GRAIN SUPPLY IN A CHRONICALLY FOOD DEFICIT STATE: THE CASE OF KERALA

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In Honour of

MY PARENTS

I hereby declare that the research for this dissertation titled *"GRAIN SUPPLY IN A CHRONICALLY FOOD DEFICIT STATE: THE CASE OF KERALA"* being submitted to the Jawaharlal Nehru University for the award of the Degree of Master of Philosophy was carried out entirely by me at the Centre for Development Studies, Trivandrum.

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Certified that this dissertation is the bonafide work of ***Lini R Nair*** and has not been considered for the award of any other Degree by any other University. This dissertation may be forwarded for evaluation.

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CHAPTER I

INTRODUCTION

I.1 Regional Distribution of Grain Production in India:

Efforts to achieve self-sufficiency in foodgrain production formed a major agenda in the planning process of Indian Government. For this purpose, successive governments at the Centre and the States have introduced various measures such as expansion of area under irrigation, increasing area under cultivation, land reforms, encouragement of modern inputs, Community Development Programmes in the subsequent plans and so on. As a result, there has been rather an impressive growth in foodgrains output in the post-independence period[1]. However, as 'Green Revolution' is confined only to some parts of the country, it has worsened the existing inter-regional disparities in the per capita foodgrain production. During the post-Green Revolution period, per capita cereal output really went up only in Haryana, Punjab and Uttar Pradesh where as it has more or less remained constant in Andhra Pradesh, Madhya Pradesh, Maharashtra, and West Bengal and declined in all other states[2].

The food situation in the country with some regions having surplus food production and some others having food deficits, necessitates a regional redistribution from surplus regions to deficit regions. There are two channels through which this

redistribution takes place, namely, the private trade channels, and the Government's Public Distribution System. The efficiency of private trade, by itself, effecting the inter-regional transfer has been seriously questioned by the historical experience of regional food shortages and famines in modern Indian history. Further, the United Nations[3]' study presented a clear case of market failure, in mopping up the surpluses, by pointing to the inter-state disparities in per capita production and consumption. The study confirmed the hypothesis that the differences in calorie intake are explained by differences in the levels of production of foodgrains but not by differences in levels of income. The recent study while analyzing the impact of population on poverty and unemployment in India[4] has indicated that the structure of the grain market during the period 1961 to 1989 remained more or less the same. It is in this context, that distribution system in ensuing adequate supply of foodgrains to chronically deficit state like Kerala, assumes importance.

Recent studies on Public Distribution System have tended to focus on the subsidy-burden and financial viability of the scheme[5]. Another set of studies focused more on the welfare aspects of the Public Distribution System. A general criticism raised has been that Public Distribution System is urban-biased. However, few studies that are available on PDS in Kerala have tended to be more positive in their evaluation of the PDS. The Food Policy Research Institute Research Report[6] concluded that the Public Distribution was better than direct income transfer for raising the consumption levels of low income consumers, from the point of view of feasibility and cost effectiveness. Not only have the poor in

Kerala benefited from the PDS but it also became a vital instrument in matters of regional food security. Seasonal variation in PDS offtake tended to complement the seasonal need for small landholders who were not self-sufficiency in food. Thus the ration shop was described to function as an extension of the land reform for the land holders[7]. The study on PDS by Mahendra Dev and Suryanarayana[8], strongly argues that the PDS is no longer urban-biased. The potential to increase the real income and food consumption of low income groups, while at the same time increasing aggregate demand for food is considered as a major impact of subsidised food distribution systems in low-income countries[9].

The National Sample Survey Organization (NSSO) per capita consumption figures per month for different states for various rounds are presented in Table.I.1. There is a wide variation in the per capita consumption of grain between states. Krishnan[10] has pointed out that in the absence of PDS, inter-state inequalities in grain consumption [and also in total calorie intake] would have been greater. In Kerala, PDS was found to be strong, with adequate coverage of PDS in the rural areas also. Kerala has invariably recorded the lowest per capita consumption in all the NSS rounds.

Table.I.1
Per Capita Consumption of Cereals

(Kgs during a period of 30 days)

State	Rounds							
	17th Round 1961-62		27th Round 1972-73		32nd Round 1977-78		38th Round 1983-84	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1	2	3	4	5	6	7	8	9
Andhra Pradesh	16.61	13.31	15.25	12.68	15.85	12.83	15.37	11.95
Assam	17.07	12.40	14.81	12.55	14.38	13.44	14.23	12.78
Bihar	18.1	15.14	15.58	13.49	16.16	14.06	15.77	13.44
Gujarat	15.76	10.63	13.32	10.77	13.44	10.17	12.56	9.61
Haryana	N.A	N A	17.57	11.86	15.22	12.24	14.54	11.59
Himachal Pra	N A	N A	18.06	11.97	16.47	11.62	N A	N A
Jammu&Kashmir	22.49	16.64	18.79	14.16	17.99	13.16	17.99	13.80
Karnataka	19.8	13.23	15.63	11.32	16.01	12.68	15.03	11.69
Kerala	9.93	10.06	7.97	8.17	9.18	8.91	10.01	10.12
Madhya P	20.12	13.00	17.28	12.88	16.08	12.61	15.83	12.32
Maharashtra	16.08	10.81	12.6	8.95	13.52	9.92	13.79	9.95
Orissa	18.24	15.00	15.22	13.77	15.97	13.96	15.61	14.19
Punjab	18.31	12.22	15.38	10.71	14.34	10.80	13.52	9.94
Rajasthan	22.26	15.14	18.22	13.21	18.18	12.55	17.19	12.95
Tamil Nadu	15.72	12.78	14.53	11.12	13.85	11.05	13.05	10.39
Uttar Pra	18.31	12.91	16.83	12.24	16.57	12.27	15.47	11.66
West Bengal	15.98	12.27	13.64	10.53	14.74	11.92	14.28	11.89
All India	17.56	12.5	15.26	11.24	15.25	11.62	14.84	11.30

Source: National Sample Survey Organization, Various Reports.

Rice production in Kerala has never been sufficient to meet the requirements of its ever growing population[11]. Disparity in net income per unit area in respect of rice to its competing cash crops had widened, due to price as well as non-price factors, making it very difficult to retain area under rice over the years. Reduction in cultivated area under rice had compelled the state to depend more and more on external sources of supply for the meeting consumption requirements. At present, consumption requirements of population are largely met through imports, both public as well as private.

Even though the share of Kerala in the total distribution of foodgrains through PDS in India, is relatively higher, the quantity was never sufficient to meet the entire food requirements of population. The gap in food demand, was met by the private account import. Thus the food availability in a deficit state, given the domestic regional production, is determined by the operations of the Government and the traders in the surplus states. Similarly, open market prices of deficit states are also crucially determined by the factors operating outside the region. There are two opposing view points on the market price due to the Government intervention in the market. One set of studies point out that the open market prices would be lower but for PDS[12]. Counter to this, it is mentioned in the literature that the import of rice on public as well as private account would depress the open market price. The depressing effect of PDS import on open market prices in Kerala in the post-1975 period, has been established by Narayana[13].

As a part of the on going economic reforms, there are attempts by Central and State governments to alter the structure of PDS by restricting coverage. Thus more and more people are being exposed to open market for daily consumption requirements. The potential and practices in private market have serious implications for Kerala's food front, which has been a relatively unexplored area. The question remains: can the private market operate efficiently to provide food to the entire population in the absence of PDS?. Existing studies deal with marketing of cereals in surplus regions, with due emphasis on marketing, from producers' viewpoint whereas the present study is approaching the same from a deficit states's view point.

Major aspects of the problem of grain supply to a chronically food deficit state of Kerala is sought to be systematically analyzed in this thesis.

The statement of our problem could be summarized as follows:

(a) to analyze the patterns and trends of production of food crops in the state of Kerala and the worsening of the food problem..
(b) to describe the evolution of PDS in Kerala and its contribution to per capita food availability.
(c) to discuss the structure and functions of the open market channels and
(d) to compare the trends and patterns in the price movement of the state with the neighbouring states and the influence of seasonality in PDS of Kerala on prices.

I.2 Scope and Method

This study is focused on a limited and well defined geographical area, and also restricted to one cereal. In the absence of secondary literature on private grain trade in Kerala, we have undertaken a case study of Chalai Bazaar of the Trivandrum city. It is the only whole sale rice market prevailing in the Trivandrum district. This inquiry is based on a primary survey by the researcher. This enquiry was conducted in order to understand the socio-economic characteristics of the rice traders, to assess the costs and margins in the process of trade and to identify the intermediaries involved.

The important secondary data sources used in the study are: The Economic Review published by the State Planning Board of Trivandrum, Kerala; Agricultural Prices in India, Government of India; and Administrative Report of the Department of Civil Supplies [various issues],Kerala. Unpublished data of the wholesale prices of rice of the State and Trivandrum district from the Directorate of Economics and Statistics, have also been used.

The secondary data on prices used for the present study have the following limitations: The wholesale price series of rice for the state are not available, only wholesale price index is available. And this is found to be largely based on ration price. Therefore, it was unsuitable for the purpose of our analysis. Therefore, unpublished data on wholesale prices were sought to be collected from the official sources. The data for Trivandrum district only were made available to us.

Monthly wholesale prices of neighbouring states, viz, Andhra, Tamil Nadu, Karnataka and Maharashtra for the period 1975/90, published by the Government of India, in Agricultural Prices in India are taken and the data are found to be unreliable for earlier years. These state averages are not strictly comparable with the district level data on wholesale prices for Trivandrum district. For the retail prices, state level averages have been used. The retail prices of rice for the Kerala state are taken from the Economic Review of Kerala, which is also not fully comparable with the wholesale prices of Trivandrum district.

I.3 Chapter Organisation of the Dissertation

This thesis has been divided into six chapters:

Chapter I gives the introduction. In the three chapters, that follow, we shall take up each of the main sources of supply of rice to Kerala for analysis. Firstly, the trends in domestic production of foodgrains is examined. We shall look int the production of major cereal substitutes, tapioca. An attempt is made to document the process through which the state's food deficiency tended to worsen through the present century. The discussion on the cropping pattern changes and the emergence of food deficiency in the colonial period is confined only to the Travancore region, while for the post-independence period, the entire state is taken up for analysis [Chapter.II].

This is followed by an analysis of the evolution of PDS in Kerala [Chapter.III]. A brief description of the emergence of PDS is attempted. But the main body of analysis is confined to the trend in PDS offtake since the establishment of statutory rationing in 1965 and the factors that have influenced the PDS offtake.

Chapter IV, focuses on private trade. First, we shall try to establish the growing significance of supply of foodgrains to Kerala, in order to gain some insights into the relatively unknown process of private trade in Kerala. A case study of the characteristics of wholesalers, and nature and cost of intermediaries is attempted on the basis of data collected from the wholesale market in Trivandrum.

Finally, in Chapter V, we examine the trend and fluctuations in the price of rice in Kerala. A comparison of the trend in wholesale prices in Kerala is attempted with those of the neighbouring states. We shall also look into the possible relationships between the seasonality in rice price in Kerala with PDS offtake and the seasonality in the neighbouring states.

The conclusions are summarised in the last Chapter.

* * * * * * * * * * * * * *

END NOTES

1. India's foodgrains output rose from 59.2 million tons in 1953 to 170.25 million tons in 1989. [Ministry of Agriculture, [1990], Bulletin of Food Statistics, Directorate of Economics and Statistics, Government of India].

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11. See Chapter II.

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CHAPTER II

FOOD DEFICIENCY OF THE KERALA STATE

II.1.Introduction

Kerala is a chronically food deficit state because of its peculiar cropping pattern. Only 20 per cent of the cropped area is under foodgrains in Kerala. If we take tapioca also as a food crop, then the coverage increases by another 5 per cent[1], but at the all-India level 75 percent of total cropped area is under food crops[2]. Predominance of cash crops, coupled with high population density has ensured that the region has remained a chronically food deficit state. Remember, this is not a recent phenomenon. The external food dependency of the state is the resultant process of commercialisation that had taken place during the colonial era. This trend has continued into the post-independence period. In this chapter, we shall briefly look into the above process of cropping pattern change and resultant dependency on food imports. It also has a section on the analysis of trends in percapita foodgrain substitute availability in Kerala.

II.2. Food Dependency in the Colonial Period:

During the colonial period, Kerala was divided into three regions, viz, the princely states of Travancore and Cochin and the Malabar District of Madras province. There is substantial literature and evidence regarding the emergence of food dependency in Travancore. Our discussion for the pre-independence period is based upon the studies on the experience of Travancore. Till the middle of the 19th century, Travancore was self-sufficient in food grains. Available studies on this aspect report two opposing lines of thought. The clearest expression of one tendency was the Food and Agricultural Organization [FAO] sponsored study undertaken at the Centre for Development Studies[1]. The above study appraised the shift towards commercial crop production as a rational reaction to the increase in population pressure in a regime of free and cheap availability of foodgrains under favorable terms of trade. Import of paddy and rice into Travancore had risen year after year [refer Table.II.1].

Table.II.1

Imports of Rice into Travancore 1910/1947

Periods	Annual Imports	
	Quantity (cwt)	Value (Rs)
1910/11 to 1920/21	1700487	13214706
1920/21 to 1930/31	2912558	26901182
1930/31 to 1940/41	5468967	25574182
1940/41 to 1946/47	3466340	50013271

Source: P.G.K.Panikker et.al., 1978.

To quote " .. topographical and ecological characteristics of the region and the lack of irrigation facilities acted as constraints on the expansion of the rice area, either through extensive cultivation or multiple cropping ..... there are probably no incentives to invest in irrigation facilities, since rice could be imported in sufficient quantities at comparatively low prices .. ... However, we presume that the increase in the production of food did not catch up with the increase in population during the period under survey. This presumption is supported by the trends in the import of rice".[2]

In contrast, Uma Devi basically views the shift to commercial crops as a direct result of free trade regime which allowed foreign countries to dump their rice in Travancore. In 1852, for the first time, Bengal paddy was imported into Travancore through Sirkar's Commercial agent to relieve prevailing famine conditions in the state. This import continued even after the famine, and systematically, Travancore, which was once a net exporter of paddy, turned into a net importer of paddy from 1869[3]. Free import of rice and paddy from British territory and overseas encouraged cultivation of plantation crops. Availability of food grains was much above the annual requirement and it was more than 30 per cent between 1911/1931[4]. Dumping of rice in India by Siam and Indo-China, lowered its price in local markets. Import of paddy at comparatively low price, in sufficient quantities, discouraged cultivation of paddy in Travancore. It was often argued that the

Government policy towards land and labour and duty free import of rice and paddy acted as disincentives for paddy cultivation in the state. She also pointed out the deterioration in terms of trade and ecological degradation, as a byproducts of the commercialisation of agriculture in Travancore.

It is important to understand the fiscal, tenurial and labour relations in Travancore that facilitated rapid commercialisation of agriculture and also the fact that commercialisation of agriculture was not a unmitigated benefit. But, as Thomas Isaac et.al[5] has remarked, by no stretch of imagination can the commercialisation process, particularly in the mid-lands and coastal plains, be described as any variant of forced commercialisation model. Government intervention strongly influenced the land, credit, labor and product markets. The peasants had primarily responded to the impulses of these markets, particularly those from the product market. It is also debatable whether the grain availability in Travancore was higher than the requirements.

The percapita rice availability in Travancore inclusive of imports, which was only 105 Kg in 1911, increased slightly to 118 Kg in 1931. The percapita imports increased from 15.72 kg in 1901 to 47 Kg in 1931. By 1931, almost 40 per cent of the rice availability in Travancore was imported from outside.

Table.II.2
The Per capita Production, Import and Availability of Rice in Travancore

Year	Estimated Production [tons]	Imports [tons]	Per capita Production (Kg)	Per capita Imports (Kg)	Total rice availability (Kg)
1901	NA	75944	NA	15.72	NA
1911	292827	67839	85.40	19.78	105.18
1921	333319	109843	84.11	27.72	111.83
1931	353321	238535	70.33	47.52	117.91
1941	329698	218623	54.32	36.02	90.34

Source: Thomas Isaac et.al [1992].

At the time of independence 1946/47, 46 per cent of the cropped area in Travancore, 40 per cent in Cochin and 25 per cent in Malabar were under cash crops. Overall, 37 per cent of the cropped area was under cash crops in Kerala. The area under foodgrains increased at a slow rate during the period.

