

FNACN-982

**FOODGRAIN MARKETS
AND
POLICY IN THE AFTERMATH OF
THE 1998 FLOOD**

PAUL A. DOROSH

JUNE 1999

FMRSP Working Paper No. 7

FMRSP Bangladesh
Food Management & Research Support Project
Ministry of Food, Government of the People's Republic of Bangladesh

International Food Policy Research Institute

This work was funded by the United States Agency for International Development (USAID)

A

**FOODGRAIN MARKETS
AND
POLICY IN THE AFTERMATH OF
THE 1998 FLOOD**

PAUL A. DOROSH *

JUNE 1999

FMRSP Working Paper No. 7

FMRSP Bangladesh
Food Management & Research Support Project
Ministry of Food, Government of the People's Republic of Bangladesh

International Food Policy Research Institute

*This work was funded by the United States Agency for International Development (USAID)
Contract Number: 388-C-00-97-00028-00*

* Chief of Party, FMRSP, and Research Fellow, IFPRI

The views expressed in this report are those of the author and do not necessarily reflect the official position of the Government of Bangladesh or USAID.

ACKNOWLEDGEMENTS

I wish to thank Raisuddin Ahmed, Carlo del Ninno, Quazi Shahabuddin, K.A.S. Murshid, Ruhul Amin, M. Abdul Aziz, Mahfoozur Rahman and Shahjahan Miah for their numerous insights on the rice trade in Bangladesh that they shared with me. Thanks also to Shameem Mahmoud, Anarul Kabir and Amzad Hossain for their many hours and days of able research assistance in preparing this paper, and to Md. Samsuddin Sumon and Waheeda Ali Luna for their work in editing and printing the final document. As usual, any errors or omissions are solely the responsibility of the author.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iii
LIST OF FIGURES	iv
EXECUTIVE SUMMARY	v
1. INTRODUCTION	1
2. THE 1998 FLOOD: GOVERNMENT POLICY AND FOODGRAIN MARKETS	3
FOOD AID AND GOVERNMENT RELIEF EFFORTS	6
RICE POLICY AND PRIVATE SECTOR IMPORTS	15
GOVERNMENT INTERVENTIONS IN THE DOMESTIC RICE MARKET	18
DOMESTIC WHEAT MARKETS	19
3. POLICY ISSUES	22
WAS THERE TOO MUCH FOOD AID AFTER THE 1998 FLOOD?	22
CASH TRANSFERS FOR SHORT-TERM FLOOD RELIEF	31
PRIVATE IMPORTS AND FOOD SECURITY: IMPLICATIONS OF TRADE WITH INDIA	33
4. CONCLUSIONS	39
REFERENCES	42

LIST OF TABLES

Table 2.1 — Bangladesh Flood Levels and Duration, 1998 and 1999	5
Table 2.2 — Monthly Projection of Govt. Stock, Procurement, Import, Offtake of Rice & Wheat During 1998/99	7
Table 2.3 — Vulnerable Group Feeding Distribution, 1998-99	9
Table 2.4 — Foodgrain Distribution by Channels, Budget and Actual 1998/99 (thousand MTs)	14
Table 3.1 — Total Foodgrain Availability from 1980/81 to 1998/99	24
Table 3.2 — Estimates of Foodgrain Availability and Consumption, 1996/97 - 1998/99	28
Table 3.3 — Total Production of <i>Aman</i> and Kharif Rice In Bangladesh and India and Percentage Deviation from Trend, 1981-99	38

LIST OF FIGURES

Figure 1.1 (a) — Price Determination in a Closed Economy (Without Free Trade).....	4
Figure 1.1 (b) — Price Determination in an Open Economy (With Free Trade)	5
Figure 1.2 (a) — Impacts of an Increase in Demand in a Closed Economy.....	6
Figure 1.2 (b) — Impacts of an Increase in Demand in an Open Economy.....	7
Figure 2.1— Total Rice Production and Availability in Bangladesh	11
Figure 2.2 — Real Prices of Coarse Rice, 1977-98 (December - November Marketing Year).....	12
Figure 2.3 — Net Availability and HES Consumption Estimates of Rice and Wheat in Bangladesh, 1974-96.....	13
Figure 3.1 — Rice Prices and Quantity of Private Rice Imports in Bangladesh, 1993-99.....	22
Figure 3.2 — National Average Real Wholesale Price of Rice and Wheat, 1987-98	26
Figure 4.1 — Seasonal Rice Production in Bangladesh and India	34
Figure 4.2 — Seasonality Indices of Rice Price in Bangladesh, West Bengal and Delhi	36
Map 4.1 — Major Rice Producing States in India.....	39
Figure 4.3 — Procurement Quantity and Price, and Wholesale Price of Rice in India (1984/85-97/98).....	43
Figure 4.4 — Procurement Quantity and Price, and Wholesale Price of Wheat in India (1984/85-97/98).....	44
Figure 4.5 — Government Foodgrain Procurement and Distribution in India, 1980-97.....	45
Figure 4.6 — Central Pool Foodgrain Stocks of India, 1980-98 ^a	47
Figure 5.1 — Effects of a Production Shortfall.....	49

LIST OF FIGURES

Figure 2.1 — Flooded Area and <i>Aman</i> Production.....	4
Figure 2.2 — Government Budgeted and Actual Distribution of Total Foodgrain, 1998-99	11
Figure 2.3 — Government Budgeted and Actual Distribution of Rice, 1998-99	12
Figure 2.4 — Government Budgeted and Actual Distribution of Wheat, 1998-99	13
Figure 2.5 — Rice Prices and Quantity of Private Rice Imports in Bangladesh, 1993-99	16
Figure 2.6 — Wheat Prices and Quantity of Private Wheat Imports in Bangladesh, 1993-99	21
Figure 3.1 — Food Aid Levels	23
Figure 3.2 — Per Capita Food Grain Availability in Bangladesh, 1980/81 to 1998/99	25
Figure 3.3 — Total Food Grain Availability of Bangladesh, 1980/81 to 1998/99	27
Figure 3.4 — National Average Real Wholesale Price of Rice and Wheat, 1987-99	29
Figure 3.5 — Total Production of Rice in Bangladesh and India, 1972-99 (Percentage Deviation from Trend)	35
Figure 3.6 — Total Production of <i>Aman</i> Rice in Bangladesh and Kharif Rice in India, 1989-99 (Percentage Deviation from Trend)	37

EXECUTIVE SUMMARY

According to official estimates, this year's prolonged flood in Bangladesh caused a projected 2.2 million MT rice production shortfall (0.3 mn MTs of *aus* and 1.9 mn MTs of *aman*). Rice market prices have risen to import parity with India, providing the incentives for private traders to import about 8 lakh MTs through official channels since 1 July. Given the expected poor *aman* harvest, rice prices are likely to remain at import parity at least until the *boro* harvest of 1999. Fortunately, rice supplies in India appear to be adequate, as the kharif rice harvest is projected at 70.8 mn MTs, down only 2 percent from 72.5 mn MTs in 1997. Provided Bangladesh government policy encourages and does not inhibit private trade, and the Indian government policy and rice production permit rice exports at prices near current levels, the private sector in Bangladesh is likely to import another 1.0 to 1.5 million MTs of rice by May, 1999. Wheat prices in Bangladesh have risen along with rice prices, but are likely to fall substantially as government distribution of wheat through Food For Work and other channels increases early in 1999. Thus, foodgrain supplies appear to be adequate and rice prices in the next six months are likely to remain approximately equal to or only slightly higher than prices in early 1998. Nonetheless, the flood has increased food insecurity for millions of households who have lost assets and lack employment opportunities. Government policy in the coming months need not focus only on food transfers, but should aim at raising food entitlements (ability of households to acquire food) through providing employment and incomes in cash or kind.

1. INTRODUCTION

The mid-1998 floods in Bangladesh were unusual both for their depth and duration. Unlike, the normal floods that cover large parts of the country for several days or weeks during July and August, the floods in 1998 lasted until mid-September in many areas, killing hundreds of people and destroying roads, houses, crops and other assets. Damage to the November / December *aman* rice crop was especially severe, because the long duration of the flood prevented the timely transplanting or re-transplanting of *aman* rice. Official estimates of the 1998/99 *aman* production shortfall are about 1.9 million MTs, (in addition to the 0.3 million MT losses of the *aus* crop in July and August). Other estimates of total losses are even greater, e.g. 2.6 mn MTs according to USAID/Dhaka.)

Even though the *boro* rice harvest, the next major rice harvest after the *aman* crop, followed about five months later (mid-1999), the *aman* production shortfall did not lead to large price increases or food supply shortfalls. Instead, private sector foodgrain imports, together with government commercial imports and food aid, supplied markets and prevented major price increases. Government programs also helped reduce the adverse effects of the flood for many of the most severely affected food insecure households.

This paper argues that the trade liberalization of the early 1990s that permitted private sector imports of foodgrains had a major positive effect on national food security in Bangladesh enabling the flow of rice from India (and wheat from other countries) that stabilized market supplies and prices in 1998. Nonetheless, relief efforts were important, not to augment food supplies, but to provide purchasing power to households who had lost the capability to acquire sufficient food, (i.e. in Amartya Sen's terminology, they no longer had sufficient entitlements).

Section two of this paper describes the flood of 1998, the government policy response and the behavior of foodgrain markets. Much of the focus is on rice markets, particularly the role of cross-border trade in stabilizing prices and offsetting the rice production shortfall. Food aid flows, wheat markets and government distribution programs designed to alleviate the adverse impacts of the flood on poor households are also discussed. Section three explores three major issues related to the government policy response: levels of food aid, short-term emergency assistance to food insecure households, and the extent to which private sector trade, particularly trade with India, can be relied upon to meet foodgrain needs in the event of another major production shortfall. The last section discusses major lessons learned from the experience in tackling the food security problems related to the 1998 flood.

2. THE 1998 FLOOD: GOVERNMENT POLICY AND FOODGRAIN MARKETS

Floods are a normal part of the climate of Bangladesh. Several major rivers flow through Bangladesh to the Bay of Bengal and heavy monsoon rains in the catchment area of these rivers (over 90 percent of which is outside of Bangladesh) typically raise water levels from July to September. Between 1960 and 1998, flooding occurred each year except 1979, 1981, 1994 and 1997. For the period as a whole, on average 18 percent of the country was covered at some point each year by floodwaters. Four times since 1960, the percentage of land covered during the floods (not necessarily at the same time) has exceeded 30 percent: 1974 (36 percent), 1987 (39 percent), 1988 (61 percent) and 1998 (68 percent), (Figure 2.1), (Source: Flood Forecasting and Warning Centre; Bangladesh Water Development Board. Annual Flood Report 1998; p. 11).

The 1998 floods began in early July in the southern part of Bangladesh and continued over the next three months in various parts of the country, inundating 68 percent of the total area at various times. Initially, in early July, flooding, caused by heavy rainfall, was mainly confined to the southeastern hilly basin and the Meghna basin in the northeast. During the third week of July, however, a heavy on-rush of water in the Brahmaputra added to a rising levels in the Ganges (Padma) basin. By 28 July 1998, 30 percent of total area was inundated. Then, after two weeks of little change in the flood situation, water levels in the Padma River started rising sharply. Shortly thereafter other rivers also rose so that on 30 August 1998, 41 percent of the total area was inundated. The flood situation reached its peak in terms of number of monitoring stations reporting flows above danger levels on 7 September 1998, when 51 percent of the total area was inundated. Water levels fell rapidly thereafter and by 25 September 1998, no monitoring stations reported flows above danger levels. (Source: Annual Flood Report 1998; pp. 28,29.)

