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Regulation of Markets, Production Growth and Market Arrivals - A Statewise Analysis of Rice

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I

INTRODUCTION

Agricultural growth requires that the producers should get a fair price for their production. For achieving this the government is relying heavily on regulation of markets. It is expected that by regulation, physical infrastructure in the market will improve and policing of trade, in terms of regulation of market changes, proper weighment and so on, will ensure a fair price to the producer. This will encourage the producer to bring his produce to the market. How far this is so, is investigated in the paper.

Regulation of markets is a colonial legacy. The British introduced regulation first for cotton in 1886, to ensure a regular supply of raw cotton to the textile mills in U.K. The Royal Commission on Agriculture (1928) strongly advocated extending regulation to foodgrains, as well as oilseeds.

Even though the foodgrains production has increased almost four times since Independence, the growth of foodgrains production is still critical for India. With the onset of the liberalisation process in 1991, foodgrains prices have risen. According to the Expert Group of the Planning Commission, as late as 1993-94, 36.0 per cent of the population continues to live below the poverty line and the absolute numbers of poor have gone up from 307 million in 1987-88 to 320 million in 1993-94. The income increases or the employment growth cannot be expected to take care of the economic pressure of this section of the society. Hence, a safety net in terms of public distribution system would continue to be critical. The current international scenario of economic sanctions against India make it clear that food security has to be provided from domestic sources. With the importance of growth of foodgrains production is linked the importance of foodgrain marketing.

The policy statements in various documents of Government of India notwithstanding, foodgrains continue to be marketed in the villages. The Sixth Five Year Plan (1980-85) took up the marketing of agricultural produce, as the major plank of government policy. It stated that "a well spread out and regulated infrastructure of marketing which will ensure fair price to the produce in open market conditions and help eliminate non-functional marketing margins of intermediaries" is one of the essential elements of a marketing system to promote agricultural development. The Plan further recommends that (a) the regulated market system be further expanded, by bringing more markets and commodities within the scope of regula-

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tion; (b) arrangements for enforcement and inspection be strengthened to ensure better trade practices like open auction and regulated marketing changes; and (c) rural markets be developed and where such facility is not available within a reasonable distance, new centres be established (Government of India, 1981, p. 112).

The success of regulated markets in Punjab have led the academicians to endorse the government policy (Sidhu, 1988, 1990). The question arises: First, will the extension of regulation supplant the system of village sales for foodgrains in all the states? Secondly, how far is growth of production of foodgrains dependent on market regulation. Both these questions are analysed in the paper.

Three major cereals of the country, viz., rice wheat and jowar were analysed. Due to paucity of space only the results pertaining to rice are reported. This is the most widely grown crop in the country, accounting for one-fourth of the gross cropped area. Unlike the other cereals such as wheat and jowar which are confined to certain regions of the country, rice is grown in a large number of states. Marketing data for rice are available for 14 states, viz., Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Tamil Nadu, Rajasthan, Uttar Pradesh and West Bengal. These include all the major rice growing states, except Assam, for which data are not available. These states account for 90 per cent of rice production of India. Hence, the analysis is confined to these 14 states.

The period covered is 1980-81 to 1994-95. Thus the impact of commercialisation due to liberalisation would be captured. Further, regulation of a large number of wholesale markets in the beginning of the period notwithstanding, during the eighties and the nineties regulation of markets further progressed all over the country. It will be seen how far this helped in mopping up the marketed output of rice in the various states.

The rice market arrival data are collected by the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, since the early sixties. These data are not comparable from year to year due to increase in the coverage of markets reporting such data. In order to overcome this shortcoming in market arrival data, the Directorate gives estimates of market arrivals of principal foodgrains, namely, rice, jowar, wheat and gram, as percentage of production. For doing so total market arrivals of these crops in both the reporting and non-reporting markets are calculated on the basis of certain assumptions.¹ We have used the proportion of arrivals to production for analysis because they include arrivals in all the markets and secondly, because they indicate the extent of regulated markets. The rice arrival figures are derived by converting paddy arrivals to rice and adding the rice arrivals.