II.3. Trends in the Production of Paddy: Post-Independence Era

We shall now examine the changes that have taken place in the production of the main foodcrops in Kerala during the post independence period. Figures 2.1 and 2.2 show an upward trend in output of paddy and tapioca up to the mid-seventies, which has reversed since then. Earlier studies on Kerala Agriculture[6], had shown that the pre-and post-Green Revolution periods with either 1965/66 or 1967/68 as the boundary, have no relevance on the agricultural growth performance in Kerala. Moreover, the declining

Figure 2.1

Production of Paddy (1952/53-1991/92)

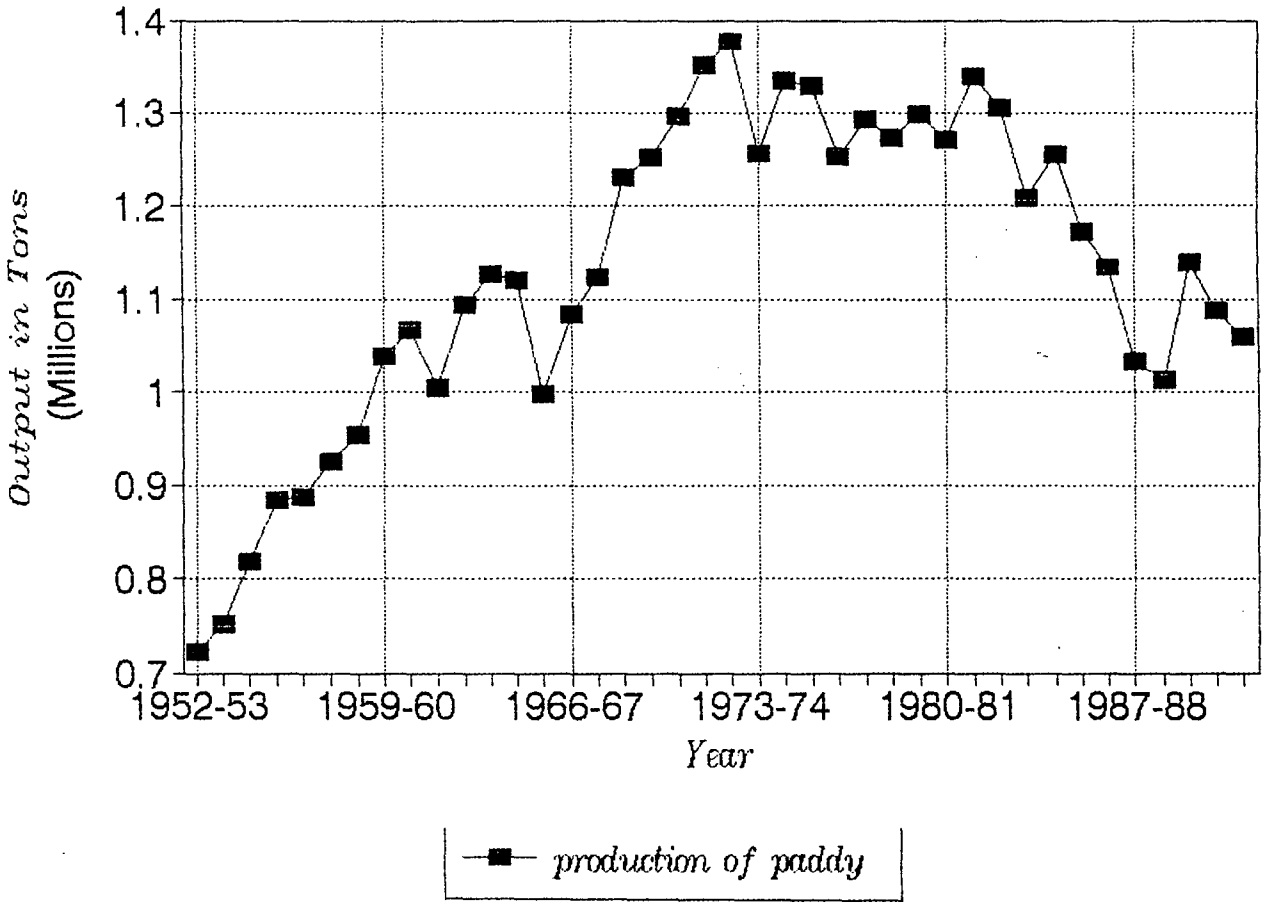
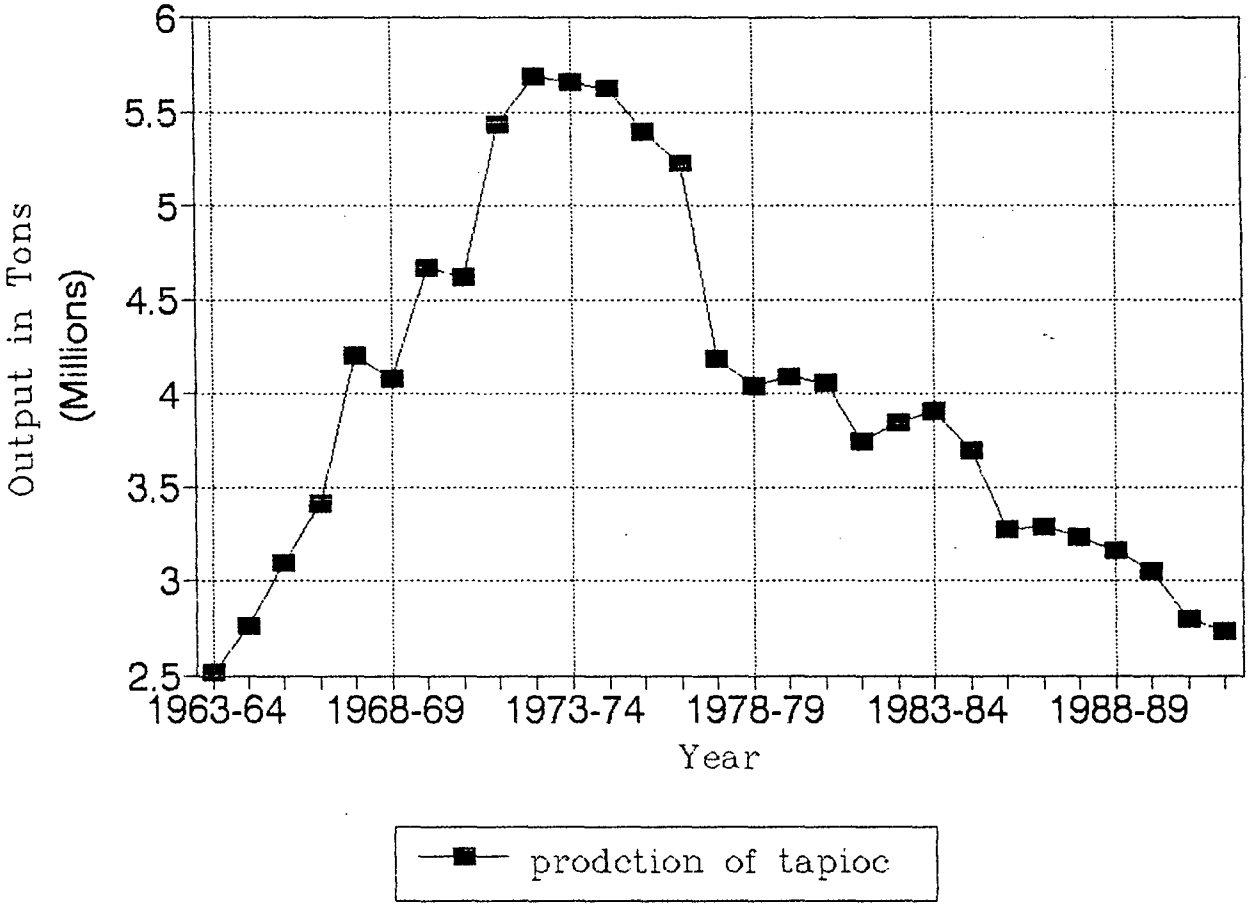


Figure 2.2

Production of Tapioca (1963/64-1991/92)



trend in agricultural production of Kerala in the mid-seventies has evoked a number of studies[7]. In fact, two distinct phases in agriculture can be delineated on the basis of expansion of net sown area in the state. The first phase upto 1974/75, was marked by an expansion in the net area sown under almost all crops, except the net area sown under rice. The increase in the gross area under rice was largely due to the expansion of area under summer rice. During the second phase [post 1974/75] the net sown area under different crops was marked by stagnancy and relative gains and losses in area under various crops. The allocation of area to different crops was seen to be based on agro-climatic conditions and on considerations of relative profitability[8].

Table.II.3 presents the production, area and yield of paddy and tapioca between 1952-53 and 1991-92. Paddy output and area under paddy showed significant negative growth rates, in 70s and 80s. Yield of paddy showed a positive but moderate growth rate. The growth rates of paddy showed that the increase in area and productivity during 1950's and 1960's were the main contributors to the positive growth rates of output.

By mid-1970's, it appeared that the extensive phase of positive growth in Kerala's agriculture was practically over. The very low growth rate of paddy productivity during 1970s and 1980s points to the absence of an intensive phase yet, in Kerala agricultural scenario. The negative paddy output growth rate from

1974/75, was mainly due to the sharp decline in growth rate of area, and even the recorded significant positive growth rate in yield was not sufficient to neutralise the negative impact of decline in area under paddy.

Despite the launching of several programs and setting up of several committees[9], paddy production continued to decline. Macro and micro data on cropping pattern in Kerala[10] showed the conversion of area from paddy to cash crops, despite the Kerala Land Utilisation Order of 1967, which prohibits the conversion of paddy land to other crops under the Essential Commodities Act, 1955. Studies on season-wise paddy production[11] confirm the decline in area for all seasons during the second phase. These studies also confirm the increase in growth rate of paddy yield in the second phase, and it can be attributed to marginal land going out of cultivation. Relative profitability of cash crops as compared to paddy, is considered to be the basic factor responsible for the shift. Given the industrial relations in paddy arguments, there is a premium for the labor intensive crops. It has been shown that wages have tended to rise faster than productivity in paddy cultivation[12].

Table.II.3
Production, Area and Yield of Paddy and Tapioca
in Kerala (1952/53- 1991/92)

Year	PADDY			TAPIOCA		
	OUTPUT [Tons]	AREA [Hect]	YIELD [T/H]	OUTPUT [Tons]	AREA [Hect]	YIELD [T/H]
1952-53	722380	742160	0.97	na	na	na
1953-54	750820	760850	0.99	na	na	na
1954-55	817880	763200	1.07	na	na	na
1955-56	883920	759350	1.16	na	na	na
1956-57	887170	762020	1.16	na	na	na
1957-58	925470	766760	1.21	na	na	na
1958-59	954430	768420	1.24	na	na	na
1959-60	1037940	768960	1.35	na	na	na
1960-61	1067530	778910	1.37	na	na	na
1961-62	1003930	752690	1.33	na	na	na
1962-63	1093210	802660	1.36	na	na	na
1963-64	1128000	805080	1.40	2524000	209910	12.02
1964-65	1121000	801121	1.40	2763000	209372	13.20
1965-66	997489	802329	1.24	3095658	229684	13.48
1966-67	1084062	799400	1.36	3409668	224600	15.18
1967-68	1123897	809500	1.39	4198357	296700	14.15
1968-69	1231354	873900	1.41	4081115	296700	13.76
1969-70	1251354	874100	1.43	4665764	295600	15.78
1970-71	1298005	874800	1.48	4617189	293600	15.73
1971-72	1351738	875200	1.54	5429281	303300	17.90
1972-73	1376367	873700	1.58	5692355	304800	18.68
1973-74	1257069	874700	1.44	5659523	306400	18.47
1974-75	1333931	881500	1.51	5625116	317900	17.69
1975-76	1329403	876000	1.52	5390217	326900	16.49
1976-77	1254003	854374	1.47	5223806	323278	16.16
1977-78	1294635	840374	1.54	4188566	289722	14.46
1978-79	1272743	799238	1.59	4044046	289885	13.95
1979-80	1299695	793266	1.64	4088916	243763	16.77
1980-81	1271962	801699	1.59	4060911	244990	16.58
1981-82	1339393	806871	1.66	3745142	248069	15.10
1982-83	1306197	778490	1.68	3848718	227617	16.91
1983-84	1207916	740086	1.63	3903169	233010	16.75
1984-85	1255902	730379	1.72	3694270	216742	17.04
1985-86	1173051	678281	1.73	3276877	202919	16.15
1986-87	1133786	663803	1.71	3292302	192878	17.07
1987-88	1032605	604082	1.71	3236352	172908	18.72
1988-89	1012558	577557	1.75	3165265	169475	18.68
1989-90	1141231	583389	1.96	3053972	160145	19.07
1990-91	1086578	559450	1.94	2803001	146493	19.13
1991-92	1060222	541327	1.96	2737353	142238	19.24

Source: Economic Review (Various issues).

II.4. Trends in Production of Tapioca: Post-Independence Period

Production of Tapioca in Kerala as an alternative in sustaining calorie intake among lower income groups, in times of scarcity of rice, has played a very important role. Tapioca, which is a cheaper substitute, gives more calories per unit of expenditure than rice. Tapioca [refer Table II.3] recorded a high growth rate of production during 1963/64-1974/75 period, at around 7 per cent growth per annum. But during 1975/76-1991/92, area under tapioca steeply declined at 5 per cent per annum. As a result of this, tapioca output declined by 3 per cent per annum. But overall rise and fall in the rate of growth of tapioca was much sharper compared to that of rice.

II.5.Sources of Growth:

To find the sources of growth, two approaches are available, one is to delineate the contribution of individual inputs based on estimated production function and the other is to decompose production growth into area growth and yield growth. Various decomposition methods are available in the literature. One of the simplest methods[13] is used here. This method separates three effects, the pure area effect, pure yield effect and the interaction effect due to changes in area and yield. The results are given in Table.II.4.

Table.II.4
Effect of Area, Yield and Interaction Term on Output

	Period I 1963/64-1974/75	Period II 1975/76-1991/92	Period III 19632/64-1991/92
Change in Output			
Paddy	20060	-16101	-1138
Tapioca	342260	-169868	42047
Area effect			
Paddy	17.28	76.11	51.77
Tapioca	-35.84	-83.28	-63.65
Yield effect			
Paddy	82.49	23.15	47.71
Tapioca	134.79	202.37	174.40
Interaction term			
Paddy	0.00	0.01	0.01
Tapioca	0.01	-0.19	-0.11

Source: Calculated from the data on area and production given in Economic Review (various issues).

For the whole period, paddy output decreased [1138 tons] from an almost equal contribution of area and yield effects. In period I, 82 per cent of increase in output [20060 tons] was contributed by yield effect and in Period II, 84 per cent decrease in paddy output was contributed by area effect. This substantiates the impact of area effect on the change in paddy output across periods. For tapioca, the yield effect has contributed more for the change in output than area effect in all the periods.

To test statistical significance of paddy and tapioca production, Chow-test is carried out and a high value [39.16 & 229.93] of Chow-test indicates two distinct phases in paddy and tapioca production.

II.6. Per Capita Availability of Rice and Rice Substitute:

Table II.5 presents the trends in the percapita production. The percapita production of rice and tapioca in the state were estimated by giving allowance for seed, wastage etc,. The allowance given for rice is 12.5 percent and for tapioca is 25 percent, considering its additional industrial uses.

Even during the sixties, the growth in the rice production did not keep pace with the growth in population. Since then, the percapita production of rice has steadily declined from 51 Kg in 1973/74 to 44 Kg in 1981/82 and further to 31 Kg in 1989/90. Even though percapita availability of rice had tended to decline in the sixties, it proved to be a period of remarkable increase in the production of tapioca. The percapita rice equivalent tapioca increased from 47 Kg in 1964/65 to 88 Kg in 1973/74. Tapioca provided nearly around 60 per cent of the total percapita cereal or cereal substitutes produced in the state at the end of sixties. Since seventies, percapita availability of tapioca had also declined, in fact at a faster rate than that of rice.

From the trends in domestic production of cereal or cereal substitutes, one can divide the post-independence period into two phases: upto the end of sixties, when the percapita domestically produced cereal availability tended to increase.