Figure 2.1 — Flooded Area and *Aman* Production

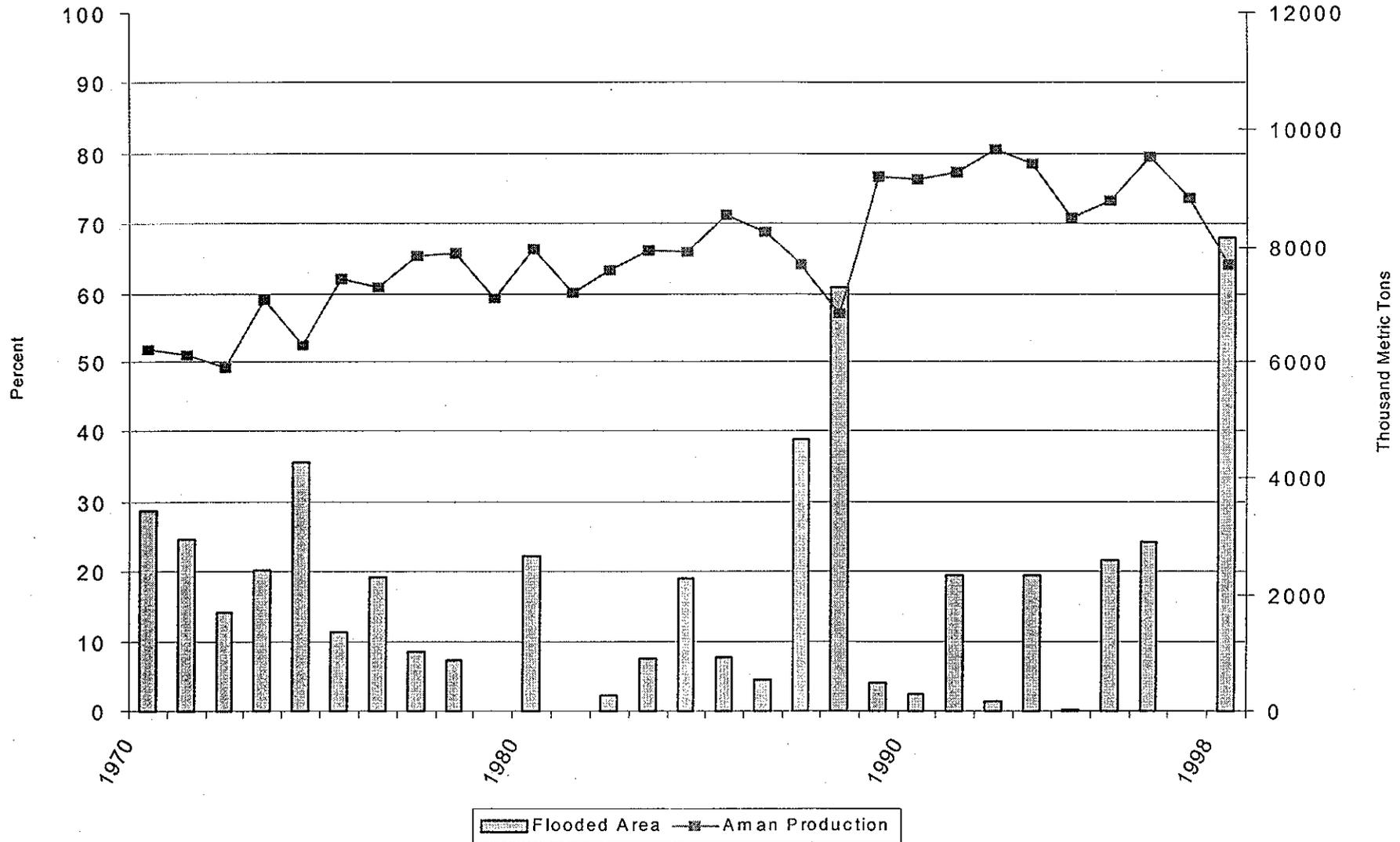


Table 2.1 — Bangladesh Flood Levels and Duration, 1998 and 1999

	1988	1998	Difference 1998 - 1988
Total Flood Affected Area	89970	100250	10280
(percentage of total area)	61	68	7
Peak Water Level (meters)			
Brahmaputra Basin			
Bahadurabad (Jamuna)	20.62	20.37	-0.25
Aricha (Jamuna)	10.58	10.76	0.18
Mymensingh (Old Brahmaputra)	13.69	13.04	-0.65
Dhaka (Buriganga)	7.58	7.24	-0.34
Narayanganj (Lakhya)	6.71	6.93	0.22
Ganges Basin			
Rajshahi (Padma)	19.00	19.68	0.68
Goalondo (Padma)	9.83	10.21	0.38
Bhagyakul (Padma)	7.43	7.50	0.07
Meghna Basin			
Bhairab Bazar (Upper Meghna)	7.66	7.33	-0.33
Average	11.46	11.45	0.00
Days Above Danger Level			
Brahmaputra Basin			
Bahadurabad (Jamuna)	27	66	39
Aricha (Jamuna)	31	68	37
Mymensingh (Old Brahmaputra)	10	33	23
Dhaka (Buriganga)	23	57	34
Narayanganj (Lakhya)	36	71	35
Ganges Basin			
Rajshahi (Padma)	24	28	4
Goalondo (Padma)	41	68	27
Bahgyakul (Padma)	47	72	25
Meghna Basin			
Bhairab Bazar (Upper Meghna)	68	68	0
Average	34	59	25

Notes: Names of rivers are shown in parentheses next to station names

Source: Bangladesh Water Development Board, Annual Flood Report 1998

Although water levels in the 1998 flood did not set records at all flood-monitoring stations, the flood was unprecedented in its duration especially in the central part of Bangladesh. Water levels in the 1998 flood exceeded danger levels much longer than in the 1988 flood, the only other flood to cover more than 40 percent of the land area since 1960. As shown in Table 2.1, average water levels in the Brahmaputra Basin in the north central part of the country exceeded danger levels 33 to 71 days, 23 to 39 more days than in 1988. Peak water levels were similar to those in 1988, however, though 1988 levels were higher in Dhaka and at Aricha.

Initially, the flood caused only relatively minor damage, reducing the *aus* harvest by about three lakh metric tons. However, transplanted *aman* seedlings were also lost, and as the duration of the flood extended, it became increasingly clear that the November/December *aman* crop was at risk. Given that most modern varieties (HYVs) of rice are photo-period sensitive, replanting after August 15 would result in significant yield loss or even total crop failure. Moreover, even local varieties had to be planted before about September 15 to produce satisfactory yields.

FOOD AID AND GOVERNMENT RELIEF EFFORTS

In late August, it became clear that the flood had already caused substantial damage to existing crops, road infrastructure and other assets, and would likely lead to a very large rice production shortfall. Damage to the *aus* rice crop was 300,000 MTs; preliminary estimates of the damage to the *aman* crop increased gradually to 530 thousand MTs towards the end of August. As a result, the Government of Bangladesh launched an international appeal for aid on 26 August 1998. Ultimately, donors pledged 1.083 million MTs of flood relief food aid in addition to 596,000 MTs of regular program food aid.¹

¹ Note, however, that delivery of 300,000 MTs of US 416-B food aid was postponed until after June 30, 1999, after the 1999/2000 Bangladesh fiscal year begins.

Table 2.2 — Monthly Projection of Govt. Stock, Procurement, Import, Offtake of Rice & Wheat During 1998/99

('000 MT)

Month	OPENING STOCK		ADDITION								OFF-TAKE													
			Domestic Procurement		Import						RICE						WHEAT							
	Rice	Wheat	Rice	Wheat	Food Aid		Commercial		Total Import		Priced		Non-Priced			Rice Total	Priced		Non-Priced				Wheat Total	
					Rice	Wheat	Rice	Wheat	Rice	Wheat	Rice	Wheat	OMS ^a	Others	VGF		GR	Others	OMS ^a	Others	FFW	VGD		FFE
July '98	352	278	62	4	0	10	40	0	40	10	0.0	11.1	0.1	2.6	0.3	14.1	0.0	8.3	7.0	0.9	0.0	0.0	0.4	16.6
Aug	439	274	9	0	1	0	24	0	25	0	0.0	11.2	10.5	20.4	1.9	44.0	0.0	8.9	5.1	28.3	0.0	0.3	0.8	43.3
Sept	428	230	4	0	1	15	13	0	14	15	0.0	11.6	17.0	30.8	7.1	66.5	0.0	9.1	7.4	14.6	0.0	0.0	1.8	32.9
Oct	379	211	0	0	7	37	0	143	7	180	0.0	10.4	30.8	6.6	6.6	54.4	0.0	8.9	1.5	17.9	0.0	28.5	4.0	60.8
Nov	331	329	0	0	11	127	9	118	20	245	0.0	10.3	28.1	1.8	9.5	49.7	0.0	9.4	2.4	17.0	0.0	26.9	29.8	85.5
Dec	301	487	1	0	4	357	17	68	20	425	0.1	10.9	20.0	0.7	5.9	37.6	0.0	9.4	16.6	17.6	2.7	59.5	18.2	124.0
Jan '99	285	787	2	0	0	214	74	0	74	214	0.4	11.6	0.1	0.8	5.5	18.4	0.0	9.1	70.8	14.6	75.2	0.3	3.6	173.6
Feb	342	826	5	0	33	179	30	76	63	255	0.4	12.2	20.0	0.6	3.0	36.2	0.0	10.0	76.1	17.2	5.9	60.1	0.7	170.0
Mar	373	910	25	33	0	111	41	25	41	136	4.4	11.2	20.6	0.2	3.8	40.2	2.4	10.5	108.2	18.3	70.4	61.0	3.4	274.2
Apr	398	803	25	125	1	36	56	0	57	36	4.0	11.3	20.1	0.2	2.2	37.8	0.9	9.7	114.4	17.2	0.6	59.1	1.6	203.5
May	442	759	100	50	0	60	17	0	17	60	5.0	12.0	0.0	3.0	1.0	21.0	5.0	13.3	200.0	17.0	121.0	0.0	33.0	389.3
June '99	537	479	100	13	0	15	0	0	0	15	1.0	11.0	0.0	2.0	1.0	15.0	4.0	11.7	94.0	17.0	120.0	0.0	23.0	269.7
Total			332	225	59	1161	320	429	379	1590	15	135	167	70	48	435	12	118	703	198	396	296	120	1843

Source: FPMU, Ministry of Food.

a: includes Fair Price Card Sales.

Major flood relief efforts began in August 1998 through the provision of 20,400 MTs of rice through Gratuitous Relief (GR) in flood-affected thanas and an additional 30,800 MTs of rice in September. In addition, the Vulnerable Group Feeding (VGF) program began on a large scale in August with an initial distribution of 13 lakh cards entitling the holder to 8 kgs of rice per month. During August and September, a total of 27,500 MTs of rice were distributed through this program. At 8 kgs/card, an estimated 1.35 and 2.13 mn households received VGF rations in August and September, respectively. Almost no wheat was distributed through relief channels in the initial months of the flood (Table 2.2).

In late September, the World Food Programme (WFP) strongly urged the Government of Bangladesh to expand the VGF program to 4 million cards (households) with an allotment of 32 kgs of wheat per card. The WFP urged that this expansion take effect for both September and October, but the 141,680 MTs of wheat needed for two months distribution would have had to come almost exclusively from government stocks as little food aid had arrived. Recognizing the urgent need for more relief to poor, flood-affected households, the Government of Bangladesh agreed to the expansion in the number of VGF cards to 4 million cards. However, given that delays in food aid arrivals were likely, the allotment was reduced to 8 kgs of rice and 8 kgs of wheat per card for October only, postponing a decision on November distribution until more definite information on food aid arrivals was available (Table 2.3).

Initial estimates of foodgrain availability greatly overestimated the arrivals of foodgrain because of unforeseen delays in shipments and unloading. By the end of October, only 52 thousand MTs of food aid had actually arrived, 71 thousand MTs less than assumed by the WFP in its late-September analysis. During November only an additional 25 thousand MTs of food aid wheat arrived and were available for distribution, so that by the end of November, cumulative food aid arrivals were only 77 thousand MTs,

Table 2.3 — Vulnerable Group Feeding Distribution, 1998-99

Month	Number of Cards (millions)	Ration per card			Foodgrain Distributed			Estimated Number of Recipients ^a (mn HHs)	Actual Distribution as % of Target ^b (percent)
		Rice (kgs)	Wheat (kgs)	Total (kgs)	Rice (000 MTs)	Wheat (000 MTs)	Total (000 MTs)		
July/August	0.39	16	0	16	10.5	0.3	10.8	0.68	172.6
September	0.67	16	0	16	17.0	0.0	17.0	1.06	158.6
October	4.00	8	8	16	30.8	28.5	59.3	3.71	92.7
November	4.00	8	8	16	28.1	26.9	55.0	3.44	85.9
December	4.20	5	15	20	20.0	59.5	79.5	3.98	94.6
January '99	0.00			0	0.1	0.3	0.4		
February '99	4.20	0	16	16	20.0	61.0	81.0	5.06	120.5
March '99	4.20	5	15	20	20.6	61.0	81.6	4.08	97.1
April '99	4.20	5	15	20	20.1	59.1	79.2	3.96	94.3

Note: ^a Estimated number of recipients is equal to the total grain distributed divided by the official ration per card

