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# WORKING OF GRAIN MARKETS IN SELECTED STATES, INDIA 1955-56 to 1964-65

By

Uma Lele

Cornell University

Occasional Paper No 12  
Department of Agricultural Economics  
Cornell University  
USAID Prices Research Project

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The maps were made by Joe Baldwin and Mrs. Audrey Douglas typed the manuscript. I am grateful to Mr. Guntant Desai for checking much of this work and to Mrs. Alice Wells who was the key to administration of this whole complex project.

This research has been financed as part of a USAID financed contract between Cornell University and USAID on agricultural prices. I am grateful to USAID for its assistance.

## PREFACE

Sound government policy for agricultural development requires knowledge of the extent and nature of imperfections in the marketing system. Uma Lele's work in this important and controversial area commenced several years ago with a detailed study of market structure and inter-market and interseasonal price differentials with respect to the jowar market in Maharashtra. In that earlier work she studied the markets surrounding Sholapur in particular detail. In answering a number of important questions with respect to jowar in Maharashtra, a series of new questions were raised concerning the extent to which similar behavior could be expected for other crops and regions. The study reported here was an attempt to provide a higher degree of generalization to the findings of the earlier study and to provide greater detail concerning the manner of operation of the foodgrains trade. The study was thus expanded to include the other two important foodgrain crops, rice and wheat, and the northern, eastern and southern regions of India in addition to expanded study of jowar marketing in western India.

For this study, Dr. Lele spent over a year traveling among the market areas, collecting data, observing practices and, most important, establishing close rapport with the traders themselves. In addition the very considerable resources of the Agro-Economic Research Centers of the University of Food and Agriculture located in New Delhi, West Bengal and Madras facilitated collection of a very large quantity of statistical data. The result of these efforts is a definitive study of the working of foodgrain markets in India.

Uma Lele's study of agricultural marketing in the Indian economy is one of a series of studies being carried out at Cornell University as part of a USAID financed contract for research on agricultural prices. We are grateful for the assistance provided by the Agriculture and Rural Development Service of the War on Hunger of USAID and, in particular, to Douglas Caton and Norman Ward.

The broad program of study, of which this study is one part, covers three major areas of enquiry: (1) the role of prices in inter-sectoral income and capital transfers; (2) the effect of price relationships on agricultural production and marketings and, (3) the factors affecting urban prices of agricultural commodities. Thus in total these studies are concerned with the effects of agricultural prices on the nonagricultural sectors of the economy, with their effects in the agricultural sector and with the manner in which agricultural prices are determined. Over the course of the contract a substantial number of studies are being carried on in various countries and dealing

with various aspects of the processes At the completion of these studies an effort will be made to pull them together into an integrated view of the role and functioning of agricultural prices in the development process

John W. Mellor

Ithaca, New York  
February, 1969

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CHAPTER I  
SCOPE OF THE STUDY

Role of marketing in development of the traditional societies has been emphasized only recently in the literature on development. Current literature on distribution underscores the general neglect of the field in the low income countries and the popular view of trade as an exploitative and antisocial activity. <sup>1</sup> Research on traditional market structure, bearing upon its competitiveness or otherwise, has been inadequate.

The scant literature in the field provides at best conflicting evidence regarding efficiency of the traditional market structure. <sup>2</sup> It fails to offer generalizations valid for wide geographic areas. Quite a number of these

- 
- 1 P. T. Bauer, West African Trade, (London: Routledge and Kegan Paul Ltd., 1963), Leon Hirsh, Marketing in an Underdeveloped Economy The North Indian Sugar Industry (Englewood Cliffs, N.J. Prentice Hall Inc. 1961). Uma Lele, "Traders of Sholapur", in Developing Rural India. John W. Mellor, Thomas F. Weaver, Uma J. Lele and Sheldon R. Simon, Cornell University Press, Ithaca, N. Y. 1968. Also see an excellent survey article by J.C. Abbott, "The Development of Marketing Institutions", in Agricultural Development and Economic Growth, ed. Herman Southworth and Bruce F. Johnston, Cornell University Press, Ithaca, N. Y. 1968.
  - 2 John K. Galbraith and Richard H. Holton, Marketing Efficiency in Puerto Rico, (Cambridge, Mass.: Harvard University Press, 1955), P. T. Bauer, op. cit., Leon Hirsh, op. cit., Alice G. Dewey, Peasant Marketing in Java, (New York: Free Press of Glencoe, 1962), A. P. Kulkarni, The Behaviour of Prices of Groundnut Pods in some regulated Markets in Maharashtra, Unpublished Ph.D. dissertation, University of Poona, 1962. Uma Lele, op. cit., Also, Uma Lele, Efficiency of Jowar Marketing: A Study of Regulated Markets in Western India, Ph.D. Dissertation, Cornell University, 1965 hereafter referred to as Uma Lele, Ph.D. Thesis, Zaibun Jasdawalla, Marketing Efficiency in Indian Agriculture, (Bombay Allied Publishers, 1966), Paloh Cummings Jr. Pricing Efficiency in the Indian Wheat Market, (Impex India, New Delhi, 1967).  
Also see, J. P. Bhattacharjee's section on West Bengal in the Report on Market Arrivals, 1958-59 Season, Ministry of Food and Agriculture, Government of India, and Louis F. Hermann, Considerations Relating to Agricultural Price Policy in India, with special reference to Rice and other Foodgrains, Report to the Ministry of Food and Agriculture, 1964.

studies altogether neglect such aspects of trade as the numbers and size distribution of traders, role of capital, extent of free entry, availability of market intelligence and of transport facilities and the effect of all these factors on the degree of competitiveness.

In the past there has been frequent governmental interference with trade in low income countries that has often originated in political pressure, popular biases, inadequate knowledge or simply in developmental zeal. Often such intervention has had no economic justification and has proved to be inconsistent with the development of the agricultural sector. The Indian grain trade is no exception to such a general rule. It has a long history of government controls which goes back to the British times. Compulsory procurement, fixation of ceiling prices, zoning of surplus and deficit states, fair price distribution and rationing have all been used singly or simultaneously at least for three decades. 1 The goal of the restrictionist policies during British times was basically maintenance of popular support for the colonial rule rather than long run development of the Indian agriculture.