Table.II.5

Percapita Production of Rice, Rice Equivalent Tapioca and Total Food

YEAR	POPULATION (in lakhs)	ANNUAL PERCAPITA PROD(Kgs)			ANNUAL GROWTH RATES		
		RICE	RICE EQ: TAPIOCA	TOTAL RICE	R	T	Food
1961-62	169	55	na	na	--	na	na
1962-63	173	50	na	na	-8.13	na	na
1963-64	177	54	na	na	6.38	na	na
1964-65	181	54	47	101	0.80	--	--
1965-66	186	53	51	104	-2.91	6.94	1.68
1966-67	190	46	56	102	-13.07	9.46	-2.04
1967-68	194	45	60	105	-2.95	7.60	2.83
1968-69	199	44	72	116	-0.89	20.29	11.24
1969-70	204	47	68	115	6.25	-5.04	-0.74
1970-71	209	47	76	123	0.11	11.69	6.97
1971-72	213	49	74	123	3.19	-3.32	-0.84
1972-73	217	50	85	135	3.51	15.54	10.76
1973-74	221	51	88	139	2.32	3.02	2.76
1974-75	225	46	86	132	-10.99	-2.31	-5.51
1975-76	229	49	84	133	6.40	-2.34	0.70
1976-77	233	48	79	127	-2.07	-5.85	-4.46
1977-78	237	45	75	120	-5.65	-4.78	-5.10
1978-79	241	46	59	105	2.66	-21.22	-12.27
1979-80	246	45	56	101	-2.01	-5.13	-3.76
1980-81	250	45	56	101	0.48	-0.65	-0.15
1981-82	255	44	54	98	-3.81	-2.41	-3.04
1982-83	258	45	50	95	3.94	-8.98	-3.22
1983-84	261	44	50	94	-3.73	1.43	-1.04
1984-85	265	40	50	90	-8.72	0.09	-4.01
1985-86	268	41	47	88	2.62	-6.58	-2.51
1986-87	272	38	41	79	-7.81	-12.45	-10.29
1987-88	275	36	41	77	-4.61	-0.84	-2.64
1988-89	279	32	40	72	-10.11	-2.98	-6.32
1989-90	283	31	38	70	-3.22	-3.47	-3.36
1990-91	286	35	36	71	11.24	-4.77	2.45
1991-92	290	33	33	66	-6.01	-9.53	-7.80

Note: For percapita figures of tapioca before 1963/64 refer End Note.3
Rice equi: of Tapioca:1 ton of rice=2.2 tons of raw tapioca

Source:Estimated from the production data in Economic review(various issues)

The period since then has witnessed a remarkable decrease in the percapita domestic production of cereals. In fact in 1991, it was almost half of what it had been at the end of sixties. This in fact could be considered as a reflection of the emphasis given in the successive Five-Year Plans on food self reliance in the state.

Even though, food security through domestic production continued to receive attention in the later plan documents, it no more enjoys the traditional status.

Kerala has adopted a strategy of securing food security through guaranteed supplies from the rest of India either through state sponsored Public Distribution System (PDS) or through free flow of private trade channels. To what extent, this has been fulfilled is an issue of discussion in the subsequent chapters.

END NOTES

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The discrepancy in the period chosen in the studies of Pillai,P.P., [1982] and Sivanandan,P.K.,[1985] lies in the difference in using base year. Pillai used triennium 1959/61 as the base year, while Sivanandan used 1971/72 as base year. Data base on Tapioca based on crop cutting experiments are available from 1963/64 onwards, and data for earlier years are not strictly comparable with the data after

1963/64.

7. Same as End Note No.3.

8. Narayana,D., Nair,K.N., Sivanandan,P., Shanta.N.,and Rao,G.N., [1991], Coconut Development in Kerala- Ex-post Evaluation, Centre for Development Studies,Pp.12.

9. The various programmes launched by Government are Intensive Area Development Programme [IADP],Intensive Paddy Development Programme [IPDP], Paddy Boosting Programme [PBP], Training and Visit Programme [T&V] and the Report on One Man Commission on Paddy Cultivation in Kerala.

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CHAPTER III

FOOD GRAINS SUPPLY THROUGH PUBLIC DISTRIBUTION SYSTEM

III.1. Introduction

Till the Second World War, the private trade channels proved capable of meeting the increased food deficit in the region. Most of the rice requirements were being met through imports from foreign countries, particularly Burma. The situation had dramatically changed with the outbreak of the Second world war and disruption of supplies from Burma due to Japanese occupation. Imports from Burma into British India dropped from 18 lakh tons in 1939-40 to 9.8 lakh tons in 1941-42 to 0.8 lakh tons in 1942-43[1]. The problem of the food deficit regions like Kerala was also compounded by the food policy of the British Government during the initial years of the war which granted individual provincial Governments autonomy in intervening in the grain markets. The Bengal famine of 1942 forced the Government of India to abandon the laize-faire policy and adopt a comprehensive All India Food Policy on the lines outlined by Foodgrain Policy Enquiry Committee of 1943[2]. The report had recommended introduction of urban rationing in chronically food deficit states, formation of a Central Food Department for procurement and transportation of foodgrains, price controls and a general overhaul of the Ministry of Administration

and readjustment of relation between the province and the Centre [Government of India, 1943].

Meanwhile the food situation in Travancore, Cochin and the Malabar district had become extremely precarious and the sceptre of famine loomed large[3]. Soon after the outbreak of the war and disruption of the grain supply, the Governments of Travancore and Cochin had initiated steps to procure supplies from within the country with the help of the Government of India.

With the adoption of the Government of India's new policy a statutory rationing was introduced in all the regions. Internal movement of foodgrains within each region was also restricted and authorities sought to procure the entire marketable surplus of the farmer through various monopoly procurement schemes. However, the major source of public distribution was the allotments made by the Government of India. As a consequence, the total quantum as well as composition of the ration in terms of type of cereals fluctuated from season to season.

The Public Distribution System survived the post war vicissitudes characterised by the food policy in India. The attempts to decontrol immediately after attainment of independence proved to be short lived. However, as the food production picked up and the situation improved, prices declined slightly during the early fifties by and large with controls were by and large lifted

and statutory rationing was given up. The rationing in Travancore - Cochin had continued on an informal basis. Private trade came to be prominent as a supplement to public distribution. Even when decontrol was announced in the Madras Province. However, Malabar district was exempted.

The ration shops continued to function as Fair Price Shops. The major shock to the Public Distribution System came in 1957 after the formation of the state. The Southern Rice Food Zone Consisting of Madras, Andhra Pradesh, Mysore and Kerala was formed. Free movement of rice was permitted with in the zone. It was expected that the surplus in Andhra Pradesh would be sufficient to meet the deficit in other southern states. The concerned deficit states were to make direct arrangements for purchasing rice from Andhra Pradesh. Attempts by Kerala to directly purchase the rice ran into difficulties and the Public Distribution System came to a near halt[4]. The private trade channels assumed greater importance in ensuring food supplies to the state.

With frequent interruptions in free movement within zone, southern food zone continued to exist between 1960/61 and 1963/64. According to the Foodgrains Policy Committee these zones were constituted with a view to "promoting regional self-sufficiency, avoiding cross-movement and reducing speculative activity"[5]. The compulsory levy of Government of Andhra Pradesh in Dec 1963 and the ban on movement of rice outside the state imposed in 1964, made the

rice flow rather irregular and uncertain. Relatively low prices fixed by the Government on levy, built a barrier to procure rice from the traders and millers. In June 1964, procurement operations in Andhra Pradesh were given up.

In August 1964, statutory maximum retail and wholesale prices of rice were fixed. But in the surplus states the enforcement of levy on rice was found to be very difficult, because the traders from deficit states offered higher prices than the fixed maximum prices. As a consequence, surplus states in the southern rice zone began to reimpose informal restrictions on movement of rice to deficit states. In October 1964, Government of India abolished the regional food zone and each state become virtually a separate food zone.

Inflow of foodgrains to Kerala through private trade came to a total halt as TamilNadu and Andhra Pradesh imposed restrictions on free flow of grain. The acute scarcity of rice gave rise to severe social unrest and forced the intervention of the Central Government. Statutory food rationing was declared in the state. The Government of India guaranteed to procure and supply the state foodgrains necessary for statutory rationing. All households except the self-sufficient rice producers (less than three per cent) were eligible for a subsidized supply from the public distribution.

In January 1965, Government of India set up Food Corporation of India [FCI]. FCI was established for undertaking purchase, storage, movement, transport, distribution and sale of foodgrains in the country. FCI was entrusted to collect rice from surplus states, especially from Madras and Andhra Pradesh and to distribute rice for deficit states such as Kerala. Statutory rationing [complete prohibition of free trade] was introduced in the state from the last week of October 1965. Imposition of restrictions on inter-state movement and intensification of procurement, was introduced and the distribution through PDS was expanded. However, rationing had to be scaled down due to Government of India's failure to fulfill its commitment. Even the reduced rations could not be maintained smoothly as they suffered occasional interruptions, due to the failure of the Central Government to make adequate supplies of rice to the state.

Apart from the Central allotments, a determined effort was also made to procure as much grains as possible from within the state itself through a system of progressively graded producer levy. The taluks were divided into three grades based on average productivity of paddy. The levy rates were varied according to the grade groups and size of holding. Holdings lower than two acres were exempt from levy. The levy rate when related to average yield was estimated to be between 30 per cent to 80 per cent, and the ratio rising with the size of holdings[6]. The high rate of producer levy accelerated the tendency for subdivision of holdings in order

to escape the levy. Consequently, as can be seen from Table III.1, the total internal procurement has rapidly tended to decline from a peak of 138000 tons in 1968-69 to less than 1000 tons before the end of the Seventies. As a result, the Public Distribution System in Kerala has come to be totally dependent upon releases from the central pool.

Table III.1

Procurement of Paddy from Internal Production

Year	Total paddy procurement ['000 tonnes]	Procurement as a % production	As a % of Offtake
1966-67	93.1	5.7	10.97
1967-68	118.6	7.0	19.34
1968-69	138.0	7.3	21.30
1969-70	130.9	7.4	15.61
1970-71	114.5	5.9	13.92
1971-72	105.0	5.2	12.45
1972-73	78.1	3.8	8.81
1973-74	80.9	4.3	10.61
1974-75	60.3	3.0	7.68
1975-76	60.0	3.0	11.15
1976-77	35.0	2.1	3.87
1977-78	21.0	1.6	1.54
1978-79	2.5	0.1	Neg
1979-80	0.7	Neg	Neg
1980-81	0.4	Neg	Neg
1981-82	0.3	Neg	Neg
1982-83	0.07	Neg	Neg

Source: Government of Kerala, Department of Civil Supplies, A Handbook of Statistics, 1976, Pp.38.

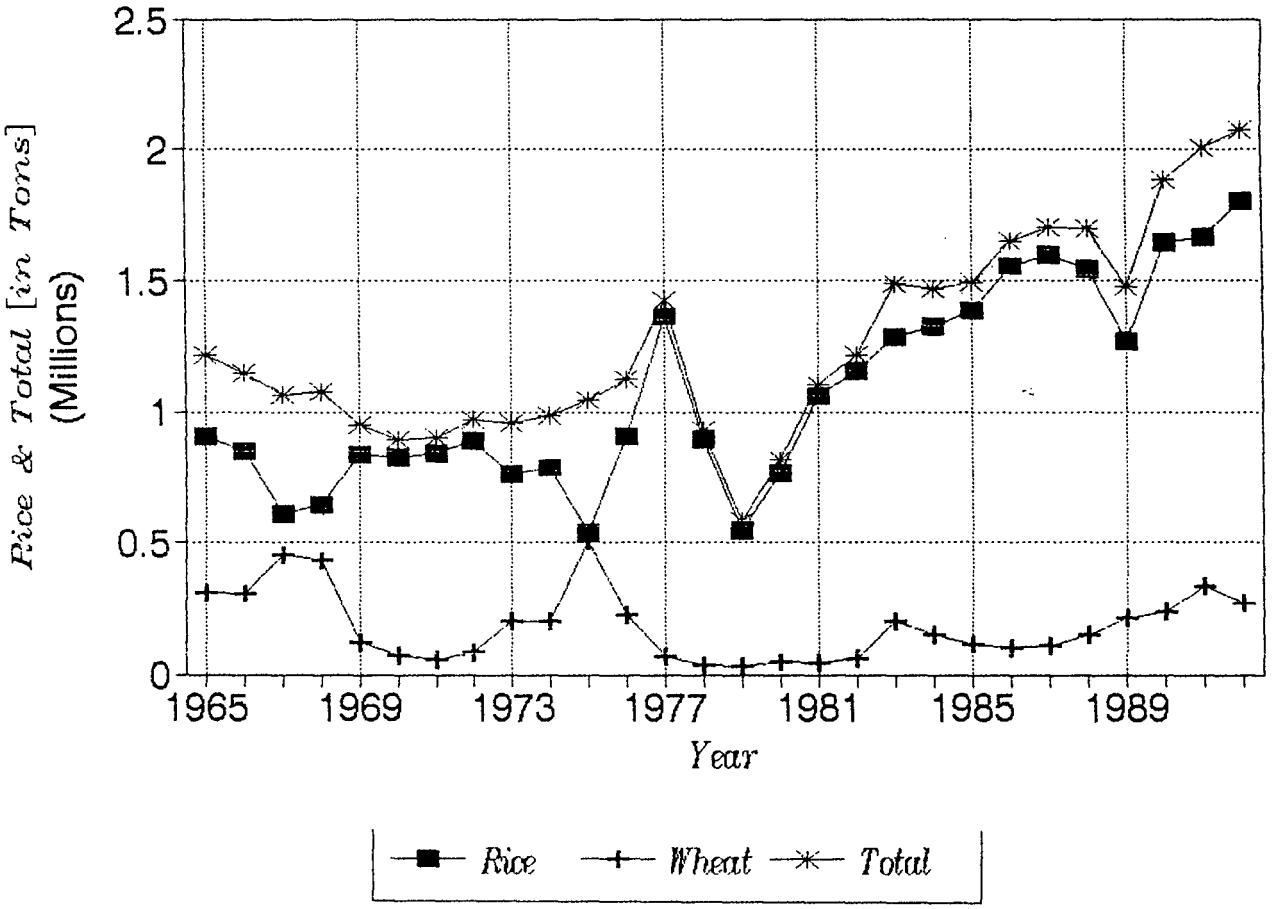
III.2.Trends in the Offtake from the Public Distribution System:

In the first year of statutory rationing [1965], a total of 12 lakh tons of grain was distributed through rationing. Since then, it slowly declined to below 9 lakh tons in 1971. During the early seventies, there is a slow improvement in the quantity supplied through Public Distribution and the overall food situation in the state also improves as there is a revival of the private trade. There was a spurt in the supply in 1977 to 14 lakh tonnes only to decline sharply to 6 lakh tonnes in 1979. Since then the improvement in the offtake from the Public Distribution System has steadily increased through the eighties to reach 20 lakh tonnes in 1991. Figure 3.1 shows the offtake of rice and wheat and total cereals through PDS in Kerala.

In per capita terms, there has been a steady decline in PDS offtake of grain from above 65 Kg in 1965-66 to 24 Kg in 1978-79. The mid-seventies, particularly the year 1976-77, the per capita increase is an exception to the general trend. The per capita offtake of grain have tended to ready rise during the eighties.

Figure 3.1

Offtake of Cereals through PDS



The composition of grain supplied through the Public Distribution System has also changed over time. The quantity of grain supplied has always been an issue of contention in Kerala. The so called conservatism of Kerala consumers to par boiled rice have been subject to criticism. Whenever there was a serious short fall in rice supply, a compensatory increase in wheat supply, as can be clearly seen from Table.III.2. In 1965 wheat contributed to around a quarter of the offtake from the Public Distribution System. The share of wheat supply raised to over 40 per cent in 1967 and 1968 when the supply of rice sharply declined. Subsequently, the share of wheat sharply declined as the rice supply increased. The mid-seventies also witness a sharp compensatory increase in wheat supply. However, during the eighties a new pattern of offtake is clearly evident. Despite the improvement in the supply of rice, wheat offtake has also tended more or less steadily increase. The latter trend is clearly visible in the per capita offtake. The per capita rice offtake increased from 37 Kg to 58 Kg between 1978-79 and 1990-91. There is a parallel increase in the wheat offtake from 1 Kg to 8 Kg during the same period. This is an indication of the changing food habits of the Kerala population.