^b Target distribution is calculated ration per card times the number of cards

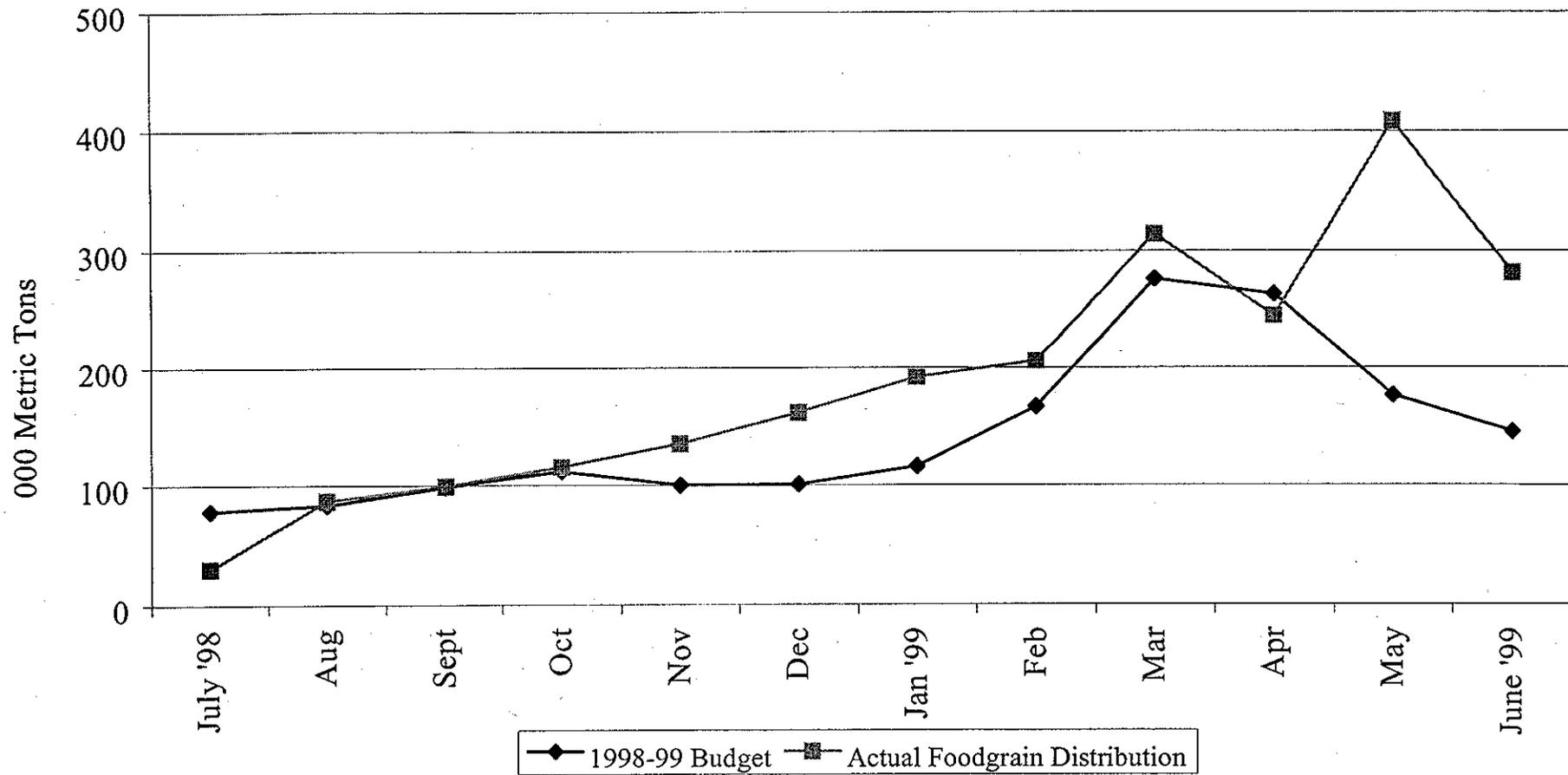
Source: Calculated from data from the Ministry of Relief and the Ministry of Food, Government of Bangladesh.

compared with the WFP-projected 431 thousand MTs. Fortunately, the Government of Bangladesh's own commercial imports of 224 thousand MTs of wheat arrived on six ships and were unloaded from mid-October to early November, 1998 permitting a continuation of the expanded VGF program in November, as well. The VGF program was again expanded in December 1998 to cover a total of 4.2 million households with an increase in the ration size to 20 kgs per card (5 kgs of rice and 15 kgs of wheat) for the month of Ramazan. No distribution of foodgrain through the VGF program took place in January, but the program restarted in February with a ration size for February through April of 15 kgs of wheat and 5 kgs of rice per card.

Altogether, planned off take for 1998/99 was increased from 1.718 million MTs to 2.279 million MTs. Through December, however, limited government wheat stocks, uncertainties about rice supplies after the *aman* harvest, and financial constraints limited total distribution to 630 thousand MTs, only 26 thousand MTs more than in the pre-flood government distribution for this period (Figure 2.2). Rice distribution was greater than originally planned only in August and September, mainly because of VGF distribution. Thereafter, it was significantly less than planned, especially in March and April as originally budgeted OMS sales did not take place (Figure 2.3). The story for wheat is the exact opposite. Actual wheat distribution was below initial plans in August and September, and exceeded initial plans every month thereafter (Figure 2.4). To a large extent, additional foodgrain distributed through VGF and other relief channels was offset by reductions in previously budgeted OMS rice sales and a postponement of planned Food For Education (FFE) disbursements. Later, disbursements for Food For Work fell behind schedule so that total distribution of foodgrain through April 1999 was only 1.578 million MTs, 69 percent of the target for the entire fiscal year.

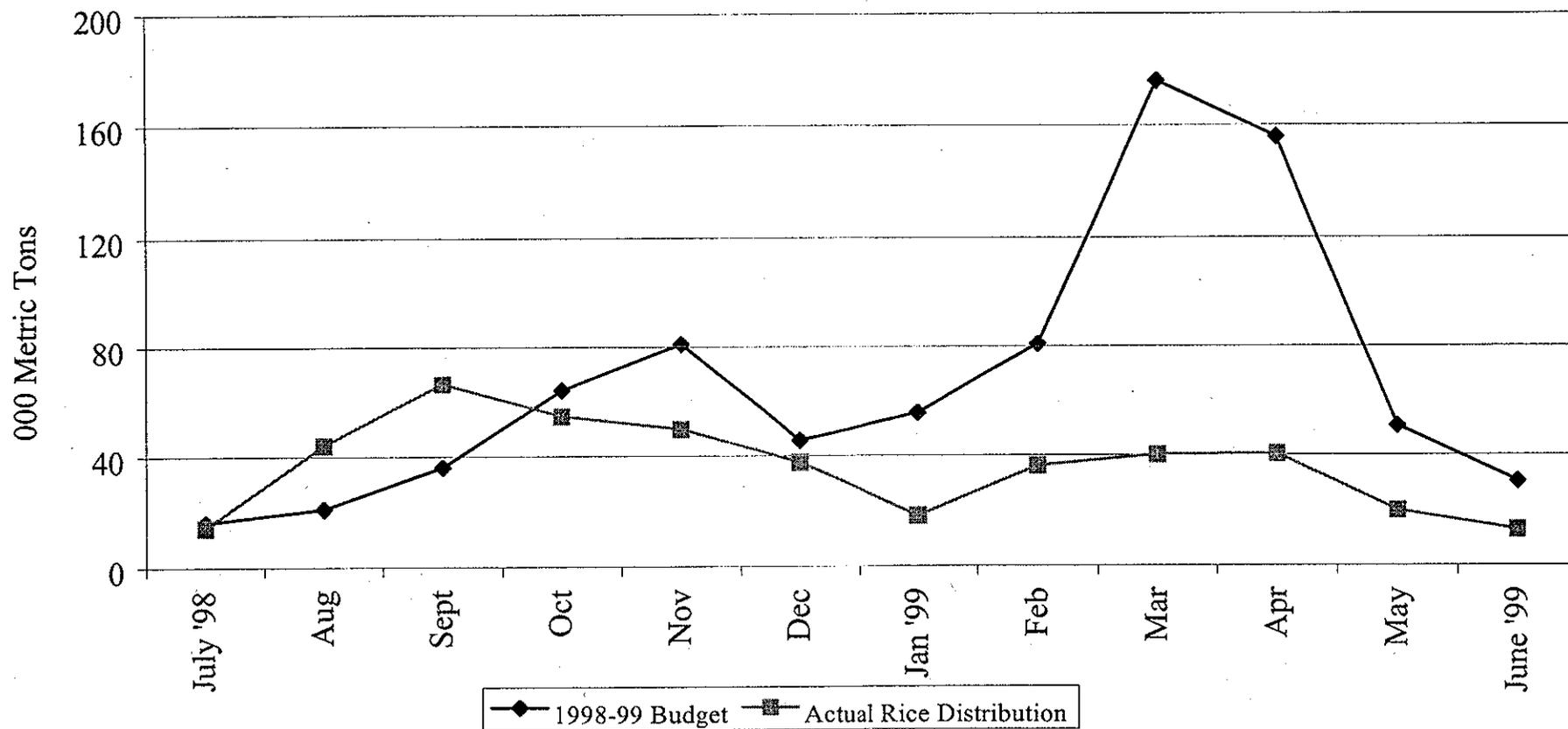
The VGF program accounted for 29.3 percent of total distribution of foodgrain from July 1998 through April 1999: 167,000 MTs of rice and 296,000 MTs of wheat. Gratuitous relief accounted for 65,000 MTs of rice and 7,000 MTs of wheat, 4.6 percent

Figure 2.2 — Government Budgeted and Actual Distribution of Total Foodgrain, 1998-99



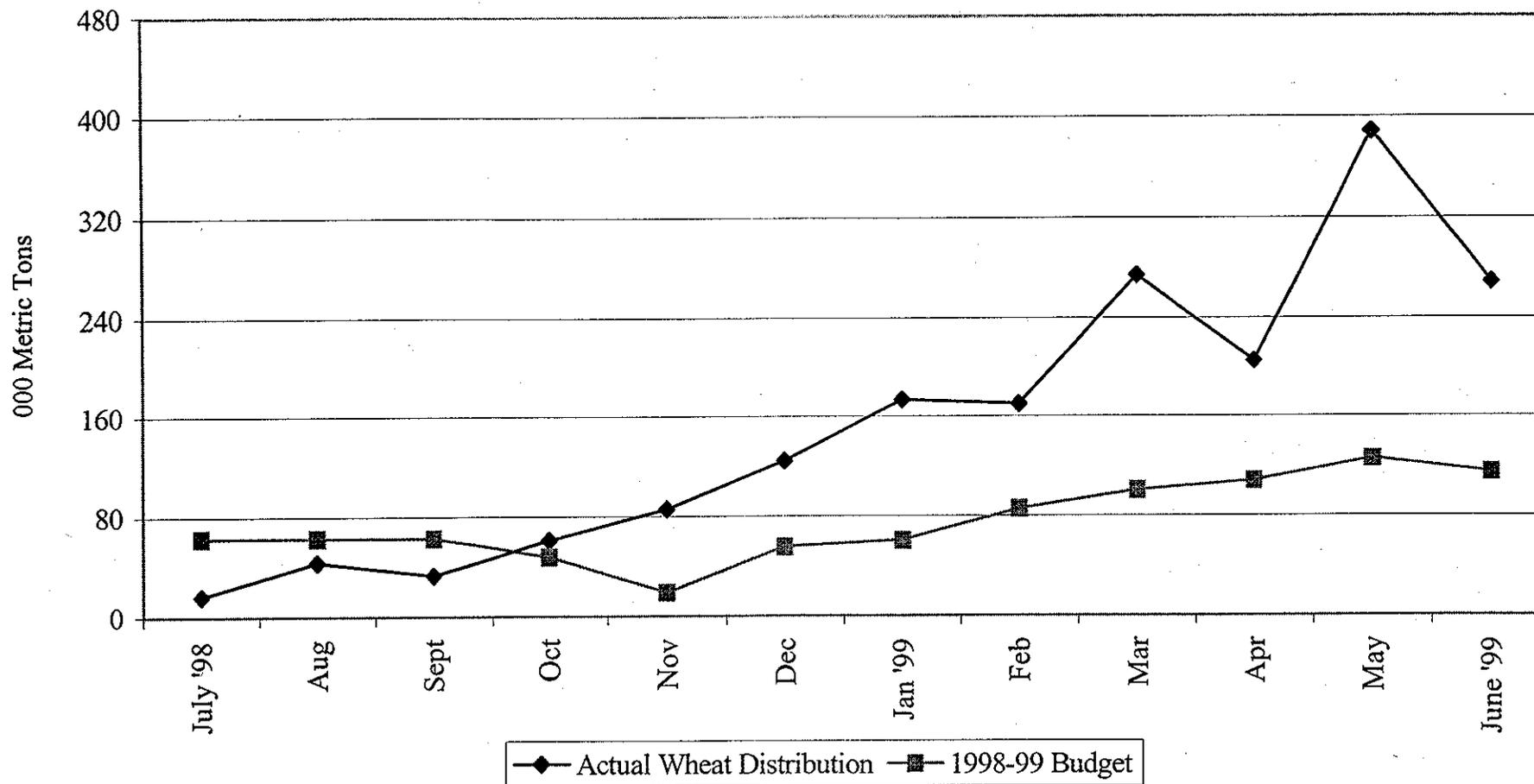
Note : Actual distribution includes May 1999 estimates of projected distribution for May to June 1999.

Figure 2.3 — Government Budgeted and Actual Distribution of Rice, 1998-99



Note : Actual distribution includes May 1999 estimates of projected distribution for May to June 1999.

Figure 2.4 — Government Budgeted and Actual Distribution of Wheat, 1998-99



Note : Actual distribution includes May 1999 estimates of projected distribution for May to June 1999.

Table 2.4 — Foodgrain Distribution by Channels, Budget and Actual 1998/99 (thousand MTs)

	Budget 1998/99			Total Planned 1998/99*			Actual (through April 1999)		
	Rice	Wheat	Total	Rice	Wheat	Total	Rice	Wheat	Total
<i>Priced Channels</i>									
Essential Priorities(EP)	124	85	209	10	7	17	106	72	178
Open Market sales(OMS)	200	0	200	15	12	27	9	3	12
Other Priority(OP)	6	6	12	2	3	5	6	10	16
Large Employee Industries(LEI)	0	15	15	0	1	1	0	11	11
<i>Non-Priced Channels</i>									
Food for work(FFW)	125	400	525	0	703	703	1	409	410
Vulnerable Group Development(VGD)	60	120	180	10	198	208	10	164	174
Food for Education(FFE)	150	200	350	0	396	396	0	154	154
Test Relief (TR)	40	16	56	0	20	20	0	50	50
Vulnerable Group Feeding(VGF)	20	10	30	167	296	463	167	296	463
Gratuitous Relief (GR)	66	24	90	3	7	10	65	7	72
Others	22	29	51	228	201	429	38	0	38
Total	813	905	1718	435	1844	2279	402	1176	0

Note: * Actual distribution includes May 1999 estimates of projected distribution for May to June 1999.

