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**ASPECTS OF INDIA'S FOOD ECONOMY AND
THEIR IMPLICATIONS FOR RICE TRADE
BETWEEN INDIA AND BANGLADESH**

S. R. OSMANI

DECEMBER 1998

FMRSP Working Paper No. 10

FMRSP Bangladesh

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

International Food Policy Research Institute

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*The views expressed in this report are those of the author and do not necessarily reflect the
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EXECUTIVE SUMMARY

The prospect of importing rice from India to cope with domestic shortfalls offers Bangladesh a powerful means of achieving food security in times of crises. In recent years, this prospect has become more concrete. Both India and Bangladesh took important steps to liberalize their foodgrain trade in 1994. Since then, both Indian exports of rice to the world market and Bangladeshi imports of rice from India have increased to historically unprecedented levels. Whenever there was a serious shortfall in Bangladesh during this period, foodgrain flowed in from India, mainly at the initiative of the private sector, and moderated the price hike in the domestic market. This phenomenon raises a completely new dimension to the issue of food security in Bangladesh. It opens up the possibility that private trade with India may provide a relatively inexpensive way of strengthening Bangladeshi food security in comparison with traditional methods of holding expensive buffer stocks or using inefficient bureaucratic machinery to try and import food in times of crises.

However, this prospect also begs the question of whether trade with India can be relied upon to fulfill this role on a sustained basis. This paper addresses the potential for continued exports of Indian rice to Bangladesh in view of seven key aspects of India's agricultural economy, food policy and domestic political situation.

First, on the production front, the Indian rice sector appears to have overcome the technological barrier that had held it back in the early days of the Green Revolution. Between 1970 and 1995, India nearly doubled its foodgrain production. Rice production in India grew 1.7 percent yearly in the 1970s and over 4 percent each year in the 1980s, the most dynamic decade of foodgrain production in its history. This dynamism faded somewhat in the 1990s, with growth falling back to the 1970s rates, but since this growth was taking place from a much higher base, the absolute increase in rice production was much larger.

This growth in Indian rice production has not been spatially uniform. From its birthplace in the traditionally non-rice-growing states of the northwest, the Indian Green Revolution has now spread to the traditional rice-growing areas of the east and the south. One implication of this spatial spread is that year-to-year fluctuations have diminished. Another implication is that growth has accelerated in the eastern states that border Bangladesh. In West Bengal in particular, increased production contributed both to the national rice supply and to smoothing of seasonal availability (by emphasizing the off-season rabi crop).

Indian policymakers project that growth in rice production will continue. They have embarked on an ambitious plan to double agricultural output in the next ten years. Their main strategy is to devote large public investment towards irrigating areas in the rabi season, both to increase net area cultivated and to ensure an even more even seasonal distribution of rice production.

Second, subsidies on agricultural inputs have played an important role in the past in disseminating the High Yielding Variety (HYV) technology among all classes of farmers, but as the level of input use has risen manifold over the last three decades, the fiscal burden of these subsidies has become unsustainable.

Use of electricity, fertilizer, irrigation and credit has increased dramatically. As a proportion of agricultural GDP, input subsidies climbed from 3.7 percent in 1980-81 to nearly 8 percent in 1994-95. Electricity accounts for the bulk of this increase (growing nearly 20 percent per year), followed by fertilizer (12 percent), irrigation (6 percent) and credit (4 percent). The share of electricity in total subsidies rose from about one quarter in the early 1980s to 56 percent by the mid 1990s, becoming the single most important agricultural subsidy.

Although the current level of input subsidy is somewhat below the level permitted by the World Trade Organization (WTO), and although Indian agriculture happens to be net taxed rather than net subsidized when all kinds of incentives and disincentives are

taken into account, the sheer budgetary pressure will compel the Indian government to cut down on subsidies, albeit slowly in view of farmers' resistance.

Third, the minimum support price policy operated by the Food Corporation of India (FCI) has contributed significantly to encourage Indian farmers to adopt the HYV technology. However, the huge cost and wastage involved in maintaining the operations of the FCI at its current level is becoming increasingly unsustainable. It is almost inevitable that in the near future, the FCI will procure much less foodgrain than it does now, leaving the private sector to become the major player in the foodgrain market.

Procurement serves three ends: supporting farmers, supplying consumers through "fair price" shops, and maintaining a buffer stock. The government sharply increased procurement following the macroeconomic reforms of the early 1990s in order to protect farmers from the effects of devaluation. By the mid-1990s, the carrying cost of the buffer stock was 36 percent of the total food subsidy.

Fourth, despite moderate increases in per capita income and expenditure, per capita consumption of cereals has declined in India since the 1970s. This tendency is attributable to changing preferences rather than worsening income distribution and is likely to persist in the future, with the bulk of the new demand for cereals coming from population growth. At the same time, ambitious programs are being undertaken to double foodgrain output. Consequently, projections of supply and demand for rice for the first decade of 2000 suggest that supply will exceed demand at current prices; so additional price incentives will have to be provided to the farmers if the planned supply is to materialize. This implies that the government will have to either accumulate ever-increasing stocks, which would place an untenable burden on the FCI, or allow excess stock to be exported abroad. Allowing free export of rice is the only feasible way to sustain accelerated production.

Fifth, of all the major agricultural commodities in India, rice enjoys the greatest comparative advantage. It is in fact the only unambiguously exportable commodity, with

the potential of huge efficiency gains from its export, even after accounting for the level of subsidies.

At present, the central government's policy towards rice export is one of cautious pragmatism; since 1994, its export has been permitted if prices at the national level seem stable or depressed, but not otherwise. For the last few years, the government's attitude has been fairly relaxed, but it has maintained a network of regulations that allow it to restrict trade as it sees fit.

Sixth, complete liberalization of rice export could have negative ramifications for food policy. It will almost certainly raise the domestic price of rice, especially if subsidies are also withdrawn as part of the overall reform package. The domestic price of rice is lower than the world price because of an overvalued exchange rate and export restrictions. Therefore, to the extent that India's trade regime is liberalized, domestic prices will rise, and this will be even more pronounced if input subsidies are lifted. The combined effect of these reforms would be to raise overall agricultural prices by 15 to 20 percent, with cereal prices rising even more. The fact that the world price of rice would probably fall if India were to export large amounts could mitigate the price rise, but would not offset it. Most analysts concur that the poor will be worse off as a result, at least in the short run.

In addition, exporting rice could threaten the country's ability to ensure food security in times of crisis by increasing the cost of maintaining a buffer stock. Proponents of liberalization argue that it would be more efficient to import rice in time of crisis. However, critics contend that if India were a major player in the world rice market, and Indian rice prices went up, it could cause world prices to rise, making imports prohibitively expensive.

Consequently, Indian policymakers are wary of freeing trade completely. It is permitting the marginal export of rice, but if there is any hint of the market price rising

substantially above what is considered to be a fair price for consumers, it will not hesitate to limit exports.

Finally, since June 1997, the Indian government has introduced a Targeted Food Distribution System in recognition of the fact that the erstwhile universal distribution system was both unsustainably expensive and incapable of providing a strong enough safety net for the poor. India had attempted to re-orient its Public Distribution System (PDS) towards the poor in the mid-1980s. In spite of these reforms, however, the poor received a lesser share of PDS cereals than the overall population, and were not given priority access to them. This system was thus highly inefficient as an income-transfer mechanism; one study found that in 1986-87, it cost the central government Rs. 4.27 to transfer Rs. 1 of income to the poor.

Since 1997, the system of universal coverage at uniform prices has given way to a two-tier system in which the poor pay considerably less than those above the poverty line, and receive prioritized access to food. Attention is currently being directed towards further containing leakage by making the program more self-selecting.

These seven features sum up trends in food policy and food security in India at present. The first five features suggest that the economic and policy environment in India is likely to become increasingly oriented towards exporting rice and should create a favorable climate for sustained rice trade between India and Bangladesh. The sixth feature, the likely negative impact of agricultural trade liberalization on the Indian poor, is the only potential impediment towards this tendency. If the food security of the poor is jeopardized as a result of liberalization, it is unlikely that free export of rice will be politically sustainable, regardless of the potential efficiency gains. However, even this impediment may be offset by the final feature, namely the introduction of a targeted public food distribution system, in place of the universal food distribution system that was of very little help to the poor. The offsetting force will be further strengthened if the savings made from the reduction of subsidies is used to expand the scope of poverty

alleviation programs - the current climate of opinion is certainly favorable towards such switching of resources.

One additional aspect of Indian policy that has an important bearing on the international trade is the position of state governments. All exports to Bangladesh must go through either Andhra Pradesh or West Bengal. However, these states are not predisposed to external trade.

The Andhra Pradesh government operates a very ambitious cheap rice policy for its population. This policy inevitably imposes a heavy subsidy burden on the government. Any rise in the market price will make this burden heavier by entailing a higher procurement price, and hence a higher issue price charged by the FCI. Given this constraint, the government is naturally concerned for ensuring that the market price does not rise. It therefore tries to restrict rice exports when the market price is up, even when the central government has no such directive.

The West Bengal government is guided by other compulsions, namely the need to moderate prices for the rural poor, while coping with high demand in Calcutta. In this situation, the prospect of any additional stimulus to the market that might come from export to Bangladesh is cause for concern.

However, there are reasons to expect that these state-level restrictive practices may weaken in the future. As noted earlier, India is embarking on an ambitious program of doubling foodgrain production in the next ten years. If this plan succeeds, it will entail a very sharp increase in production within a relatively short time span. There is some doubt as to whether increased production of this magnitude can be absorbed within the state without a sharp decline in prices, which might defeat the production goal itself. If producer incentives are to be maintained, export of rice to either Bangladesh or elsewhere will become a necessity. There are already some suggestions that farmers in the surplus districts of West Bengal would not be receiving a remunerative price for their HYV crops

in the absence of recent exports to Bangladesh. If this claim is substantiated, then one can certainly expect smoother flow of rice from India to Bangladesh in the future.

In summary, this paper finds that India is likely to continue to export rice, and that certain policy changes would allow it to reap the advantages of trade while safeguarding its own food security. Rice is India's most promising agricultural export in terms of comparative advantage, and that trade could serve to bolster rice production and consumption in India far more efficiently than under the present mechanism. However, in order to safeguard the consumption of the poorest and for the policy to be politically palatable, policymakers must take steps to provide a safety net and enact other anti-poverty measures in tandem with export promotion. The Government of India could fund such policies by reducing subsidies on input use. While there is some opposition to international trade in rice at the national and state levels in India, these will likely be overcome if the Government of India is able to fulfill even part of its ambitious plan to double rice production in the coming decade.

1. INTRODUCTION

Both India and Bangladesh took important steps in liberalizing foodgrain trade in 1994. Since then, both India's export of rice to the world market and Bangladesh's import of rice from India have risen to historically unprecedented levels. Whenever there was a serious shortfall in Bangladesh during this period, foodgrain flowed in from India, mainly at the initiative of the private sector, and moderated the price hike in the domestic market. In fact, the import parity price, based on Indian prices, has acted as a ceiling on domestic prices in Bangladesh (Dorosh, 1998). This phenomenon has added a completely new dimension to the issues of food security in Bangladesh. It opens up the possibility that private trade with India may provide a relatively inexpensive way of strengthening the food security of Bangladesh in comparison with traditional methods such as holding expensive buffer stocks or using inefficient bureaucratic machinery to try and import food in times of crises.

But can trade with India be relied upon to play this role on a sustained basis? The answer to this question depends to a large degree on how the food economy of India is likely to evolve and how Indian food policy is likely to evolve in response to the developments in its food economy. The present report aims at making an informed judgment on the likely course of these evolutions. It studies different aspects of India's food economy, with a view to gaining an insight into the underlying forces that are likely to shape the future of India's food policy, and uses this insight to form a view as to the likelihood of sustained rice trade between India and Bangladesh.

The next three sections focus on the production and distribution aspects of India's food economy. Section 2 looks at the trends of foodgrain production; Section 3 deals with input use and subsidies, and Section 4 analyzes the changing pattern of public sector involvement in the procurement and distribution of foodgrain. Next, in Section 5, we

take up the trade-related issues - in particular, what are the prospects of trade in view of the emerging demand-supply balance in the domestic economy, where does India's comparative advantage lie, and what are the likely effects of trade liberalization on India's food security. Finally, in Section 6, we bring together the insights drawn from the preceding sections and combine them with an analysis of food policy at the level of the states, especially West Bengal, to form a judgment on the likelihood of sustained rice trade between India and Bangladesh.

A few clarificatory remarks are in order at this stage. First, the term foodgrain is generally used in Bangladesh interchangeably with cereals, whereas it is meant to include both cereals and pulses in the Indian literature. In this study, we generally follow the usage in Bangladesh, with a few exceptions, which are explicitly noted. Secondly, while much of the ensuing discussion deals with cereals as a whole, we focus particularly on rice wherever possible, since Indo-Bangladesh trade in cereals consists almost entirely of trade in rice. Third, while studying India's food economy as a whole, we pay particular attention to the Eastern region, especially West Bengal, in view of its special relevance for trade with Bangladesh. Finally, one of the objectives of this study was to suggest ways in which India's food economy could be monitored by the Government of Bangladesh on a regular basis. Some suggestions in this regard are made in Annexure 1.