Table.III.2

Rice and Wheat Distributed through PDS 1965-1991

YEAR	RICE [in Tons]	WHEAT [Tons]	TOTAL [Tons]	Share to total		Percapita Availability		
				RICE	WHEAT	RICE	WHEAT	TOTAL
1965	906400	311875	1218275	74.40	25.60	30.85	10.62	41.47
1966	848506	302556	1151062	73.72	26.28	28.17	10.05	38.22
1967	613094	454614	1067708	57.42	42.58	19.86	14.72	34.58
1968	647885	431596	1079481	60.02	39.98	20.47	13.64	34.10
1969	838493	116100	954593	87.84	12.16	25.84	3.58	29.42
1970	822329	71085	893414	92.04	7.96	24.72	2.14	26.86
1971	843315	55529	898844	93.82	6.18	24.73	1.63	26.36
1972	886471	83514	969985	91.39	8.61	25.46	2.40	27.86
1973	762236	198156	960392	79.37	20.63	21.44	5.57	27.01
1974	785570	202519	988089	79.50	20.50	21.64	5.58	27.22
1975	538061	504828	1042889	51.59	48.41	14.51	13.62	28.13
1976	904177	220464	1124641	80.40	19.60	23.89	5.82	29.71
1977	1362724	65174	1427898	95.44	4.56	35.26	1.69	36.94
1978	895727	35009	930736	96.24	3.76	22.70	0.89	23.58
1979	548603	32670	581273	94.38	5.62	13.61	0.81	14.43
1980	769510	47679	817189	94.17	5.83	18.70	1.16	19.86
1981	1063287	43862	1107149	96.04	3.96	25.31	1.04	26.36
1982	1158696	58913	1217609	95.16	4.84	27.14	1.38	28.52
1983	1288114	201810	1489924	86.46	13.54	29.68	4.65	34.33
1984	1325308	148005	1473313	89.95	10.05	30.05	3.36	33.40
1985	1384327	111020	1495347	92.58	7.42	30.88	2.48	33.35
1986	1554983	98437	1653420	94.05	5.95	34.13	2.16	36.29
1987	1597962	104208	1702170	93.88	6.12	34.50	2.25	36.75
1988	1546264	150450	1696714	91.13	8.87	32.85	3.20	36.05
1989	1269985	209238	1479223	85.85	14.15	26.55	4.37	30.92
1990	1649273	232332	1881605	87.65	12.35	33.92	4.78	38.70
1991	1671398	332706	2004104	83.40	16.60	33.83	6.73	40.56
1992	1804212	271505	2075717	86.92	13.08			

Source: Economic Review, [various issues], State Planning Board, Trivandrum

The fluctuations in rice, wheat and total offtake of PDS. Based on the figure 3.2, the period 1965/92 was divided in the following manner for the rice offtake. Upswings were between 1968/70, 1974/77 and from 1979 onwards, whereas the downswings were between 1965/68, 1970/74 and 1977/79. Peaks and troughs were reached in 1970, 1977 and in 1968, 1974 respectively.

PDS wheat offtake showed an inverse relationship to PDS rice offtake, with a lag of one year, till 1977. In other words, Government tried to keep the offtake through PDS more or less stable by supplying wheat in times of scarcity of rice.

The PDS offtake in Kerala as a percentage to the total cereal production in the country, was found to be quite low between 1977/79 [refer Table.III.3].

The cereal production in the country showed an increasing trend. The share of Kerala's PDS offtake was very low for 1978 and 1979. After 1982, the share of PDS offtake to the cereal production registered an increasing trend. Similarly, the percentage share of Kerala's PDS offtake to production has also decreased. Kerala, West Bengal, Maharashtra and TamilNadu had accounted for the major share of the offtake in the total distribution of foodgrains in the country.

Figure.3.2

Fluctautions in PDS Offtake

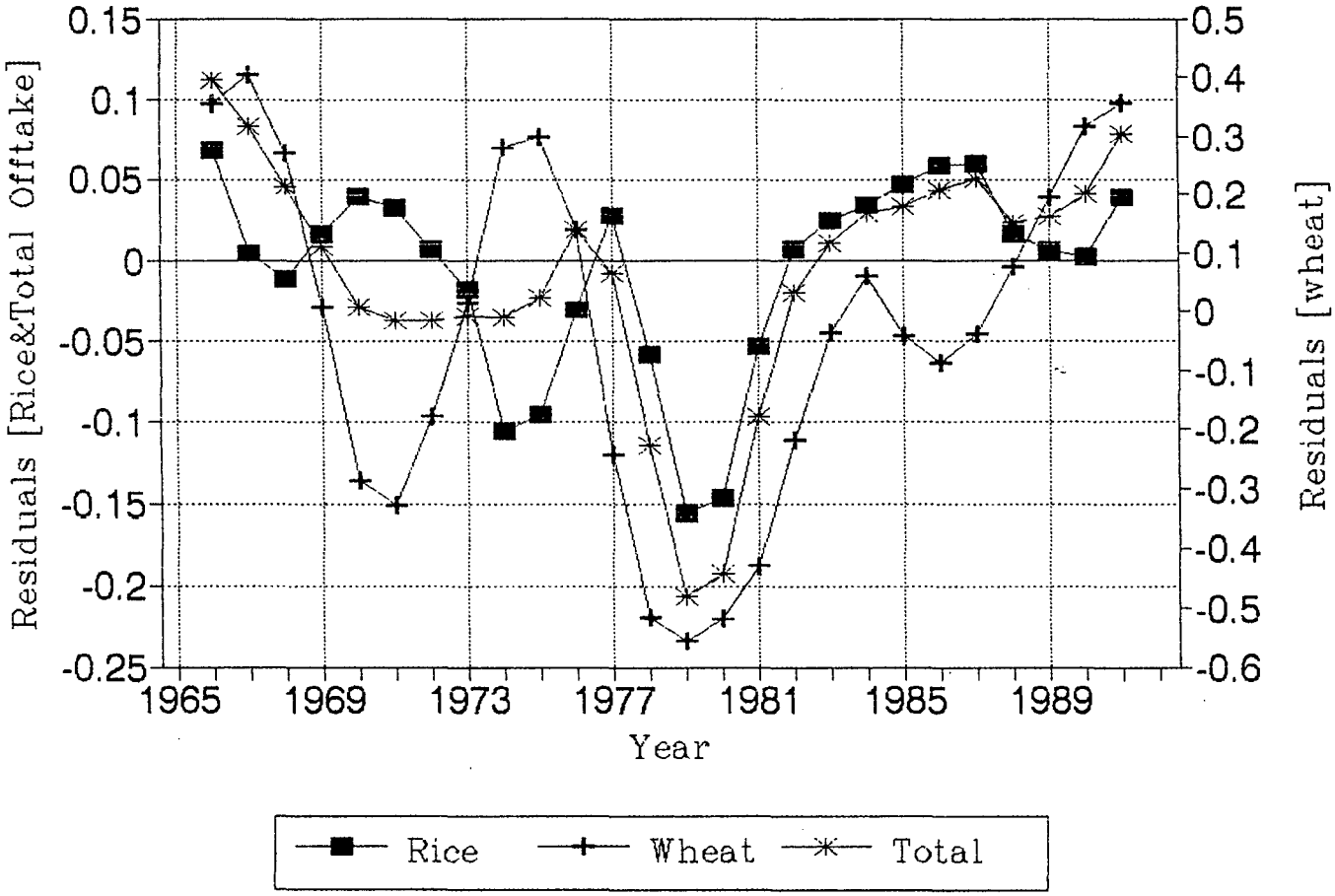


Table.III.3

Cereals: Total Distribution in the Country and Kerala as a Percentage of Production

Year	Production of Cereals All India [in MT]	Distribution of Cereals India [million tons]	Kerala	Distribution as a % of Production in All-India	Kerala
1977-78	114.43	10.18	0.93	9.14	71.5
1978-79	119.72	11.66	0.58	4.97	44.6
1979-80	101.13	14.99	0.82	5.47	63.0
1980-81	118.96	13.01	1.11	8.53	85.4
1981-82	121.79	14.76	1.22	8.27	93.8
1982-83	117.66	16.21	1.49	9.19	87.2
1983-84	139.48	13.33	1.47	11.03	122.5
1984-85	133.58	15.80	1.50	9.50	120.0
1985-86	137.08	17.60	1.65	9.38	141.0
1986-87	131.71	18.37	1.70	9.25	150.4

Source: For all India see D.S.Tyagi, [1990], p.42 and for Kerala see Table.III.2.

III.3.Factors Influencing the Public Distribution System Offtake:

There is a discernable seasonality in the offtake of the Public Distribution System [For details see section 5.6 in Chapter V] as can be seen from Table.III.3. The offtake is lowest in the month of February, then it steadily rises reaching a peak in the month of July-August. The month of July coincides with the height of monsoon when agricultural work also reaches a trough. Often, Government as a matter of policy undertakes, to supply an extra supply of rice during this period. The month of August normally coincides with the `Onam' festival season when demand for rice shoots up. The offtake declines from the month of September. In

December also the offtake is normally above average. On the whole, it would appear that the seasonality in Public Distribution System offtake runs counter to the agricultural production cycle.

The above discussion suggests the possibility of demand factors strongly influencing Public Distribution System offtake. It has been widely noted that inter-household differences in Public Distribution offtake is strongly influenced by household income. The percentage quantity of purchase from Public Distribution System to total purchase tends to systematically decline both in rural and urban areas with a raise in fractile income groups. The lowest fractile group in the rural areas derives as much as 65 percentage of their rice from the Public Distribution System. The ratio is 54 per cent in urban areas. These proportions decline to 38 and 24 per cent respectively in the highest fractile groups [see Table III.4].

Table.III.4
Percentage of Quantity of Purchase from PDS to Total Purchase by Fractile Group: Rice

Fractile Group	Kerala	
	Rural	Urban
0-10	64.91	54.38
10-20	58.61	54.10
20-40	51.59	51.54
40-60	51.86	45.18
60-80	47.14	38.93
80-90	40.72	37.50
90-100	38.84	23.63
All	51.36	46.19

Source: Sarvekshana, Vol.XIII, Issue No.43, April-June.1990.

However, if absolute quantity of rice purchased from the Public Distribution System is examined, it is seen that the offtake from Public Distribution System tends to increase up to certain level of income before declining[7]. This is because ration rice is substituted for tapioca in the lowest income groups. In contrast when income rises above the threshold, ration rice is substituted for open market purchase or on production. A distinctive feature of the Public Distribution System in Kerala is that it has been successful in ensuring distribution of foodgrains to the poorest strata. An inter-state comparison (1984) showed that while 87 per cent of foodgrains distributed in Kerala was accounted for by families with annual income below Rs.3600 the ratio was 56 per cent for Gujarat and 50 per cent for TamilNadu[8]. Aggregate changes in the annual offtake, however cannot be explained with reference to demand variable. Following George[9] we had undertaken a regression exercise to explain the quantity of rice sold through ration shops for the period 1976 to 1986[10]. The results of the analysis are shown below.

$$Q\,rr = F\left[\frac{Por}{Prr},\ Prw,\ Pt\right]$$

where Qrr is the quantity of rice sold through ration shops, Por is the open market price of rice Prr is a ration rice price Prw is a ration wheat price and Pt is Tapioca price.

$$Qrr = 25726 + \underset{[1.99]}{20511}\ Por/\ Prr + \underset{[-0.39]}{20511}\ Prw + \underset{[4.29]}{51611}\ Pt$$

$$R^2 = 0.43.$$

These results predict that the offtake through PDS is not significantly influenced by the ratio of open market prices to ration rice price, nor ration wheat price or tapioca price. This result confirms the results of the earlier study covering pre 1976 period. The quantity of wheat supplied through PDS can be analysed in the following way.

$$Q\,rw = F\left[Q\,rr,\ Por,\ \frac{Prw}{Prr},\ \frac{Pt}{Prw}\right]$$

The regression results are presented below.

$$Qrw = 8579 - \underset{[-1.52]}{0.04}\,Qrr + \underset{[5.41]}{7477}\,Por - \underset{[-0.92]}{9869}\,Prw/Prr + \underset{[-2.6]}{24843}\,Pt/Prw$$

$$R^2 = 0.33$$

When rice sales decrease by one kilogram, wheat purchases increase by 0.04 Kilogram. It may be noted that for the pre 1976 period George had shown that the rice sales through ration shops declined by one kilogram, wheat sales increased by 0.62 kilograms for the pre 1976[11]. The difference could be explained by the increased availability of rice both through PDS and open market. Another reason could be a comparatively faster increase in ration rice price and decline in the differential between market and ration rice.

To sum up, the above discussion really indicates that the changes in the aggregate annual offtake from the Public Distribution System are determined by supply conditions rather than changes in demand. The monthly allotments to the state are determined by Central Civil Supplies Department and lifted from the Food Corporation of India

Depots by the wholesalers on intimation from the state Government. Normally, the entire rice allotment is lifted. This further confirms our conclusion that the Public Distribution System offtake of rice is supply determined.

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10. This is because the published data of ration rice and wheat prices are available in the Civil Supplies Department Handbook only upto 1986.

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CHAPTER IV

PRIVATE TRADE IN RICE

IV.1 INTRODUCTION:

We have already referred to the fact the private trading channels which used to meet the food deficits in the region had completely broken down with the outbreak of the Second World War. Since then the role of private trade in supplying food grains to Kerala have witnessed dramatic variations depending upon the food policy of the Government of India. Non-availability of data on regional trade flows is a major constraint in undertaking a detailed analysis of the trends in supplies through private trade. No regular statistics have been published and data regarding road movement of rice into Kerala are available only for two time points [Thomas Isaac, 1992]. Therefore, the data presented in Table.4.1 rely upon the quick estimates made by the Civil Supplies Department in Kerala. Despite the severe limitations, interesting insights may be drawn from the time series data in Table.4.1.

Table.IV.1

Import of Rice on Private Trade Account,Kerala 1969-1986

Year	Import on Private trade account [000T]	Percapita availability of rice from private trade [Kgs/Year]	% to total percapita availability
1961	776	46	31.94
1962	769	44	36.67
1963	805	45	40.54
1964	453	25	25.51
1969	200	9	9.61
1970	400	12	12.50
1971	450	21	18.70
1972	500	22	19.44
1973	0	-	-
1974	150	6	7.41
1975	350	15	17.01
1976	450	19	17.71
1977	200	8	7.51
1978	700	28	25.28
1979	600	24	26.18
1980	700	27	29.21
1981	500	19	18.16
1982	400	15	14.38
1983	500	19	16.76

Source: Thomas Isaac, [1992] and CDS [1975] for the period 1961-64.

Through the fifties, the private trade has steadily increased in prominence with the formation of the Southern Food Zone in early sixties, contributed as much as 40 per cent of the net cereal availability in the state. Inflow of rice through private channels was around three to three and half times higher than the supply through the Public Distribution System. However, with the abolition of the Southern Food Zone and the introduction of statutory rationing the entire private trade in rice came to a halt in October 1964. Only after a lapse of four years, ie, in 1969, had the private import of rice started once again. In subsequent years the quantum of import on private account has tended to increase

with wide fluctuations from year to year. By early 1980's the Civil Supplies Department had stopped publishing data on import of rice on private account. Therefore, for more recent trends we have to rely upon NSS estimates of total consumption of foodgrains in Kerala [see Table.IV.2]. From the estimates of consumption of foodgrains in Kerala, the PDS offtake and internal production is subtracted to arrive at a net inflow through private trade.

Table.IV.2

Quantity Imported through Private Channels in Kerala

Year	Import on Private trade account(in 000T)	Percapita availability of rice from private trade (Kgs/Year)	% to total percapita availability
1961/62	333196	20	16.71
1973/74	33501	2	1.73
1977/78	189887	8	7.25
1986/87	386294	14	13.02
1988/89	499599	18	16.94

Source: Estimated from the 'Sarvekshana', Department of Statistics, Ministry of Planning, Government of India.(various issues)

It must be warned that the two time series obtained in Table.IV.1 and IV.2 are not comparable. The estimates based on NSS consumption of grains in the state seem to vary much on the higher side. But still they show that the relative importance of private trade had sharply declined during the latter half of sixties and first half of seventies. Since then, it had tended to rise in prominence. It would appear that in the latter half of the eighties it has become an important source of supply to the state. Around 18 per cent of the rice supply to the state comes from the trade on private account.