Source: FPMU, MOF.

of total distribution. Food for Work, which began on a large scale only in January 1999 when soil conditions permitted heavy earthwork, accounted for 26.0 percent of distribution; Test Relief accounted for another 3.2 percent. In all, these four relief channels accounted for 63.1 percent of distribution.

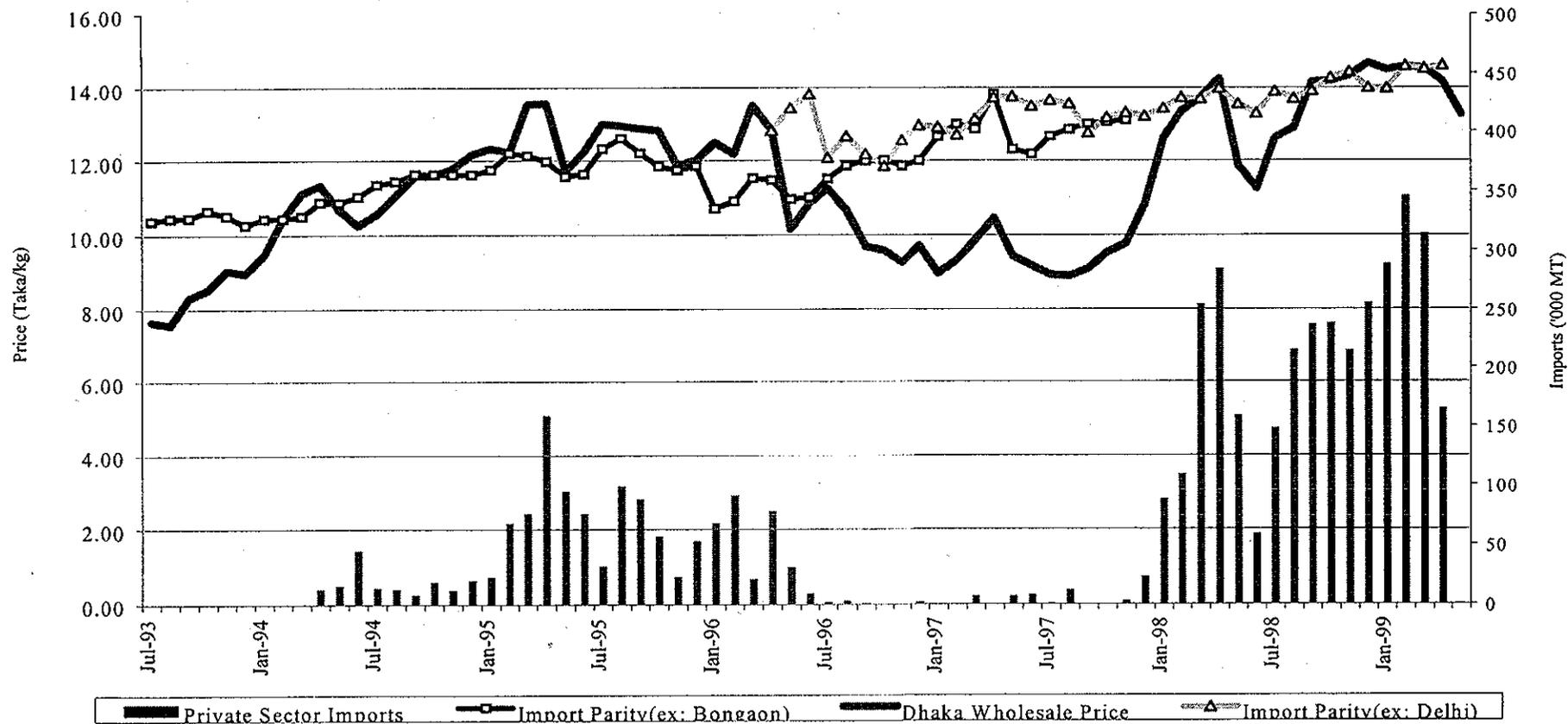
Continued high levels of off take are planned for the rest of fiscal year 1999, with Food for Work wheat off take projected at 681,000 MTs, 29.4 percent of total planned off take of foodgrain (2.315 million MTs) for the year (Figures 4 and 5). Overall, increases in Food For Work (1.79 lakh MTs) and Vulnerable Group Feeding (4.33 lakh MTs) are the major components of the currently planned 5.61 lakh MT increase in 1998/99 food distribution compared with the original budget (Table 2.4).

RICE POLICY AND PRIVATE SECTOR IMPORTS

Government rice policy was based on the realization that government imports and food aid alone would not be sufficient to make up the projected 1.9 million MT shortfall in food grain supply before the wheat and *boro* harvests in April to June of 1999. Thus, the government encouraged private sector imports of rice, a policy that pre-dated the flood.

As shown in Figure 2.5, market prices of rice had been high in the first half of 1998, even before the flood because of a poor 1997/98 *aman* rice harvest in November/December 1997. As domestic prices rose beginning in December 1997, it became profitable for the private sector to import rice from India. Government policy encouraged private sector imports of rice through removal of tariffs on imports, limitations on open market sales, instructions to expedite clearance of rice imports through customs and abstaining from re-imposition of anti-hoarding laws. As a result, during the first five months of 1998, the private sector imported 8.94 lakh MTs of rice from India, mainly by truck and rail across land borders.

Figure 2.5 — Rice Prices and Quantity of Private Rice Imports in Bangladesh, 1993-99



Note : Price data for May 1999 is upto the 1st week only; private sector imports are as of 6th May,1999. From November the carrying cost has increased by 1.1 Tk/kg to 4.1 Tk/kg.

Source : Dorosh (1999), calculated using data from FPMU, CMIE (1998,1999) and Baulch, Das et. al, (1998);

With the onset of the *boro* rice harvest in May, the national average wholesale price of coarse HYV rice fell from a peak of 14.2 Tk/kg in April to 12.0 Tk/kg in June and private imports slowed to 59,000 MTs in June. During the flood, prices again rose to import parity. By continuing its policy of encouraging private sector imports, the government enabled the private sector to import more than 2 lakh MTs of rice per month from August 1998 to March 1999, with private rice imports reaching 288 thousand MTs in January and 345 thousand MTs in February, 1999.²

Thus, because of the poor 1997/98 *aman* harvest and the flood-damaged *aus* and *aman* harvests in 1998/99, Bangladesh rice prices (wholesale Dhaka) remained close to ex: India import parity prices (the price of rice exported from India adjusted for 3 Tk/kg transport and marketing margin between the Delhi wholesale market and wholesale Dhaka) for most of calendar year 1998.³ Wholesale prices after the flood were in fact remarkably stable. The national average wholesale prices of coarse rice remained in the range of 14.14 to 14.83 Tk/kg from September 1998 through mid-April 1999.⁴

Note that the large amount of private sector rice imports during 1998 and early 1999 was unprecedented in Bangladesh. Prior to 1994, when international trade in rice was liberalized, private sector imports were not permitted. And for about 1 and ½ years prior to the poor *aman* harvest in 1997/98, rice prices in Bangladesh had been significantly below the cost of rice imported from India. As a result, there were

² The extremely high figures for recorded rice imports in early 1999 may overstate actual rice imports. It is possible that other commodities were imported using false invoices to avoid import tariffs and other surcharges.

³ In Figure 4, a marketing margin of 2 Tk/kg is used to calculate the West Bengal import parity prices shown for July, 1993 to September, 1997.

⁴ Note that Figure 4 shows that domestic prices were 0.5 to 2.0 Taka below ex: Delhi import parity prices from May through August 1998, yet private sector imports continued. The main explanation is that rice exports during this period originated mainly from West Bengal's rabi (*boro*) crop, where prices are generally 1.5 to 2.0 Taka/kg less than Delhi prices during this season (as evidenced in the data from 1996 and 1997).

essentially no private sector imports of rice from June 1996 to December 1997. The only other period of large-scale private sector rice trade was April 1994 to June 1996, when 1307,000 MTs were imported, about 39 percent of the total imported in the sixteen month period from January 1998 through April 1999 (See Dorosh, 1999).

GOVERNMENT INTERVENTIONS IN THE DOMESTIC RICE MARKET

In comparison with private sector rice imports, government interventions in the domestic rice market were small, only 399 thousand MTs from July 1998 through April 1999. Private sector rice imports, equal to 2.42 mn MTs in this period, were thus 6.1 times larger than government rice distribution. 57.7 percent of rice distribution was targeted to flood-affected households through Vulnerable Group Feeding (41.5 percent) and Gratuitous Relief (16.2 percent). Total rice distribution during these months, however was only slightly above the original target, in part because of difficulties encountered in procuring rice either through domestic or international tenders.

One reason for the relatively small amounts of rice distribution in this period was that the Ministry of Food faced substantial difficulties in its efforts to procure rice. Problems related to the instability of prices and unreliability of suppliers limited actual procurement through commercial international tenders to only 94,670 MTs of procurement out of 3.1 lakh MTs in contracts as of 8 March 1999, (31 percent of contracted amount). Local tenders faced similar problems as five local tenders for 2.95 lakh MTs of rice resulted in only 17 thousand MTs of procurement through from 1.74 lakh MTs contracted (10 percent of the contracted amount) through 15 March 1999. Efforts to procure grain through the Bangladesh State Trading Corporation likewise resulted in little procurement.

Nonetheless, in spite of the problems with procurement, the Ministry of Food, through cautious management, including a delay in beginning OMS and ration shop sales of rice until December 1998, was able to maintain rice stocks at 3.98 lakh MTs at the beginning of April 1999. With a good *boro* harvest in April and May, market prices fell

by 19 percent, from 14.46 Tk./kg (*aman* coarse rice) in the third week of April to 11.74 Tk./kg (*boro* HYV rice) in the second week of May (DAM data), thus bringing to an end a nine-month period of high rice prices and concerns about post-flood food availability.

DOMESTIC WHEAT MARKETS

Somewhat surprisingly, the private sector continued to import substantial volumes of wheat following the flood, even though large amounts of wheat food aid flowed into Bangladesh and distribution through VGF and Food for Work was expanded. In January and February, 1999, a total of 90,000 MTs of wheat were imported, raising total wheat imports from July 1998 through February 1999 to 624,000 MTs, 435,000 MTs more than in the same period in 1997/98. As shown in Figure 2.6, domestic wheat prices were slightly below calculated import parity prices based on wheat export prices in the United States (U.S. Hard Red Winter, No. 2, FOB Gulf of Mexico). However, much of the imports in early 1999 came from other exporters, including Turkey, Australia and Central Asian countries (quality and cost of transport differences likely account for the deviation between calculated import parity and domestic prices of wheat⁵). Thus, given the large private sector imports, it appears that food aid inflows did not provide a disincentive for domestic wheat producers, at least in early 1999.

Overall, supply of wheat in Bangladesh was 4.01 million MTs in 1998/99, an increase of 52 percent over 1997/98.⁶ The large increase in apparent wheat consumption may be explained by several factors: 1) the effects of high rice prices on wheat consumption, (as determined by the cross-price elasticity of demand for wheat for a change in rice prices); 2) the adverse income effects of the flood, which may have induced some households to substitute wheat for rice (given a negative income elasticity

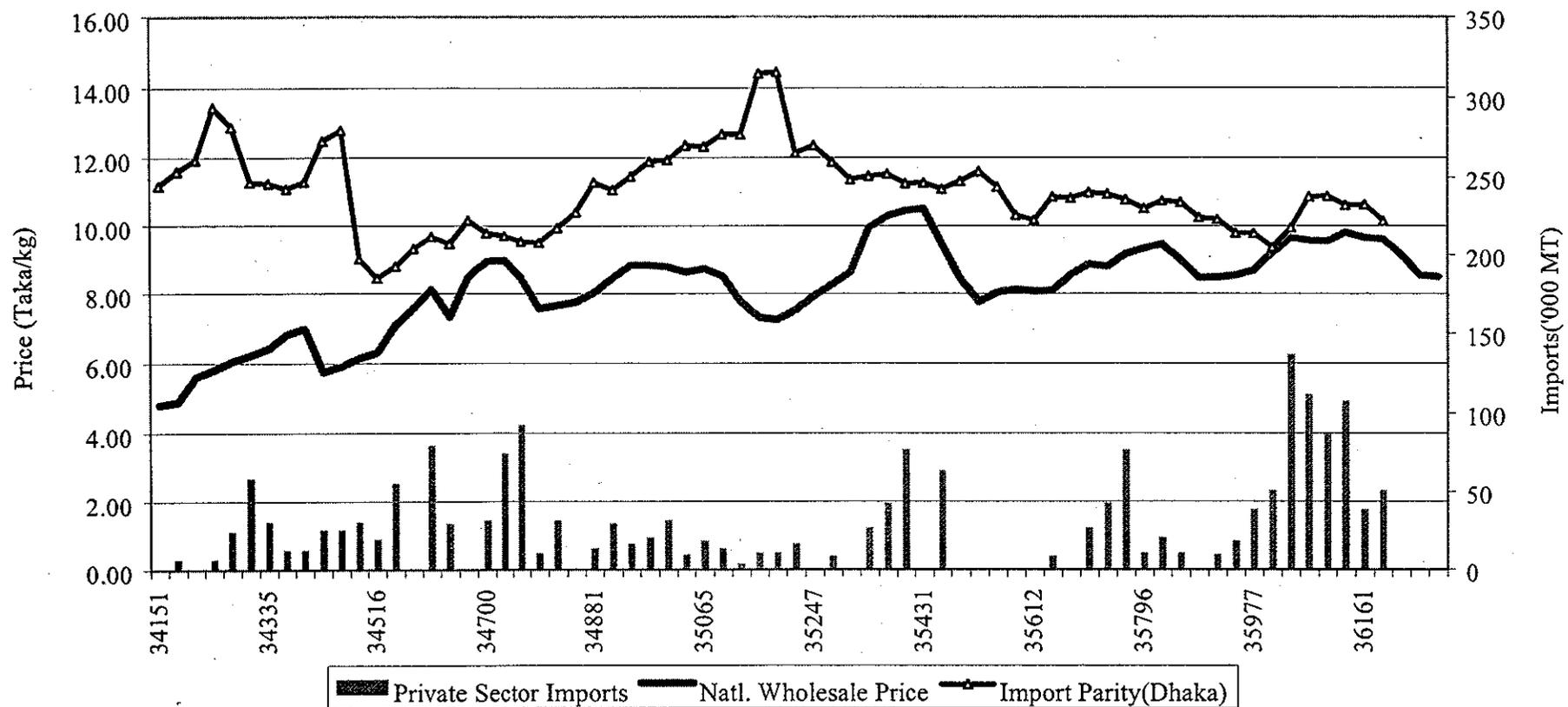
⁵ Reportedly, much of the wheat imported by the private sector during the flood was lower-quality "feed" wheat, brought into Bangladesh with false papers (personal communication with private sector importers).