2. TRENDS IN FOODGRAIN PRODUCTION

In the twenty-five years since 1970, India has nearly doubled its foodgrain production -- from an annual average output of 92.8 million Metric Tons (MT) in the triennium ending 1971-72 to 177.7 million MT in the triennium ending 1996-97. Wheat production has increased nearly three-fold and rice production has just about doubled, but the production of coarse cereals has risen only marginally, by just above one-tenth. Rice was and still remains the single most important foodgrain in India, with a roughly constant share of around 45 percent since 1970. The share of wheat, however, has surged from 25 percent to 37 percent -- at the expense of coarse cereals, whose share have fallen from 30 percent to 18 percent (Table 1).

Table 1 — Cereal Production in India: 1969-70 to 1996-97

Triennium	Total Production ('000 tons)				Share in total Production (percent)			
	Rice	Wheat	Coarse Cereals	All Cereals	Rice	Wheat	Coarse Cereals	All Cereals
1969-70 to 1971-72	41,908	23,445	27,474	92,827	45.1	25.3	29.6	100.0
1979-80 to 1981-82	49,736	35,198	29,025	113,959	43.6	30.9	25.5	100.0
1989-90 to 1991-92	74,181	53,558	31,149	158,888	46.7	33.7	19.6	100.0
1994-95 to 1996-97	80,915	65,713	31,061	177,689	45.5	37.0	17.5	100.0

Source: Data supplied by the Commission for Agricultural Costs and Prices, Government of India.

Table 2 — Annual Growth Rates of Cereal Production in India: 1969-70 to 1996-97

Period	Annual compound growth rate (percent)			
	Rice	Wheat	Coarse Cereals	All Cereals
1969-70/1971-72 to 1979-80/1981-82	1.73	4.15	0.55	2.07
1979-80/1981-82 to 1989-90/1991-92	4.08	4.29	0.71	3.38
1989-90/1991-92 to 1994-95/1996-97	1.75	4.18	0.00	2.23
1969-70/1970-71 to 1994-95/1996-97	2.67	4.21	0.50	2.63

Source: Data supplied by the Commission for Agricultural Costs and Prices, Government of India.

Ignoring year-to-year fluctuations, wheat production has grown at a fairly steady rate of around 4.2 percent per annum throughout this period (Table 2). Initially, rice lagged behind wheat, growing at a rate of 1.7 percent per annum in the 1970s; but a sudden burst of dynamism in the 1980s boosted its growth rate to over 4 percent. With both wheat and rice growing at over 4 percent per annum, the 1980s turned out to be the most dynamic decade of foodgrain production in Indian history. The dynamism has faded somewhat in the 1990s, with the growth of rice falling back to the rate prevailing in the 1970s. However, it must be noted that growth is now taking place from a much higher base, so that in absolute terms the annual increase in rice production has been much bigger in the 1990s compared to the 1970s.

In the mid-1990s, the major rice producing states were, in descending order of importance: West Bengal, Uttar Pradesh, Andhra Pradesh, the Punjab, Tamil Nadu, Bihar, Orissa and Madhya Pradesh. Together, these states accounted for over 80 percent of all rice production in the country (Table 3). The ordering has changed in some significant ways over the preceding twenty-five years. In 1970, West Bengal and Tamil Nadu were

**Table 3 — Trend in Rice Production in Major Rice Producing States in India:
Triennia Averages, 1969-70 to 1995-96**

(Average Annual Production in million tons)

State	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92	1994-95 to 1996-97
West Bengal	6,333	6,395	11,105	12,078
Uttar Pradesh	3,670	4,674	9,716	10,328
Andhra Pradesh	4,735	7,062	9,621	9,345
Punjab	727	3,340	6,662	7,371
Tamil Nadu	5,046	5,189	6,147	7,292
Bihar	4,479	4,496	5,889	6,439
Orissa	4,092	3,691	6,073	6,399
Madhya Pradesh	3,534	3,236	5,160	6,043
Assam	1,982	2,213	3,087	3,353
Karnataka	2,113	2,314	2,539	3,123
Maharashtra	1,488	2,208	2,244	2,482
Haryana	456	1,140	1,781	2,042
Others	3,253	3,751	4,157	4,620
All-India	41,908	49,736	74,181	80,915

Source: Data supplied by the Commission for Agricultural Costs and Prices,
Government of India.

the two biggest producers of rice; by 1995, West Bengal was still at the top, but Tamil Nadu had dropped down to fifth position. Meanwhile, Andhra Pradesh, Uttar Pradesh and the Punjab have emerged as major rice-growing states. The emergence of the Punjab - from a negligible position in 1970 to the fourth largest in 1995 - has been the most spectacular.

Behind this changing ordering lies the fact that the Green Revolution in rice did not occur uniformly across the states. In fact, the initial breakthrough came outside the traditional rice-growing states of Eastern and Southern India; however, new technology did spread eventually, even if unevenly, to most of them. The nature of this dissemination can be seen most clearly by noting how the different states contributed to different stages of growth in rice production in India.

Consider first the pattern of growth in rice production. Even a cursory examination of the time series of foodgrain output in India reveals a striking contrast between rice and wheat -- while wheat output has grown fairly steadily over the years, once allowance is made for year-to-year fluctuations, rice production has grown in a number of discrete steps. Four such steps can be identified since the onset of the Green Revolution in the late 1960s; they occurred at or around the following years: 1977-78, 1983-84, 1988-89 and 1993-94. Accordingly, one can identify five distinct periods in which rice production is seen to have made a sudden discrete jump from one period to the next. Within each period, output has either stagnated or risen very slowly.¹

Table 4 shows the average annual production within each period; the difference between the averages for successive periods measures the extent of the jump at each step.

¹ These periods are: (1) 1967-68 to 1976-77, (2) 1977-78 to 1982-83, (3) 1983-84 to 1987-88, (4) 1988-89 to 1992-93, and (5) 1993-94 to 1995-96. The terminal year of the final period has been set at 1995-96 only because our state-level data ends at this year. When data for the most recent years become available, the terminal date may have to be revised.

Table 4 — Ranking of States in Terms of Contribution of Steps to Major Increases in All-India Rice Production: 1967-68 to 1995-96

Rank of State	Step I 1967/68-1976/77 to 1977/78-1982/83	Step II 1977/78-1982/83 to 1983/84-1987/88	Step III 1983/84-1987/88 to 1988/89-1992/93	Step IV 1988/89-1992/93 to 1993/94-1995/1996	Overall increase 1967/68-1976/77 to 1993/94-1995/1996
1 st	Punjab (2.34)	Uttar Pradesh (2.11)	West Bengal (2.71)	Tamil Nadu (1.12)	Punjab (6.76)
2 nd	Andhra Pradesh (1.97)	Punjab (2.01)	Uttar Pradesh (2.34)	West Bengal (1.01)	Uttar Pradesh (6.69)
3 rd	Uttar Pradesh (1.50)	West Bengal (1.97)	Andhra Pradesh (2.26)	Punjab (0.99)	West Bengal (5.95)
4 th	Haryana (0.67)	Madhya Pradesh (0.96)	Orissa (1.22)	Madhya Pradesh (0.96)	Andhra Pradesh (4.33)
5 th	Maharashtra (0.66)	Bihar (0.83)	Punjab (1.08)	Bihar (0.91)	Madhya Pradesh (2.78)
6 th		Orissa (0.77)	Tamil Nadu (0.94)	Uttar Pradesh (0.75)	Tamil Nadu (2.56)
7 th			Madhya Pradesh (0.60)	Orissa (0.62)	Orissa (2.40)
All-India Jump	(8.80)	(9.47)	(13.24)	(7.40)	38.9

Source: Data supplied by the Commission for Agricultural Costs and Prices, Government of India. Figures within parentheses are production jumps in million tons.

The overall absolute increase in rice production from the first to the fifth period was to the tune of 38.9 million MT. This was distributed between the four steps as follows: 8.8 million MT at step one around 1977-78, 9.5 million MT at step two around 1983-84, 13.2 million MT at step three around 1988-89 and 7.4 million MT at step four around 1993-94.

Table 4 also shows which states contributed the most at each step towards the increment of rice output at the all-India level. It is interesting to note that the leader (in terms of incremental output) was a different state at each step – the Punjab at step one, Uttar Pradesh at step two, West Bengal at step three and Tamil Nadu at step four. The changing leadership is a clear indication of the manner in which the Green Revolution has spread across the major rice-producing states.

Further insight can be gained by noting the secondary and tertiary leaders, along with the main leader, at each step. At step one, the Punjab was followed by Andhra Pradesh and Uttar Pradesh as the major contributors to the incremental rice output. At that point, it was mainly the western part of Uttar Pradesh that was surging ahead, leaving behind the eastern part, which was the main rice bowl of this state. At around the second step, however, eastern Uttar Pradesh had also begun to make significant strides, with the result that Uttar Pradesh as a whole became the leader at that point. The eastward march of the Green Revolution became firmly established when West Bengal also began to emerge strongly at around step 2, so much so that it became the leader at step 3 and remained the second largest contributor at step 4. The eastward march also embraced Orissa, which emerged as a major contributor, ahead of Punjab, at step three. Then came the turn of the south. Among the southern states, only Andhra Pradesh had made significant progress in the early years of the Green Revolution, but the south as a whole, including Andhra Pradesh, stagnated in the 1980s. Since the late 1980s, however, the south has also been coming along strongly, first with the revival of Andhra Pradesh at step three and then with the mantle of leadership passing on to Tamil Nadu at step four.

In sum, India's Green Revolution in rice took off around 1977-78 from the northwestern part of India, which was also the place where India's Green Revolution in wheat started about a decade earlier. The only state from outside this region that shared in this take-off was Andhra Pradesh in the south.² By around 1983-84, however, the eastern part of India had begun to take on the role of the major player and has remained so to this day, although the south is staging a comeback in the 1990s.³

The emergence of the eastern states, especially of West Bengal, as the major stage of the Green Revolution in rice after many years of doldrums is one of the most impressive success stories of India's efforts to achieve self-sufficiency in foodgrain. The underlying reason behind this success remains a matter of dispute, though. Some argue that liberalization of the Indian economy - specifically, the reduction of tariffs on industrial goods, along with relaxation of restrictions on rice export -- has turned the inter-sectoral terms of trade in favor of foodgrain in general and rice in particular and this has spurred rice production. Others argue that varietal improvement has been the most important factor. The initial varieties of high-yielding rice seeds that came to India were short-duration dwarf type, which were not suitable for the Eastern region where agro-climatic factors demanded varieties that were of somewhat longer duration and were semi-dwarf rather than dwarf, in addition to being acceptable to local tastes. After much experimentation, these varieties became available only towards the late 1970s. That is when the Green Revolution really took off in eastern India. Others maintain that the real secret lies in institutional improvement, such as the consolidation of Panchayat Raj and the implementation of Operation Barga in West Bengal, which spurred investment by farmers by ensuring the security of their rights on land.⁴

² There were of course a number of small regions within some of the other states that also showed signs of take-off at this time, but at the overall state level, only Andhra Pradesh had made a mark.

³ A comprehensive recent account of India's agricultural growth across regions can be found in Sawant and Achuthan (1995).

⁴ Mukherjee and Mukhopadhyaya (1995) present a powerful case for the importance of institutions.

Table 5 — Seasonal Pattern of Rice Production in India: Kharif and Rabi Seasons

Triennia	All-India			Eastern States			West Bengal		
	Kharif	Rabi	Share of Rabi (%)	Kharif	Rabi	Share of Rabi (%)	Kharif	Rabi	Share of Rabi (%)
	<i>in million tons</i>			<i>in million tons</i>			<i>in million tons</i>		
1970-71 to 1972-73	38.63	2.89	7.0	16.15	1.24	7.1	5.39	0.73	11.9
1979-80 to 1981-82	45.94	3.80	7.7	16.59	1.14	6.4	5.63	0.77	12.0
1989-90 to 1991-92	66.19	7.99	10.8	23.94	3.47	12.7	8.51	2.60	23.4
1994-95 to 1996-97	70.63	9.40	11.7	25.02	4.36	14.8	9.01	3.24	26.4

Source: Data supplied by the Commission for Agricultural Costs and Prices, Government of India.

It is conceivable that all these factors worked together to dynamize India's rice production, although so far no study has attempted to quantify the individual contribution of each. In any case, the highly impressive growth of rice production in West Bengal, whatever its source, has had two major consequences. First, since West Bengal has traditionally been the largest producer of rice in India, its strong performance in three of the four periods identified above has given a strong boost to overall rice production in India. Secondly, since West Bengal happens to be one of the few states where a significant amount of rice is grown in the rabi season, the strong performance of West Bengal has also contributed towards a more even seasonal pattern of rice availability. In fact, the rabi crop appears to have gained proportionately more than the kharif crop from the spread of the Green Revolution in West Bengal, with the result that the share of rabi crop in total rice production in the state has more than doubled - from around 12 percent at the beginning of the 1980s to over 26 percent by the mid-1990s (Table 5). At the all-India level, the share of rabi rice has risen from just under 8 percent to nearly 12 percent during the same period.