As part of the on going structural reforms, and the concerted effort at removing all types of subsidies, and targeting food subsidies in particular, the scenario for a state like Kerala is going to be one of larger dependence on private imports. Hence, the study of the private trade would be highly relevant at the juncture.

IV.2.Chalai Rice Bazar:

Perhaps due to the dominance of the public Distribution System, there is no secondary literature on private rice trade in Kerala. Therefore, we have decided to undertake a case study of Chalai Rice Bazar in Trivandrum city. The wholesale rice market of Chalai Bazar caters largely to the rice requirements of the coastal areas of the Trivandrum district. The description of the various intermediaries and the process of trading are briefly discussed below.

There are 44 wholesale rice traders operating in the market. Of the 44 rice traders, 40 per cent are semi-wholesalers who make the bulk of their purchase from the other wholesalers in the Chalai market itself to sell to the retail merchants. Their activity being second sale, is usually non-taxable. The rest of the traders make their purchase from collection points in other states or within the state.

Fifteen of the rice wholesalers have been in business for more than twenty years. Another fifteen had entered business between ten to twenty years back and the rest of the fourteen have entered

business only in the last one decade. Here after they are referred to as Group-1, Group-2, and Group-3 respectively.

Table.IV.3
Distribution of traders according to Educational Qualifications and Age of the concern

Age of the Concern(yrs)	No of Shops	Educational Qualifications					Missing
		1	2	3	4	5	
above 20	15	1	3	2	5	2	2
11-20	15	5	7	0	2	_	1
Below 10	14	3	2	6	2	_	1
Total	44	9	12	8	9	2	4

Source: Survey Conducted by the Researcher. Otherwise Stated, All Successive Tables are from the Survey.

Codes:- 1-below SSLC; 2-SSLC; 3-above SSLC an below Degree; 4-Degree; 5-others

Educational standards among the traders vary from primary education to professional qualifications [including two cases-one post-graduate and one technical diploma holder]. The management structure of most of those long-established firms is that of extended family so that an elderly or less educated proprietor or partner can make use of their graduate sons or the younger generation with higher qualifications to take over the business on the death of father or the elderly member of the family. Perhaps, it is because of this situation that the educational qualifications of the owners of long established firms are higher than the recent entrants.

Hindus dominate in rice trade with 31 shops [70 per cent] and the remaining shops are almost equally shared by Christians [15.9 per cent] and Muslims [13.6 per cent]. Among the Hindus, Nairs and Vellala pillais are the prominent castes. 40.95 per cent of the traders are Tamilians and the remaining traders are Keralites. The number of Muslim owned shops tended to increase in the eighties.

Table.IV.4

Distribution of traders according to the religion and age of the concern.

Group	Religion		
	Hindus	Christians	Muslims
I	12 (80)	2 (13.3)	1 (6.7)
II	10 (66.7)	4 (26.7)	1 (6.7)
III	9 (64.3)	1 (7.1)	4 (28.6)
Total	31 (70.5)	7 (15.9)	6 (13.6)

The number of licenses acquired by all the individual traders were collected. [The special licenses issued for wholesale trades are considered here, and the general licenses like GL, KFDL etc are not included]. Legally Food Grains licenses [FGL] are essential for wholesale rice shops. From an examination of the licenses itself, it can be inferred that most of the rice traders [except 3 traders] started their business with foodgrains licenses and later within two to six years entered into other commodity trades like pulses, sugar, oil etc,.

Table.IV.5

Distribution of shops based on the number of licenses

Group	Number of licenses					Missing
	1	2	3	4	5	
I	3	4	4	3	_	1
II	7	2	_	5	1	0
III	8	2	1	1	_	2
Total	18	8	5	9	1	3

Among the existing 44 rice shops, only 18 shops specialise in rice trade and the remaining 26 shops deal with other commodities also. Most of the long established firms, trade in other commodities, while majority of the firms with less than 10 years of existence, deal only rice.

It can be presumed from this fact that, as time passes firms secure business proficiency, and establish compatible relationship with the brokers, who normally handle more than one commodity. This helps them to enter into the marketing of other commodities also.

Table.IV.6

Distribution of shops based on the type of activity and type of concern

Group	Type of activity		Type of concern		
	W.S	S.W.S	Proprietary	Partnership	Branch
I	12	3	6	9	
II	10	5	8	6	1
III	5	9	11	3	
Total	27	17	25	18	1

Among the long-established firms, 20 per cent of them are semi-wholesalers, while among the young firms 36 per cent are semi-wholesalers. Out of the three long established semi-wholesalers, two of them are concentrating on the chamba variety, which they purchase mainly from the Kerala-Tamil Nadu border. The remaining one firm deals with cement and poultry products and only recently, they started dealing with rice in very small quantities (15 to 10 bags). Continuous contacts with the brokers for a fairly long time enables the trader to build up trust,which is an indispensable factor in inter-state purchases.

At present, rice shops with proprietary management form the dominant form of ownership. The type of the concern varies with the age of the firm. This has been for more than 20 years in existence. In all proprietary firms, 75 per cent are established within the last 20 years while 50 per cent of the ownership firms had more than 20 years of existence. In all partnership firms, associates were found to be immediate family members (mother/ brothers/ sons/ uncle). The preference for proprietary management over

partnership in the recent period, the reason might be the change in the Joint family structure. This can be substantiated by the fact that out of the 18 partnership firms 15 of them are owned by the Hindus and the remaining two by the Muslims. But all the Christian firms are found to be under proprietary management. But the partnership between uncle or nephew is noticed only in firms owned by Hindus.

Table.IV.7

Distribution of shops according to the number of shops, bank loan,and number of attached head load workers

Group	Number of shops			Bank loan		No: of A.H.W			
	1	2	3	Yes	No	0	1	2	3
I	11	3	2	2	9	2	10	3	_
II	12	2	1	6	8	_	9	5	1
III	14	_	_	7	7	1	10	3	_
Total	37	5	2	15	24	3	29	11	1

A.H.W-Attached Headload Workers

Sixteen per cent of the traders own more than one shop. One among the traders, having more than one shop, own a shop in Tamil Nadu and the others have retail outlets. All the traders owning more than one shop, have wholesale rice shops with more than 10 years of existence. The long established rice traders are seen to be less dependent on bank loans.

The wholesale traders in Chalai receive their supply, both from collection centres within the state as well as outside the state. Kalikavila, Cochin, Quilon, Chenganashery and Kuttanad are the major supply places inside the state. Except Kuttanad, all other places supply rice while paddy is available from Kuttanad.

Rice available from Kalikavila, where most of the illegal rice trade from Tamil Nadu takes place, is of Tamil Nadu chamba variety. Quilon railway station and nearby areas is the major market where most of the millers from other states assemble their rice, with the help of agents. Cochin and Chengaserry are the rice supply markets within the state.

Andhra Pradesh, Karnataka, Punjab, Madhya Pradeh and Tamil Nadu are the major states from where supply is available to the traders. The major districts in Andhra Pradesh are West Godavari, East Godavari and Nellore Districts. The exact markets are Kakinada, Hyderabad, Mirialguda, Nellore and Warangal in A.P, Kottar, Madras, Nagarcoil, Madurai, Tirunelveli and Thanjavur in T.N, Mangalore and Shimoga in Karnataka, and Gondia in Maharashtra, Jaipur in Madhya Pradesh, and Jalandhar and Phasilga in Punjab.

The wholesalers utilize the service of intermediaries effecting the purchase of rice from the collection points and transporting it to Chalai Bazar.

Intermediaries are essential in this trade because of the following reasons.

(1) Agents are necessary to ascertain the quality and price prevailing in the market while purchasing from a distant market.

(2) Inter-state purchases, brokers arrange the transportation and loading facilities.

(3) Most of the brokers in one state have contacts with more than one mill and even to the mills in other states also. Thus, through the brokers, information on prices prevailing in the various markets for the different varieties is being made available.

(4) Most of the mill owners prefer to sell via brokers hence a trader has to depend on the broker for purchase.

But, there are traders who directly contact millers for business and they sometimes purchase without the services of an intermediary.

Brokers can be mainly classified according to their geographical area of functioning and the role performed by them:

(1) Brokers in other states who act as intermediaries between millers and traders

(2) Brokers in Quilon :(a) as millers' agent (b) intermediaries between millers and traders and (c) organize transport

(3) Brokers in Kalikavila who have contacts with traders or millers in Tamil Nadu and smuggle rice in to Kerala

(4) Brokers within the Chalai market to transact between traders.

IV.3.The Trading Process:

In the inter-state trading processes majority of the traders contact a broker mostly through telephone and rarely by telegram for placing their order. Based on the brand and mill name an experienced trader can easily judge the quality of rice. But information on the percentage of broken rice, stones, 'mukka' or the black coloured rice enables the trader to assess the quality very easily. But in the case of purchasing from a recently established mill, the traders insist the broker to produce the

sample for physical examination. For this, most of the brokers send their sample by post. If the trader suspects that the price of rice is very high than his anticipation, he will try to elicit information from other brokers. Traders collect the price of rice from more than one broker [shop around purchase] before placing an order. The brokers arrange the facilities for transportation of good.

Most of the traders prefer to transport rice by road even though it is costlier than the rail freight. The main reason is the flexibility of road transport. The railway goods yard in Trivandrum is around ten kilometres away from Chalai. This creates problem of additional transportation by road to the Chalai market. Moreover, railways would require full wagon loads to take advantage of the economics in freightage.

The marketing channels of rice to Trivandrum have been complex with different types of functionaries like producers, millers and brokers. Big wholesaler traders in the markets have direct contacts to the millers in other states through traders. Small wholesale traders mostly purchase from the brokers in Quilon who are either attached to a mill or operate independently. Big wholesale traders, because of their experience in trading practices and financial viability places the order to a broker of a mill who is mostly operating in other states. While placing an order, the value of purchase which includes the transportation, handling charges etc., will be fixed. It is the responsibility of the broker to send the commodity to the trader. The trader decides the mode of transportation.

Small wholesale traders mostly purchases from the brokers in Quilon. The brokers usually visit the market and give the `sample' of the rice variety they are going to purchase. Quilon is the place, where railway meter-gauge ends in Kerala, is the prominent purchase place for small wholesale traders. Mills in other states have employed brokers, to function in Quilon. The brokers in Quilon arrange unloading of product from the rail, temporary storing of the product, payments to the railway etc,. These brokers send the samples to the market by post or bring the product sample to the market and collect orders.

Semi-wholesalers purchase from other wholesalers and sell to the retailers. Exchange of rice between wholesalers, in times of occasional shortages is also possible in the market.

Marketing channels of `Chamba' variety which is widely preferred in Kerala, are entirely different from the marketing channels of other `white' varieties of rice. `Chamba' variety rice has mostly been grown in Tamil Nadu and Kerala. The import of this variety takes place from Tamil Nadu. Tamil Nadu Government has restricted the export of rice and therefore 'Chamba' variety is smuggled in to Kerala. Rs.10/= per sack is the going rate for smuggling a sack across the border. The merchants who have shops in the border areas of Neyattinkara account the smuggled rice as local purchases. The brokers of the `Neyattinkara' area visit the `Chalai' market everyday evening and get the `order' from the traders. The next day itself, they bring the `load' to `Chalai'. Rice is also purchased from Palakkad/ Kuttanad area by the traders.

In inter-state purchases, millers were always behind the scene and very rarely they contact the traders. All the trading operations will be carried through the brokers. When the load reaches the market, the trader has to unload the commodity and keep it in his shop.

There are two types of headload workers

(1) those who are attached to the shops and

(2) those who are the members of labor board.

The piece-rate prevailing in the market are Rs.0.65/=for unloading a 75 Kg bag, and Rs.1.90/=per bag for loading and Rs.0.55/= per bag as 'atti' (for arranging bags inside the lorry). But the loading and unloading charges vary with the distance the headload worker has to cover. So if a trader has a godown in a side road of the main market road, then he has to incur a higher cost for loading and unloading.

The mode of transportation from the wholesale shop to the retailers' shop is to be arrange by the retailer himself. The prescribed loading charges inside the market will be collected from the retailer and given to the attached headload worker.

The traders have to pay an amount in the Labor Board and the labor board sends headload workers to the shop according to the demand of traders. The amount a trader has to pay in the Labor Board is calculated on the basis of total amount he has to pay for the headload workers in a prescribed time, say, one month or week and a 25% levy to the amount.

IV.4. Costs and Margins:

Costs incurred by the traders are of three types:
(1) Brokerage (2) Transportation costs and (3) Handling costs. Brokerage varies from market to market and from shop to shop. When a trader purchases rice from outside the market, and if he transports the good via road, the broker charges an amount, which include all costs he incurred [including transportation charges]. Thus, it is difficult to get the exact amount charged by the broker. Usually, the broker attached to a mill get a margin [exclusive of other costs] of Rs.1/=per bag [ie,Rs.0.013/= per Kg].

The brokerage charged by the brokers of Quilon [for unloading, loading and other charges] varies between Rs.0.02/= to Rs.0.10/= per Kg. One trader compensates the broker, when the load reaches the market, with Rs.0.33/= to Rs.0.55/= per Kg, which include transportation charges also. Another trader pays Rs.0.04/= per Kg, but the transportation is by rail.

Transportation costs paid varies with the distance to be covered. On an average, the traders pay Rs.3000-5000/= per load [via road] and the load consists of 120 to 140 bags [including loading charges also].

Costs incurred by the trader:

If a trader purchases from Nellore and the mode of transportation is rail:

		Rs			
		Minimum	%	Maximum	%
Hypothetical price of rice per sack	-	180.00	87.0	180.00	83.3
Brokerage	-	0.60	0.3	1.00	0.5
Transportation cost [via rail]	-	24.00	13.3	24.00	13.8
Transportation cost from Veli to the market	-	3.60		5.80	
Unloading	-	0.60	0.3	1.00	0.5
Margin of the trader	-	1.80	0.9	5.40	2.5
		207.60	100	216.20	100

If a trader purchases from Nellore and the mode of transportation is road:

		Rs			
		Minimum	%	Maximum	%
Hypothetical price of rice per sack	-	180.00	82.2	180.00	78.5
Brokerage	-	0.80	0.4	1.20	0.5
Transportation cost [via road]	-	36.00	16.4	42.00	18.3
Unloading	-	0.60	0.3	1.00	0.4
Margin of the Trader	-	1.80	0.8	5.40	2.4
		219.00	100	229.40	100

If a trader purchases from Nellore and transports till Quilon through rail:

		Rs			
		Minimum	%	Maximum	%
Hypothetical price of rice per sack	-	180.00	86.6	180.00	83.9
Brokerage	-	0.80	0.4	1.20	0.6
Transportation cost [via rail]	-	18.80	9.0	18.80	18.3
Transportation from Quilon to Trivandrum	-	5.25	2.5	6.75	8.8
Brokerage at Quilon	-	1.00	0.5	1.50	0.7
Unloading	-	0.60	0.3	1.00	0.5
Margin of the Trader	-	1.80	0.9	5.40	2.5
		208.30	100	214.65	100

Whatever may be the mode of transportation, it adds as a major share to the total costs and margins involved in the trading process. The percentage of each item of expenditure to the total price, shows that the transportation of rice through rail is cheapest mode of transportation. Transporting rice via, rail till Quilon and afterwards via road is next cheapest mode of transportation.

The broker at the Quilon railway station charges Rs.7-10/= per Quintal (including unloading, loading and other charges) or Rs.1.50/=per bag.

But if trader purchases from broker who is associated to a mill, then the brokerage is Rs.1/= per bag. If a trader sells within the market the broker has to be paid at the rate of Rs.0.60-0.80/= per bag and Rs.1/= per Quintal.

If the broker helps the trader to sell one load from the carrying lorry itself he will get an additional amount of Rs.100/=.

Gain of Rs.500/= per load is possible if the payment is spot cash [within 7 days]. The credit time available for payment alters between 7-15 days from trader to trader. This depends on the relationship of trader to the party. Punctuality of the trader, builds confidence over time which in turn removes the customary restrictions.