⁶ These figures, given in Table 3.1 are preliminary. It is likely that net PFDS distribution may be somewhat smaller than indicated.

of demand for wheat in rural areas); 3) the secular increase in wheat consumption as tastes for wheat change over time, in part due to the use of higher protein wheat for milling into flour for baking; and 4) the positive income effects of wheat transfers to very poor, flood-distressed rural households.

A detailed investigation of these factors is beyond the scope of this paper. Some light on these issues is shed in the next section that examines estimates of 1998/99 per capita availability of foodgrain in Bangladesh.

Figure 2.6 — Wheat Prices and Quantity of Private Wheat Imports in Bangladesh, 1993-99



Note : Domestic price data for May 1999 is upto the 1st week only; Import parity(Dhaka) price is based on US # 2 HRW and includes import tariffs.

Source : FPMU, DAM, USDA AND CMIE(1999).

3. POLICY ISSUES

As discussed above, the evidence indicates that the Government of Bangladesh, in cooperation with donors and the private sector, successfully managed the effects of the flood, avoiding a major crisis in food supply and helping to boost household food security. In evaluating the policy measures taken and lessons for ensuring food security in the future, three major issues stand out. First, given that per capita availability of foodgrain actually rose during 1998/99, was the amount of food aid excessive? Second, what can be done to better meet the needs of poor households in the period immediately following a major disaster or production shortfall, before food aid arrives? Finally, can private sector trade, particularly trade with India, be relied upon to meet foodgrain needs in the event of another major production shortfall?

WAS THERE TOO MUCH FOOD AID AFTER THE 1998 FLOOD?

As shown in Figure 3.1, food aid commitments to Bangladesh in 1998/99 were considerably above the levels of food aid in recent years. In contrast to the long-term declining trend, expected food aid arrivals in 1998/99 are 1.22 million MTs, 671,000 MTs greater than the total in 1997/98. As noted above, more than four lakh MTs of the 1.083 million MTs of flood relief and rehabilitation aid pledged for 1998/99 is scheduled to arrive in fiscal year 1999/2000.

This massive increase in food aid was in response to the massive needs for flood relief and rehabilitation. Official data on food availability per capita indicate that in 1998/99, 176.4 kgs/capita were available⁷, an 8 percent increase over the average per capita availability of

⁷ This figure is based on a projected *boro* harvest of 8.2 million MTs.

Figure 3.1 — Food Aid Levels

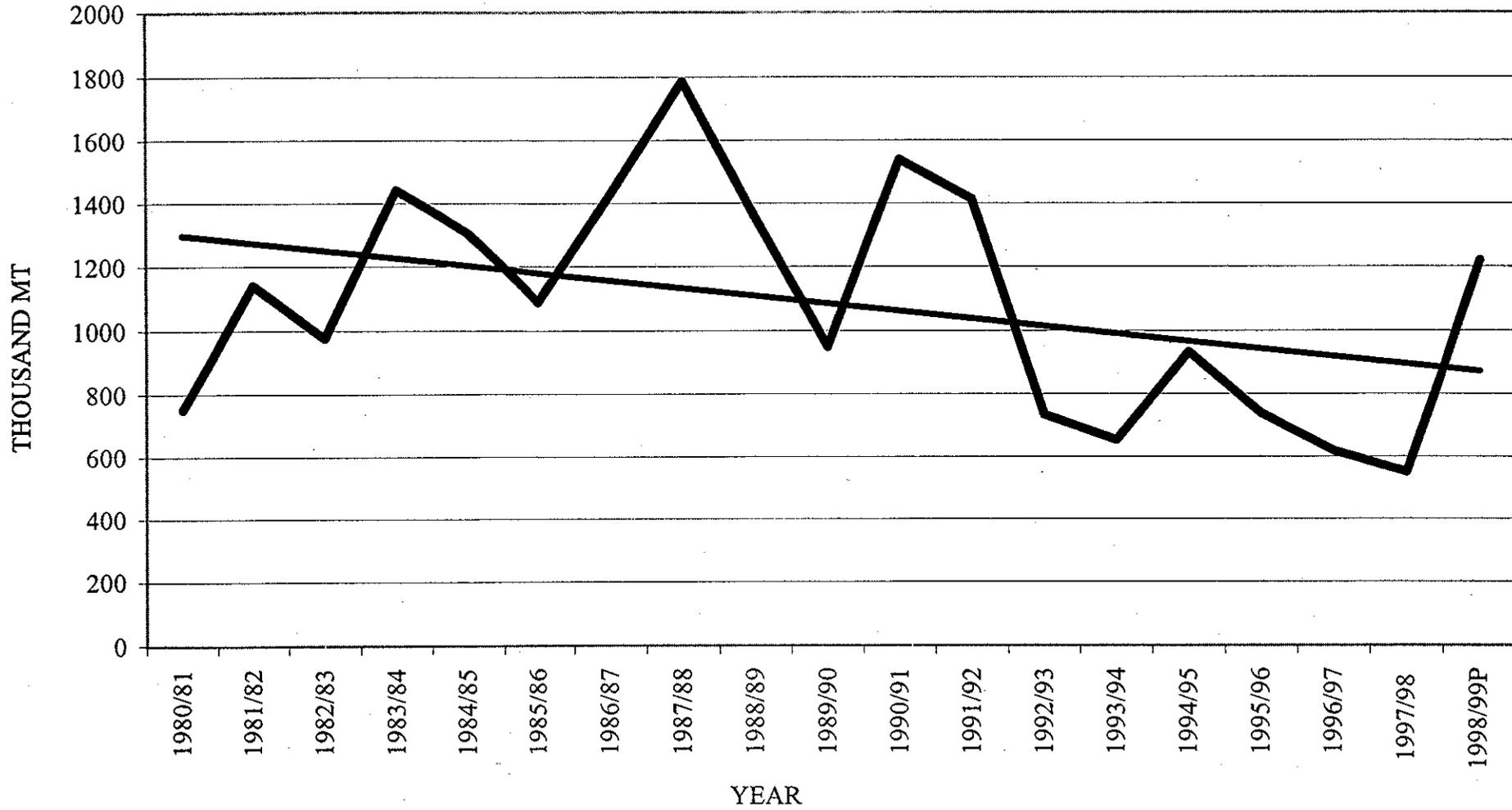


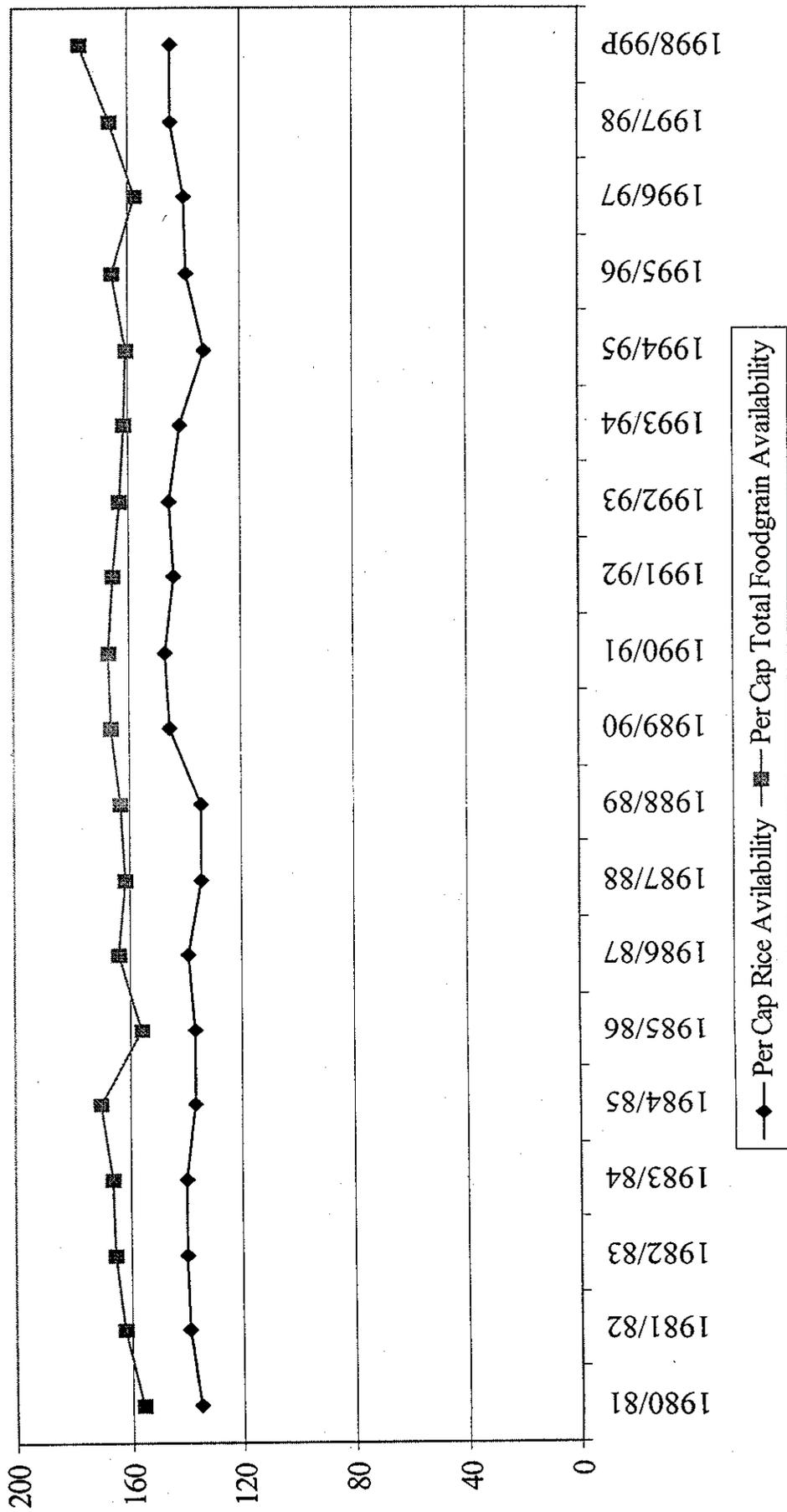
Table 3.1 — Total Foodgrain Availability from 1980/81 to 1998/99

Year	Rice Production (^{'000} MT)	Net PFDS Distribution (^{'000} MT)	Private Imports (^{'000} MT)	Net Rice Availability (^{'000} MT)	Wheat Production (^{'000} MT)	Net PFDS Distribution (^{'000} MT)	Private Imports (^{'000} MT)	Net Wheat Availability (^{'000} MT)	Total Foodgrain Availability (^{'000} MT)	Per Capita Rice Availability (kg/cap)	Per Capita Wheat Availability (kg/cap)	Per Capita T.Fgrain Availability (kg/cap)
1980/81	13,880	-327	0	12,165	1,092	852	0	1,835	14,000	135.3	20.4	155.7
1981/82	13,629	482	0	12,748	967	1,282	0	2,153	14,901	138.7	23.4	162.1
1982/83	14,215	328	0	13,121	1,095	1,415	0	2,401	15,522	139.7	25.6	165.3
1983/84	14,509	358	0	13,416	1,211	1,427	0	2,517	15,933	139.7	26.2	166.0
1984/85	14,623	266	0	13,426	1,464	1,948	0	3,265	16,692	136.9	33.3	170.1
1985/86	15,038	153	0	13,687	1,042	1,039	0	1,977	15,664	136.5	19.7	156.2
1986/87	15,406	358	0	14,223	1,091	1,574	0	2,555	16,779	138.8	24.9	163.7
1987/88	15,413	180	0	14,052	1,048	1,948	0	2,891	16,943	134.2	27.6	161.8
1988/89	15,544	326	0	14,316	1,021	2,199	0	3,117	17,433	134.0	29.2	163.2
1989/90	17,856	-243	0	15,827	890	1,447	0	2,248	18,075	145.3	20.6	166.0
1990/91	17,852	244	0	16,311	1,004	1,345	0	2,248	18,559	146.9	20.3	167.2
1991/92	18,252	-180	0	16,246	1,065	1,509	0	2,468	18,714	143.8	21.8	165.6
1992/93	18,341	243	0	16,750	1,176	597	355	2,010	18,761	145.7	17.5	163.1
1993/94	18,041	202	74	16,512	1,131	1,008	312	2,338	18,851	141.1	20.0	161.1
1994/95	16,833	83	583	15,816	1,245	1,213	1,013	3,347	19,162	132.9	28.1	161.0
1995/96	17,687	240	650	16,808	1,369	1,133	850	3,215	20,023	138.9	26.6	165.5
1996/97	18,883	226	15	17,236	1,454	550	237	2,096	19,331	140.1	17.0	157.2
1997/98	18,854	130	1,007	18,106	1,803	875	142	2,640	20,745	144.8	21.1	166.0
1998/99P	17,617	238	2,300	18,393	1,850	1,642	700	4,007	22,400	144.8	31.6	176.4
Ave 1980s	14,695	236	0	13,462	1,115	1,520	0	2,524	15,985	137.1	25.6	162.7
Ave 1990-98	18,067	105	259	16,624	1,237	1,075	323	2,512	19,136	142.2	21.5	163.6

Note: 1998/99 total rice production assumes *boro* production as 8.2 million metric ton.