The all-India share of rabi rice may not seem very large at present, but this is likely to change. Indian planners are currently preparing a plan to double the size of agricultural output in the next ten years. As part of this plan, the production of foodgrain (including both cereals and pulses) is expected to go up from around 200 million MT in 1997-98 to around 300 million MT in ten years time. This is an ambitious project and huge public investment is being envisaged in order to implement the plan. The major strategy will be to make fuller use of the net cultivable area in the rabi season by extending irrigation facilities. If this happens, not only will the total exportable surplus grow in size, but the seasonal distribution of the surplus will also become more even.

Along with seasonal fluctuations, year-to-year fluctuations in rice output have also come down in recent years. This is partly due to sheer good luck - since the early 1990s, India has enjoyed an unbroken run of six consecutive good monsoons, breaking the usual pattern of one widespread drought every five years or so. This is partly also a consequence of spatial spread of HYV technology from its original birthplace in the northwest towards the east and the south. This spatial spread has ensured that the HYV rice is now grown under many different agro-climatic conditions, with the result that localized misfortune with weather need not spell disaster for overall rice availability. This was most vividly illustrated in the second half of 1998, when despite severe damage to the kharif crop caused by floods and drought in parts of the Eastern region, India was expecting a bumper harvest of foodgrain for the year 1998-99.

3. INPUT USE AND INPUT SUBSIDY

The use of modern inputs has increased phenomenally in Indian agriculture. Since most of the inputs are heavily subsidized, the overall subsidy burden has also increased enormously. However, to what extent foodgrain have enjoyed this subsidy compared with the rest of agriculture cannot be ascertained with reasonable accuracy since most data on subsidies is available for agriculture as a whole. The following analysis is, therefore, conducted in terms of overall agriculture. However, since foodgrain accounts for the lion's share (roughly 60 percent) of total gross cropped area, the general trend in overall subsidies should give a rough qualitative picture of subsidies in foodgrain.

The share of irrigated land in gross cropped area has increased in India from 19 percent in the triennia 1962-65 to 29 percent in 1980-83 and further to 36 percent in 1992-95 (Table 6). In the final triennia, the share of irrigated land was the highest in the northwest region (67 percent), followed by a distant second eastern region, which had a share of 31 percent, the southern region 29 percent, and the central region, a paltry 12 percent. All the states in the northwest, except Himachal Pradesh (18 percent), had high shares, much above the national average – with the Punjab having the highest share of all (95 percent). In the rest of the country, the major irrigated states were West Bengal and Bihar in the eastern region, Tamil Nadu and Andhra Pradesh in the southern region, and Gujarat and Rajasthan in the central region.

Fertilizer consumption at the all-India level has increased spectacularly from just 4.3 kg/hectare in 1962-65 to as much as 89 kg/hectare in 1992-95 (Table 3). Rapid increase has occurred in all regions, largely in line with the expansion in irrigated area, except in the southern region, where the growth of fertilizer consumption has far

Table 6 — Trends in the Level of Inputs Used in Agriculture by State

States	Consumption of Fertilizers (kg/hectare)			Percentage of GCA Irrigated		
	1962-65	1980-83	1992-95	1962-65	1980-82	1992-95
Haryana	2.53	68.99	191.19	31.1	62.21	77.14
Himachal Pradesh	0.94	30.65	50.29	17.1	16.7	17.84
Jammu and Kashmir	1.54	34.16	60.75	35.97	40.37	40.69
Punjab	7.84	192.07	296.68	58.42	86.84	94.58
Uttar Pradesh	4.06	75.36	134.27	26.99	47.42	62.29
<i>North-west region</i>	<i>4.29</i>	<i>91.02</i>	<i>163.62</i>	<i>32.26</i>	<i>55.52</i>	<i>67.25</i>
Assam	0.26	4.15	11.94	-	-	-
Bihar	2.96	27.46	85.36	20.13	33.67	43.18
Orissa	1.2	13.78	33.35	11.8	22.9	26.24
West Bengal	4.72	48.02	139.36	22.62	24.57	54.27
<i>Eastern region</i>	<i>2.63</i>	<i>26.07</i>	<i>74.27</i>	<i>16.5</i>	<i>24.1</i>	<i>30.94</i>
Gujarat	3.63	40.38	76.66	7.83	22.93	29.33
Madhya Pradesh	0.82	11.78	42.01	5.67	11.79	20.66
Maharashtra	2.41	26.83	68.63	6.9	12.66	15.38
Rajasthan	0.56	9.25	31.39	12.95	21.27	27.2
<i>Central region</i>	<i>1.72</i>	<i>19.93</i>	<i>51.88</i>	<i>8.08</i>	<i>16.18</i>	<i>11.97</i>
Andhra Pradesh	9.67	58.2	149.74	29.47	35.43	39.87
Karnataka	3.43	37.15	74.4	9.51	15.95	22.58
Kerala	15.4	45.66	85.79	19.73	13.36	12.34
Tamil Nadu	11.99	92.17	140.78	45.33	48.7	47.9
<i>Southern region</i>	<i>8.34</i>	<i>55.88</i>	<i>115.33</i>	<i>25.66</i>	<i>29.32</i>	<i>33.02</i>
All India	4.33	42.62	89.08	19	29.29	35.66

Source: Bhalla and Singh (1997), Table 5

outstripped the growth of irrigated area.⁵ In the central region too, fertilizer consumption has increased out of proportion with the growth of irrigated area.

Both irrigation and fertilizers have been heavily subsidized. Much of the irrigation has been provided through large-scale canal or dupe-tubewell projects undertaken by the public sector, with very little attempt to recover the cost from farmers. Even the pumps and shallow tube-wells owned and run by the private sector have been

⁵ Thus, in Tamil Nadu, fertilizer consumption has gone up from 12 kg/hectare to 141 kg/hectare, while the share of irrigated area has virtually stagnated.

subsidized by providing electricity at incredibly low prices. In addition, farm credit has also been provided at subsidized rates of interest.

Input subsidies became important in Indian agriculture with the advent of the Green Revolution technology in the mid-1960s, but it was only after the farm lobby came to power in the late 1970s that the size of subsidies became enormous. The growth of subsidies since then has been analyzed in a recent study by Gulati and Sharma (1997). They estimated subsidies separately for four different inputs - electricity, irrigation, fertilizer and credit. Of the four, only the fertilizer subsidy is provided by the central government, and the other three by state governments. The estimates of budgetary subsidies (the subsidies explicitly provided for in government budgets) are readily available from government documents. Gulati and Sharma, however, employ a broader concept of subsidy, which incorporates both direct subsidies accounted for in the budgets and indirect subsidies not accounted for.

According to their estimates, total input subsidy has increased at the annual compound rate of 11.6 percent between 1980-81 and 1994-95 (Table 7). This is a much faster rate of growth than that experienced by either agricultural GDP or the overall GDP of India. As a result, subsidies as a proportion of both agricultural GDP and overall GDP have doubled. As a proportion of agricultural GDP, subsidies have gone up from 3.7 percent in 1980-81 to nearly 8 percent in 1994-95, while as a proportion of overall GDP, it has gone up from 1.3 percent to 2.6 percent.

The fastest rate of increase has been recorded by subsidy on electricity, which has grown at the rate of nearly 20 percent per annum, followed by fertilizer (12 percent), irrigation (6 percent) and credit (4 percent) (Table 8). The upsurge in agricultural production experienced in the 1980s was mainly the result of rapid expansion of irrigation based on pumps and private tube-wells. Much of the electricity used for running such equipment was provided at a heavily subsidized price. In fact, cheap electricity became a

Table 7 — Input Subsidies as Percentage of GDP: 1980-81 to 1994-95

Year	Input subsidies at current prices (Rs billion)	Subsidies as percentage of agricultural GDP	Subsidies as percentage of overall GDP	
1980-81	15.59	3.67	1.27	
1981-82	17.27	3.62	1.22	
1982-83	22.09	4.37	1.44	
1983-84	28.03	4.57	1.57	
1984-85	37.74	5.79	1.91	
1985-86	44.17	6.31	2.06	
1986-87	53.51	7.19	2.26	
1987-88	68.96	8.26	2.58	
1988-89	85.95	8.26	2.70	
1989-90	101.45	8.79	2.78	
1990-91	114.44	8.39	2.68	
1991-92	133.85	8.40	2.75	
1992-93	148.79	8.36	2.65	
1993-94	156.95	7.66	2.20	
1994-95	195.99	7.99	2.60	
Growth (percent)	Rate	11.61	6.46	5.75

Source: Gulati and Sharma (1997), Table 3.

Notes: Growth rate has been calculated as annual compound growth rate between 1980-81 and 1994-95 at 1980-81 constant prices.

Table 8 — Input Subsidies in Indian Agriculture: 1980-81 to 1994-95

(Rs. billion, in current prices)

Year	Electricity	Irrigation	Fertilizer	Credit	Total
1980-81	3.40	4.34	2.68	5.17	15.59
1981-82	4.15	4.60	1.99	6.53	17.27
1982-83	6.13	5.26	3.21	7.49	22.09
1983-84	7.51	5.97	5.52	9.02	28.03
1984-85	9.83	7.11	10.21	10.58	37.74
1985-86	13.25	8.45	10.20	12.28	44.17
1986-87	18.35	11.09	10.05	14.02	53.51
1987-88	26.13	15.18	11.47	16.18	68.96
1988-89	29.73	20.55	16.97	18.70	85.95
1989-90	37.97	20.42	24.07	18.99	101.45
1990-91	48.44	21.86	23.26	19.87	113.44
1991-92	61.24	24.87	25.44	22.29	133.85
1992-93	75.09	19.00	30.72	23.97	148.79
1993-94	92.10	16.09	23.32	25.44	156.95
1994-95	113.49	17.68	27.78	27.04	195.99
Growth rate	19.55	6.23	12.04	3.92	11.61

Source: Gulati and Sharma (1997), Table 2.

Notes: Growth rate has been calculated as annual compound growth rate between 1980-81 and 1994-95 at 1980-81 constant prices.

political weapon with which parties in power in state governments tried to consolidate their standing with the electorate. The Tamil Nadu government went to the extreme of providing completely free power to farmers; this example was soon followed by several other states, most notably, the Punjab, Kerala and Bihar. As a consequence, subsidies in electricity soared, so much so that the share of electricity in total input subsidies shot up from just about a quarter in the early 1980s to well over half (56 percent) by the mid-1990s (Table 9). Electricity has thus become the single most important medium of subsidy in Indian agriculture.

Table 9 — Share of Individual Inputs in Total Input Subsidy, by Triennium
Average: 1980-81 to 1994-95

(percentage)				
Triennium	Electricity	Irrigation	Fertilizer	Credit
1980-81 to 1982-83	24.5	26.1	14.1	35.0
1983-84 to 1985-86	27.6	19.8	23.3	29.3
1986-87 to 1988-89	35.6	22.2	18.4	23.8
1989-90 to 1991-92	33.1	18.2	19.6	17.1
1992-93 to 1994-95	55.7	10.7	16.6	15.4

Source: Calculated from Gulati and Sharma (1997), Table 2.

Next in importance are fertilizer and credit, with shares of 16.6 and 15.4 percent respectively in the mid-1990s, followed by irrigation, with a share of 10.7 percent (Table 9). The shares of both irrigation and credit have fallen sharply since the early 1980s, while the share of fertilizer has risen marginally.

The mounting subsidies have recently become a matter of serious concern for a number of reasons.⁶ First, they have been held responsible for wasteful misallocation of

⁶ Detailed analysis of these criticisms can be found in Gulati and Sharma (1995, 1997) and Mahendra Dev (1997).

resources. For instance, it has been pointed out that the availability of cheap power for irrigation has encouraged excessive production of water-intensive crops (such as sugarcane), which are intrinsically less efficient than most other crops. Another example of misallocation is excessive use of nitrogenous fertilizer encouraged by the disproportionately heavy subsidy on urea - the Nitrogen-Phosphorus-Potassium ratio currently stands at 8.5:2.5:1 against the ideal ratio of 4:2:1. Secondly, subsidies are seen as an important factor in creating fiscal stress, which not only leads to macroeconomic imbalances by inviting inflationary financing but also crowding out productive investment in agriculture. It has been estimated, for example, that while input subsidies and public investment in agriculture were at roughly equal level in 1982-83, ten years later, in 1992-93, subsidies were 3.8 times larger than investment (Mahendra Dev 1997, Table 2). Thirdly, heavy input subsidies are also being blamed for environmental degradation. It has been suggested, for instance, that subsidies on water have encouraged excessive irrigation, with potentially disastrous results in terms of falling water tables, leading eventually to desertification of vast tracts of land.