The gradual shift to free trade after the end of the second world war was brought about by the realization that the continuing food crisis was likely to perpetuate in an 'artificial manner' 2 as a result of the high commitments undertaken by the government on one hand and the difficulties of procurement on the other, and that the real solution of the food problem was not imports or controls on procurement and distribution 3 but that "only a substantial increase of domestic production within the earliest possible time could solve the Indian food problem. 4 Quite understandably, the resurgence of controls in the latter 1950's and their further intensification in the mid 60's became a centre of debate among prominent economists, with opponents arguing that turning terms of trade against agriculture would, in the long run, have harmful effects on the resource allocation

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1 See: Sir Henry Knight, Food Administration in India, Stanford University Press, Stanford, California, 1954.

2 Foodgrains Policy Committee, 1947, Interim Report, Government of India, P. 11.

3 Ibid. P. 12

4 Ibid. P. 12

within the agricultural sector. <sup>1</sup> The opponents of the policy pointed out the difficulties of meeting large-scale (extensive) distribution commitments concomitant with the problems of procurement at controlled prices. They also expressed concern about the continuous reliance of the Indian nation on imported supplies for feeding its urban masses.

Some additional features of the present food policy have escaped attention of the critics of the food policy. First, the governmental interference through such policies as zoning, distribution, procurement, ceiling prices, etc. has been directed mainly at maintaining cereal prices low and not towards prices of other crops such as pulses, oil-seeds, cotton, jute etc. with the result that prices of these crops have been oscillating more or less with the free market forces, whereas those of cereals have remained

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- 1 For debate on the agricultural price policy in India, See Report of the Agricultural Prices Commission on Price Policy for Kharif Cereals for 1965-66 season. Ministry of Food and Agriculture, 1965. Raj Krishna's three articles in Economic Times, October 27, 28, 31, 1964. Also see his "Government Operations in Foodgrains", Economic and Political Weekly, Vol. II, No. 37, September 16, 1967, p. 1695-1706 K. N. Raj in Times of India, January 20, 1966, M. L. Dantwala, Times of India, January, 1966, K. N. Raj, Times of India, February 16, Dantwala in Times of India, February 19, 1966, M. L. Dantwala "Incentives and Disincentives in Indian Agriculture", Indian Journal of Agricultural Economics, April-June 1967. V. M. Dandekar, "Agricultural Price Policy: A Critique of Dantwala", and Dantwala "Agricultural Price Policy: Reply", Economic and Political Weekly, Vol. III, No. 11, March 16, 1968, pp. 454-459.

Also, Edward Mason, Economic Development in India and Pakistan, Occasional papers in International Affairs, No. 13, Cambridge, The Centre for International Affairs, Harvard University, 1966. T. W. Schultz, Economic Crisis in World Agriculture, Ann Arbor, University of Michigan Press, 1967. John W. Mellor, "Functions of Agricultural Prices in Economic Development", Indian Journal of Agricultural Economics, Vol. XXIII, No. 1, January - March, 1968.

controlled. <sup>1</sup>

There is sufficient evidence that individual crops show an elastic supply response to changing prices in India. <sup>2</sup> There is also considerable evidence that commercial crops (as distinguished from subsistence crops) such as cotton, jute etc. show higher elasticity of supply. <sup>3</sup> Under these circumstances, it is likely that if prices of commercial crops are allowed to increase much more rapidly than those of foodcrops that there will be a shift of inputs from foodcrops to nonfood crops. It will be worse if agricultural inputs such as water, fertilizer and pesticides which are subsidized with the very purpose of bringing about technological change in foodgrain production are used in the cultivation of commercial crops because of the relatively higher prices of the latter.

An additional factor which may lead to a shift to commercial crops is the uncertainty regarding prices of foodgrains. The price policy has not only been aimed at lower cereal prices, but the nature of the controls has changed so frequently as to create a great deal of unpredictability regarding its future course. Although little is known about the effect of expected prices on resource allocation, it is only logical that such unproductive policies will discourage allocation of resources to

- 1 Some may challenge the effectiveness of the policy. However, even they will not dispute that cereal prices have been at least somewhat lower than what they would have been in absence of governmental intervention.
- 2 See Raj Krishna's excellent article on "Agricultural Price Policy and Economic Development" in Southworth and Johnston, op. cit. pp. 497-548, for review of literature in this area.
- 3 This is partly due to greater use of purchased inputs, partly due to the market oriented attitude of the cultivators who grow them and partly due to the fact that individually, the crops constitute small proportions of the total cultivated land as compared to foodgrains that occupy a major portion of the cultivated land. "It is conceivable that a crop taking up ten percent of the total acreage in an area could have a much more elastic supply response than the aggregate, but it is not conceivable for a crop taking up 95 percent of the acreage. The lesser crop after all can double in acreage at the expense of the major one, but the major one cannot similarly double at the expense of the minor one". John W. Mellor, "The Functions of Agricultural Prices in Economic Development", The Indian Journal of Agricultural Economics, Vol. XXIII, No. I January-March 1968, p.

cereals. Another factor which is often overlooked in the discussion of producer's response is the ease of marketing as a factor affecting producers' allocational decisions. It is often argued by those who support such a policy that although prices are controlled the cultivator's income is weighted by the quantities he sells at the controlled prices and those he sells at the market prices. <sup>1</sup> It should, however, be realized that when commercial crops can be easily marketed at high prices a cultivator is likely to be weary of producing foodgrains although he may receive a high price for some of his surplus foodgrains in the open market (in case of partial levy) or in the black market (in case of monopoly procurement). In the previous case there are no risks in marketing whereas in the latter there are at least some granting that cultivators are not frequently penalized for such transactions. The allocation will not only depend upon the weighted average price of foodgrains as against other commodities but also on the relative ease or difficulty of marketing the produce.