From the survey, it is obvious that the mode of transportation is an important factor in determining the price. Difficulties in getting the wagons at the right time push up the price in the market. Traders have to reserve the wagons very early and in times of seasons for `mango' etc,. it is very difficult to get the wagons. Most of the time, railway authorities prefer to send a goods train with one commodity rather than wagons carrying different goods. Money has to be paid very early in the case of rail transportation and for any mishaps on the way would adversely affect the financial position of the market.

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CHAPTER V

PRICE SITUATION IN KERALA

5.1.INTRODUCTION:

This chapter analyses the long-term trends and the seasonality in the movement of rice prices in Kerala. First, we shall take up the trend in rice prices and then examine the seasonality. Three sets of factors may influence the price movements.(a) Domestic production within Kerala (b) the PDS supply and (c) the prices in the neighbouring states that supply rice to Kerala. the share of domestic production in the total consumption has been drastically coming down in the recent yearsand therefore our discussion is confined to latter two factors.

Before examining the various aspects of price situation in Kerala, major limitations of the present analysis should be mentioned. The imperfections in and non-comparability of data are the two major constraints. The monthly wholesale price data published by the Government of India, for various states were found to be static for three or four years. The state average wholesale price series of rice is not available and the wholesale price index series of rice was found to be based on the ration price. Retail prices of rice for various districts are not available in published form. Unpublished data of Trivandrum district wholesale price series of rice obtained from the Bureau of Economics and Statistics of Government of Kerala are not strictly speaking comparable with the state average retail prices of rice due to differences in spatial reference. Further, the data used here for wholesale prices are of

the prices prevailing in Trivandrum market for two varieties, Chamba and rice, while the retail prices used are the state average prices which include the price of different varieties of rice in different district markets. But due to non-availability of data, we are forced to work within these limitations. Another constraint of the study is the period chosen for analysis. Since the district wholesale price series is available only for the period 1976/90, the sections dealing with wholesale prices will be following the same period. For analyzing the long-term and short-term movement of retail prices, 1965/90 has been chosen at the period.

5.2.Wholesale and Retail Prices in Kerala:

Wholesale price of rice in Trivandrum district (1976/91) and the retail price of rice in Kerala (1960/91) are given in Table V.2. Figure 5.1 presents the movement of wholesale prices of rice in Trivandrum district and retail prices of Kerala for the period 1975/91. Giving due consideration to the various costs and margins involved in the process of trade, the expectation is that the price at the retail level should be higher than the wholesale price. So the ratio of retail to wholesale prices is estimated and it was found to be less than unity for the period 1984/87, implying that, wholesale prices were higher than the retail prices during this period, which could be attributed to data incompatibility. For the rest of the period, the retail prices were higher than the wholesale prices.

Figure 5.1

Wholesale and Retail Prices of Rice

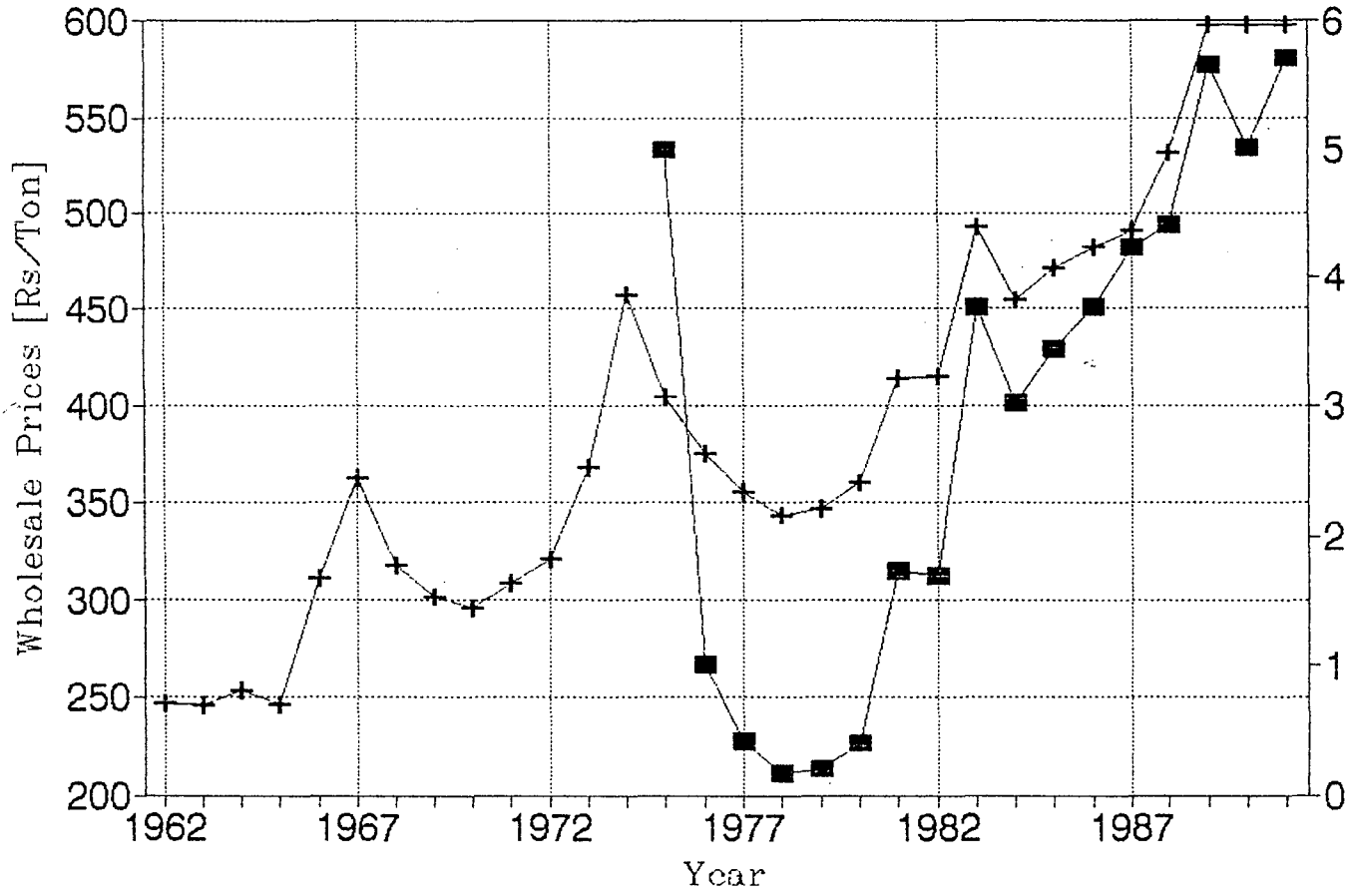
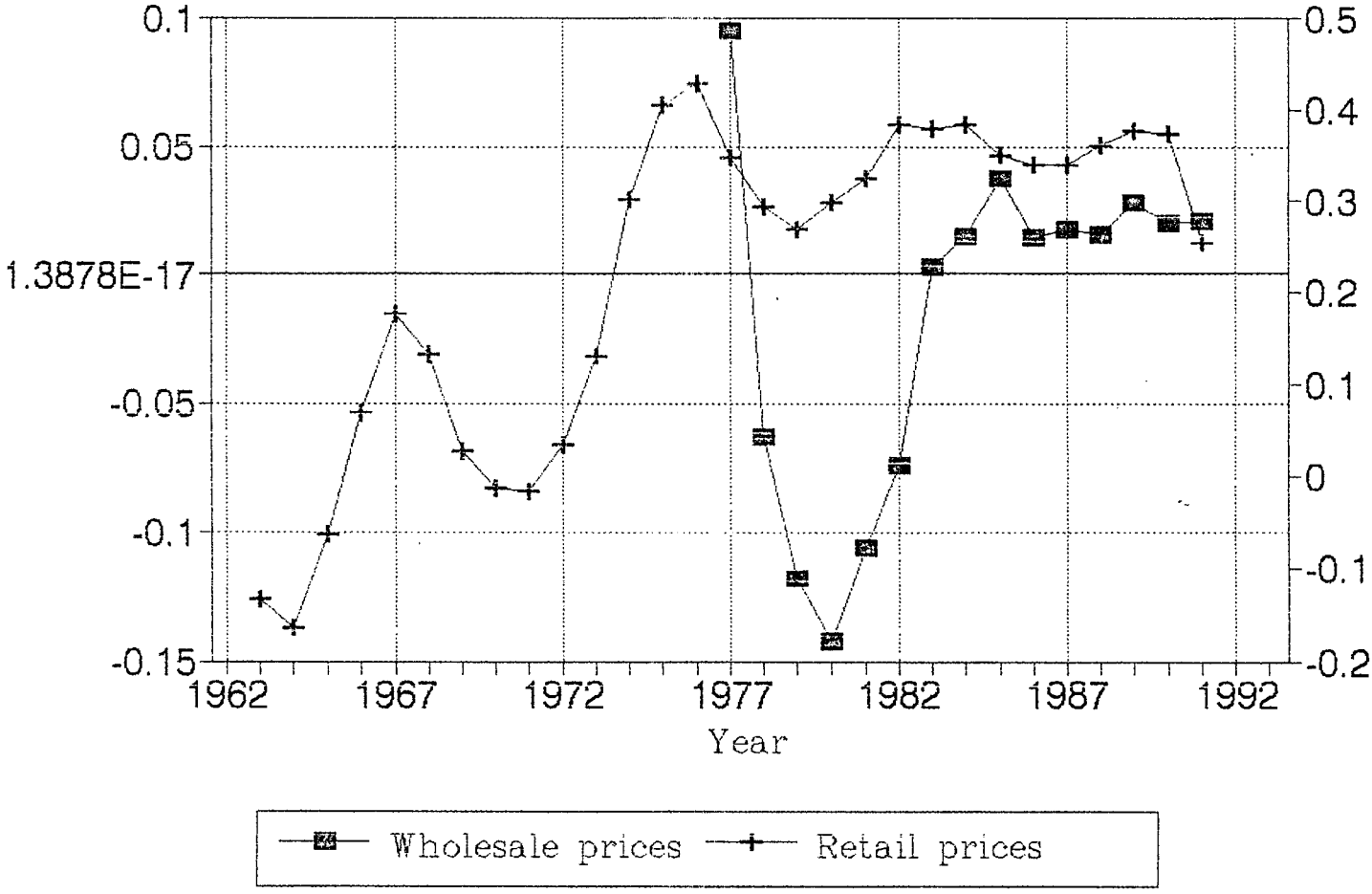


Figure 5.2 presents the cycles in the wholesale and retail prices of rice in Kerala[1]. Based on the graph, periods are classified as 1961/67, 1971/74, and 1978/83 can be identified as periods of upswings and the in between periods as the downswings of the cycles. After 1983 the amplitude of the cycle was found to be relatively low.

While analyzing the relationship between rural poverty, money-wage rates and cereal prices in India, for the period 1956/85, Narayana[2] has shown that "the movement of prices of cereals has been characterised by cyclical fluctuations [refer Table V.1] with some regularity and a strong trend element. The prices decline rather slowly from a peak through one or two years and then stagnate or increase slowly over a period of four to five years. During the next two to three years the prices increase rather sharply and reach a peak. This pattern has repeated over the last thirty years.So, the movement itself had been marked by clear peaks and troughs."

The wholesale prices of rice reached the lowest level in 1978, and afterwards showed a steady increasing trend. The trend in the movement of growth rates of wholesale and retail level were almost the same for the period under consideration. Retail prices reached the lowest point of trough in 1978, and it showed an increasing trend upto 1983. After 1983, the retail prices moved through a cycle of very low amplitude. The trough in 1970/71 reached within 2 or 3 years after the peaks in 1967 and the trough in 1979 reached after 4 years from the peak of 1974.

Figure.5.2
Cycles in Prices



The peak value of 1983 was 14 per cent higher than the peak value of 1974 which was 58 per cent higher than the peak value of 1967. The trough value of 1986 was 91 per cent higher than that of 1979, which in turn was 36 per cent higher than that of 1971. Negative growth rates between peaks and troughs were found to be 41 per cent (1967/70), 43 per cent (1974/79) and 4 per cent (1983/86). The peak of 1967, 1974 and 1983 were reached with 306.7 per cent, 136.2 per cent and 98.6 per cent increases. This shows that the growth rates in accelerating phases were declining. On the whole, a seven or eight year cycle pattern is followed by the retail prices. Growth rates of wholesale prices witnessed sharp decline compared to the decline in retail prices for the period 1975/79. Comparison of the pattern in the movement of wholesale prices and retail prices showed that whenever the wholesale price increases retail price also increases to the same extent, but when the wholesale price declines, the retail prices do not reflect the decline to the full extent.

Table.V.1
Cyclical Fluctuations in the Retail Prices of Cereals in Kerala (state average), from 1956/85

Years in which peak occurred	Years in which troughs occurred	Average annual % change from (1)	(2)	(3)
1960	1961	35.2	29.2	-26.7
1967	1971	10.2	28.8	-6.7
1975	1978	2.2	21.9	-10.5
1983				

Note: (1)from peak to peak (2)from two years preceding the peak to peak (3)from peak to the succeeding trough.

Source: D.Narayana, [1990]

Table.V.2
Wholesale and Retail Prices of Rice
V.2(a)Annual Growth rates and Ratio of Retail to Wholesale Prices

Year	Wholesale price(Rs/Q) Tvm dt	Retail Price(Rs/Kg) in Kerala	Annual G.R of W.P	of R.P	Ratio of R.P to W.P
1960	na	0.60			
1961	na	0.44	-	-26.67	
1962	na	0.71	-	60.23	
1963	na	0.69	-	-2.36	
1964	na	0.80	-	16.22	
1965	na	0.70	-	-12.71	
1966	na	1.68	-	140.57	
1967	na	2.44	-	45.24	
1968	na	1.77	-	-27.46	
1969	na	1.53	-	-13.56	
1970	na	1.45	-	-5.23	
1971	na	1.63	-	12.41	
1972	na	1.82	-	11.66	
1973	na	2.52	-	38.46	
1974	na	3.85	-	52.78	
1975	na	3.06	-	-20.52	
1976	266.84	2.62	-	-14.32	
1977	227.96	2.33	-14.57	-11.16	1.02
1978	208.61	2.14	-8.49	-8.09	1.03
1979	214.01	2.21	2.58	3.04	1.03
1980	226.05	2.40	5.63	8.80	1.06
1981	315.85	3.21	39.72	33.65	1.02
1982	313.04	3.23	-0.89	0.55	1.03
1983	439.80	4.39	44.07	36.07	1.00
1984	401.57	3.81	-10.96	-13.10	0.95
1985	428.78	4.06	6.78	6.49	0.95
1986	450.30	4.23	5.02	4.23	0.94
1987	482.02	4.36	7.05	3.05	0.90
1988	493.22	4.97	2.32	14.04	1.01
1989	576.94	5.96	16.97	19.82	1.03
1990	533.00	5.96	-7.62	0.00	1.12
1991		5.96		-0.08	

V.2(b)Accelerating and Decelerating Phases in Retail and wholesale prices
V.2(a) i For wholesale prices

Phases	Period	G.R	S.D	Avg	C.V
Decelerating phase	1975/78	-24.35	131.25	309.27	42.44
Accelerating phase	1979/91	9.4%	110.24	422.33	26.10
	1975/91		110.2	422.33	26.10

V.2(b) ii For Retail prices

Phases	Period	G.R	S.D	Avg	C.V
Accelerating	1960/67	31.50	0.64	1.01	64.05
Decelerating	1968/70	-8.46	0.12	1.60	7.49
Accelerating	1971/74	34.30	0.84	2.73	30.84
Decelerating	1975/79	-10.21	0.61	2.47	24.67
Accelerating	1980/83	19.77	1.45	3.31	43.84
Decelerating	1984/87	-0.80	0.17	4.04	4.26
Accelerating	1988/91	7.37	0.66	5.44	12.15
	1984/91	4.31	0.86	4.91	17.60
Whole	1960/91	11.36	1.67	2.73	58.83

Note: G.R- Growth Rates, S.D- Standard Deviation,
Avg- average, C.V- Coefficient of Variation

Sources: for Wholesale price, Bureau of Economics and Statistics,(unpublished) Government of Kerala,Trivandrum and for retail prices, Economic Review(Kerala), State Planning Board, Trivandrum.