For all these reasons, a strong pressure is building up among policy advisers both at home and abroad to roll back subsidies. This pressure is already beginning to have an impact. After a virtual explosion of subsidies in the early 1980s, sanity seems to have prevailed later in the decade. While the subsidy on electricity has kept on growing unabated, the subsidy on irrigation and fertilizer has fallen in real terms in the 1980s. It can be seen from Table 8 that subsidy on irrigation has fallen even in nominal terms between 1989-90 and 1994-95; in the same period, subsidy on fertilizer has increased in nominal terms by only about 15 percent, which is well below the rise in the general price level. At the aggregate level, it can be seen from Table 7 that subsidies as a percentage of agricultural GDP rose sharply from 3.67 percent in 1980-81 to 8.26 percent in 1987-88, but in the subsequent decade the ratio has virtually stabilized at just over 8 percent. Similarly, subsidies as a percentage of overall GDP doubled between 1980-81 and 1987-88, but the ratio has stabilized at around 2.6 percent since then.

What are the prospects of further reductions in subsidies in the medium term?

While fiscal pressure will continue to force policy-makers to look constantly for ways to cut subsidies, there are reasons to suspect that the pace of any such reduction is not going to be much faster than what it has been in the last decade.

The first and foremost reason lies in the recognition that although input subsidies are quite large, Indian agriculture is actually net taxed rather than net subsidized when one takes into account all explicit and implicit taxes and subsidies on both inputs and outputs. The tax element arises from the fact that the prices of major crops such as rice, wheat and cotton have been fixed below their international levels. The resulting negative support outweighs the positive support given in the form of input subsidies and higher than international prices fixed for a few crops such as oil seeds and sugarcane. The estimate of implicit tax depends on the output prices assumed to be received by the

Table 10 — Pattern of Input Use by Farm Size: All India

	Farm	
	Small and marginal	Medium and large
Number of holdings	75.67	24.33
Total operational area	29.00	71.00
Gross cropped area	32.62	67.38
Net irrigated area	38.85	61.15
Net irrigated area by canals	39.50	60.50
Net irrigated area by wells	38.10	61.90
Number of tube-wells fitted with electric pump sets	35.30	64.70
Fertilizer use	33.94	66.06
Short-term credit	42.65	57.35

Source: Gulati and Sharma (1997), Table 4.

farmers. If it is assumed that they receive farm harvest prices, then the net taxes amount to 8.7 percent of the total value of agricultural production in the mid-1990s (Gulati and Sharma, 1997, Table 1).⁷ In this situation, any pressure to reduce subsidy is likely to be resisted vigorously by the farm lobby, unless the implicit taxes on output prices are removed at the same time.⁸

Secondly, evidence has recently emerged that contrary to popular perception, small and marginal farmers do benefit from input subsidies. As can be seen from Table 10, small and marginal farmers use irrigation, fertilizer and credit more than proportionately to their share of gross cropped area. In other words, per unit of gross cropped area, they use more of these inputs than do the medium and large farmers. Assuming that prices paid for inputs are not much different for the two groups of farmers, this means that small and marginal farmers actually receive more subsidies per unit of cropped area than larger farmers. It is true that the larger farmers receive the lion's share of subsidies by virtue of their greater command over cropped area and hence greater absolute amount of input use. However, the fact is that in relative terms, the smaller farmers seem to benefit even more. This would make it very difficult to eliminate subsidies unless some way is found to compensate them for this loss through some other means.

Thirdly, it used to be believed that once India becomes a signatory to the Uruguay Round, the World Trade Organization (WTO) regulations would force her to reduce subsidies substantially, but that fear seems to have receded. For a developing country such as India, the current WTO regulations allow input subsidy of up to 10 percent of gross value of agricultural output. India's Ministry of Agriculture it has recently estimated that all budgeted input subsidies together amount to some 7.5 percent of gross

⁷ If, however, the farmers are assumed to receive minimum support prices fixed by the government, then the estimate of net tax rises to 18 per cent (Gulati and Sharma, 1997, Table 1).

⁸ The issues related to output price policy are discussed in sections IV and V.

value of agricultural output. Therefore, there is at present no pressure on account of WTO membership to reduce subsidies any further.

Finally, one has to take into account the realities of political pressure exerted by the farm lobby. A number of times in the recent years, government attempts to cut back subsidies have succumbed to this pressure. A few year ago, the distribution of potash and phosphatic fertilizer was decontrolled, enabling the government to eliminate subsidy on them, but urea, the most widely used fertilizer, continued to remain controlled. As urea continued to be heavily subsidized after other fertilizers were decontrolled, the relative input prices tilted strongly towards urea, leading to its overuse at the expense of other fertilizers. Concerned at the widespread use of unbalanced dosages of fertilizer, the government has recently reintroduced subsidy through the back door. This is now called 'concession', which is really a subsidy given to distributors instead of producers. The ideal solution would have been to reduce subsidy on urea rather than to reintroduce subsidy on other fertilizers, but that does not seem to be politically feasible. In early 1998, the government of India proposed to raise the price of urea by Rs. 1 per kg; but parliament rejected it. Later, the government proposed to raise price by just Rs. 0.5 per kg; even that proposal was rejected.

The political problem is even more serious with the subsidy on electricity. It was noted above that electricity now consumes the lion's share of input subsidy, and that while other subsidies have been reduced in real terms in the last decade, the electricity subsidy continues to grow. Having used cheap electricity as a political weapon to win votes, the state governments now find it hard to take it away. For instance, a number of people were recently killed in Haryana when farmers tried to protest the state government's plan to raise the price of electricity.

All these make it unlikely that input subsidies will be reduced drastically in the near future. The most one can expect is that the weight of budgetary pressure will eventually but slowly bring subsidies down to a more manageable level.

4. THE PUBLIC FOODGRAIN PROCUREMENT AND DISTRIBUTION SYSTEM

An important feature of India's food economy is extensive public sector involvement in the procurement and distribution of foodgrain. The involvement began during the World War II when a system of food rationing was introduced in order to ensure adequate food supplies for the city dwellers. But it was in the mid-1960s that the present Public Distribution System (PDS) came into being with the establishment of the Food Corporation of India (FCI). The new system was devised mainly with the aim of providing price support to the farmers, as the Indian policy-makers came to realize that adverse terms of trade were acting as a disincentive to producers and that farmers needed price support in order to invest in the new HYV technology.

The FCI procures foodgrain (and a few other crops) from the farmers and millers at predetermined procurement prices and sells them to state governments at a uniform issue price. An element of subsidy is involved at this stage as the issue price is invariably below the sum of the procurement price and the FCI's cost of operation; the burden of this subsidy is borne by the central government. The state government then distributes the foodgrain through designated fair price shops. An additional subsidy may sometimes be involved at this stage in many states, as the retail price charged by the fair price shops may be below the issue price plus cost of operation at the state level. The burden of this part of the subsidy is borne by the respective state government.

After operating mainly as a price support mechanism for nearly two decades, the PDS began to undergo a new orientation since the mid-1980s as greater emphasis began to be placed on using it as the country's most widespread safety net for the poor. First, specially subsidized foodgrain distribution was introduced in 1985 in all the tribal blocks, covering about 57 million people, most of whom belong to the poorest segment of the population. Then the distribution network was expanded under the Revamped PDS

(RPDS) scheme to 1,752 blocks with a high incidence of poverty, covering 164 million people. Finally, in the mid-1990s, a Targeted PDS (TPDS) was introduced in order to ensure that the benefit of food subsidy goes mainly to the poor. Currently, the whole system is guided by three objectives: (1) providing price support to farmers, (2) ensuring that consumers get adequate access to food at reasonable prices; and (3) maintaining a buffer stock in order to smooth out unusual price variations due to supply shocks.

The procurement policy for rice has two parts: (a) procurement of paddy at the minimum support price, and (b) procurement of rice at the levy price. Paddy is procured from mandies -- large regulated markets where farmers sell to FCI agents at the minimum support price. Although the idea of a minimum support price is that if the market tends to fall, the government will stand ready to procure as much paddy as the farmers are willing to sell at that price, in practice things don't quite work that way. When the market goes down sharply, FCI often finds itself unable to buy what is being offered due to lack of funds or storage facilities. Besides, in many states, procurement of paddy does not take place at all due to the absence of mandies. Where mandies don't exist, it becomes uneconomic to procure paddy from thousands of small haats and bazaars; and this is the situation in most parts of the Eastern states. The reason for the absence of mandies in this region lies in the predominance of small farmers and the lack of infrastructure. One cannot expect farmers carrying head-loads of paddy to sell in a distant mandi crossing many a field and river. Mandies exist mainly in the Punjab and Haryana, where large farmers predominate and infrastructure is good; and that is where procurement of paddy mainly takes place and the minimum support price truly prevails. Elsewhere, paddy price can and does sometimes fall below the minimum support price in times of severe glut.

Rice is procured mainly from rice millers by imposing a levy, whereby the millers are obliged by law to sell a certain percentage of the rice milled by them to the FCI agents at a predetermined procurement price. The levy charge varies from state to state -- it is generally within the range of 50 to 70 percent.

Foodgrain procured by the FCI goes to a central pool. A part of this is then sold to the states, according to predetermined quotas, to meet their public distribution needs. The other part is held in stock, which can be either sold to private traders through Open Market Sales (OMS) in order to stabilize prices, or exported abroad (through either private traders or state trading agencies).

Table 11 — The Size of Foodgrain Procurement and Public Distribution in India: 1960-1997

Annual average for the years	Procurement (million tons)	Public Distribution (million tons)	Procurement as percentage of net production (%)	Distribution as percentage of net availability (%)
1960 - 1965	1.44	6.48	1.94	8.18
1965 - 1970	5.68	11.14	7.38	13.94
1971 - 1975	8.04	10.36	8.92	11.14
1976 - 1980	11.76	11.56	11.16	11.12
1981 - 1985	16.56	14.62	13.62	12.24
1986 - 1990	18.48	17.40	13.54	12.60
1991 - 1995	22.84	16.96	14.48	10.96
1996 - 1997	21.70	20.50	13.00	12.00

Source: Computed from GOB (1998), Table 1.19, p. S-25.

The scale of PDS operations has increased rapidly since the mid-1960s. The size of annual foodgrain procurement (including both cereals and pulses) has gone up from 1.44 million MT during 1960-1965 to 21.70 million MT during 1996-97 (Table 11). Over the same period, the size of PDS distribution of foodgrain has gone up from 6.48 million MT to 20.50 million MT. It has been estimated from the National Sample Survey that in 1986-87, some 25 percent of the population depended upon PDS for rice and 12 percent for wheat. Cereal purchases from PDS accounted for 13 percent of market purchases in rural areas and 16 percent in urban areas (NSSO, 1990).

While the absolute scale of operation has continued to expand, the relative importance of PDS in India's food economy has, however, remained more or less stable since at least the 1970s. Thus, the size of procurement as a percentage of net production of foodgrain has varied between 11 and 14.5 percent since 1975 and, PDS distribution as a percentage of net availability of foodgrain has varied between 11 percent and 14 percent since 1965, without showing any clear trend (Table 11).

As the size of PDS has expanded, so has the size of subsidies. In real terms, the cost of food subsidy incurred by the central government has more than doubled in the last two decades. In constant 1980-81 prices, the amount of subsidy has increased from Rs. 6.9 billion in the triennium ending 1978-79, to Rs. 15 billion in the triennium ending 1996-97 (Table 12). The growing burden of the food subsidy has become a major fiscal concern, and reduction of this subsidy, along with input subsidies, has become a major focus of economic reform in recent years. It should be noted, however, that as in the case of input subsidy, the relative burden of food subsidy -- measured either as a percentage of GNP or as a percentage of public expenditure -- has not changed much since the mid-1970s. If anything, it has declined a little. In the triennium ending 1996-97, food subsidy accounted for 0.56 percent of GNP and 3.02 percent of total central government expenditure; two decades ago, in the triennium ending 1978-79, these percentages were 0.61 and 3.42 respectively.

It is also important to bear in mind the changing composition of food subsidy. There are two major parts of the subsidy - one relates to PDS distribution through fair price shops and the other relates to the carrying cost of buffer stocks held by the FCI. It is the latter part that is causing mounting concern in recent years, as a chain of events, originating from the macroeconomic reforms of the early 1990s, has led to an enormous increase in the size of buffer stocks. In order to compensate the farmers for the effects of devaluation, procurement prices were raised sharply by the government -- by as much as

Table 12 — The Burden of the Food Subsidy: 1976-77 to 1996-97

Annual average for the years	At current prices (Rs. billion)	At constant 1980-81 prices (Rs. billion)	As percentage of GNP (%)	As percentage of Central Govt. Expenditure
1976-77 to 1978-79	5.19	6.88	0.61	3.42
1979-80 to 1981-82	6.50	6.51	0.53	2.96
1982-83 to 1984-85	8.82	6.79	0.48	2.39
1985-86 to 1987-88	18.83	11.68	0.72	3.02
1988-89 to 1990-91	23.75	11.58	0.59	2.54
1991-92 to 1993-94	37.29	12.93	0.59	2.85
1994-95 to 1996-97	55.14	15.06	0.56	3.02

Source: Computed from Radhakrishna and Subbarao (1997), Table 3.1, p.17 and GOB (1998).

