 1993

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Table 5 – Private rice stocks in Bangladesh are alive and well

Month	1989/90				1992/93			
	Private rice stocks	Public rice stock	Total rice stocks	Private rice stocks as multiple of rice need	Private rice stocks	Public rice stock	Total rice stocks	Private rice stocks as multiple of rice need
October	1.36	0.58	1.94	.96	3.10	0.68	3.78	2.07
November	7.17	0.60	7.77	5.10	7.55	0.64	8.19	5.14
December	7.81	0.72	8.53	5.54	8.20	0.61	8.81	5.58
January	6.77	0.82	7.59	4.80	7.11	0.55	7.66	4.84
February	5.32	0.84	6.16	3.77	5.58	0.52	6.1	3.73
March	3.37	0.75	4.12	2.39	3.54	0.50	4.04	2.37
April	4.38	0.64	5.02	3.11	4.60	0.44	5.04	3.07
May	6.32	0.65	6.97	4.48	6.64	0.42	7.06	4.44
June	5.35	0.82	6.17	3.79	5.62	0.40	6.02	3.76
July	4.33	0.85	5.18	3.07	4.76	0.42	5.18	3.18
August	4.3	0.83	5.13	3.05	4.51	0.40	4.91	3.01
September	3.15	0.78	3.93	2.23	2.80	0.39	3.19	1.87
October	1.84	0.65	2.49	1.76	2.12	0.34	2.46	1.42
All months	4.72	0.73	5.46	3.39	5.08	0.48	5.57	3.42

Source: Chowdhury, 1992; IFPRI/FPMU Private Stock RRA, 1993

Notes: Monthly putative rice requirement during 1989/90 is assumed at 1.41 MMT and during 1992/93 at 1.496 MMT. The latter is obtained assuming a population growth of 2% a year between 1989/90 and 1992/93.

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Table-6 Reasons for changes in millers' stock

(%)

	Millgate mills					Non-Millgate mills				
	Reasons					Reasons				
	Large losses in 1992 led to cutbacks in 1993 stocks	Large public stock, by lowering future prices, induced cutback	Farm stocks in 1993 monsoon was plentiful, thus lowering expected stock profitability	Others	All	Large losses in 1992 led to cutbacks in 1993 stocks	Large public stock by lowering future prices, induced cutback	Farm stocks in 1993 monsoon was plentiful, thus lowering expected stock profitability	Others	All
Progressive	69	7	3	21	100	64	14	-	21	100
Others	60	40	-	-	100	40	-	-	60	100

Source: IFPRI/FPMU Rapid Rural Appraisal, 1993

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Table 7 - Probit-function estimates of technological, financial and procurement-status variables on lean-stocks tactics

Dependent variable	JULSTO		SEPSTO		OCTSTO	
	Coefficient	T-stat	Coefficient	T-stat	Coefficient	T-stat
Constant	-0.644	-2.07	-0.405	-1.35	-0.617	-2.07
NONAUTO	1.08	3.59	0.833	2.84	0.572	1.99
EXP	-0.889	-1.41	-0.0054	-0.878	0.00819	1.24
TURNOVER	0.0002447	-0.976	-0.00047	-1.87	0.00038	1.47
MILLGATE	0.444	2.91	0.414	2.82	0.311	2.21
BANKCC	0.388	2.49	0.347	2.29	-0.0263	-0.187

Source: IFPRI/FPMU Private Stock Rapid Rural Appraisal, 1993

Notes: Variable definitions: NONAUTO is a dummy variable with value of 1 if the mill at hand is other than automatic mill and zero otherwise; EXP is number of years of experience; TURNOVER is the quantity of sales; MILLGATE is a dummy with value of 1 for enterprises who had millgate contract status in 1992 and zero otherwise; BANKCC has value of 1 for enterprises with a bank- issued credit ceiling in 1992, and zero otherwise; JULSTO is a dummy variable with value of 1 if the enterprise registered a decline in stocks in the year to July 1993, and zero otherwise; SEPSTO is a dummy with value of 1 if the enterprise registered a decline of its stocks in year to September 1993; and the same for OCTSTO, *mutatis mutandis*.

A maximum-likelihood estimator was used to generate these results.

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**Table 8 – Paddy prices and cash requirements, Bangladesh
Farmers, 1992, 1993**

(All numbers relate to aman season; acres)

	1992	1993	Difference in 1993 over 1992	T-statistics	% change in 93 over 92
Aman operated area/farm	4.65	4.64	-.01	-.26	-.2
% irrigated					
% under HYV	56.6	58.0	1.4	0.86	2.5
% under coarse	66.5	64.4	-1.1	-1.64	-3.2
Yield rate/acre (mds)	39.2	38.9	-0.3	-.63	-.8
Number of AFL person-days hired/farm	114.6	110.7	-3.9	-1.3	-3.4
Annual cash salary to AFL (Tk.)	6336	6634	298	3.1	4.7
Number of CL days hired/farm	129.7	122.1	-7.7	-3.99	-5.8
Cash wage rate/day (Tk.)	27.7	27.6	-.11	-1.43	-.4
Total labor demand (days)	244	233	-11	-3.2	-4.5
Total labor cash need/farm (Tk.)	9840	9540	-300	2.0	-3.0
Paddy price	210	158	-52	7.6	-24.8

Source: FPMU/IFPRI RRA, 1993

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Farm and Mill RRA Samples, 1993

Greater District	Farm RRA			All
	Small	Medium	Large	
Pabna	24	13	21	58
Rajshahi	34	24	30	88
Dinajpur	27	35	64	126
Rangpur	49	41	46	136
Comilla	50	28	10	88
Chittagong	15	49	21	85
Sylhet	-	26	56	82
Mymensing	3	26	50	79
Bogra	14	23	32	69
Khulna	4	28	41	73
Total	220	293	371	884

Greater District	Mill RRA		All
	Mill Gate	Non-Mill Gate	
Pabna	5	6	11
Rajshahi	38	47	85
Dinajpur	93	30	123
Rangpur	33	7	40
Comilla	1	7	8
Chittagong	-	10	10
Sylhet	1	8	9
Mymensing	4	16	20
Bogra	58	41	99
Khulna	2	5	7
Total	235	177	412

Source: IFPRI/FPMU RRA 1993

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