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RICE PRODUCTION, ARRIVALS AND MARKET REGULATION – STATEWISE ANALYSIS

Rice production has gone up significantly during the eighties and the mid-nineties. The all-India growth rate of rice production between 1980-81 and 1994-95 has been 3.44 per cent per annum. The trend rate has been calculated on the basis of a semi-log growth function:

$$\text{Log } Y = a + bt, Y = \text{Production of rice.}$$

The same equation is used to arrive at the growth rates of the proportion of rice market arrivals to production.

Table 1 shows that 9 out of the 14 states had significant growth of rice production - the rate varying from high to moderate. Punjab, West Bengal, Uttar Pradesh and Haryana have enjoyed growth rates of 4 per cent and more. Orissa, Tamil Nadu and Madhya Pradesh have also enjoyed high growth rates of over 3.5 per cent, while Karnataka and Andhra Pradesh have had moderate but statistically significant growth of 2.7 and 2.15 per cent per annum respectively. Growth rates in Gujarat, Rajasthan, Bihar and Maharashtra have not been significant. The first two states account for a very small proportion of the country's output - 1.0 and 0.2 per cent respectively (Table 1). Also, rice is only a minor crop in the cropping pattern of these states, accounting for only 6.91 and 0.79 per cent of the gross cropped area. Maharashtra accounts for 3 per cent of the country's production, but in the cropping pattern of the state, rice is not the major foodgrain. Less than 8 per cent of the cropped area is under rice, whereas almost 50 per cent of the area is under jowar. Kerala has a negative growth rate but it also accounts for only 1.4 per cent of the production. Bihar is the only state with considerable cropped area under the crop (50 per cent) which does not have significant growth. Thus, barring a few states, rice production has had a rising trend all over the country.

Despite the beginning of market regulation a century ago, it was taken up in real earnest all over India, only after the onset of the green revolution in the late sixties. In 1970 a little over 40 per cent of the wholesale centres were regulated in India. By 1979 this figure had gone up to 90 per cent, with the number of wholesale centres going up from 3,754 to 4,839. By 1994 the number of wholesale assembly centres had gone up to 7,047 and that of the regulated markets to 6,809 (Table 1).

As regards the statewide regulation of markets it is seen (Table 1) that at the beginning of the period over 80 per cent of wholesale centres were regulated in all the states except West Bengal, Madhya Pradesh and Kerala. By the end of the period, even in West Bengal and Madhya Pradesh over 90 per cent of the wholesale assembly centres were regulated. The regulated centres in West Bengal and Bihar include other than wholesale trading places like cold storages, hence, the percentage of regulated markets is above 100. The situation in Kerala is different. Here the wholesale assembly centres have gone up from 56 to 348 - these cater mostly to crops other than foodgrains. The number of sub-markets has gone up in all the states - pointing to the regulation of rural shandies. Thus it is seen that all over the country the regulated markets have proliferated during the eighties and have continued to do so in the nineties - just as envisaged in the Sixth Five Year Plan.

Having seen that production of rice has gone up all over the country, along with the regulation of large number of rural markets, it remains to be seen whether the regulatory system has overtaken the indigenous system of village sales.

For India the proportion of rice arrivals to production stagnated around 30 per cent of production, during the entire period of study. The growth rate was -0.32 , and statistically not significant. All-India market arrivals in the selected markets had a growth rate of 3.62 per cent per annum from 1980-81 to 1994-95.