69 percent for wheat and 44 percent for rice between 1990-91 and 1995-96.⁹ Since the resulting support prices were far above the prices that would have prevailed in a closed market, farmers unloaded huge stocks on the market. The FCI had no choice but to buy whatever was offered at the support price, so it had to end up buying more than it would have preferred. At the same time, PDS offtake of cereals either stagnated or declined as the issue price was raised in tandem with procurement price so as to minimize the subsidy on distribution. Consequently, the FCI was forced to hold a buffer stock that was much above the intended level. In July 1995, the FCI's stock reached a peak of 35 million MT, which was way above the norm for that time of the year (22 million MT). The stock has since come down, but it is still generally above the norm (Table 13). Not surprisingly, the

⁹ For an illuminating discussion of the principles and practice of fixing agricultural prices in India, see, among others, Tyagi (1990) and Rao (1992). For an official account of the underlying principles, see GOI (1986).

Table 13 — Central Foodgrain Stocks and Minimum Buffer Stock Norms

(Million MT)

Beginning of the month	Wheat		Rice		Total	
	Minimum norm	Actual Stock	Minimum norm	Actual Stock	Minimum norm	Actual Stock
Jan '93	7.7	3.3	7.7	8.5	15.4	11.8
April	3.7	2.7	10.8	9.9	14.5	12.6
July	13.1	14.9	9.2	9.3	22.3	24.2
October	10.6	13.7	6.0	7.2	16.6	20.9
Jan '94	7.7	10.8	7.7	11.2	15.4	22.0
April	3.7	7.0	10.8	13.5	14.5	20.5
July	13.1	17.5	9.2	13.3	22.3	30.7
October	10.6	15.6	6.0	10.9	16.6	26.5
Jan '95	7.7	12.9	7.7	17.4	15.4	30.3
April	3.7	8.7	10.8	18.1	14.5	26.8
July	13.1	19.2	9.2	16.4	22.3	35.6
October	10.6	16.9	6.0	13.0	16.6	29.9
Jan '96 (P)	7.7	13.1	7.7	15.4	15.4	28.5
April	3.7	7.8	10.8	13.1	14.5	20.9
July	13.1	14.1	9.2	12.9	22.3	27.0
October	10.6	10.5	6.0	9.3	16.6	19.8
Jan '97 (P)	7.7	7.1	7.7	12.9	15.4	20.0
April	3.7	3.2	10.8	13.2	14.5	16.4
July	13.1	11.4	9.2	11.0	22.3	22.4
October	10.6	8.3	6.0	7.0	16.6	15.3
Jan '98 (P)	7.7	6.7	7.7	11.5	15.4	18.2
April	3.7	5.1	10.8	13.0	14.5	18.1

Source: GOI (1998a).

Note: (P) -- Provisional

Table 14 — State-Wise Distribution of PDS Cereal Offtake and Subsidy

(Percentage)

States	Share of the poor in India: 1986-87	Share of PDS distribution of cereals: 1993-1994	Share of central govt. subsidy on cereals: 1993-1994
Uttar Pradesh	17.97	8.49	7.74
Bihar	13.01	4.26	4.50
Maharashtra	9.74	7.58	7.61
Madhya Pradesh	9.70	3.65	3.87
West Bengal	8.70	6.65	7.12
Tamil Nadu	8.05	7.00	6.24
Andhra Pradesh	5.79	13.65	12.96
Karnataka	5.65	5.65	5.73
Orissa	5.30	2.77	3.07
Gujarat	4.08	3.25	3.64
Rajasthan	4.01	3.66	4.77
Kerala	3.16	10.39	9.49
Assam	2.31	4.20	4.29
Haryana	0.99	3.47	2.71
Punjab	0.96	1.89	2.01
Jammu & Kashmir	0.60	2.07	2.02
All India	100.00	100.00	100.00

Source: Computed from Radhakrishna and Subbarao (1997), Tables 3.4 and 4.3.

subsidy for holding buffer stocks has soared. For instance, in 1994-95, out of the central food subsidy of Rs. 51 billion, the carrying cost of buffer stocks was Rs. 18.5 billion, or 36 percent of total food subsidy (Radhakrishna and Subbarao, 1997, p.72).

While the buffer stock component of food subsidy has recently been the main source of concern, it does not mean that all is well with the PDS component of the subsidy. The main problem with PDS, however, is not so much with its size as with its inability to target the benefit to those who need it most, namely, the poor. Whether one looks at the geographical coverage of PDS across states or at the distribution of PDS supplies between the poor and non-poor within states, the predominant picture one finds is one of gross mis-targeting.

A typical picture of the geographical coverage is given in Table 14. Each state has been arranged in this table in the descending order of its share of the country's poor population. For each state, information is given on its share of the poor (in 1986-87) on one hand, and its shares of PDS cereals and central government subsidy on cereals in 1993-94 on the other. It can be seen that the states with the heaviest concentration of the poor do not receive commensurate shares of PDS cereals and the subsidy that goes with it. Even though Uttar Pradesh, Bihar and Madhya Pradesh account for about 40 percent of India's poor, they receive only about 17 percent of PDS cereals and 16 percent of the subsidy. By contrast, two states receive cereals and subsidies out of all proportion to their share of the poor - these are Kerala and Andhra Pradesh. Kerala is unique among all the Indian states in having an almost universal coverage of its population under PDS, and Andhra Pradesh is unique in having an exceptionally inexpensive food policy which ensures a minimum ration of rice at only Rs 2 per kg (while the market price may be as high as Rs. 7-8 per kilo). Andhra Pradesh, and other relatively richer states (such as Maharashtra and Gujarat) can afford to provide sizeable subsidies from their own budgets, in addition to central government subsidies, to sustain a large offtake from FCI. But since states such as Uttar Pradesh, Bihar and Madhya Pradesh are too poor to afford

Table 15 — Contribution of PDS to Cereal Consumption and Income by State: 1986-87, Rural India

State	Purchase of PDS Cereals				Income transfer	
	Kg per capita per month		Percentage of total cereal consumption		due to PDS cereals (Rs / capita / month)	
	Poor	All	Poor	All	Poor	All
Andhra Pradesh	2.43	2.53	21.29	18.19	2.70	2.81
Assam	0.84	0.72	7.58	5.43	1.07	0.90
Bihar	0.05	0.06	0.40	0.39	0.03	0.04
Gujarat	1.52	1.30	17.43	11.76	1.50	1.35
Haryana	0.02	0.01	0.16	0.07	0.03	0.02
Jammu & Kashmir	2.61	1.89	18.00	9.91	1.76	1.39
Karnataka	0.94	1.08	8.86	8.21	1.21	1.37
Kerala	4.35	4.46	52.16	43.39	6.00	6.02
Madhya Pradesh	0.27	0.27	2.04	1.61	0.09	0.10
Maharashtra	1.02	1.13	9.85	9.54	0.52	0.58
Orissa	0.01	0.04	0.07	0.25	0.00	0.03
Punjab	0.06	0.01	0.71	0.08	0.00	0.00
Rajasthan	1.32	0.86	9.76	5.15	0.54	0.37
Tamil Nadu	1.24	1.30	12.09	10.59	1.75	1.80
Uttar Pradesh	0.12	0.21	0.95	1.33	0.00	0.00
West Bengal	0.94	0.95	7.26	6.16	0.65	0.63
All India	0.76	0.88	6.38	6.17	0.72	0.84

Source: Radhakrishna and Subbarao (1997), Tables 3.8 and 4.7

Table 16 — Contribution of PDS to Cereal Consumption and Income by State: 1986-87, Urban India

State	Purchase of PDS Cereals				Income transfer	
	Kg per capita per month		Percentage of total cereal consumption		due to PDS cereals (Rs / capita / month)	
	Poor	All	Poor	All	Poor	All
Andhra Pradesh	2.72	2.44	25.28	21.44	3.65	3.20
Assam	1.40	1.28	13.27	10.15	1.34	1.23
Bihar	0.12	0.26	1.01	2.02	0.05	0.12
Gujarat	1.18	0.91	13.79	10.34	1.34	1.03
Haryana	0.08	0.08	0.74	0.75	0.08	0.07
Jammu & Kashmir	5.70	7.16	45.13	48.97	5.77	7.48
Karnataka	1.31	1.70	14.54	16.38	1.81	2.36
Kerala	4.47	4.24	52.34	44.40	5.86	5.53
Madhya Pradesh	0.50	0.51	4.27	4.36	0.22	0.22
Maharashtra	1.49	1.50	16.56	16.23	1.45	1.52
Orissa	0.17	0.35	1.25	2.50	0.08	0.14
Punjab	0.05	0.04	0.59	0.396	0.07	0.05
Rajasthan	0.29	0.26	2.41	1.95	0.06	0.10
Tamil Nadu	1.22	1.19	13.82	12.00	1.99	1.89
Uttar Pradesh	0.19	0.32	1.81	2.72	0.09	0.13
West Bengal	3.05	3.31	27.14	27.22	2.22	2.19
All India	1.27	1.34	12.59	12.26	1.40	1.41

Source: Radhakrishna and Subbarao (1997), Tables 3.8 and 4.7

this additional subsidy, they end up claiming far less PDS offtake and central subsidy than is warranted by their share of India's poor. PDS has thus been chronically afflicted by a high degree of spatial inequity.

There is also inequity in access to PDS within states. Tables 15 and 16 show, respectively and separately for rural and urban areas, the access to subsidized PDS supplies of cereals and the resulting income transfer received by the poor as well as by the total population within each state, based on the National Sample Survey of 1986-87. Looking first at the all-India figure, it can be seen that the amount of PDS cereals received by the poor accounts for 6.38 percent of their total cereal consumption, which is marginally higher than the corresponding figure of 6.17 percent for the total population. However, the poor receive a lower absolute amount of PDS cereals compared to the overall population and a correspondingly lower amount of income transfer through PDS. This pattern is replicated for the majority of the states, especially in the rural areas.

These figures suggest that if the objective of PDS is to provide a safety net for the poor, then it is highly inefficient, since much of the subsidy leaks out to the non-poor.¹⁰ In an authoritative study of the PDS, Radhakrishna and Subbarao (1997) have estimated that only 34 percent of the income transfer affected through PDS went to the poor in 1986-87 (p.47). Mainly because of this huge leakage, PDS has been a highly expensive mechanism of redistributing income to the poor -- for instance, in 1986-87, it cost the central government Rs. 4.27 to transfer Rs. 1 to the poor.¹¹

¹⁰ For further evidence on the mis-targeting of PDS, see, *inter alia*, Jha (1991), Mahendra Dev and Suryanarayana (1992), and Parikh (1994).

¹¹ There are actually two parts of this cost - one due to the administrative cost of effecting the transfer and the other due to leakage to the non-poor. The second part is the bigger of the two, but the first part is by no means negligible. Its magnitude can be illustrated by the fact that the central government had to spend Rs. 1.43 to transfer Rs. 1 to the consumers in general -- including both the poor and the non-poor (Radhakrishna and Subbarao, 1997, p.47). Thus, the administrative cost (which includes leakages due to pilferage) works out to be 43 per cent of the value of the transfer. Clearly, even as a mechanism of transferring income from the government to the population at large, the system seems to be highly inefficient; as a mechanism of transferring income specifically to the poor, it is several times more so (because of the leakage to the non-poor).

In recognition of such gross mis-targeting and the huge cost it entails, the Indian government has recently taken steps to completely overhaul the system. Since June, 1997, the system of universal coverage at a uniform price for all has given way to a two-tier Targeted Public Distribution System (TPDS). The entire population in each state is now divided into two groups: those below the poverty line (BPL) and those above the poverty line (APL). The BPL price is considerably lower than the APL price, and the lion's share of the consumer subsidy now goes to the former. For instance, in 1997-98, the economic cost of FCI rice (the procurement cost plus the FCI's distribution cost) was Rs. 830 per quintal, whereas the central issue prices were Rs. 350 for BPL and Rs. 700 for APL. Apart from the price differential, the two groups also differ in terms of priority. From their quota received by the states, they first allocate foodgrain to BPL consumers, and if there is anything left over, only then do they accommodate the APL consumers. As a result, the unwieldy public distribution system of India has now become more targeted than before.¹²

Since June, 1997, another deviation from the old system has occurred, specifically in the state of West Bengal. The state government has come to an understanding with the FCI that as far as possible, it would try to meet its distribution needs from its own procurement, instead of first sending its procurement to the central pool and then receiving its share from that pool. Help from the FCI will be sought only when internal procurement is not enough to meet the entire distribution need; by the same token, if procurement exceeds needs, the surplus would be handed over to the FCI. The reported reason for this change is that the people of West Bengal do not like the taste of other states' rice that is received from the central pool. The state government also makes the

¹² There remains some concern though as to whether even this overhauled system will be able to eliminate the problem of mis-targeting. Questions have been raised about whether the identification of the poor will be accurate enough, and whether fair price shops might not try to cheat the system by selling the lower-priced foodgrain earmarked for the BPL consumers to the APL consumers at a higher price. In view of these worries, some form of self-targeting mechanism has been suggested by some as a better alternative, for example, by tying subsidies with public employment programs or other such programs in which the poor self-select themselves. Radhakrishna and Subbarao (1997) discuss and propose such alternative feasible mechanisms. For an earlier and wide-ranging analysis of the possibilities of reforming India's procurement and distribution system, see Tyagi (1990).

additional argument that this is more cost-effective than the earlier system. As evidence of success of the new system, it is pointed out that during 1997-98 (the first year of the operation of the new system), the state government procured a record amount of 0.23 million MT, compared with the previous peak of 0.15 million MT procured by the FCI. Despite the record procurement, however, the state government has not been able to meet the entire need of the BPL consumers, not to mention the APL. The state government has set itself the target of procuring more in the future so as to meet the BPL needs fully and the APL needs at least partially. To this end, it has proposed to raise the levy rate from 30 percent to 50 percent from the 1998 kharif season, which will bring the West Bengal rate more in line with the rest of India, where 50 percent tends to be the norm.¹³

¹³ A fuller discussion of the proposed new system of procurement and distribution in West Bengal can be found in GOWB (1997).