It is, therefore, necessary to define the goals of the agricultural price policy. Those who argue in favour of zones and controlled prices of foodgrains in surplus areas believe that any reallocation of resources will not be all that harmful as some fear for after all India needs everything that it can produce. <sup>2</sup> However, such a policy of controlled food prices and a free market for commercial crops will result in increase in the production of commercial crops at the cost of foodgrains. This would be contrary to the goal of self-sufficiency in foodgrains so highly cherished by these same persons.

The conclusions from the preceding discussion are obvious. If the goal is reaching self-sufficiency in the food production in India in the long run it is necessary to allow foodgrain prices to remain on par with prices of other agricultural crops. This would stimulate allocation of resources into food crops and, if achieved through free market, would check increases in demand for food through the effect of high price elasticity.

Such a policy seems most reasonable in view of the difficulties faced by the central and the state governments in the last few years in taking over trade as a solution to a basically more fundamental problem of shortages. The government failed to procure more than ten percent of the production even with the sense of urgency placed on the policy, increased its commitments by introducing statutory rationing across the board in all large urban centers,

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1 Dantwala in Economic Weekly, op. cit.

2 Dantwala in his conversation with me.

depended heavily on imported food for distribution and caused extensive illegal black market in foodgrains that handled approximately two-thirds of the marketed surplus. Development of such a black market has had harmful effects on the distributional efficiency. It has resulted in dispersal of quantities that would be mass-handled in open trade, increased costs of marketing, resulted in an emergence of a class of profiteering intermediaries who receive a major share of the consumer's rupee, and has distorted price signals thus further affecting resource allocation.

Such a policy should be acceptable only if the traditional market structure provides an even worse alternative. It was said about the private trader during the second world war that.

Almost every deficit province and state, which had to organize its food supplies soon found itself compelled to eliminate the wholesale dealer from the import and export of grain and from much of the internal trade. For instance, at the Third All-India Food Conference in July 1943, the representative of Travancore said: "I have tried every form of indulgence given to the wholesale trader. On every occasion our indulgence was misused and abused. Some of the most prominent of them were guilty of the most atrocious practices". And he advised the Government of India not to rely on wholesale merchants, "however big, however influential, however well supported, they may be in certain quarters." The representative of Cochin said "That is the whole secret of any successful solution of the Food problem in India. To eliminate the grain speculators, big or small, who are adopting a callous and antisocial attitude in order to get rich quickly, never mind how many people starve. In fact, it is in their interest to create a feeling of panic and food shortage, whether real or artificial." The experience of some provinces with the unreliability of trade agencies in dealing with foodgrains was not dissimilar, and the orgy of speculation and profiteering which accompanied the Bengal famine and the brief "free trade" interlude emphasized the danger. In the event government procurement, distribution, and rationing took the place of the private trader in grain throughout much of India. <sup>1</sup>

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<sup>1</sup> Henry Knight, op. cit. p. 246.

Before replacing the traditional trade structure with a new one it is necessary to evaluate the performance of the traditional trade in the past decade with regard to the above charges.

### Choice of Foodgrains and Areas

This study undertakes to examine these issues in the trade of three major cereals, rice, wheat and jowar. Rice accounts for the largest area among all the principal crops in India. On an average, the area under rice forms 36 percent of the total area under cereals, 28 percent of the total area under foodgrains and 21 percent of the total cropped area.<sup>1</sup> The total production of rice in the country forms roughly 48 percent of the total production of cereals and 40 percent of the total production of foodgrains.<sup>2</sup> Rice, wheat and jowar together constitute two-thirds of India's foodgrain production and contribute roughly a third share to the national product. The study proposes to deal with the rice trade in West Bengal and Madras, wheat trade in the Punjab and jowar trade in Maharashtra. West Bengal and Madras are both predominantly rice producing and consuming areas. Together they produce a fourth of the total Indian rice production. The Punjab is not only a major producer and consumer of wheat but is also a major exporter of wheat to a number of states in the Indian union. Punjab produces a fourth of the total Indian wheat production. Maharashtra is the largest jowar producing state in India contributing little over a third of the total jowar production. Maharashtra is also a major consumer and exporter of jowar. (See Figure 1 for location of the areas of study and Figure 2 for acreage distribution of the three cereals.)

#### Hypotheses to be Tested

The following hypotheses will be examined in the context of the Indian foodgrain market.

1. The traditional market structure is basically competitive and to a considerable extent fulfills the textbook conditions of competitiveness.