Contrary to expectations, the proportion of market arrivals to production has a negative

TABLE I. FEATURES OF RICE PRODUCTION AND REGULATION OF MARKETS IN SELECTED STATES OF INDIA

States	Annual average growth rate (1980-81 to 1994-95)	Production, ('000 tonnes) Average for TE 1995	Per cent of GCA of the state under rice: TE 1995	Number of regulated markets as on 31.3.1979			Number of regulated markets as on 31.3.1994		
				Principal market	Sub-markets	Total markets	Principal markets	Sub-markets	Total markets
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Punjab	5.56	7276 (9.4)	31.25	109	367	476 (100)	143	524	667 (100)
West Bengal	5.46	11936 (15.4)	72.75	35	81	116 (58.00)	41	415	456 (231.0)
Uttar Pradesh	4.72	9922 (12.9)	22.35	251	366	617 (99.52)	262	383	645 (100.00)
Haryana	4.00	1991 (2.6)	13.15	87	88	175 (100.00)	99	174	273 (100.00)
Orissa	3.98	6254 (8.2)	61.53	36	30	66 (86.84)	46	87	133 (81.60)
Tamil Nadu	3.82	6929 (8.8)	33.98	176	29	205 (93.18)	270	Nil	270 (90.00)
Madhya Pradesh	3.62	5739 (7.2)	22.58	250	67	317 (50.08)	290	293	583 (92.10)
Gujarat	3.01 (N.S.)	826 (1.0)	6.91	119	154	273 (96.47)	155	222	377 (100.00)
Karnataka	2.71	3061 (4.0)	11.29	115	197	312 (100.00)	122	307	429 (100.00)
Andhra Pradesh	2.15	9229 (12.2)	30.62	203	297	500 (100.00)	244	577	821 (100.00)
Bihar	1.48 (N.S.)	5126 (6.4)	49.91	118	320	438 (98.87)	122	706	828 (186.91)
Rajasthan	0.66 (N.S.)	153 (0.2)	0.79	112	166	278 (98.23)	138	250	388 (100.00)
Maharashtra	0.58 (N.S.)	2336 (3.1)	7.97	227	252	509 (89.14)	256	566	822 (98.68)
Kerala	-2.06	2330 (1.4)	20.06	4	Nil	4 (7.14)	5	Nil	5 (1.44)
India	3.44	77414 (100.00)	24.91	1860	2485	4345 (89.79)	2248	4561	6809 (96.72)

Sources: Production data from Centre for Monitoring Indian Economy (1996); col. 5 from Bhalla and Singh (1997); number of regulated markets from *Bulletin of Food Statistics*, Ministry of Food, Government of India for various years.

Notes: 1. States are ranked according to growth rate of production shown in col. (2). N.S. = Not significant, all other growth rates are significant at 1 per cent level. TE = Triennium ending. GCA = Gross cropped area. 3. Figures in parentheses (col. 3) show the state share in rice production of India. 4. Figures in parentheses (col. 7 and col. 10) show the percentage of wholesale centres regulated. 5. The number markets regulated refers to all markets and not only to markets having paddy or rice transactions. They include cold storages also.

and significant trend in nine out of the 14 states. These include all the high growth states - Punjab, West Bengal, Uttar Pradesh, Haryana, Tamil Nadu and Madhya Pradesh, except Orissa where the growth rate is high at 4.28 per cent per annum. But the average proportion of production accounted for by the regulated markets being only 5.87 per cent in the early nineties (Table 2), this is not impressive. Given that the production growth rates were not significant in Gujarat, Bihar and Rajasthan, it is not surprising that the proportion of market arrivals to production has not gone up significantly in these states. In Kerala, the proportion

TABLE 2. MARKETED SURPLUS, GROWTH RATE OF RICE PRODUCTION AND ESTIMATED PROPORTION OF MARKET ARRIVALS TO PRODUCTION - SELECTED STATES