The growth rates of wholesale and retail prices during different accelerating and decelerating phases of the cycles are given in Table V.2 (b) i and V.2 (b) ii. Coefficient of variation for the different periods predicts wide fluctuations during 1960/67 and 1971/73.

The movements in PDS offtake [See Chapter.III, Figure 3.2 and Figure 5.2] was seem to be inverse with respect to the movement in retail prices until 1977. It can be argued that the sharp increases in PDS rice offtake, pulls down the open market retail prices of rice in Kerala and vice versa for the period before 1977.

5.3.Trends in Wholesale Prices in Kerala and Neighbouring States:

A comparison of the trends in the movement of prices between the neighbouring states and Kerala, is carried out in this section.

Figure.5.3

Wholesale Prices of Selected Markets

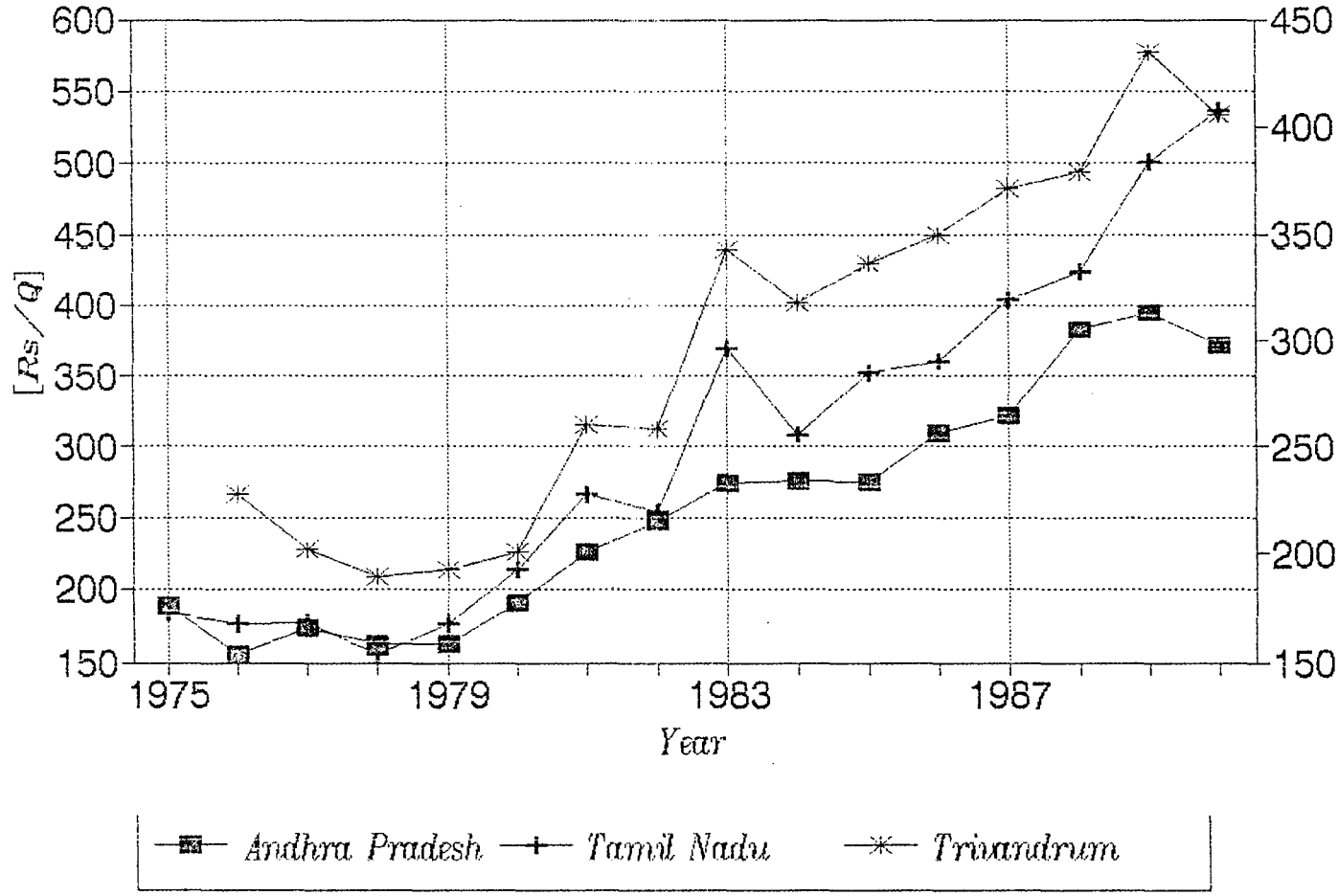
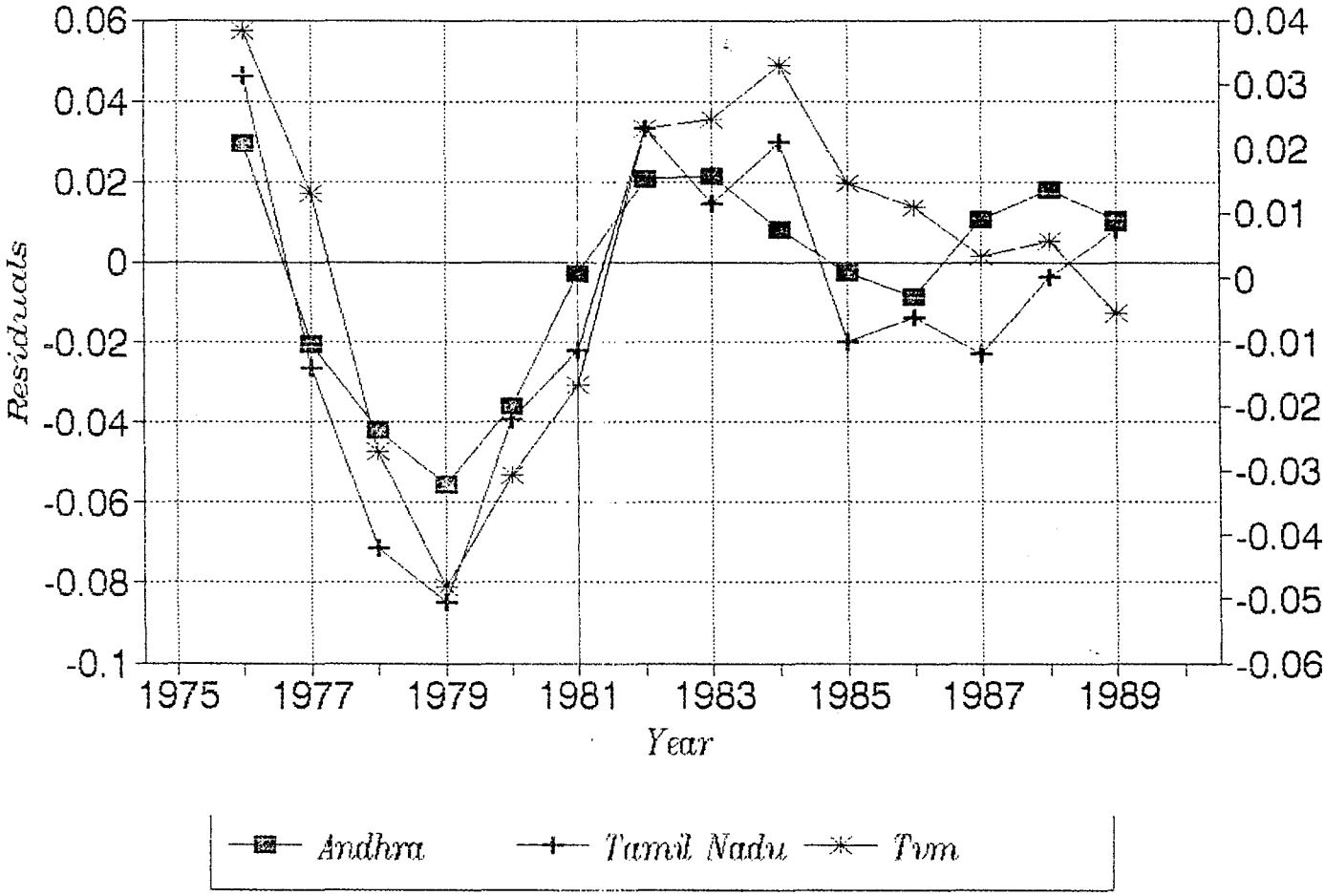


Figure 5.4

Cycles in Wholesale Prices of Rice



Although the analysis was started with the wholesale prices in Karnataka, Tamil Nadu and Maharashtra along with Andhra, serious imperfections observed in the data[3], and we were forced to restrict our analysis only to Andhra and Tamil Nadu. Further, the relationship between the prices of the former states and Kerala was seen to be relatively very weak.

Figure 5.3 shows that the wholesale prices of rice in Trivandrum was always higher than the wholesale price of rice in neighbouring states. The wholesale prices in Trivandrum have tended to move in sympathy with the trends in neighbouring states. But the amplitude of fluctuations in Trivandrum district is relatively higher. Since, the wholesale prices of Trivandrum district are not strictly comparable with the wholesale prices of neighbouring states, a different exercise was carried out between the state average retail prices and neighbouring states' wholesale prices.

Even though sixteen years of data are perhaps too meagre to come to any precise conclusions, it is possible to see some pattern in the movement of wholesale prices. Figure 5.4 gives the clear pattern of the movement. *Prices in the neighbouring states showed cyclical movement during the period 1975/82, with a trough in 1979.* After 1983, prices were more or less stable.

Wholesale prices of rice in the neighbouring states showed [refer Table.V.4] a negative growth rate in 1976 and an increasing trend between 1980/83. Negative growth rates were registered in Tamil Nadu and Trivandrum markets in 1984, and a mild decline in price noticed in 1985 in the case of Andhra. In 1988, wholesale

price of rice in Andhra, increased by more than 15 per cent. But the price increase was comparatively moderate in Tamil Nadu [4.15 per cent] and Trivandrum [2.32 per cent]. Increase in rice price was very low in Andhra in 1989 [below 6 per cent], but in Tamil Nadu and Trivandrum markets, prices rose by 15.36 per cent and 17 per cent respectively. This shows the closer resemblance in the movement of wholesale prices of rice in Trivandrum and wholesale prices of Tamil Nadu.

Table V.4

Simple Annual Growth rates of Wholesale Prices of Selected Markets

Year	A.P	T.N	Tvm
1976	-17.50	-3.23	na
1977	11.04	0.26	-14.57
1978	-5.98	-8.34	-8.49
1979	0.17	8.82	2.58
1980	17.33	14.78	5.63
1981	18.31	18.51	39.72
1982	9.85	-3.75	-0.89
1983	10.14	35.00	40.49
1984	0.85	-13.78	-8.69
1985	-0.17	11.53	6.78
1986	12.07	1.88	5.02
1987	4.25	9.93	7.05
1988	18.82	4.15	2.32
1989	3.17	15.36	16.97
1990	-5.71	6.31	-7.62

Source: Calculated from the wholesale prices of various states, viz, Andhra Pradesh[A.P], Tamil Nadu[T.N], taken from Agricultural Prices [various issues]

The wholesale prices of Andhra and Tamil Nadu were found to be related to the retail prices of Kerala for the period 1965/90. Various methods were tried out to find lag effect, if any, on Kerala retail prices due to the wholesale prices in Andhra and Tamil Nadu. The results showed that the annual retail prices immediately respond to the wholesale prices of Andhra and Tamil Nadu and the results are presented in Table.V.3. Similar results were obtained when the exercise was done with the Trivandrum wholesale prices.

Table.V.3
Relation between the retail prices of Kerala and Wholesale prices of Andhra and Tamil Nadu (Rs/Kg) 1965/90

State	Constant	Slope	t_Value	Adj R^2
Andhra	0.44	1.31	14.29	0.89
Tamil Nadu	0.82	1.23	11.59	0.84

Source: Agricultural Prices in India(various issues) and Economic Review, Kerala (various issues).

Thus the findings could be rendered in the following way, that although the analysis started with the assumption that the prices in the state were substantially affected by the prices in the four major states, the results of the exercise predicted that the prices of Andhra and Tamil Nadu influence the prices to a significant level compared to the prices in other markets. The prices were found to be increasing with cyclical movements. The wholesale prices in Trivandrum district found to be moving in congruence with the wholesale prices in other states. Fluctuations in the movement of prices between the markets were found to be more or less similar.

5.4. Seasonality of Wholesale and Retail Prices of Rice in Kerala:

Seasonality in the marketing of agricultural produce is a well known phenomenon. It is generally held that the prevalence of high degree of seasonality in the marketing of agricultural produce tends to depress the prices of agricultural produce in the busy season. There are two distinct seasons in foodgrains market a short, post-harvest busy season of the market and a long 'slack' or 'lean'season covering the rest of the year.

Consumption remains uniform through out the year. But the supply comes, only during the harvesting seasons. Significant increase in the relative demand in the lean months, increases the prices during those months.

Seasonality of wholesale prices and retail prices of rice for the periods 1976/82 [Period I] and 1983/90 [Period II] are shown in Table.V.5 and V.6[4] respectively. During 1976/82, wholesale prices of rice were above average between June/September and for 1983/90, prices were above average between April/December. The wholesale prices start increasing from March and reach the maximum value in August, and then they decline. The lowest price in March was found to be 4 per cent and 20 per cent lower than the average price and highest price in August was 6 per cent and 11 per cent higher than the average price for 1976/82 and 1983/90 respectively. The percentage variations between the highest and lowest prices were 11.10 per cent and 38 per cent respectively for the 1976/82 and 1983/90.

Meanwhile, retail prices were above average between June/August for all the periods. Retail prices start from the lowest price of January during the 1976/82, and for 1983/90, price starts from the lowest price of September. The lowest prices in both the periods were found to be 3 per cent below than the average price. But the highest prices in August were 7 per cent and 5 per cent above the average for 1976/82 and 1983/90 respectively. The percentage variation between the highest and lowest prices were around 10 per cent for both the periods. Thus the broad pattern emerging from the seasonality factors is that the wholesale prices increase from March onwards and reach the seasonal high in August. The prices decline after the seasonal harvest in August/September. Thus, the two distinct seasons in prices are, Mar/Aug the lean season and Sept/Feb the busy season.

Table.V.5

Seasonality Factors of Wholesale Prices of Rice in Trivandrum District

Sample Range	76.01-82.12	83.01- 90.12
Jan	0.969118	0.851967
Feb	0.970987	0.850015
Mar	0.958277	0.806063
April	0.998706	1.021849
May	0.994110	1.050265
June	1.022687	1.073858
July	1.023327	1.096648
August	1.064603	1.111417
September	1.031319	1.062092
October	0.991759	1.017561
November	0.995798	1.062932
December	0.984309	1.061639
Standard Deviation	0.03	0.10

Table.V.6
Seasonality Factors in Retail Prices of Rice in Kerala

	76.01/82.12	83.01/90.12
Jan	0.970603	1.013525
Feb	0.975354	0.997950
Mar	0.992463	0.972861
Apr	0.999522	0.985865
May	0.998984	0.995743
Jun	1.027465	1.036362
Jul	1.045726	1.046133
Aug	1.065166	1.050326
Sep	0.995102	0.963914
Oct	0.970644	0.965204
Nov	0.993191	0.985975
Dec	0.970887	0.991050
Standard Deviation	0.03	0.03

Standard deviation increases between the periods for wholesale prices, which means the seasonality is stronger for the second period, in comparison to first period. The percentage variation between the highest and lowest values were also found to be higher for 1983/90.

The wholesale and retail prices in a year reach their highest level, for all the periods, in August. But the percentage variation between the lowest and highest prices and the standard deviation for both the periods showed the absence of seasonality in retail prices. Absence of seasonality in retail prices and the strong seasonal element in wholesale prices during the Second period seek explanations.

It is proven elsewhere in the literature that an inverse relationship between the seasonality in wholesale and retail price movements. In the sense " stronger the seasonal movement in the

wholesale price,the weaker the seasonal movement in the retail price, and in the end no such movement at all"[5].