Source : FPMU, MOF.

Figure 3.2 — Per Capita Food Grain Availability in Bangladesh, 1980/81 to 1998/99



the first eight years of the decade (Table 3.1 and Figure 3.2). As indicated in Figure 3.3, though the increase in *boro* production is largely responsible for the increase in total foodgrain availability in the 1980s and most of the 1990s, the rise in foodgrain availability in 1998/99 is largely due to non-domestic sources (private sector rice and wheat imports, government commercial wheat imports and food aid).

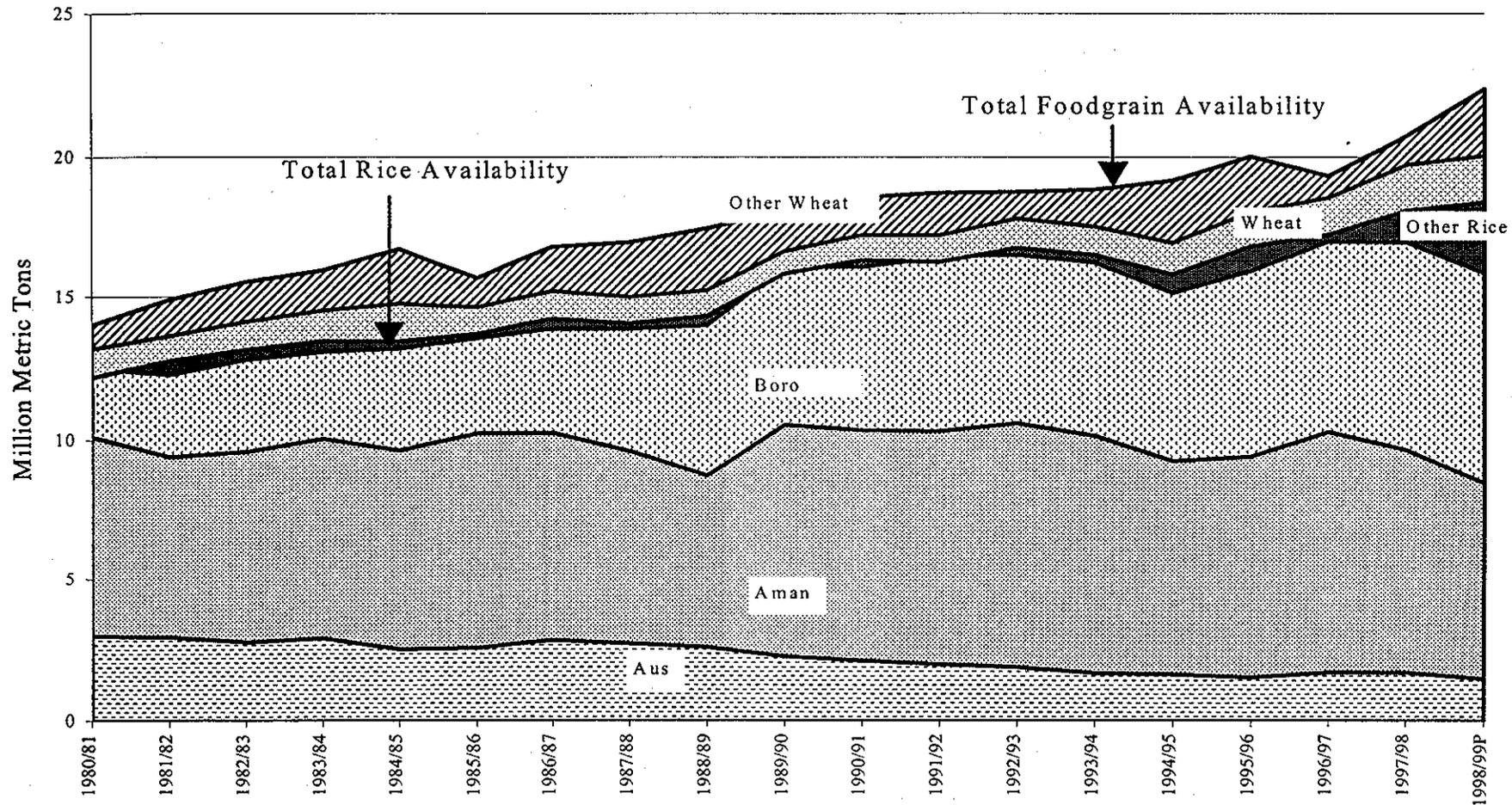
The reported large increase in per capita availability of foodgrain in 1998/99 is surprising and, if true, could be interpreted as an indication that too much food aid had been imported into the country. The price evidence suggests, however, that the increase in actual consumption of foodgrain was likely much less than the increase in per capita availability given in Table 3.1. Moreover, an increase in availability or even consumption per capita is not necessarily an indication that the programs were excessive.

Table 3.2 shows estimates of per capita availability along with prices from 1996/97 through 1998/99. Estimated per capita rice consumption, (assuming no change in private stocks between fiscal years: July 1 through June 30), was only 140.1 kilograms per person in 1996/97, compared with 143.8 kilograms per capita in 1997/98 and preliminary estimates of 144.1 kilograms per capita in 1998/99. However, real prices of rice were considerably higher in 1997/98 and 1998/99 than in 1996/97 (Figure 3.4). The real rice price in 1998/99 was only 13.75 Tk/kg⁸ (in mid-1998 prices), 31.2 percent higher than in 1997/98. Thus, given higher prices, rice demand should have been lower, not higher in 1997/98 and 1998/99 as compared with 1996/97.

Accepting the 1996/97 figures as a reliable base, the fourth column in Table 3.2 provides a plausible adjustments to production, import and private stock change figures to make consumption per capita figures consistent with the 1996/97 levels and an own-price

⁸ Preliminary data, July 1998-April 1999.

Figure 3.3 — Total Food Grain Availability of Bangladesh, 1980/81 to 1998/99



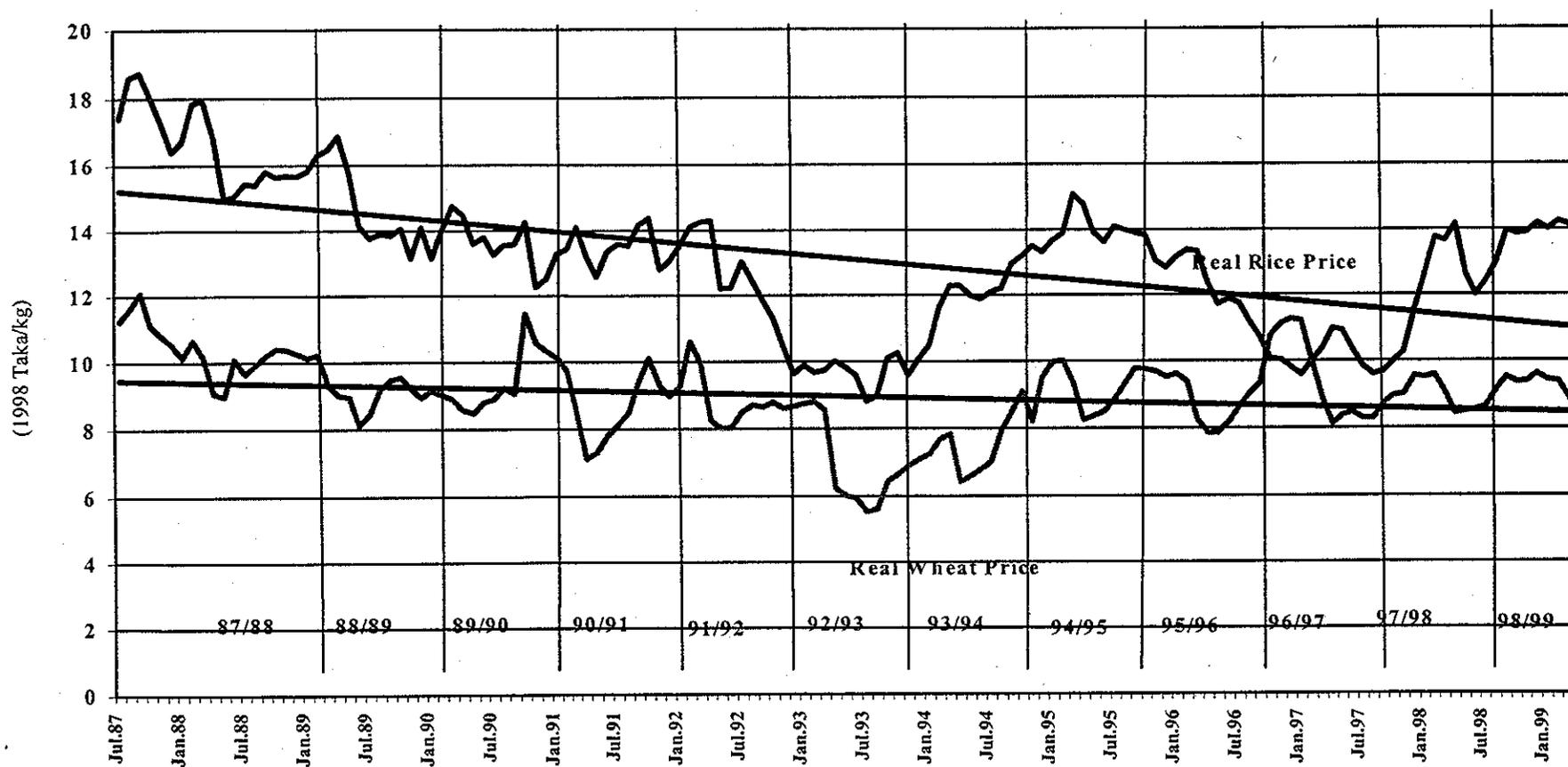
Note : Other Rice denotes net PFDS Distribution and Private Imports and Other wheat denotes net PFDS Distribution
 Source : FPMU, MOF.

Table 3.2 — Estimates of Foodgrain Availability and Consumption, 1996/97 - 1998/99

	Official 1996/97	Official 1997/98	Official 1998/99	Low Prod Low Imps 1998/99
Production	20.337	20.506	19.366	18.866
<i>Aus</i>	1.871	1.874	1.616	1.616
<i>Aman</i>	9.552	8.850	7.700	7.200
<i>Boro</i>	7.460	7.979	8.200	8.200
Wheat	1.454	1.803	1.850	1.850
Net Production	18.303	18.455	17.429	16.979
Private Imports	0.237	1.149	2.924	2.624
Rice	0.015	1.007	2.300	2.000
Wheat	0.222	0.142	0.624	0.624
Domestic Rice Procurement	0.513	0.399	0.230	0.230
Domestic Wheat Procurement	0.103	0.217	0.204	0.204
Government Rice Sales	0.739	0.529	0.468	0.468
Government Wheat Sales	0.653	1.092	1.846	1.846
Net PFDS Market Injections	0.776	1.005	1.880	1.880
Rice	0.226	0.130	0.238	0.238
Wheat	0.550	0.875	1.642	1.642
Total Availability (mn MTs)	19.316	20.609	22.234	21.484
Rice	17.236	17.970	18.302	17.552
Wheat	2.081	2.640	3.931	3.931
Total Availability (kgs/person)	157.0	164.9	175.1	169.2
Rice	140.1	143.8	144.1	138.2
Wheat	16.9	21.1	31.0	31.0
Change in Private Stock (mn MTs)	0.000	0.000	0.000	0.696
Rice	0.000	0.000	0.000	0.696
Wheat	0.000	0.000	0.000	0.000
Consumption (kgs/person)	157.0	164.9	175.1	163.7
Rice	140.1	143.8	144.1	132.7
Wheat	16.9	21.1	31.0	31.0
Average Wholesale Price				
Rice (Tk/kg)	9.79	11.48	14.03	
Wheat (Tk/kg)	8.99	8.74	9.34	
Rice (1998 Tk/kg)	10.48	11.65	13.75	
Wheat (1998 Tk/kg)	9.60	8.87	9.14	

Note: Low Production, Low Import scenario assumes and own-price elasticity of demand for rice of -0.20.

Figure 3.4 — National Average Real Wholesale Price of Rice and Wheat, 1987-99



Note: Prices are deflated using the non-food Dhaka middle-income Cost of Living Index (and the national CPI after June 1998).