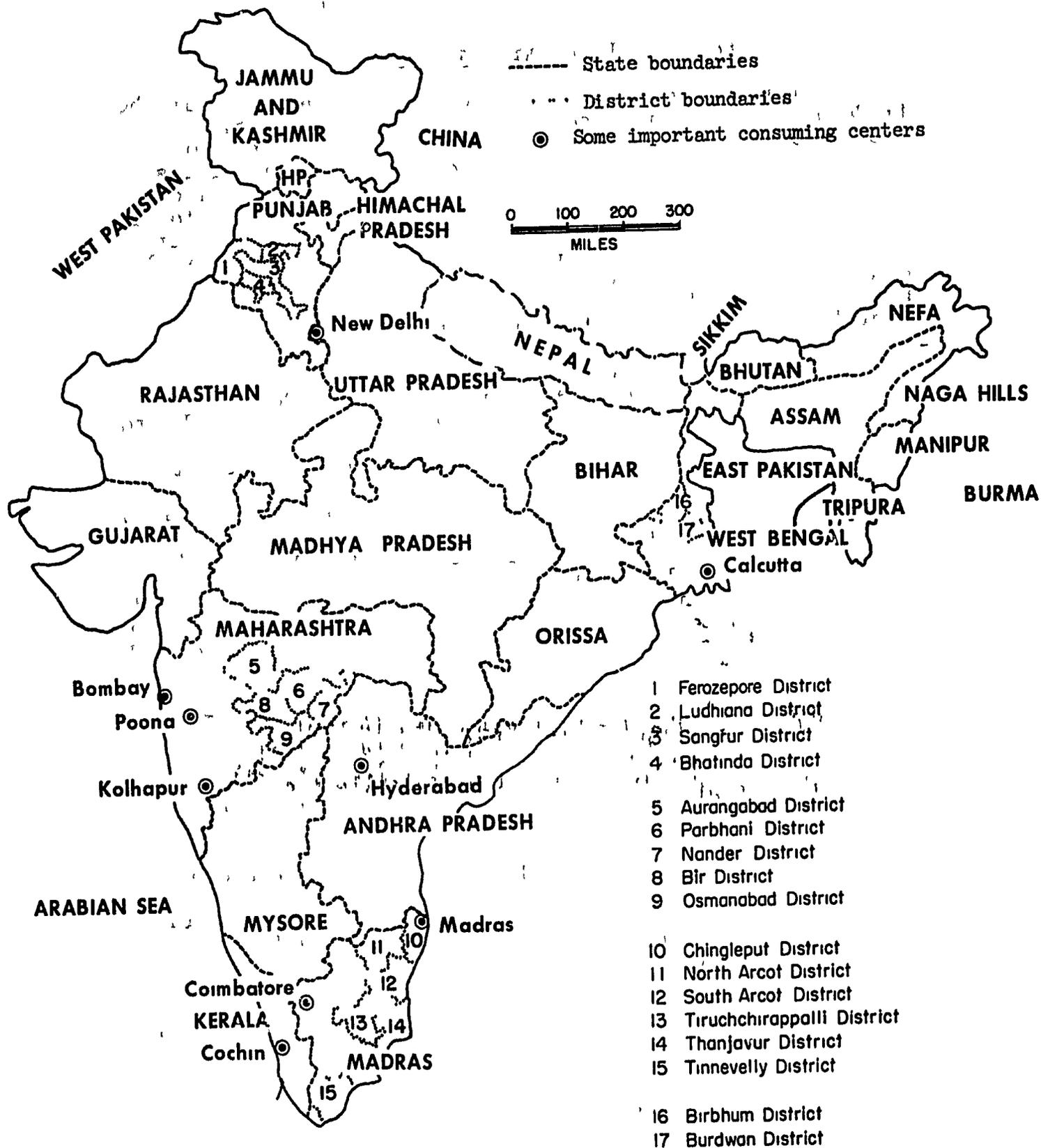
2. All markets of individual cereals are closely interlinked with one another, i.e. the price of an individual crop in one market is related to the prices of the same crop in other markets. This interrelationship between price movements in two markets is defined as

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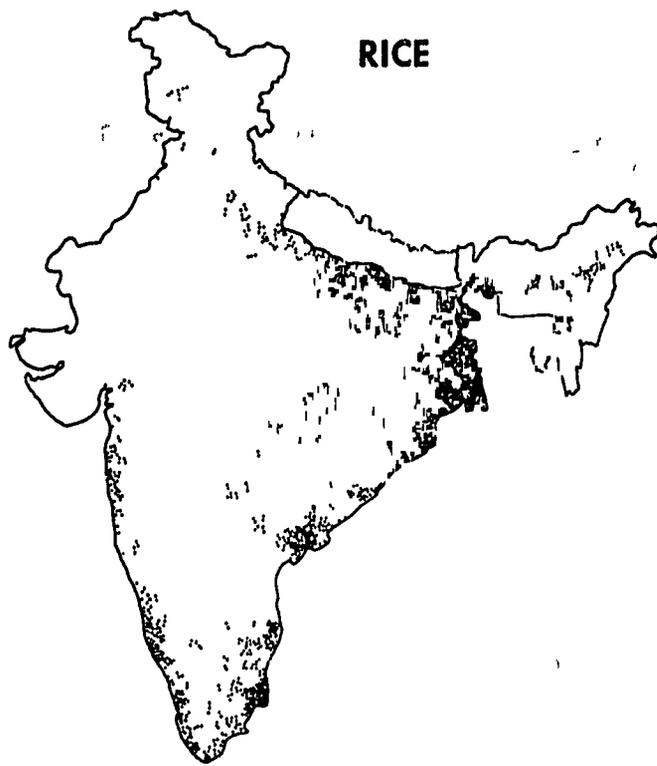
1 The Rice Economy of India, Ministry of Food and Agriculture, 1961, p, 3,

2 In India, cereals include rice wheat, jowar, bajra, maize, barley and ragi. Foodgrains include cereals and pulses including gram.

Figure 1. Map of India showing relative position of the States and areas selected for the study



Source: Adapted from Government of India, Ministry of Food and Agriculture, Directorate of Economics and Statistics, Indian Agricultural Atlas, New Delhi 1958.