The correlation coefficients between wholesale and retail prices were 0.82 and 0.33 for the first and second period respectively. The absence of seasonality in retail prices with a strong seasonal element in wholesale prices could be due to the nature of PDS offtake. The decline in production of rice in the state rules out the possibility of influence of domestic production in seasonality. Thus, the seasonality in PDS rice offtake has to be analyzed to give, meaningful explanations, if any for the phenomenon. This is done in the sixth section.

5.5.Seasonality of Wholesale Prices of Rice in the Neighbouring States:

Wholesale prices in almost all the states reach the lowest level when the harvesting period starts and pick up in lean months. Generally the Autumn crop is more prominent in the country with some variations across states. In Andhra Pradesh, the marketing season for paddy starts from the first week of November for the kharif crop and the last week of April for the rabi crop[6]. In Tamil Nadu, October/December and March are the major harvesting months.

Seasonality factors of wholesale prices of rice in Andhra and Tamil Nadu were calculated for the periods 1976/82 and 1983/90 and the results are presented in Table.V.7 to V.8. Between 1976/82, wholesale prices in Andhra Pradesh, start rising from April, and

reach a maximum in November/December and decline thereafter. The seasonality factors were found to be higher than average during second half of the year. Thus the two distinct seasons are the lean season between April /Dec and the peak season between Jan/ Mar. The lowest price in April was around 6% below average price and highest price was 4% above average price. There is a mild decline in the percentage variation between the highest and lowest prices from 1976/82 to 1983/90. On the whole, seasonality in wholesale prices of rice in Andhra Pradesh was found to be very less.

In Tamil Nadu, the pattern of price seasonality, changes across the periods. The lean season was observed during March/ August, with increase in price for 1976/82. The prices were above average during second half of the year for 1976/82, whereas it was above average for the first half of the year between 1983/90. December/May months were found to be lean months between 1983/90. The lowest prices were 9 per cent and 11 per cent below average and highest prices were around 18 per cent above average for 1976/82 and 1983/90 respectively.

The percentage variation between the highest and lowest prices were 28 per cent and 35 per cent respectively for Periods I and II. Thus, in Tamil Nadu the seasonality in prices became stronger in after 1983 as compared to the period before 1983.

Table.V.7
Seasonality Factors in Wholesale Prices of Rice in Andhra Pradesh

	76.01 82.12	83.01 90.12
Jan	1.002940	1.011206
Feb	0.981033	0.998244
Mar	0.956649	0.965508
April	0.938426	0.949287
May	0.942882	0.956014
June	0.988891	0.979742
July	1.021161	1.005220
August	1.032122	1.032848
Sept	1.033992	1.027781
Oct	1.044354	1.021665
Nov	1.040754	1.020886
Dec	1.025049	1.036837
S.D	0.04	0.03

Table.V.8

Seasonality Factors in Wholesale Prices of Rice in Tamil Nadu

	76.01-82.12	83.01-90.12
Jan	1.185467	0.983492
Feb	0.958427	1.138145
Mar	0.928583	1.119680
April	0.955578	1.150216
May	0.969830	1.188580
June	1.007129	0.882049
July	1.065727	0.912218
Aug	1.070517	0.924092
Sept	1.043562	0.900526
Oct	1.010199	0.883015
Nov	1.015801	0.911763
Dec	1.001912	0.898169
S.D	0.07	0.12

The main conclusions which could be drawn from this discussion are as follows: In almost all the states April to August/September have been the lean months, when prices increase. In Andhra Pradesh, the prices are found to be higher than the average during second

half of the year. That the lean months have shifted from second half of the year to the first half of the year is clearly visible in the seasonal factors of Tamil Nadu Wholesale Prices. Thus, the deduction is that the seasonality in wholesale prices in the selected markets might be the reason for the high seasonality in the wholesale prices of rice in the Trivandrum district. But the correlation coefficient between the wholesale prices between Andhra Pradesh and Tamil Nadu with Trivandrum prices which was found to be below 0.6 predicts a relatively weaker correlation between the markets.

5.6.Seasonality in PDS Offtake:

Seasonality factors of monthly rice offtake of PDS is presented in Table.V.9 for the period Jan 1976 to Dec 1990. The broad pattern emerging from the seasonality factors is that the offtake increases from February onwards and reaches a maximum in August. The lowest offtake in February was found to be 16 per cent and 9 per cent below average and the highest offtake in August was 19 per cent and 15 per cent above average for Periods I and II respectively.

Table.V.9
Seasonality Factors in Rice Offtake through PDS

Range/ Month	76.01/ 82.12	83.01/ 90.12
Jan	0.914663	1.005236
Feb	0.844394	0.916676
Mar	0.950954	0.998058
Apr	0.987423	0.939875
May	1.016793	0.981005
Jun	1.010289	1.006515
Jul	1.100695	1.049841
Aug	1.189877	1.151015
Sep	1.047900	1.042964
Oct	0.960074	0.936068
Nov	1.014737	0.984887
Dec	1.003934	1.008397
S.D	0.08	0.06

The percentage variations between the highest and lowest offtake for 1976/82 and 1983/90 were 41 and 26 respectively for Periods before and after 1983. These predict that the seasonality in PDS rice offtake is weaker after 1983 period as compared to the period before 1983. The correlation between the wholesale prices and offtake seasonality factors were 0.88 and 0.45 and the correlation between the retail prices and offtake seasonality factors were 0.83 and 0.59 respectively for the first and second periods. Comparatively low seasonality in PDS offtake between 1983/90 might have increased the seasonality in wholesale prices.

5.7 Conclusions:

The open market prices in Trivandrum was found to be moving along with the wholesale prices of other states. The wholesale prices of Tamil Nadu were found to be closely related to the

wholesale prices of Kerala. The immediate response of open market prices of Kerala to the prices in the neighbouring states, ruled out any possibilities of lag effect in prices in the market.

The prices at different levels, namely wholesale and retail prices, showed that the pattern of trend in prices at both levels are almost the same. When the wholesale prices increase the retail prices also increase, but whenever the wholesale prices decline the retail prices do not decline to the full extent.

Seasonality of wholesale prices was found to be comparatively stronger for the second period, in comparison to the first period. The standard deviation of retail prices for both the periods showed the absence of seasonality in retail prices. The seasonality of wholesale and retail prices were found to be highly correlated in the first period. The seasonality in Andhra wholesale prices were found to be very low, whereas in Tamil Nadu the seasonality in wholesale prices increased from first to the second period. The strong seasonality in Tamil Nadu prices might have contributed to the strong seasonality in domestic wholesale prices.

The seasonality in PDS offtake is found to be weaker in the second period, compared to the first period. Though the neighbouring states show a stronger seasonality in prices, during the second period, compared to the first period, the PDS offtake in the state, might have kept the seasonality in retail prices to the same level. The seasonality in retail prices could have been even higher, as is evident from the strong seasonality in wholesale prices inside and outside the state during the second period, if PDS has not been in existence.

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END NOTES

1. Cyclicality is calculated by taking the three year moving averages of the trend eliminated using a Log linear equation.

2.D.Narayana (1990),Rural Poverty, Money-Wage Rates and Cereal Prices in India, Working Paper No.239, Centre for Development Studies,Aug 1990.

3. Monthly wholesale prices of Maharashtra, Tamil Nadu and Karnataka and Andhra were taken from Agricultural Prices in India, (Various issues).

4. See End Note No.7

5.Narasimhan, Valsala.,(1986), An Essay on the Formation and Dynamics of the Marketed Surplus and Price of Foodgrains, Ph.D Thesis,Indian Statistical Institute,Calcutta,1986. But,she is concerned with methodological exploration of the classical methodology, and she has not taken into account the government intervention in the market.

6.Subbarao.K (1978) Rice Marketing System and Compulsory Levies in Andhra Pradesh: A Study of Public Intervention in Foodgrain Marketing, Allied Publishers, Delhi.

CHAPTER VI

SUMMARY AND CONCLUSIONS

We have attempted to analyse the problems of foodgrain supplies to a chronically food deficit region-namely the state of Kerala. As stated in the introductory chapter the regional inequalities in foodgrain production have been widening in the post-independence period. They are reflected in the growing dependency of majority of the states on a few Green Revolution states for their grain requirements despite the claim of national food self-sufficiency. Kerala presents an extreme case of external food dependency.

In the second chapter of the study we have described how during the course of the last century the food dependency of the state had worsened. Commercialisation of agriculture from the latter half of the ninteenth century had resulted in a rapid shift of the cropping pattern in favour of non-food crops. The farmers were primarily responding to the market incentives provided by the Government interventions.Even before the Independence, the region had become predominantly a commercial crop area. The broad developments in the post-independence period, continued to be along the same channels as during the colonial period. The importance of non-food crops in the regional agricultural economy continued to rise. However, the post-independence period, could be divided into two separate phases. During the first phase, the rice production,

expanded in absolute terms. But its relative importance continued to decline. However, during the latter phase, ie, since mid-seventies, even the absolute production of foodgrains even in absolute terms has tended to decline.

During the first phase, the increase in production was mainly due to the expansion of area. From mid-seventies onwards, paddy area was shifted to other non-food crops and increase in productivity was not enough to neutralise the consequent decline in production.

As a result, the percapita rice production in the state had declined from 49 Kg in 1971/72 to 31 Kg in 1989/90. In percapita terms, the availability of rice from domestic production as mentioned above had declined even in the first phase. But as we noted in Chapter.II, if the production of cereal substitute, tapioca is also included, the percapita food availability from domestic production increases during this period. In contrast, when the percapita rice production sharply declined from mid-seventies, not only there was a compensatory increase in tapioca production. As a result, the domestic food availability rapidly shrunk, during the last century [Chapter.II]. The share of domestic rice production in the cereal consumption of the state tended to decline from 48 to 40 per cent during 1969/83 period.

How was Kerala able to meet the food deficit?. Foodgrains have to be procured from food surplus regions in India. To what extent, has the Government controlled the procurement and distribution and the private trade channels been sucessful in meeting the rice

requirements of the state? Cereal consumption has been the lowest in Kerala among all the states in India. A greater proportion of the nutritional requirements in Kerala was met from the non-cereal food items. Therefore, we have not been concerned with the absolute level of food availability but its trend overtime. In Tables.II.5, III.2, IV.1 & IV.2 we have reproduced, the data we have discussed in Chapter.II, Chapter.III and in Chapter IV on percapita cereal production, PDS offtake and supply through private channels.

It is already mentioned that the two sources are not comparable. Still, we have presented the percapita private imported rice consumed in Kerala calculated with the help of both the sources. The NSS data on quantity of rice consumed in Kerala for the period 1986/87 and 1988/89 also included in the table, which show that the percapita consumption of rice is stagnating in Kerala. The share of rice on private account became prominent between 1978/81.

In Chapter.III, we discussed the evolution of PDS in Kerala, levels in PDS offtake and the factors influencing them. The PDS, that was established to meet the food crisis, at the outbreak of the world war, to survive the vissicitudes of the food policy shifts in post-independence period and finally came to be formalised in its present structure and norms in 1965.

The percapita PDS supply, had stagnated and even declined till around the mid-seventies and then steadily improved, from 65 Kg in 1965 to 70Kg in 1992. The compostion of rice and wheat have tended to change over time depending upon availability. The changes in the supply have been more or less complementary in nature.

Table.VI.1
Annual Percapita Availabiliity of Rice from Different Supply Sources

Year	Percapita Availability of rice from [in Kg]			
	Domestic Production	PDS	Private Trade	Total
1961	55 [38.19]	43 [29.86]	46 [31.94]	144
1962	50 [41.67]	26 [21.67]	44 [36.67]	120
1963	54 [48.65]	12 [10.81]	45 [40.54]	111
1964	54 [55.10]	19 [19.39]	25 [25.51]	98
1965	53	49	-	-
1966	46	45	-	-
1967	45	32	-	-
1968	44	33	-	-
1969	47 [48.30]	41 [42.11]	9 [9.61]	97
1970	47 [47.80]	39 [39.70]	12 [12.50]	98
1971	49 [44.70]	40 [36.50]	21 [18.70]	110
1972	50 [44.26]	41 [36.30]	22 [19.44]	113
1973	51	34	-	-
1974	46 [52.58]	35 [40.00]	6 [7.41]	87
1975	49 [56.66]	23 [26.50]	15 [17.01]	87
1976	48 [45.40]	39 [36.89]	19 [17.71]	106
1977	45 [40.80]	57 [51.69]	8 [7.51]	110
1978	46 [41.41]	37 [33.30]	28 [25.28]	111
1979	45 [49.58]	22 [24.24]	24 [26.18]	91
1980	45 [43.69]	31 [30.09]	27 [29.21]	103
1981	44 [41.87]	42 [39.97]	19 [18.16]	105
1982	45 [42.80]	45 [42.80]	15 [14.38]	105
1983	44 [39.38]	49 [43.86]	19 [16.76]	112
1986	38 [34.86]	57 [52.29]	14 [12.84]	109
1988	32 [30.19]	55 [51.89]	19 [17.92]	106

Source: Table II.5, Table III.2 , Table IV.1 & Table IV.2.

Our discussion with respect to the factors that influence the PDS offtake showed that the demand factors are not important in explaining the trends in the aggregate offtake, far they are supply determined. The monthly allotments to the state are determined by Central Civil Supplies Department and lifted from the FCI by ration rice wholesalers in Kerala.

In Chapter IV, we examined the supply of rice through private channels. First, we attempted to determine the relative importance of private trade channels in the supply of rice to the region. It has been noted that its fortunes have tended to dramatically change overtime depending upon the national food policy. From being the sole source of supply before the second world war, it became insignificant during the war and then tended to rise in importance during the post independence period until mid-60s. Once again the private trade channels were closed down for a period, and became activated only at the end of sixties. However, despite the various limitations of data it is possible to conclude that rice through private trade has tended to be more and more important. Given its growing importance of private trade, it is important to study the nature of trading process, various intermediaries in the market and the margins involved. In the absence of secondary data, with respect to Kerala, we have made an attempt to look into some of these aspects, through a case study of the Trivandrum wholesale rice market. The rice supplies mostly come from Andhra and Tamil Nadu and a limited amount is also supplied by rice growing regions in Kerala, particularly Palakkad and Kuttanad. There is a high degree of intermediation by brokers and the market is efficient in

supplying adequate quantities. A major bottleneck seemed to be of transoprt.

Finally in Chapter V, an attempt has been made to examine, how the domestic price [wholesale as well as retail] were being influenced by PDS offtake and supplies from the neighbouring states. Tne individual prices are characterised by cyclical fluctuations with a strong upward trend element.

Comparison of the pattern in the movement of wholesale prices and retail prices showed that whenever the wholesale price increases retail price also increases to the same extent, but when the wholesale price declines, the retail prices do not reflect the decline to the full extent.

The movements in PDS offtake was seem to be inverse with respect to the movement in retail prices until 1977. It can be argued that the sharp increases in PDS rice offtake, pulls down the open market retail prices of rice in Kerala and vice versa for the period before 1977.

The broad pattern emerging from the seasonality factors is that the wholesale prices increase from March onwards and reach the seasonal high in August. The prices decline after the seasonal harvest in August/September. Thus, the two distinct seasons in prices are, Mar/Aug the lean season and Sept/Feb the busy season.

Seasonality of wholesale prices was found to be comparatively stronger for the period after 1983, in comparison with the period

prior to 1982. The standard deviation of monthly retail prices for both the periods showed the absence of seasonality in retail prices. The seasonality of wholesale and retail prices were found to be highly correlated in the period preceding 1982. The seasonality in retail prices tended to be very weak in both the periods. Our analysis has tended to emipirically confirm the hypothesis of inverse relationship between seasonality in wholesale and retail prices during the period the post 1983 period. The seasonality in Andhra wholesale prices was found to be very low, whereas in Tamil Nadu the seasonality in wholesale prices increased from first to the second period. The strong seasonality in Tamil Nadu prices might have contributed to the strong seasonality in wholesale prices of Kerala.

The seasonality in PDS offtake is found to be weaker during 1983/90, compared to the period prior to 1982. Though the neighbouring states show a stronger seasonality in prices, during the post 1983 period, compared to the period before 1982, the weak seasonality in retail prices could be due to the PDS offtake in the state. This PDS offtake might have kept the seasonality in retail prices to the same level. The seasonality in retail prices could have been even higher, as is evident from the strong seasonality in wholesale prices inside and outside the state during the post 1983 period, if PDS has not been in existence.

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