State	Growth rate per cent per annum		Average MA/P Triennium ending		Marketed output (1981-82)	Percentage of urban population 1991 Census
	Production 1980 to 1994-95	MA/P 1980-81 to 1991-92	1983	1992		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Punjab	5.56	-0.91	94.37	83.07	94.70	29.55
West Bengal	5.46	-2.01	18.63	15.27	8.89	27.48
Uttar Pradesh	4.72	-0.24**	28.90	28.70	34.20	19.84
Haryana	4.00	-2.16	87.83	70.77	91.04	24.63
Orissa	3.98	4.28	3.53	5.87	31.64	13.38
Tamil Nadu	3.82	-0.65*	34.57	33.40	59.31	34.15
Madhya Pradesh	3.62	-2.94**	21.90	14.30	38.12	23.18
Gujarat	3.01(N.S.)	2.52 (N.S.)	41.27	51.27	N.A.	34.19
Karnataka	2.71	2.84	18.07	23.80	69.97	30.92
Andhra Pradesh	2.15	0.08 (N.S.)	38.33	42.03	56.33	26.89
Bihar	1.48(N.S.)	-0.50 (N.S.)	14.93	15.20	27.20	13.64
Rajasthan	0.66(N.S.)	-1.49*	32.00	27.50	N.A.	22.88
Maharashtra	0.58(N.S.)	5.00	11.27	22.37	18.20	38.69
Kerala	-2.06	-8.28	25.67	9.20	15.21	26.39
India	3.44	-0.32 (N.S.)	30.00	30.27	42.71	25.72

Source: The proportion of rice market arrivals to production estimates are from *Bulletin of Food and Statistics*, various years. These estimates are available only up to 1992. Marketed surplus estimates are from the Sub-group of the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, given in Bansil (1992).

Notes: 1. States ranked by growth rate of rice production. N.S. = Not significant. *, ** Significant at 10 per cent and 5 per cent level, respectively. All other rates are significant at 1 per cent level.

2. MA/P = Estimated proportion of rice market arrivals to production. N.A. = Not available.

has declined at a very high rate - much higher than the rate of decline of production. In Andhra Pradesh the proportion is more or less stagnant, despite the significant growth of production and regulation of the wholesale centres. Maharashtra has a high growth of proportion of market arrivals to production - but this is due to secondary sales by traders rather than primary sales by the producers. This is seen from the fact that the estimated proportion of marketed surplus² is 18.20 - but the proportion of rice arrivals is 22.37 per cent. This is on account of the high percentage of urban population, 38.69 per cent. The same is the situation in West Bengal - the marketed surplus is 8.89 per cent, whereas the market arrivals account for 15.27 per cent of production.

Karnataka is the only state which has a positive and a significant growth rate of proportion of market arrivals to production, 2.84 per cent per annum. However, by the early nineties the regulated markets accounted for less than a quarter of the production, even though the marketed surplus has been estimated at about 70 per cent.³

In the first four high growth states the regulated markets account for the bulk of the marketed output (Table 2). In Punjab, West Bengal, Uttar Pradesh and Haryana in the early eighties almost all the marketed output was received in the regulated market. Even in these states, the proportion has declined by the early nineties. However, a very large proportion is still accounted for by the regulatory system. The north-western state of Punjab, Haryana, Uttar Pradesh, and Andhra Pradesh are the success stories of market regulation. The experience is quite different in the other states.

In Tamil Nadu, Madhya Pradesh and Karnataka, with significant growth in production and regulation of almost all the wholesale assembly centres, the bulk of the output flows outside the formal regulated market system.

For Orissa, the Reserve Bank of India Committee Report (1984) while suggesting measures to boost agricultural productivity in eastern India, had recommended regulation of markets. This was done and growth was also achieved, but the regulated markets accounted for only 20 per cent of the marketed surplus.

Thus, we see that for rice, the indigeneous system of sales outside the regulated markets continue to flourish. It does not hamper growth as during the same period production has been growing in most of the states.⁴ The important point is that even the low proportion of production accounted for by the regulated markets is an over-estimate of the proportion of produce sold in the regulated markets by producer sellers. This is so on account of two factors.

First, the clubbing of rice and paddy arrivals leads to an over-estimate of output brought to the market by producer-sellers because they sell in the form of paddy.⁵ Rice sales are mostly secondary sales by traders, catering to the urban demand. The proportion of paddy sales to paddy production works out lower than the proportion of rice arrivals shown in the official data.