5. DEMAND-SUPPLY BALANCE, EXPORT POTENTIAL AND TRADE LIBERALIZATION

Having considered the production and distribution aspects of India's food economy in the preceding sections, we now take up the issues and problems relating to the export of foodgrain, especially rice, from India. India has embarked on a path of wide-ranging economic reforms since the early 1990s. Liberalization of international trade is an important component of these reforms. If India has an export potential in foodgrain, then this trend towards liberalization will help to translate this potential into reality. But does India have an export potential? We shall attempt to throw light on this question in two parts - first, by looking at the demand-supply balance within the domestic economy, and then by asking whether India has a comparative advantage in the export of foodgrain.

A remarkable aspect of India's food economy is the absolute decline in per capita consumption of cereals over the last three decades. National Sample Survey data show that between 1970-71 and 1991-92, per capita consumption of cereals has declined from 15.35 kg per month to 13.50 kg in rural areas, and from 11.36 kg to 10.68 kg in urban areas. The decline is evident in most of the states, the major exceptions being Kerala and West Bengal, and to a lesser extent, Orissa and Maharashtra (Table 17). What makes this decline especially remarkable is the fact that during the same period, per capita total consumption expenditure has increased by a non-negligible amount. This is shown in Table 18, where a comparison is made between 1972-73 and 1987-88. Per capita total expenditure (on food and non-food combined) increased by roughly 25 percent over this period, and yet per capita expenditure on cereals declined in rural areas and stagnated in urban areas.

One possible way in which such divergence between total expenditure and cereal consumption can occur is through worsening distribution of income and expenditure. If

Table 17.— Changes in Per Capita Consumption of Cereals between 1970-71 and 1991-92

(Kg per month)

States	Rural			Urban		
	1970-71	1991-92	Growth rate	1970-71	1991-92	Growth rate (%)
Andhra Pradesh	16.05	13.60	-0.73	13.31	11.57	-0.67
Assam	15.70	13.20	-0.65	11.91	11.53	-0.18
Bihar	16.39	15.00	-0.11	13.68	13.66	-0.12
Gujarat	15.00	11.10	-1.12	10.35	8.88	-0.79
Haryana	18.13	10.20	-1.60	11.90	9.90	-0.91
Karnataka	15.71	12.30	-1.35	11.91	10.44	-0.59
Kerala	7.99	10.00	1.45	7.55	9.73	1.18
Madhya Pradesh	16.51	14.30	-0.60	12.88	11.46	-0.56
Maharashtra	12.83	11.70	-0.52	9.75	9.42	0.22
Orissa	16.12	17.10	0.21	13.22	13.36	0.05
Punjab	15.46	12.00	-1.37	11.25	8.85	-1.00
Rajasthan	17.91	14.90	-0.90	13.03	11.62	-0.42
Tamil Nadu	13.95	11.60	-1.01	10.63	9.98	-0.53
Uttar Pradesh	16.32	13.70	-0.72	11.79	11.42	-0.39
West Bengal	13.35	14.20	0.61	10.88	11.30	0.48
All India	15.35	13.50	-0.52	11.36	10.68	-0.23

Source: Radhakrishna (1996), Table 1.

Table 18 — Change in the Food Composition of Indian Consumers between 1972-73 and 1987-88

(Per capita consumption expenditure; Rs. per month at 1987-88 prices)

Commodity Group	Rural				Urban			
	Total population		Poorest 30 percent		Total population		Poorest 30 percent	
	1972-73	1987-88	1972-73	1987-88	1972-73	1987-88	1972-73	1987-88
Cereal and cereal substitutes	22.23	21.36	16.41	16.50	19.41	19.37	15.59	16.36
Non-cereal food	19.43	26.61	8.87	12.71	35.47	43.58	15.17	21.25
All food	41.66	47.97	25.28	29.21	54.58	62.95	30.76	37.61
Non-food	18.78	26.72	6.98	11.19	39.34	56.71	10.81	16.19
Total Expenditure	60.44	74.69	32.26	40.40	94.21	119.67	41.57	53.80

Source: Radhakrishna and Ravi (1992)

the incremental income accrues mainly to the richer segment of the population, whose income elasticity of demand for cereals may be zero or negative, then it is possible that total expenditure might rise and yet cereal consumption fall. To what extent this has actually happened is not altogether clear. At least the National Sample Survey data does not reveal any sharp worsening of income distribution in India, although there are some doubts as to how accurately these surveys are able to capture the growth of income at the upper end of the income scale. What is clear, however, is the possibility that other forces, such as change of taste, must have been at work as well. This is evident from the consumption pattern of the poorer segment of the population, as shown in Table 18. Per capita total expenditure of the poorest 30 percent of the population increased by about 25 percent in rural areas between 1972-73 and 1987-88, and yet per capita cereal consumption practically stagnated at around 16.5 kg per month. As in the case of the overall population, their incremental income was used almost entirely to purchase non-cereal food and non-food items. All this has happened when the real price of cereals has actually declined over time.

Evidently, a shift of preference has occurred across the population. This suggests that rising income in the future is unlikely to entail any substantial increase in per capita demand for cereals. This is reflected in the demand projections for the years 2000-2010 reported in Table 19. Most of the incremental demand is going to arise from population growth rather than growth in per capita demand. The resulting aggregate demand at the household level is projected to grow at the rate of 1.98 percent per annum for all cereals combined. The demand for rice will grow somewhat faster than the average, at about 2.2 percent per annum. Even after adding non-household demand (seed and feed), it has been estimated that total demand for rice is unlikely to grow at more than 2.5 percent per annum.

Considering the supply side, it may be recalled from Table 2 that rice output grew at the unprecedented high rate of 4 percent per annum during the 1980s. The growth rate

**Table 19 — Projected Growth Rates of Household Demand for Cereals in India
Between 2000 and 2010**

<i>(Percent per annum)</i>		
Commodity Groups	Per capita demand	Aggregate demand
Rice	0.44	2.20
Wheat	0.81	2.30
Other cereals	-0.57	0.97
All cereals	0.42	1.98

Source: Radhakrishna and Ravi (1990)

did come down to 1.75 percent in the 1990s, but it is important to note that the government of India has recently embarked upon an ambitious program of doubling food production within ten years (GOI, 1998b). As part of this program, foodgrain output is projected to increase by 50 percent, which implies a growth rate of over 4 percent per annum, and this acceleration in growth is expected to come mainly from increased rice production in the Eastern region. Even if the goal of this ambitious program is only partially fulfilled, it is clear that growth of supply is very likely to exceed the growth of demand.

This imbalance in supply and demand implies that either the government will have to accumulate ever-increasing stocks in order to maintain price incentive for the producers, or the excess supply must be exported abroad. The former is not a feasible proposition; therefore, if India is to go anywhere near its goal of output expansion in the face of sluggish growth of domestic demand, then increased export of foodgrain must be considered an essential part of future policy.

This raises the question of whether India can in fact export foodgrain in the world market; in other words, does it have comparative advantage in the production of

foodgrain? Recent evidence shows that India does have strong comparative advantage in both rice and wheat. This evidence is based on calculations of resource cost ratio (RCR), a measure of comparative advantage that shows how many rupees it costs to produce a commodity at home as a ratio of how many rupees worth of foreign exchange can be either earned (export parity RCR) or saved (import parity RCR) by trading it internationally. A resource cost ratio of less than unity indicates the existence of comparative advantage -- as an import substitute if the ratio is calculated with reference to import parity price and as an exportable if it is calculated with reference to export parity price.

A study sponsored by the World Bank has estimated that under import parity, wheat has the lowest RCR (0.49) among all the major agricultural crops (Table 20). That is, among all these crops, wheat is the most efficient import substitute, so efficient allocation requires that wheat be produced at home instead of being imported from abroad. Next comes rice, whose RCR at import parity is 0.58.

Under export parity, however, rice is the most efficient commodity of all (0.70). The other two exportables, cotton (0.93) and wheat (0.96), are marginal cases. In other words, rice is the only major agricultural crop in India whose export is unambiguously and significantly beneficial for the country on efficiency grounds. The low ratio for rice derives from (a) low domestic price of rice relative to world prices, and (b) low opportunity cost of land resulting from low returns of competing crops (coarse cereals). This is true even after allowing for all the subsidies in calculating the cost of rice production. It should be noted, however, that the wedge between domestic and world price would be smaller if input subsidies were eliminated (which would raise domestic price) and if India were to emerge as a major exporter in the world market for rice (which might bring down the world price).

One question arises at this point: if rice is so efficient, why hasn't it been exported more? The answer lies in the simple fact that India's foodgrain sector has traditionally

Table 20 — Efficiency Indicators for Major Indian Crops

Crop/Scenario	Resource Cost Ratios				
	TE 83-84	TE 86-87	TE 89-90	TE 92-93	Average
Importable Scenario					
Wheat	0.59	0.62	0.48	0.5	0.55
Chickpea	0.62	0.77	0.5	0.48	0.59
Rapeseed-mustard	1.09	1.46	1.82	1.51	1.47
Rice	0.56	0.69	0.57	0.52	0.59
Maize	0.95	0.91	0.74	0.82	0.86
Sorghum	0.71	0.8	0.84	0.69	0.76
Pearl Millet	0.94	0.95	0.86	-	0.92
Cotton	0.66	0.82	0.6	0.73	0.70
Sugarcane	1.21	2.66	0.72	0.98	1.39
Groundnut	1.03	1.67	1.44	1.51	1.41
Pigeonpea	0.3	0.83	0.88	0.96	0.74
Soyabean	0.81	0.77	0.93	0.85	0.84
Sunflower	1.18	1.33	1.44	1.23	1.30
Exportable Scenario					
Rice	0.62	0.9	0.68	0.6	0.70
Cotton	0.8	0.99	0.86	1.06	0.93
Wheat	0.94	1.12	0.85	0.94	0.96

Source: Gulati and Sharma (1997), Table 1.

been kept artificially insulated from global markets. Imports are tightly controlled through canalization, that is, nobody except government agencies or specific traders licensed by the government can import these commodities. Exports of common wheat and rice on private account were opened up in late 1994, but brought back under government control in 1996. Currently, wheat export is severely restricted, and although rice export is being allowed freely, it is being done under a watchful eye. Not only do the rice exporters have to be registered with the Agricultural and Processed Food Products Export and Development Agency (APEDA), each of their consignments also needs APEDA's separate approval. This system provides the government with a mechanism with which to restrict the export of rice as and when deemed necessary.

It should be noted that the system of compulsory levy also acts as an implicit restriction on export. As of now, the freedom to export rice only means the freedom to export only from that portion of rice that is not surrendered to the FCI. If the system of compulsory levy did not exist, at least a part of the rice that the millers are now obliged to hand over to FCI might conceivably have been exported, given favorable world prices. In that sense, rice export from India is not completely free, even when there are no explicit restrictions.

These explicit and implicit restrictions, together with other market imperfections within the domestic economy, imply that rice may not actually be exported even if it were economically efficient to do so. It was pointed out earlier that the comparative advantage of rice derives partly from the low opportunity cost of land and labor used in its production; however, actual exporting will depend on whether the low opportunity costs are reflected in prices. In other words, what matters for the potential exporters is the relationship between domestic and world prices, technically known as the nominal protection coefficient (NPC). As can be seen from Table 21, between 1980-81 and 1986-87, the NPC (under export parity) measured at the official exchange rate was very close to unity (0.97), which explains why rice wasn't exported much during that period.