Source : FPMU data and author's calculation.

elasticity of demand for rice of -0.2 . Thus, with an elasticity of -0.2 ,⁹ per capita rice demand would fall by approximately 5.3 percent in response to the 31.2 percent increase in prices.¹⁰ This fall in per capita demand implies a reduction in total consumption by about 1.4 million MTs relative to the estimate based on official figures (column 3). One plausible scenario therefore is that the *aman* harvest was about 0.5 million MTs less than the official estimate (7.2 million MTs as compared with the official estimate of 7.7), private sector rice imports were 0.3 million MTs less (2.0 million MTs as compared with the official figure of 2.3 million MTs), and that the change in private stock of rice from presumable low levels of 1997/98 was about 0.7 million MTs, i.e. equal to 8.8 percent of the official estimate for *boro* production in 1997/98 (7.98 million MTs).

The scenario outlined above is not meant as a definitive estimate. Any combination of adjustments to production, private imports and changes in private stock totaling 1.4 million MTs (7.7 percent of official rice availability) would give the same consumption per capita. Moreover, other factors including small changes in income per capita, distribution of income, and non-rice prices could account for some change in per capita consumption. These calculations are designed to illustrate a simple point: an increase in per capita rice consumption is not consistent with a 31 percent increase in real prices, but with relatively small adjustments in estimated supply, a plausible accounting of supply and demand changes can be made.

Assuming that the wheat consumption per capita figures are accurate, i.e. that the factors outlined in the previous section can account for the 48 percent increase in per capita consumption between 1997/98 and 1998/99, then total foodgrain consumption in 1998/99 is 163.7 kilograms/capita, 0.7 less than the estimates based on official figures for 1997/98. Even though per capita foodgrain consumption would still be 4.3 percent higher

⁹ Note that a higher elasticity of demand for rice would suggest an even greater decline in per capita rice consumption in 1998/99, and require a large downward adjustment to import and production figures, or a larger increase in private stock between July 1, 1998 and July 1, 1999.

¹⁰ This percentage change in consumption is calculated using a logarithmic formulation for elasticities: $d\ln q/d\ln p = dq/dp (p/q) = \epsilon_d$, the price elasticity of demand. Using the simpler $\epsilon_d = (\% \text{change } q) / (\% \text{change } p)$ formula would result in an estimated 6.2 percent fall in consumption.

than in 1996/97, a year of bumper harvests, this does not indicate that food aid inflows were too high. As discussed above, the private sector was importing substantial amounts of wheat, suggesting that domestic prices were approximately equal to actual import parity for the qualities of wheat imported. More important, the food aid provided the resources needed to fund relief to millions of food-insecure households through the VGF and Food For Work programs. The question then becomes whether an alternative source of resources could have been used.

CASH TRANSFERS FOR SHORT-TERM FLOOD RELIEF

Direct distribution of food and relief supplies was vitally important during the flood and the immediate post-flood period. By late September, 1998, floodwaters had receded and, in most of the country, transport links were re-established nearly everywhere. Yet, many people still faced critical problems of insufficient food. Unfortunately, as discussed above, because of delayed food aid arrivals and limited government stock, availability of foodgrain in government godowns were a constraint on expansion of VGF and other programs.

Given that in most of the country, by late September, poor households had access to well-supplied markets by this point, their food consumption was constrained by lack of purchasing power, rather than food availability, per se. The months of September and October are normally slack periods of labor demand in rural areas, and the flood made it even more difficult for the rural poor to find employment. Increasing purchasing power to affected households was a feasible alternative to direct food distribution and increased food aid in the short run because in the post-flood, pre-harvest period (from mid-September to end-November), food supply was no longer a constraint at the local or national levels. As discussed above, private sector imports kept rice prices at import

parity and markets supplied with rice. Moreover, much of the 1997/98 *boro* and 1998/99 *aman* harvests remained in private stocks.¹¹

Thus, following the flood of 1998, except for the immediate post-flood period, household food security in Bangladesh was constrained not by food availability in markets, but by household access to food. But government distribution of food faced two other constraints as well: availability of public foodgrain stocks and finances for relief and rehabilitation efforts.

Food aid eventually eased these two constraints on public distribution. By providing food, it eased the government stock situation. And because the food aid was given as a grant, it placed no added burden on the government treasury. Yet, additional use of cash payments could have enabled the government and donors to provide even more immediate help to flood victims. Had donors provided cash to supplement direct food distribution, the total value of the VGF program could have been substantially increased without endangering government foodgrain stocks.

There were, in effect, three distinct periods following the flood, each with its own constraints on household food security and policy options. Immediately after the flood, (mid-July to mid-September in most regions), household food security was constrained both by availability of foodgrain in local markets as well as by purchasing power. With transport networks and markets disrupted, the immediate food needs of flood victims could only be met by direct food distribution. Later as foodgrain availability in markets was no longer a constraint, but government foodgrain stocks had not yet been replenished through government commercial imports or food aid, (late September to mid-November),

¹¹ The 1998 *boro* harvest was about 8.0 million MTs, and flood-damaged *aus* rice crop was 1.6 million MTs (down by 3 lakh MTs from the target of 1.9 million MTs). Thus, about 9.6 million MTs of rice had been harvested in Bangladesh from May through September. In addition, the private sector had imported 0.5 million MTs from India from July to mid-September (and continued to import more than 200 thousand MTs per month from September 1998 through March 1999). Since average national rice consumption is about 1.4 million MTs per month, the 10.1 million MTs of total rice supply from the previous *boro* and *aus* harvests, combined with imports through mid-September, (adjusted for losses), could have covered consumption for at least 6 months, i.e. until December. Moreover the December *aman* harvest was expected to add another 7.6 million MTs of rice and several thousand MTs food aid wheat were scheduled to arrive by December as well.

relief efforts were constrained by government stocks and the financial cost of aid.¹²

Finally, once government stocks had again been built up (mid-November), relief efforts were constrained only by the financial and administrative costs of the programs.

One argument often advanced against the use of cash payments is that leakages are likely to be larger than in the case of food. This need not be the case if transparency is maintained, at both the local and national levels. In order to minimize losses through cash programs, one option could be to give the NGOs and other local institutions a major role in seeing that the money allocated for relief in a particular locality actually reaches poor flood-affected households. Nonetheless, even if leakages in cash distribution are somewhat higher, these costs must be weighed against the benefits of increasing the value of aid to the poor before the arrival of large food aid shipments.

PRIVATE IMPORTS AND FOOD SECURITY: IMPLICATIONS OF TRADE WITH INDIA

Fortunately for Bangladesh, market supplies of rice in India in 1998/99 were plentiful. Production of the kharif rice crop, (which accounts for about 85 percent of India's rice production), was 70 million MTs, only about 2.6 percent below the 1997/98 bumper crop. Moreover, Food Corporation of India rice stocks on 1 October, 1998 were quite high (8.7 mn MTs), nearly three million MTs above the buffer stock norm of 6 million MTs for that date. Wheat stocks were even higher: 15.8 million MTs on 1 September, 1998.

Had India's harvest not been successful, or its food stocks so plentiful, Bangladesh would have had to import rice from some other source, probably Thailand. (Though Viet Nam has in recent years become a major exporter, it exports only white (i.e. non-parboiled) rice; only India and Thailand export large quantities of par-boiled rice.) Thailand's prices of 15 percent broken rice¹³ during late 1998 ranged from \$260 to \$304

¹² In addition, the difficulties of administering a large-scale, targeted emergency program also slowed deliveries initially.

¹³ This quality is approximately equal to that of rice imported from India. Prices of 15 percent broken parboiled rice are approximately the same as those for 15 percent broken white milled rice.

/MT FOB Bangkok. Rice imported from Thailand entails high shipping costs (about \$25/MT), especially in comparison to grain delivered over land by rail or truck from India to Bangladesh. Thus, the import parity price of Thai rice delivered to Dhaka was about 15.02 to 16.76 Tk/kg in late 1998, about 0.5 to 2.0 Tk/kg higher than the Indian import parity price. Moreover, private sector imports from Thailand are generally feasible only for large traders, since rice must be imported in larger quantities (about 10,000 MTs per shipment) to minimize per unit shipping costs.

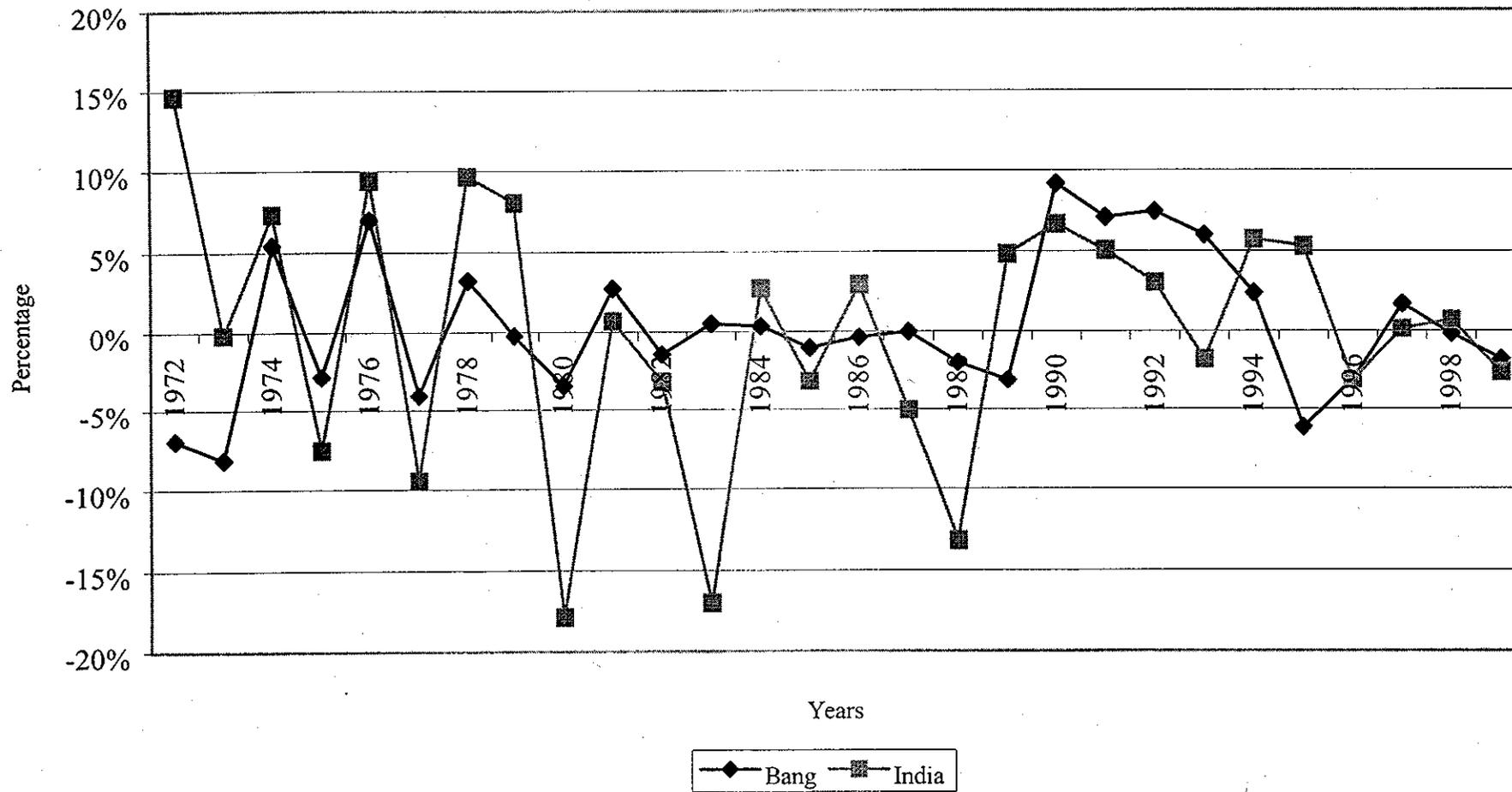
Large-scale private imports from India were possible in 1998/99 because with large government stocks of foodgrain and a good rice harvest, the Government of India was willing to allow exports. Had stocks and/or production been lower, an export quota or even an export ban could have been imposed. One important factor, then, is the probability that both Bangladesh and India will have poor rice harvests in the same year.

As shown in Figure 3.5, from 1971/72 through 1998/99, total production of rice in Bangladesh fell below five percent or more below trend in only four years: 1971/72, 1972/73, 1994/95 and 1998/99.¹⁴ India's production has been more variable over the period as a whole, with six years below trend: 1974/75, 1976/77, 1979/80, 1982/83, 1986/87 and 1987/88. However, from 1988/89 to 1998/99, in no year did India's annual rice production fall more than 5 percent below trend.

One reason for the greater stability in Bangladesh annual production is that the *boro* harvest, coming only after about five months of the *aman* harvest, acts as a natural stabilizer of domestic production. Poor *aman* harvests are often followed immediately by good *boro* harvests due to greater price incentives for production, enhanced government extension and input supply efforts, and a desire on the part of farmers to build up own-stocks of rice.

¹⁴ 1998/99 figures are preliminary and are given in Table 3.3.