The second reason why the arrival figures over-estimate sales in the regulated markets is that the figures do not always refer to sales in the market yard. They show the quantum on which market fee is collected, which is done outside the market yard also - at the processing units, entry check points to the market or even in the villages.⁶

III

CONCLUSION AND POLICY IMPLICATIONS

We have seen that during 1980-81 to 1994-95, rice production has grown in almost all the major rice-growing states. Even though the proportion has declined, the absolute quantum of arrivals would have increased due to increased production. This is much more so for the high growth states of Haryana, Punjab and Uttar Pradesh which receive a major portion of the marketed output. Markets in these states will be called upon to handle larger quantities of crops as production further increases. These must be taken care of by appropriately expanding the physical facilities in these states. However, from this it does not follow that the same must be done in all the other states also for two reasons.

First, in Punjab the regulated markets flourish because the 'mandis', traditionally received the bulk of the produce (Government of India, 1928; p. 384). On the other hand, in the eastern states of West Bengal, Orissa and Bihar trade is much more diffused traditionally and continues to be so. In Karnataka, in the past, rice mills were the important centres of sale. This continues to be so, Market regulation has not brought about any significant change in the marketing channels of rice in the various states. This fact has not come in the way of growth of production. Hence, the government must recognise the fact that the traditional non-regulatory system is still useful and relevant. It need not be choked and taken over completely by the regulatory system.

Secondly, in Punjab the average area covered by a regulated market is 75 sq.km (Sidhu, 1990). In some of the states to reach this level, the existing number of regulated markets would have to go up several times. This is costly and not even required. Von Oppen *et al.* (1985) have shown that the market density beyond a point ceases to have any impact on production. For regions with below average performance, 130 markets per 100,000 sq.km and 160 markets for the other regions, are saturation points. Karnataka had this level in 1980-81 itself. The costly exercise of multiplying the number of regulated markets is not required for growth of production.

In conclusion, though the regulated markets may be called upon to provide for larger quantities in some states, they cannot be expected to overtake or subsume the indigenous sector in all the other states. The government policy must recognise this. Sole reliance cannot be placed on regulated markets. The non-regulatory or what we have called the informal sector elsewhere (Gopala Rao and Maheshwari, 1985a, b; Maheshwari, 1997), need not be curbed on account of what Bauer and Yamey (1954) call "considerations of administrative convenience", which may "strengthen the view that the uncontrolled systems is burdensome, unnecessarily untidy and without economic justification"

NOTES

1. For further details, see Bansil (1992, p. 597). During the period covered in the study the number of markets reporting arrival data has remained constant at 591. The estimates of proportion of arrivals to production are reliable. In the case of Karnataka they were very close to the actual state level data.

2. The marketed surplus estimates refer to paddy from the *Sub-group on Estimation of Marketable Surplus Ratios of Agricultural Commodities*, Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, November 1984, Reprinted in Bansil (1992, p. 608).

3. The high proportion of rice production marketed in Karnataka has been endorsed by Gopala Rao and Maheshwari (1989) from a field survey in 1984-85. The estimate from the Cost of Cultivation data is 76 per cent (Maheshwari) (1996).

4. Maheshwari (1997) shows that the increased rice arrivals in Karnataka were on account of secondary sales in the eighties. Further, when paddy production was regressed against annual rainfall, market density, market arrivals (paddy), farm harvest prices and paddy area under irrigation for 1980-81 to 1993-94, it was seen that only the last variable was significant.

5. A survey (Gopala Rao and Maheshwari 1984) of three major markets of Karnataka revealed that the producers do not sell any produce after processing, be it paddy, groundnut or cotton. For other states we do not have any formal studies but the situation would be similar for paddy in most of them.

6. A large proportion of the market fee is collected outside the yard. In Mysore market a field survey put the figure at 25 per cent (Gopala Rao and Maheshwari, 1989).

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