Table 21 — Effective Incentive Indicators for Major Indian Crops

Crops /Scenario	1980-81 to 1986-87						1987-88 to 1993-94					
	OER			SER			OER			SER		
	NPC	EPC	ESC	NPC	EPC	ESC	NPC	EPC	ESC	NPC	EPC	ESC
Importable Scenario												
Wheat	0.77	0.76	0.81	0.64	0.59	0.63	0.68	0.64	0.69	0.58	0.52	0.56
Chickpea	1.02	1	1.05	0.84	0.81	0.85	0.98	0.97	1.02	0.84	0.81	0.85
Rape/mustard	1.41	1.45	1.5	1.17	1.18	1.22	1.94	2.04	2.11	1.64	1.69	1.75
Rice	0.76	0.75	0.84	0.63	0.61	0.68	0.59	0.57	0.65	0.5	0.48	0.54
Maize	1.1	1.12	1.18	0.93	0.93	0.98	0.97	0.99	1.06	0.85	0.85	0.91
Sorghum	1.18	1.2	1.26	1.03	1.04	1.09	1.02	1.04	1.11	0.91	0.92	0.98
Pearl Millet	1.11	1.21	1.38	1.05	1.1	1.27	1	1.06	1.32	0.92	0.93	1.17
Cotton	0.79	0.78	0.93	0.65	0.62	0.73	0.73	0.73	0.96	0.63	0.62	0.81
Sugarcane	2.11	2.34	2.43	1.35	1.35	1.41	0.88	0.89	0.95	0.7	0.69	0.74
Groundnut	1.45	1.49	1.62	1.21	1.16	1.26	1.48	1.48	1.64	1.27	1.23	1.36
Pigeonpea	1.07	1.08	1.12	0.89	0.88	0.92	1.27	1.28	1.33	1.09	1.09	1.14
Soyabean	1.09	1.13	1.28	0.91	0.91	1.02	1.22	1.29	1.41	1.05	1.06	1.16
Sunflower	1.52	1.57	1.71	1.26	1.28	1.4	1.45	1.55	1.74	1.25	1.3	1.46
Exportable Scenario												
Rice	0.97	1.01	1.09	0.79	0.77	0.83	0.75	0.74	0.82	0.63	0.6	0.67
Cotton	0.91	0.91	1.1	0.74	0.72	0.85	0.98	1.02	1.34	0.84	0.85	1.11
Wheat	1.26	1.56	1.65	0.99	1.02	1.08	1.21	1.55	1.66	0.97	1.04	1.1

Source: Gulati and Sharma (1997), Table 2.

Notes: OER = Official Exchange Rate; SER = Shadow Exchange Rate (assuming 20 percent premium on official exchange rate, however, after 1992-93 the shadow exchange rate is the market exchange rate); NPC = Nominal Protection Coefficient, EPC = Effective Protection Coefficient, ESC = Effective Subsidy Coefficient

Table 22 — Ratio of Export to Domestic Prices of Various Commodities: 1970-1985

Commodity	1970	1975	1980	1985
Rice	1.8	3.3	1.8	1.2
Wheat	2.2	2.2	0.9	0.8
Sugar	0.4	0.9	0.5	0.4
Raw cotton	2.3	2.7	3.6	2.8
Tea	2.0	1.1	1.5	1.1
Tobacco	1.8	2.1	2.9	3.1
Jute	1.3	2.1	1.0	0.4

Source: Reddy and Badri Narayanan (1992, P.52)

However, during 1987-88 to 1993-94, NPC came down to 0.75 at the official exchange rate.¹⁴ This is when India began to export rice in substantial amounts.¹⁵ In fact, in 1995-96, India emerged, albeit temporarily, as the second largest exporter of rice in the world after the United States when it exported 5.6 million tons of rice, accounting for 27 percent of world trade in rice. Since then, the volume of export has stabilized at around 2-3 million tons, which amounts to barely 3 percent of the current level of rice production in India.

It is not at all clear, however, that the prospect of becoming a major rice exporter is viewed with equanimity by all sections of Indian society. At the root of the debate lies the concern with food security as it is likely to be affected by the impact of trade liberalization on food prices.¹⁶ Domestic prices have so far remained below world prices, partly because of the overvalued exchange rate, and partly because of implicit restrictions

¹⁴ Protection for rice was low during this period according to other measures of protection as well. For example, EPC (effective protection coefficient) was 0.74 and ESC (effective subsidy coefficient) was 0.82.

¹⁵ Until the early 1990s, India used to export only high quality *basmati* rice, but since then, the export of non-*basmati* rice has also picked up, and this is what has given the boost to total rice export. For a discussion of recent changes in India's rice export, see the Agriculture and Industry Survey (1997-98).

¹⁶ For alternative perspectives on this issue, see, *inter alia*, Subramanian (1993), Parikh *et al.* (1995), Pursell and Gulati (1995), Rao (1995), Ahluwalia (1996), P. Patnaik (1996), U. Patnaik (1996), Gulati and Sharma (1997) and Gulati (1998).

on export (Table 22). This suggests that if India's trade regime is fully liberalized, then domestic prices are bound to rise; if input subsidies are removed as part of the process of economic reform, then the prices will rise further. According to one estimate, the combined effect of economic reforms in both the domestic and external sectors would be to raise the overall level of agricultural prices by 15 to 20 percent, with cereal prices rising somewhat more (Pursell and Gulati, 1995). These estimates, however, do not allow for the large country effect in the case of rice, that is, the possibility that the world price of rice would most probably fall if India enters the export market in a big way, thereby softening the impact on price in the wake of liberalization. Parikh et al. (1995) have tried to allow for this effect in a computable general equilibrium model; their analysis naturally indicates a smaller rise in the price of rice. The precise quantitative effect on the price of rice still remains a matter of dispute because the effect is sensitive to the various assumptions made by the modelers. There is, however, hardly any dispute over the qualitative conclusion that economic reforms will raise the price of rice in the short run.

This will have two opposing effects on the poor. On the one hand, it will reduce their purchasing power, other things remaining the same. On the other hand, by spurring production, it will raise their employment and wages. The latter effect will be especially strong if liberalization encompasses the non-agricultural sector as well. Since non-agriculture happens to be more heavily protected than agriculture, an all-encompassing liberalization will turn the inter-sectoral terms of trade in favor of agriculture. This will stimulate investment and productivity growth in agriculture, which in turn will improve the livelihood prospects of the rural poor.¹⁷ There is, however, a near consensus among both the proponents and opponents of liberalization that at least in the short run, the net effect on the poor will be negative. Some modeling exercises in general equilibrium and

¹⁷ In fact, using either general equilibrium or multi-market models, several analysts have found that the inter-sectoral terms of trade effect is likely to be much stronger than any efficiency-enhancing effect of resource reallocation within agriculture (Subramanian 1993, Parikh *et al.* 1995). This finding has led to the view that liberalization of non-agriculture is even more important in India than agricultural liberalization for the sake of agriculture itself.

multi-market frameworks have concluded that this is very likely to happen (Subramanian 1993, Parikh et al. 1995). And the possibility becomes stronger, the less optimistic one's assumptions are regarding agriculture's supply response to price incentive.¹⁸

The proponents of liberalization do not, however, see this as an argument against free trade. They argue instead that what is called for is further strengthening of the safety net arrangements. In particular, they emphasize the need for better targeting of the Public Distribution System and more investment on poverty alleviation programs. As discussed earlier, the move towards better targeting of the distribution system has already been made, and this is now seen as an integral part of overall economic reform. As for investment on poverty alleviation programs, it is being argued that the savings made by the reduction of subsidies can be used to augment these programs. After all, input subsidies and food subsidies together constitute over three percent of India's GDP. By contrast, the total expenditure on poverty alleviation programs (including all employment generation programs, and schemes for providing basic health and education to the poor) accounts for less than 1.5 percent of GDP. Clearly, the savings that would accrue from the reduction of subsidies can be utilized to greatly expand the scope of these programs.¹⁹ A part of the savings may also be used to help the poor indirectly by investing in agriculture. Some advocates of liberalization have indeed argued that the emphasis on trade liberalization should be accompanied by equal or greater emphasis on improving the supply response in agriculture, through greater public investment and institutional reform (Gulati 1998). Without a substantial improvement in supply response, they argue, the

¹⁸ An extreme view is presented by P. Patnaik (1996), who shows that trade liberalization will actually be harmful even in the long run, using a theoretical model in which investment in agriculture does not respond to terms of trade change. The empirical study of Mishra and Hazell (1996) does, however, find that private investment has responded strongly to terms of trade change in Indian agriculture.

¹⁹ The existing subsidies do not bypass the poor completely, as has been noted earlier in the context of both the input subsidy and food subsidy. However, as far as subsidies remain essentially untargeted, any reallocation of resources from subsidies to poverty alleviation programs will greatly strengthen the effort to help the poor. Radhakrishna and Subbarao (1997) provide quantitative estimates of how much more efficient some of these programs are in comparison with food subsidy as a means of effecting income transfer to the poor.

negative effect on the poor may turn out to be too large and long-lasting to be politically acceptable.

The critics remain skeptical about the effectiveness of all these countervailing strategies, at least in the short run, hence their concern. They are also concerned with the implications of free trade for the ability to cope with occasional crises. Despite much technological progress, Indian agriculture still remains susceptible to the vagaries of nature, especially droughts. In the last two decades, India has managed well to cope with these crises with the help of its PDS network, by increasing offtakes during crisis periods. However, the success of this coping strategy was contingent on holding a sizeable buffer stock of food, which in turn was made possible by operating a large-scale procurement policy within a closed market. Liberalization will render this strategy more difficult to pursue by raising domestic prices of foodgrain and thus making the buffer stock even more expensive than what it is now. The proponents of liberalization of course argue that it would be more efficient to cope with crises by importing foodgrain from the world market in a free trade regime than by relying on the current strategy of holding a huge buffer stock by the FCI.²⁰ We have already noted the enormous cost being incurred by the FCI for holding a huge buffer stock. The proponents of free trade argue that by avoiding these costs, free trade will enable India to ensure food security at a lesser cost.

The skeptics are not convinced. What if, they ask, the price of rice goes up in the world market when Indian prices go up due to a supply shock? Critics have pointed out that the world market in rice trade is pretty thin – the total volume of trade in a typical year is less than 20 million tons, which is roughly equivalent to the size of the buffer stock being held by India in recent years. Consequently, if India becomes a major exporter, Indian prices may come to have a large impact on world price, in which case

²⁰ Strictly speaking, hardly any proponent of liberalization advocates the complete cessation of buffer stocking policy. What they would prefer is a considerably scaled-down version of this policy, in which only a small part of the stock will be held in the form of physical commodities, and the rest will be held in the form of foreign exchange reserves. For illuminating discussion on the possible alternative methods of ensuring food security in a liberalized regime, see Tyagi (1990) and Radhankrishna and Subbarao (1997).

India may not be able to benefit from cheap world prices when its own prices are high. Then there is also the fear that if by some coincidence a food crisis occurs along with a balance of payments crisis, then it may not be possible to meet the crisis by importing foodgrain from abroad, even if world prices happen to be cheaper.

All these concerns make Indian policymakers rather wary of completely freeing up trade in foodgrain. The general attitude seems to be that as long as rice production is comfortable and domestic price is stable, the government will not worry about some marginal export, but will keep the situation under close watch and if there is any hint of market price going substantially above what is considered to be a fair price for the consumers, it will not hesitate to clamp down on export.

6. IMPLICATIONS FOR RICE TRADE BETWEEN INDIA AND BANGLADESH

It is now possible to piece together a number of salient aspects of the Indian food economy that have a bearing on the prospects of rice export from India.

1. On the production front, the rice sector appears to have overcome the technological barrier that had held it back in the early days of the Green Revolution. From its birthplace in the traditionally non-rice-growing states of the northwest, the Indian Green Revolution has now spread to the traditional rice-growing areas of the east and the south. The current strategy of the Indian government to focus its efforts on the eastern region for the purpose of both boosting aggregate foodgrain production and reducing poverty will give a further stimulus to rice production.
2. Subsidies on agricultural inputs have played an important role in the past in disseminating the HYV technology among all classes of farmers, but as the level of input use has increased manifold over the last three decades, the fiscal burden of these subsidies has become unsustainable. Although the current level of input subsidy is somewhat below the level permitted by WTO, and although Indian agriculture happens to be net taxed rather than net subsidized when all kinds of incentives and disincentives are taken into account, the sheer budgetary pressure will compel the Indian government to cut down on subsidies, albeit slowly in view of farmers' resistance.
3. The minimum support price policy operated by the FCI has contributed significantly to encourage Indian farmers to adopt the HYV technology. However, the huge cost and wastage involved in maintaining the operations of the FCI at its current level is becoming increasingly unsustainable. It is almost inevitable that in the near future, the FCI will procure much less foodgrain than it does now, leaving the private sector to become the major player in the foodgrain market.
4. Despite moderate increase in per capita income and expenditure, per capita consumption of cereals has declined in India over the last three decades. This tendency is likely to persist in the future, with the bulk of the new demand for cereals coming from population growth. At the same time, ambitious programs are

being undertaken to raise foodgrain output by 50 percent in the next ten years. Consequently, the projections of supply and demand for rice in the first decade of the next century suggest that supply will exceed demand at current prices, so that additional price incentives will have to be provided to farmers if the planned supply is to materialize.

5. Of all the major agricultural commodities in India, rice enjoys the greatest comparative advantage. It is in fact the only unambiguously exportable commodity, with the potential of huge efficiency gains from its export.
6. Complete liberalization of rice export will almost certainly raise the domestic price of rice, especially if subsidies are also withdrawn as part of the overall reform package, and most analysts agree that the poor will be worse off as a result, at least in the short run.
7. Since June, 1997, the Indian government has introduced a Targeted Food Distribution System in recognition of the fact that the erstwhile universal distribution system was both unsustainably expensive and incapable of providing a strong enough safety net for the poor.