**Figure 2.**

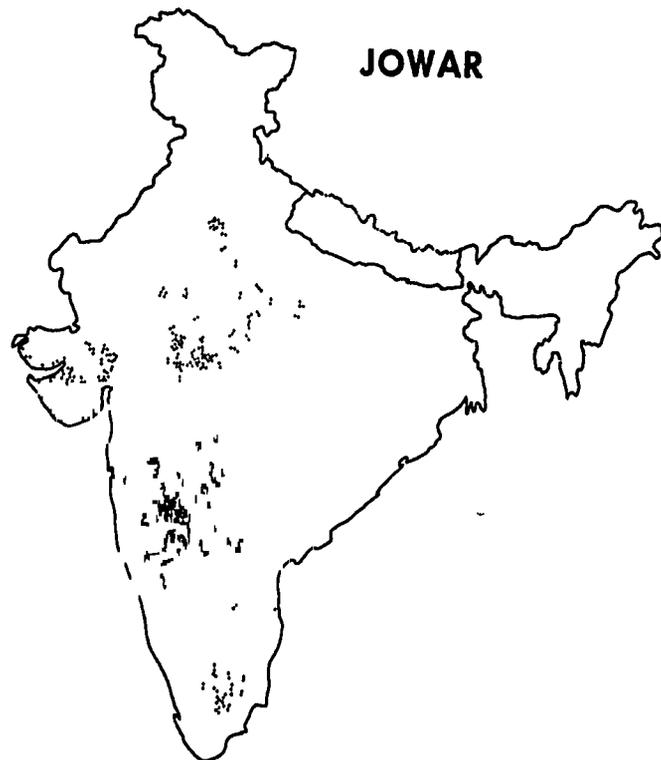
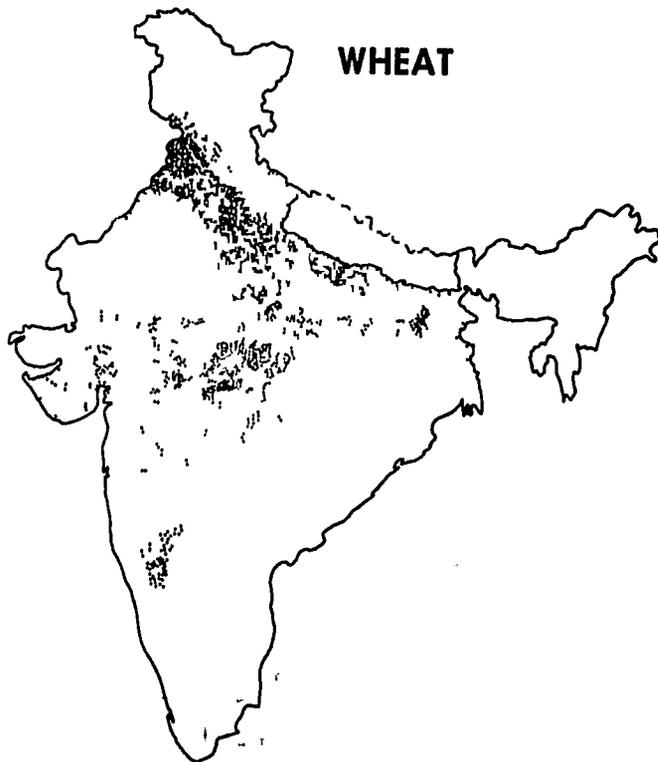
**Maps of India, showing extent of rice, wheat and jowar acreage**

**RICE - each dot = 20,000 acres**

**WHEAT - each dot = 10,000 acres**

**JOWAR - each dot = 20,000 acres**

Source Adapted from Government of India,  
Ministry of Food and Agriculture, Directorate of  
Economics and Statistics, Indian Agricultural Atlas  
( New Delhi, 1958 )



market integration.

3. Because of the competitive nature of the wholesale trade, price differences do not tend to be greater than transport costs.

4. Seasonal fluctuations in prices are consistent with storage costs.

### Methodology

At least five primary markets located in the heart of each of the four major grain surplus areas of each state have been selected for this study. A primary market, for the purposes of study, is defined as the one in which most of the transactions, at the wholesale level, take place directly between the cultivator and the wholesaler. A terminal market (i.e. a major urban consuming center in the region) which receives a significant portion of its supplies from these primary markets is selected from each of the states to study price relations over time and space. A terminal market is defined as the one where most of the arrivals come from traders rather than from producers. Most of the grain imported from surplus areas into those centers goes directly for local consumption.

#### 1. Competitiveness of Grain Markets:

In order to test the hypothesis of competitiveness of grain markets the market structure is examined through direct observation in respect of a variety of factors such as the number of participants in the market, their trading relationships, size and share of their operations, factors affecting entry into the trade, sources and extent of market intelligence, flows of supplies etc.

#### 2. Market Integration:

##### a) Village Level Price Formation -

It is generally believed that village level prices often do not reflect the market forces of supply and demand, and that when the produce is marketed at the village site, cultivators receive prices that are much lower than those prevailing in market places. Various factors are generally believed to be responsible for the phenomenon of underpricing in the village markets. Heavy indebtedness of the cultivator to the village trader cum moneylender, lack of knowledge about market prices, need of cash for payment of taxes and debts, poor transport facilities linking villages with markets, and inadequate number of wholesale markets are all too familiar explanations of the poor bargaining power of the cultivator.

In a competitive market, price difference between the village level market and the wholesale market will be equal to or less than transport costs between the two. Difference which is greater than shipment costs would result in an increased flow between the two markets and thus cause an increase in village prices and a decline in the market price.

In order to examine if village level prices are in parity with the prices in the nearby market it is necessary to compare wholesale market prices with prices of comparable varieties of grain in a nearby village market in relation to the costs of shipment between the two points. Unfortunately no systematic data are available on prices prevailing in the village markets. <sup>1</sup> Wherever possible, farm harvest prices collected by the State Departments of Agriculture are, therefore, compared with primary wholesale market prices. Since nature and problems of comparisons vary from region to region and crop to crop they are discussed in individual sections.

#### b) Price Formation in a Wholesale Market -

The degree to which price formation in an individual market is influenced by prices in other markets is estimated by obtaining correlation coefficients between weekly wholesale prices in these markets. The degree of correlation is taken as an indicator of the extent to which the two markets are integrated. (A representative price relation in each state is also shown in a diagram at the end.)

Correlation between price movements of a commodity in any two markets will be perfect, i.e., 1.00, under conditions of perfect competition. The degree of correlation will, however, be less than perfect in any real-world situation. For even though an individual trader may be unable to influence prices, conditions of perfect mobility, perfect knowledge, and perfect homogeneity of product are not satisfied in actual market transactions.

The assumption of perfect mobility is not fulfilled in the real world because of transport costs. As a result of the costs of shipment, prices in any terminal market can move within the range of plus or minus transport costs in relation to a primary market without there being any economic incentive for movement of goods between these two markets. The larger the transportation cost, the larger the range within which prices can move in

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1. For a detailed exposure on data problems see individual sections.

relation to the other market without there being any shipment of goods. This will mean a larger 'residual term' and a lower correlation between prices in the two markets. It must be added, however, that the high costs of transport may not necessarily be the result of an inefficient transport system. They may be merely the result of long distances between markets. This is the kind of imperfection over which traders or public policy have very little control.