Figure 3.5 — Total Production of Rice in Bangladesh and India, 1972-99 (Percentage Deviation from Trend)



Comparing, only *aman* production in Bangladesh with kharif production in India, gives a somewhat different story. From 1980/81 through 1998/99, production of *aman* in Bangladesh fell below trend in four years: 1981/82, 1987/88, 1988/89 and 1998/99, but in these latter two years, *aman* production was 17.44 (1988/89) and 18.33 percent (1998/99) below trend. India also experienced three years of substantial kharif rice production shortfalls below trend in the 1980s, 1982/83 (-17.40 percent), 1986/87 (-6.49 percent) and 1987/88 (-16.41 percent). In only one year of the 19-year period since 1980/81, did both India and Bangladesh have a bad *aman*/kharif crop in the same year (1986/87). Since that year, India's kharif rice production has been above or only slightly below trend, and in the two most recent years of very low *aman* harvests in Bangladesh (1988/89 and 1998/99), India's kharif production has been 5.50 percent above and 3.49 percent below trend (Figure 3.6).

Past trends are of course, not a perfect predictor of the future. But the lack of correlation between poor Indian harvests and poor Bangladesh harvests has an agronomic basis. India's kharif rice production is spread over a much wider area than Bangladesh *aman* rice production, so weather effects are likely to vary more across India's kharif rice producing zone, reducing the risk of weather-related failure to the entire crop. In particular, high rainfall or excessive snow melt in the Himalayas that cause flooding in Bangladesh and parts of eastern India does not necessarily correlate with poor weather in other regions of India.

In spite of the low correlation of production shortfalls, it is nonetheless prudent for Bangladesh to be prepared for such an occurrence. As discussed above, access to other markets for imports thus remains an important option for ensuring availability of rice at the national level.

Figure 3.6 — Total Production of *Aman* Rice in Bangladesh and Kharif Rice in India, 1989-99 (Percentage Deviation from Trend)

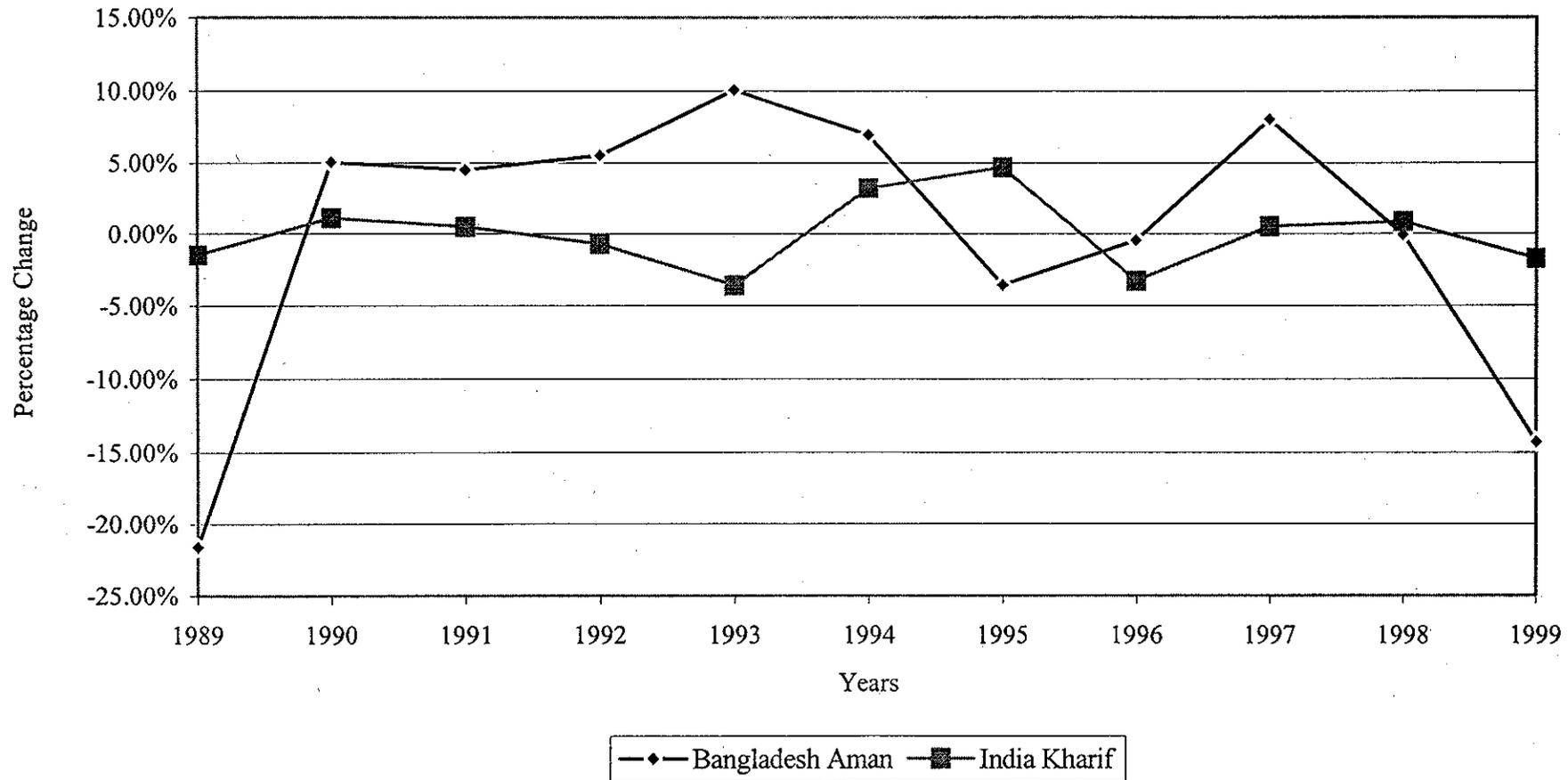


Table 3.3 — Total Production of *Aman* and Kharif Rice In Bangladesh and India and Percentage Deviation from Trend, 1981-99

Year	BANGLADESH				INDIA			
	<i>Aman</i> Prod 000 MT	Percentage Deviation	Total Prod 000 MT	Percentage Deviation	Kharif Prod 000 MT	Percentage Deviation	Total Prod 000 MT	Percentage Deviation
1980/81	7962	6.08%	13880	2.69%	50090	2.43%	53630	0.68%
1981/82	7208	-5.23%	13629	-1.57%	49245	-2.09%	53250	-3.20%
1982/83	7603	-1.33%	14215	0.28%	42697	-17.40%	47120	-16.98%
1983/84	7937	1.68%	14509	0.02%	55052	3.70%	60100	2.73%
1984/85	7931	0.32%	14623	-1.43%	53782	-1.29%	58340	-3.16%
1985/86	8540	6.67%	15038	-0.84%	59392	6.28%	63830	2.97%
1986/87	8267	1.99%	15406	-0.57%	53561	-6.49%	60560	-4.98%
1987/88	7689	-6.30%	15413	-2.60%	49049	-16.41%	56860	-13.16%
1988/89	6857	-17.44%	15544	-3.77%	63376	5.50%	70490	4.86%
1989/90	9202	9.47%	17856	8.33%	65878	7.17%	73570	6.67%
1990/91	9167	7.77%	17852	6.18%	66317	5.49%	74290	5.06%
1991/92	9269	7.70%	18252	6.47%	66368	3.28%	74680	3.07%
1992/93	9680	11.19%	18341	4.98%	65243	-0.63%	72868	-1.80%
1993/94	9419	6.96%	18041	1.35%	70724	5.47%	80298	5.73%
1994/95	8504	-4.51%	16833	-7.16%	72603	6.07%	81814	5.31%
1995/96	8790	-2.40%	17687	-4.19%	67879	-2.82%	76975	-3.10%
1996/97	9552	4.90%	18883	0.50%	71415	0.24%	81312	0.16%
1997/98	8850	-3.87%	18850	-1.41%	72500	-0.19%	83500	0.69%
1998/99	7600	-18.33%	18853	-3.06%	71450	-3.49%	82450	-2.62%

Note : Trend Values have been derived from Linear Regression.

4. CONCLUSIONS

Together, the Government of Bangladesh, donors, the private sector and NGO's achieved a large measure of success in tackling the very real threat to national and household food security caused by the 1998 flood. A major food shortage was avoided and millions of flood-affected households received direct assistance. The experience of the 1998 flood thus provides several important lessons for food policy and enhancing food security in Bangladesh.

First, the large-scale private sector imports of rice following the flood illustrates the valuable contribution that the trade liberalization of the early 1990s has made to enhanced food security in Bangladesh. In spite of severe and long-lasting floods that severely damaged the 1998/99 *aman* rice crop, there was no shortage of food in Bangladesh because private sector imports largely offset the domestic production shortfall. Enabled by government policy that encouraged private sector trade, the private sector imported 2.42 million MTs of rice and .624 million MTs of wheat (footnote: wheat imports are through February 1999) between July 1998 and April 1999. During this same period, public distribution of foodgrain was 15.84 lakh MTs, 1.88 lakh MTs of foodgrain more than the 13.96 lakh MTs in the original 1998/99 distribution plan, but .836 mn MTs less than private sector imports. Thus, the private sector rice imports were 1.53 times greater than public distribution of foodgrain in the first ten months of the 1998/99 fiscal year.

In 1998/99 essentially all of the rice imports came from India, which benefited from lower transport costs to Bangladesh as well as ample supplies of low-cost coarse rice. But the benefits of trade liberalization do not depend solely on India's exports. Had India not allowed rice exports, Bangladesh traders would likely have turned to the next lowest-cost source of imports, probably Thailand. Given the likely average size of

shipment, (about 10 MTs/truck from India by land as compared with about 10,000 MTs/ship by sea), trade with Thailand would have been more difficult and fewer traders would have been involved in imports. Nonetheless, just as in the case of wheat, private sector rice imports by sea would still bolster foodgrain supplies and help keep prices at import parity.

Second, at the household level, Bangladesh government programs mitigated the negative effects of the flood on food security through a combination of rapid disbursement of emergency food relief from its existing stocks and additional distribution of foodgrain through VGF and other channels. Through the end of November, most of the foodgrain distributed came from government stocks, not from flood-relief food aid. In fact, government commercial imports of 261,000 MTs of wheat arriving in October and November were crucial in supplying this expanded distribution before the arrival of large shipments of food aid beginning in December. Nonetheless, food aid imports are especially important for post-flood rehabilitation and providing additional incomes through Food For Work and VGF to the rural poor during the January to April slack labor period.

Third, the limited availability of foodgrain stocks from August through November constrained distribution of foodgrain to flood-affected households. One alternative is for the government to hold more stocks during the early part of the fiscal year so as to be ready for future floods. But in a situation like that in 1998 when private sector imports maintained total foodgrain supply in Bangladesh at normal levels, food insecure households were constrained by purchasing power not by market availability of food. Government relief efforts did include some cash payments in conjunction with food distribution. A policy of greater cash payments together with foodgrain rations would increase the government's ability to provide even more relief to flood victims in the future.

Finally, the experience of the flood highlights the fact that achieving food security for the poor of Bangladesh depends not only on market supply of foodgrain, but on their ability to acquire food. Even in years when food availability per capita is relatively high, millions of households in Bangladesh lack effective access to food.

The essence of the food insecurity problem in Bangladesh is poverty and millions of households do not consume adequate diets even in years when there are no major natural disasters. In the short-run, food security can be enhanced by targeted programs. In the long-run, food security requires sustainable increased incomes for the poor through labor-intensive economic growth, education, skills development and other measures. The floodwaters of 1998 have receded and a possible food crisis has been averted, but the challenge of achieving food security for all in Bangladesh remains.

REFERENCES

- Annual Flood Report 1998: Flood Forecasting and Warning Centre, Hydrology, Bangladesh Water Development Board.
- Baulch, Bob, Jayanta Das, W.M.H. Jaim, Naser Farid and Sajjad Zohir (1998): "The Spatial Integration and Pricing Efficiency of The Private Sector Grain Trade in Bangladesh : Phase I and II Report. Published by : Bangladesh Institute of Development Studies, Bangladesh Agricultural University, University of Sussex.
- CMIE (1998): "Monthly Review of the Indian Economy" various issues in 1998. Center For Monitoring Indian Economy Pvt. Ltd.
- CMIE (1999): "Monthly Review of the Indian Economy" various issues in 1999. Center For Monitoring Indian Economy Pvt. Ltd.
- Dorosh, Paul A. (1999): "The Determination of Rice Prices in Bangladesh : Supply Shocks, Trade Liberalization and Cross-Border Trade." March 1999, FMRSP Working Paper No.2.

FMRSP Bangladesh

**Food Management & Research Support Project
Ministry of Food, Government of the People's Republic of Bangladesh**



The FMRSP is a 3.5 year Project of the Ministry of Food, Government of the People's Republic of Bangladesh, providing advisory services, training and research, related to food policy. The FMRSP is funded by the USAID and is being implemented by the International Food Policy Research Institute (IFPRI) in collaboration with the Food Planning and Monitoring Unit (FPMU) of the Ministry of Food, the Bangladesh Institute of Development Studies (BIDS), the University of Minnesota and International Science & Technology Institute (ISTI).

For information contact:

FMRSP-IFPRI Bangladesh

*House # 9/A, Road # 15 (New)
Dhanmondi R/A, Dhaka-1209, Bangladesh
Phone: + (880 2) 8123763/65, 8123793-4, 9117646
Fax: + (880 2) 9119206
E-mail: fmrsp1@citechco.net
Web: <http://www.citechco.net/ifpri>*

IFPRI Head Office

*2033 K Street, N.W.
Washington, D.C. 20006-1002, U.S.A.
Phone: (202) 862-5600, Fax: (202) 467-4439
E-mail: ifpri@cgiar.org
Web: <http://www.cgiar.org/ifpri>*