The implication of the first five of these seven features is that the economic and policy environment in India is likely to become increasingly favorable towards exporting of rice; the sixth feature might, however, create a force against this tendency, but this could be neutralized by the seventh feature.

The recent spread of the Green Revolution in the eastern region of India augurs well for the prospects of rice trade between India and Bangladesh for obvious reasons of geographical proximity. The fact that the rabi season is being especially targeted for future expansion of rice production in West Bengal and other eastern states is also a favorable factor, because this will ensure a seasonal spread of the exportable surplus since most other states grow rice mainly in the kharif season. This means that Bangladesh should be able to find exportable rice in India regardless of the season in which it happens to suffer a shortfall. One possible danger is that Bangladesh and West Bengal may suffer from similar climatic hazards at the same time, but this danger is attenuated by the fact that the HYV rice has now spread across all the regions of India. This has not only

created the basis of an exportable surplus by accelerating the overall growth of rice production, but has also assured a secure basis of this surplus in the face of climatic hazards. Since accelerated rice production is now taking place in many different agro-climatic zones, localized adversities are unlikely to endanger the exportable surplus completely. This was best illustrated during the disastrous floods in Bangladesh in the summer of 1998, when parts of the eastern states of India also suffered from floods and significant crop losses along with Bangladesh. And yet, Bangladesh was able to import a large volume of rice from India as other states were enjoying a bumper crop at the same time.

As rice production gets further stimulus from the current focus on the eastern region, it will become necessary to maintain price incentives in order to achieve the ambitious targets being set. As input subsidies begin to be reduced for both budgetary and efficiency reasons, the need for providing price incentives will become even stronger. Furthermore, the fact that per capita demand for cereals is likely to grow at a negligible rate and population growth will also slow down in the coming decades implies that consumer demand for cereals will most probably fail to provide the requisite price incentive to the producers.

Under these circumstances, it will become necessary to find some way of maintaining the price incentive if the planned acceleration in supply is to materialize. In the past, price incentives were maintained primarily through the operation of the minimum support price policy, involving a huge subsidy for the FCI. Due to the absence of mandies in the eastern region, the FCI's role in providing minimum price support to paddy was never very strong in this region, and is likely to become even weaker in the near future as the search for efficiency leads to the whittling down of the FCI's activities. In that event, allowing free export of rice will become the only feasible way to sustain accelerated production. This strategy is also likely to find favor in the current climate of economic reforms, as India happens to enjoy a huge comparative advantage in rice.

It is thus clear that the forces underlying the first five features listed above will together create a favorable climate for sustained rice trade between India and Bangladesh. The sixth feature, the likely negative impact of agricultural trade liberalization on the Indian poor, is the only potential impediment towards this tendency. If the food security of the poor is jeopardized as a result of liberalization, it is unlikely that free export of rice will be politically sustainable, regardless of the potential efficiency gains. However, even this impediment may be offset by the final feature, the introduction of a targeted public food distribution system in place of the erstwhile universal food distribution system that was of very little help to the poor. The offsetting force will be further strengthened if the savings made from the reduction of subsidies are utilized for expanding the scope of poverty alleviation programs - the current climate of opinion is certainly favorable towards such switching of resources.

Keeping all these in view, it is reasonable to infer that the policy environment is likely to become increasingly favorable towards rice export from India. The already relaxed attitude of the central government over the last few years is suggestive in this regard.

The preceding discussion was concerned mainly with Indian food policy at the level of the central government. This was appropriate because most aspects of food policy - especially those related to pricing, distribution, and trade - do fall under central jurisdiction. But while discussing the implications for rice trade between India and Bangladesh, it is necessary to bring in the state governments as well, because state governments do have a role to play in the food economy: they set production targets, determine the level of subsidy on electricity and irrigation, may have procurement and distribution programs of their own in addition to those of the central government, and have de facto powers to restrict the movement of foodgrain out of, into, or through their respective states. All these may have implications for rice trade between India and Bangladesh.

Most of the Indian rice imported by Bangladesh comes through land routes via the state of West Bengal; a smaller part comes by sea, mainly from the Kakinada port in Andhra Pradesh and to a much lesser extent from the Kandla port in Gujarat. Most of these imports originate from the Punjab, Uttar Pradesh, Andhra Pradesh, Madhya Pradesh and West Bengal, and to a much lesser extent from Haryana, Orissa and Bihar. The policies and actions of the governments of these states – especially, those of West Bengal and Andhra Pradesh (the main exit points) – are relevant.

As noted earlier, the central government's policy towards rice export is one of cautious pragmatism – export is to be allowed if prices at the national level seem stable or depressed, not otherwise. For the last few years, the attitude seems to have been a fairly relaxed one. However, the same thing cannot be said about all the states that matter.

The states that produce a lot of rice but consume very little (such as the Punjab and Uttar Pradesh and to a lesser extent, Madhya Pradesh) are naturally keen to export. The current policies of the central government suit them well. However, none of these states have an exit point for exporting to Bangladesh directly. They have to send their consignments through either West Bengal or Andhra Pradesh, two of the major rice-producing states that are also major rice consumers. And there the attitude of the state governments is not so relaxed.

As noted earlier, the Andhra Pradesh government operates a very ambitious cheap rice policy for its population. Each citizen is offered a fixed ration of rice at the almost give-away price of Rs. 2 per kg, whereas the normal retail price seldom falls below Rs. 7 or 8. This policy inevitably imposes a heavy subsidy burden on the government. Any rise in the market price will make this burden heavier, by entailing a higher procurement price, and hence a higher issue price charged by the FCI. Given this constraint, the government is naturally concerned with ensuring that the market price does not rise. And that is what makes them wary about export.

This is not to say that they do not allow export at all. However, they do try to restrict the export of their own rice when the market price is up, even when the central government has no such directive. These restrictions take mainly a seasonal pattern – export being allowed in the harvest season when the price is low, but restricted in the lean season when price is high. Restriction is also imposed on special occasions, such as election time, when the political cost of high rice prices may be deemed unacceptable.

The West Bengal government does not have a cheap rice program such as that of Andhra Pradesh, but it has other compulsions. Since the mid-1960s through June, 1997, the city of Calcutta was treated as a statutory rationing area, which meant that the government of West Bengal did not allow any private inflow of rice into Calcutta from the rest of the state. The idea was that if free movement of rice was allowed, the huge purchasing power of the teeming millions living in Calcutta would suck in so much rice from the hinterland that the price in the rural areas would soar above the reach of the rural poor. So West Bengal's rice was to remain within the hinterland, while Calcutta was to be fed solely from rice obtained from the FCI central pool. This policy did not entirely succeed, since clandestine private inflow into Calcutta did take place for the simple reason that the amount of ration given to the citizens of Calcutta was far from adequate to meet their needs. However, it did have a depressive effect on local price, which was helped by the zoning policy existing at the time which enabled the state governments to restrict inter-state movement of foodgrain.

In the last few years, the zoning policy has been abolished and the law regarding the statutory rationing area has been made redundant by the introduction of the Targeted Public Distribution Program which makes it necessary to feed the 'below poverty line population' first, wherever they live. Since the entire citizenry of Calcutta is no longer to be fed from the ration system as a matter of priority, it has become necessary to ensure that those above the poverty line can purchase rice from the market. As a result, rice is now allowed to move freely into Calcutta, at least on paper. This has led to some concern as to whether it would be possible to maintain low rice prices for the rural poor. In this

situation, the prospect of any additional stimulus to the market that might come from export to Bangladesh does worry some people.

Propelled by the desire to maintain low rice prices, the government of West Bengal has restricted rice export to Bangladesh in the past. In 1996, however, a number of private traders and millers challenged these restrictions in the court, arguing that export was a central government matter and that the central government did not have a policy of restriction at that time. They obtained a stay order preventing the West Bengal government from restricting export until the court gave a ruling. By virtue of that stay order, rice was exported fairly freely from West Bengal to Bangladesh for nearly a year, up to March 1998. At that point, the court ruling went in favor of the government and restrictions were reimposed.

The same populism which drives the state governments to restrict the export of rice from within their states also sometimes leads them to restrict transit of rice from other states, although officially they cannot restrict such transit. Politicians are afraid that strong sentiments may be aroused if truckloads or wagonloads of rice from other states pass through their states for export to Bangladesh when local people are suffering due to some local scarcity. At times, riots and looting have occurred near the border between West Bengal and Bangladesh, which goes to show that the politicians' fears are not altogether unfounded.

However, there are reasons to expect that these state-level restrictive practices may weaken in the future. As noted earlier, India is embarking on an ambitious program of raising the production of foodgrain by 50 percent in the next ten years. As part of this plan, the rice output of West Bengal is to increase from 13.1 million tons to 17.1 million tons. If this plan succeeds, it will entail a very sharp increase in production within a relatively short time span. There is some doubt as to whether increased production of this magnitude can be absorbed within the state without a sharp decline of prices, which might defeat the production goal itself.

Officially, the West Bengal government claims that the state is just about self-sufficient in rice, although there are many who argue that the state already has a surplus. The official claim of near self-sufficiency is based on a comparison between availability and a normative standard of needs. By contrast, the 'surplus' argument is based on the facts that most of the poor people do not have enough purchasing power to meet the normative needs and that many of the rich people, especially in Calcutta, meet increasing proportions of their need for carbohydrates by consuming wheat instead of rice. In any case, even if one believes that the state is just self-sufficient at the moment, one must admit the possibility of a sizeable surplus in the near future, in view of the new plan for accelerated production. There is no way in which local demand is going to increase at the same rate at which production is being envisaged to increase in the next ten years. If producer incentives are to be maintained, export of rice to either Bangladesh or elsewhere will become a necessity. There are already some suggestions that farmers in the surplus districts of West Bengal (Bardhaman, Birbhum, Hoogli, Nadia, and parts of Murshidabad and Chhabish Paragana) would not be receiving a remunerative price for their HYV crops in the absence of recent exports to Bangladesh. The validity of this claim remains to be verified, but during field investigations in West Bengal, the author did come across this claim from diverse sources, including traders, officials, and farmers. If there is some truth to this claim, then one can certainly expect smoother flow of rice from India to Bangladesh in the future.

One must also remember that in normal times, Bangladesh imports only a small proportion of rice exported by India. In the last few years, India has exported two to three million MT of rice a year on average. Out of this, roughly 1.5-2 million MT was non-basmati, the kind of rice that is imported by Bangladesh. By comparison, non-food-aid import in Bangladesh is unlikely to be more than 0.5 million MT of rice in a normal year. Thus, even with current production and policies in India, there should be little difficulty in accommodating Bangladesh's normal import demand. Certainly, the experience of Bangladesh since 1994 shows that even crisis demand can be met by imports from India,

with a consequent moderating effect on the price of rice in Bangladesh. It is even conceivable that quite soon, West Bengal alone will be able to meet the normal import needs of Bangladesh, and that the West Bengal government will encourage their traders in this activity for the sake of their own farmers.

ANNEXURE 1. MONITORING INDIA'S FOOD ECONOMY

The following sources can be utilized for monitoring India's food economy on a regular basis.

1) *Monthly Review of the Indian Economy.*

Published monthly by the Centre for Monitoring Indian Economy (CMIE); 11 Apple heritage, 54-C Andheri-Kuola Road, Bombay (East), 40093, India.

Telephone:	Bombay:	8219090
	Delhi:	6855711
Fax:	Bombay:	8219696
	Delhi:	6855672

2) *Rice India*

Published monthly by the All-India Rice Exporters Association (AIREA); PHD Chamber of Commerce and Industry, 4th Floor, PHD House (Opp, Asian Games Village Complex), New Delhi 110-116.

Telephone:	Delhi:	6526900/6526171
Fax:	Delhi:	6526229

3) *Impex Times*

Fortnightly publication on changes in government's export and import policies. Published by Mr. Takhat Ram, A 1/151, Inder Puri, New Delhi 110012.

Telephone:	Delhi:	5742307/5718426
Fax:	Delhi:	5721532

4) *Bulletin of Wholesale and Retail Prices*

Two mimeographed bulletins: one weekly and another monthly. These bulletins provide information of prices in a large number of markets throughout the country. Prepared by the Directorate of Economics and Statistics, Department of Agriculture and Co-Operation, Ministry of Agriculture, Government of India. Contact person: Dr. G. S. Ram, Economic and Statistical Advisor to the Ministry of Agriculture; Tel: 3382719.

- 5) *Crop forecasts* prepared by the Directorate of Economics and Statistics, Department of Agriculture and Co-Operation, Ministry of Agriculture, Government of India.
Contact person: Dr. G. S. Ram, Economic and Statistical Advisor to the Ministry of Agriculture; Tel: 3382719.
- 6) *Newspaper Clippings*. Professional clipping service is available in Delhi and Calcutta for gathering clippings on topics stipulated by the client.

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