Low correlation may also result from a different kind of immobility which arises from transport bottlenecks. In underdeveloped countries, unavailability of transport facilities over long periods of time is a common phenomenon. Such bottlenecks obstruct free flow of goods between surplus and deficit regions and result in excessively depressed prices in the surplus region or excessively high prices in the deficit region or both.

A factor closely related to transport bottlenecks is the uncertainty about how long a favourable price difference between markets can be expected to persist. Risks in establishing business connections on a sporadic basis tend to be greater than normal, as there is always a fear of loss of margin if movement of goods between markets is delayed by transport bottlenecks. It is this risk, apart from the actual shortage of transport, which discourages free movement of goods between markets.

Such immobility may cause price differences that are greater than transport costs. These differences can be reduced by improving the flow of goods between markets.

Low correlation between price movements in different markets may also result from lack of scientific grading of the produce. Price differences due to differences in varieties often tend to be considerable in low-income countries where grain is generally marketed without grading. Data collected by the governmental agencies often do not relate to comparable varieties of grain and sometimes do not even specify the variety. <sup>1</sup> This leads to apparent

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1 In India, all wholesale markets regulated under Agricultural Produce Market Acts maintain records of transactions. On the basis of these records and under the Integrated Scheme for Improvement of Market Intelligence the market committees send data on weekly wholesale prices to the Ministry of Food and Agriculture and to State Departments of Agriculture. From these data, prices for selected markets are published by the Ministry of Food and Agriculture and the State Departments of Agriculture in their periodical bulletins. The prices thus published, however, do not refer to the same varieties for each market, and, therefore, are

regional differences which originate in lack of homogeneity of the commodity. There is often a tendency in under-developed countries to attribute all price differences to speculative elements in trade. In the present analysis, a special effort was made to acquire prices of uniform varieties for the markets studied. <sup>1</sup> Despite this effort, the price data have some obvious limitations due to lack of scientific grading. It can, however, be said that the data generally fulfil the condition of homogeneity of product.

Excessive price differences may also occur as a result of poor dissemination of knowledge regarding market conditions. This means that the trader is not aware of the opportunities for making profits by exploiting price differences through movement of goods. Imperfect knowledge may thus result in inadequate flow of goods and hence in price differences that are greater than costs of shipment. This factor is not of much significance in the areas studied, because the traders are found to be highly knowledgeable about price movements in various market centres. <sup>2</sup>

In the present study, correlations between prices in different markets are expected to be less than perfect because of three factors: basic transport costs, transport bottlenecks and the resulting uncertainty arising from time taken for transport.

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Footnote continued from preceding page

not comparable. Prices in a typical bulletin of Maharashtra State refer to 12 different varieties of jowar, in addition to which a number of price quotations are given, the varieties of which are not specified. The prices relate to the fair average quality of the most common variety of the commodity transacted in the market.

- 1 Varietal differences are found to be substantial when a wide geographical region is considered. The same varieties are sometimes found to be known by different names in different markets. As far as possible data were collected directly from the primary and terminal markets rather than from state agencies. Discussions with the traders and market officials helped to identify uniform varieties of grain. Direct collection of data also minimized the clerical errors of reporting and recording often observed in the centrally assembled data.
- 2 Sources and nature of market information available to traders will be discussed in individual parts.

If the correlations are less than perfect, it is necessary to determine whether price differences are greater or less than transport costs. This can be done by examining price differences after deducting transport costs.

If price differences are greater than transport costs, it is an indication that the flow of shipments was not adequate to wipe out price differences. It is then necessary to determine whether this condition resulted from factors beyond the control of the trader, such as transport bottlenecks, or was a result of speculative and monopolistic actions of traders.

### 3. Seasonality of Price Movements

Two issues are examined in the analysis of seasonality. The first is a relatively simple question of whether off-seasonal rise in the prices of agricultural commodities is excessive in relation to storage costs and, therefore, provides opportunities to traders to earn abnormal profits. The second and more basic question relates to the factors that determine the seasonal pattern of prices.

To tackle the issue of profitability of storage the following procedure is followed. First, price rise from the harvest season until the postharvest off-season is considered in relation to the cost of purchasing grain in the harvest season and storing it until the off-season. Profits that could be earned by such a storage policy are estimated by comparing the actual off-seasonal price with the cost of storage. However this approach makes an assumption of a rigid storage policy, namely that all the purchases are made in the harvest season and that all the sales are made in the off-season, which is far from realistic.

In actual operations the peak period of purchase extends to several weeks, often to two or three months. In addition to this, purchases are made on minor scale all year round. Nor are sales restricted to the week of the highest off-seasonal price. Seasonal low and high, although generally concentrated in specific time spans, move from week to week and month to month in different years and are, therefore, difficult to predict. Not all traders are skillful in judging the two extremes accurately. Besides, the nature of the trade itself does not permit restriction of purchases and sales to these two times. In fact there is a constant turnover and a continuous flow of supplies to the consumer all year round. Traders buy and sell at prices other than the low and the high of the season. The hypothetical estimates therefore, only show the return from a constant purchase and sale policy.

To bear this out, wherever possible, profit estimates obtained from actual profit loss statements of the traders have been presented and compared with the corresponding hypothetical estimates. Profit rates, volume of operations and purchase and sale records of various traders have also been presented with a view to examine year to year and trader to trader uniformity, if any, in storage operations.

Just as in the case of regional price difference, in a perfectly competitive market, price in the off-season will be equal to the harvest price plus the cost of storing grain until the off-season. Under ideal conditions where there is no uncertainty about the future, knowledge about excessive price rise would result in an increase in the stocks and thus keep prices competitive. In such a market, price pattern will be determined by the costs of storage, so that the off-seasonal price will be equal to harvest price plus storage costs. However, a major difficulty in applying the methods of regional price analysis to seasonality of prices is that the knowledge available to traders about future prices is nowhere as perfect as that about regional price differences. The distance in time itself creates difficulties in anticipating, accurately, various forces which would affect demand and supply in the off-season.

It is, therefore, hypothesized that the off-seasonal price rise in excess or less than storage costs is a function of the misestimate of crop size. This error in the estimate of the crop size is considered as being a result of one or a combination of the following factors. 1. Inadequate direct intelligence available to traders about the actual size of the crop at the time of the harvest when a major portion of the crop is harvested. 2. Inadequacy of the market arrival magnitude as an index of the crop size due to (1) destabilizing behaviour of cultivators and (2) inter-market flows. 3. Inadequate knowledge about the storage operation of other traders. As an indirect support for the hypothesis of misestimation, crop size in the previous year is related to the postharvest price rise in the following year to examine if there is any significant relationship between the size of the crop and the off-seasonal price rise. During the period of this study seasonal price pattern was not left completely to the free play of market forces but was considerably influenced by various official policies such as movement restrictions; imports and distribution of food, price fixation etc. Wherever such factors seemed important they have been taken into account in analysing seasonal variation of prices.



PART I

T H E P U N J A B <sup>1</sup>

- 1 All the references to the State of Punjab relate to the former Punjab State which consisted of the present Punjab State and the present Haryana State. The former Punjab State was divided in two states in November 1966. As it was a single state during the period of this study, the available data refer to the United Punjab State. All the primary markets studied for this project are located in the central part of the State which is now in the new Punjab State.

## CHAPTER II

### INTRODUCTION TO THE PUNJAB MARKET

#### Sources of Data

The source material used for the Punjab study comprises of weekly wholesale prices of wheat, monthly arrivals of wheat, production of wheat, storage costs, profit loss statements of selected traders from each market, purchase and sale statements of the same traders from each market, transportation costs, information about flows of arrivals and dispatches, information on the working of the markets, marketing practices of the traders, etc.

Weekly wholesale prices of major local varieties of wheat for the period 1955 to 1966 were collected from the records maintained by the regulated market committees. Data on monthly arrivals were also collected from the regulated market committees.<sup>1</sup> Data on transportation and storage costs were collected by interviewing major wheat traders in the primary markets.

Collection of profit loss statements of individual traders and the statements of their stock positions was the most difficult task in the data collection.

Traders were most reluctant to part with the records for various reasons. Due to the severe official restrictions on trade in India, Government authorities have frequently seized record books of those whose activities are suspect. There is, therefore, a great deal of hostility towards anyone demanding stock books. Even barring these abnormal circumstances there has been a great deal of secretiveness about trade records.<sup>2</sup> The investigators, therefore had to use

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1 For an explanation of why the data were collected directly from the primary markets rather than from the official agencies in New Delhi see the sources of data section for Maharashtra.

2. Many traders stated that a trader would not mind showing his records to an outsider as much as he would to a fellow trader. Many presidents of the traders' associations stated that they would invite wrath of fellow traders if they insisted on others showing us their records. A thing that was universally noted about the traders from Punjab to Tuticorin and from Bombay to Calcutta was that they would usually instantly agree to show their records stating that they had nothing to hide from anyone etc. However, when it actually came to showing the records they would offer excuses such as "how can we locate such old records?" or that "my munim (clerk) is busy" or that "the records are with the income tax office" and so on and so forth.

a great deal of skill in acquiring stock records.

Review of the Wheat Price Policy  
With Special Reference to Punjab, 1955 to 1966

The decade of the 50's began with a shortage of all foodgrains and consequent high prices all over India. This was partly due to poor crop for two successive years at the beginning of 1950's that failed to keep pace with rising population. It was also due to the Korean war boom that was generated by an increase in the money supply and by an overall speculative tendency on part of the public.

This was followed by two successive good crops in 1952/53 and in 1953/54 and consequent unloading of hoarded stocks after decontrol of rationing in 1954. Supplies were so abundant and prices low that the wheat zones formed in May 1954 were abandoned in March 1955 in favour of unrestricted free trade. Procurement of wheat on Government account was completely given up in March 1954. A price support policy had to be adopted to prevent an unwarranted fall in wheat prices.

The wheat policy during the period of this study can be described in terms of three major official actions.

1. Imports, Internal procurement and Distribution of wheat.
2. Zonal system.
3. Credit control.

All these various steps were taken simultaneously or in combinations to combat rising prices.

Internal Procurement and Distribution of Food Supplies:

From mid 1955 prices showed a sharp and sudden rise in contrast to the falling prices in the past two years. This was accentuated by a poor crop prospect for 1955-56. Prices were particularly high in the urban centers like Bombay, Calcutta and New Delhi. To curb the price rise Government released stocks of wheat in the three cities.

Partial procurement and distribution of wheat was undertaken both by the central and the state governments at various times. However, the extent of wheat procured domestically was almost always very negligible. The quantities distributed mainly came from imports. Table 2.1 shows the internal procurement, imports and distribution of wheat during the period of this study. It will be noticed that a major portion of the wheat internally procured was procured in Punjab. Tables 2.2 and 2.3 show the statewide distribution

of wheat through fair price shops and roller flour mills. Very little wheat was distributed in Punjab. Most of the quantities went to:

1. The major wheat consuming states that are deficit in production (Bihar, U. P., Rajasthan etc.), and
2. to those states which contain urban industrial populations such as Maharashtra and W. Bengal.

TABLE 2.1: IMPORTS, INTERNAL PROCUREMENT AND TOTAL ISSUES OF WHEAT BY THE CENTRAL AND STATE GOVERNMENTS, 1957-64

(000 m. tonnes)

YEAR	IMPORTS	INTERNAL PROCUREMENT	PROCUREMENT IN PUNJAB STATE	TOTAL ISSUES OF WHEAT *
	(1)	(2)	(3)	(4)
1957	2,898	N.A.	N.A.	2,230
1958	2,716	N.A.	N.A.	3,006
1959	3,553	263	N.A.	3,623
1960	4,386	395	213	3,676
1961	3,092	20	20	2,983
1962	3,250	Neg.	---	3,221
1963	4,073	5	5	3,816
1964	5,621	94	83	6,785
1965	6,583	379	301	5,939

Source: 1. Report of the Study Team of Fair Price Shops 1966, Ministry of Food and Agriculture, Government of India, P. 78.

2. Bulletin on Food Statistics 1963 and 1966, Ministry of Food and Agriculture, Government of India.

N. A. -- Not Available

\* Imports (1) and Internal Procurement (2) do not add up to total issues due to changes in stocks of the central and state governments.

TABLE 2.2 STATEWISE DISTRIBUTION OF WHEAT FOR RELEASE THROUGH THE FAIR PRICE SHOPS  
( '000 tonnes)

STATES	YEARS									
	1957	1958	1959	1960	1961	1962	1963	1964	1965	
1	2	3	4	5	6	7	8	9	10	
1. Punjab	37.5	12.6	60.6	49.2	29.9	25.5	27.6	176.9	18.9	
2. U.P.	365.4	393.0	387.9	164.4	59.5	112.0	104.7	796.4	444.0	
3. M.P.	45.4	83.5	52.3	...	...	41.3	14.9	163.9	71.2	
4. Rajasthan	34.1	49.1	104.5	1.6	30.9	16.4	16.6	463.8	157.7	
5. Bihar	519.4	723.8	267.8	459.0	336.2	315.2	317.9	636.0	573.7	
6. Maharashtra, Gujarat	244.2	218.1	557.3	697.8	221.1	394.4	304.0	1127.2	1328.3	
7. West Bengal	345.1	483.0	510.5	374.9	292.3	398.8	753.6	521.4	552.4	
8. Madras	32.0	11.0	33.8	30.9	34.3	32.4	23.7	114.7	81.9	
9. Assam	14.5	67.2	62.2	48.2	38.0	42.1	112.3	113.6	91.8	
10. Orissa	11.3	16.5	17.6	22.6	22.9	27.3	54.6	42.5	40.5	
11. A.P.	34.8	30.2	29.5	45.0	31.7	39.3	70.5	91.1	69.2	
12. Mysore	25.0	16.5	31.8	43.7	46.9	46.6	47.1	113.9	94.8	
13. Delhi	43.6	12.6	26.8	5.4	2.2	9.3	3.9	80.2	75.8	
14. Others	95.8	145.2	90.7	196.5	69.6	111.8	186.1	263.8	643.6	
All India Total	1847.9	2263.2	2233.3	2139.2	1215.5	1612.4	1937.5	4705.4	4243.8	

Others= Kerela + Other Union Territories except Delhi + Others.

Source: 1. Report of the Study Team of Fair Price Shops, 1966  
Ministry of Food and Agriculture, Government of India, P. 85.

TABLE 2:3 STATEWISE DISTRIBUTION OF SUPPLIES OF IMPORTED WHEAT THROUGH ROLLER FLOUR MILLS  
(In '000 tonnes)

STATES	YEARS									
	1957	1958	1959	1960	1961	1962	1963	1964	1965	
1	2	3	4	5	6	7	8	9	10	
1. Punjab	35.4	...	79.1	...	19.1	129.2	178.8	175.8	131.1	
2. U.P.	35.6	48.5	179.3	330.0	415.2	327.3	383.7	463.1	267.0	
3. M.P.	0.7	8.7	14.1	...	17.1	39.6	34.4	38.5	33.7	
4. Rajasthan	0.3	0.5	0.5	0.4	...	7.1	9.5	29.7	27.9	
5. Bihar	27.5	43.1	56.0	69.2	60.2	81.9	111.4	109.4	84.8	
6. Maharashtra	195.1*	222.1*	274.6	255.6	246.9	271.1	258.4	306.5	222.9	
7. Gujarat	... +	... +	... +	53.2	54.1	65.6	75.1	61.5	58.8	
8. West Bengal	231.2	239.0	259.8	293.8	258.2	289.1	333.8	289.2	228.5	
9. Madras	23.5	69.8	103.9	133.5	152.7	199.1	207.8	272.3	151.0	
10. Assam	...	9.6	10.0	25.5	52.1	66.5	43.5	51.3	50.9	
11. Orissa	...	0.3	1.7	0.5	4.8	12.7	13.1	19.0	26.8	
12. Andhra Pradesh	...	1.5	3.0	8.9	30.4	43.4	19.9	63.1	45.1	
13. Mysore	...	20.2	33.8	36.8	34.2	33.1	36.9	58.5	45.9	
14. Delhi	71.2	19.4	174.7	172.8	130.3	160.7	166.5	203.5	156.3	
All India Total	620.5	682.7	1190.0	1380.2	1475.3	1726.4	1871.4	2146.3	1538.9	

\* Including Gujarat.

+ Included in Maharashtra.

Source: 1. Report of the Study Team of Fair Price Shops, 1966  
Ministry of Food and Agriculture, Government of India. P. 83.

The distribution method has also been used for changing dietary habits of the masses. The quantities distributed in the rice eating southern states increased in the recent years when wheat purchases were made obligatory for acquiring rice rations.<sup>1</sup>

The method of procurement varied significantly from one state to another. In Punjab, where major portion of the domestic wheat was procured, there was less interference with the market mechanism compared to other states. Government simply reserved the right of preemption at the going market rate in the course of regular auctions in wholesale markets. Purchases were made through wholesalers by open bidding. Traders were even paid commission that they would receive otherwise for such a service. In other states purchases were made at fixed prices. These purchases were not of much importance, however, since very little wheat was procured elsewhere.

#### Zoning:

As the price situation started getting worse following the poor crop of 1955-56 the government announced formation of wheat zones in June 1957. Three zones were formed.

- Zone I : Punjab, Himachal Pradesh and Delhi.
- Zone II : Uttar Pradesh.
- Zone III : Madhya Pradesh, Rajasthan and Bombay.

These zones were formed by matching surplus states with deficit states thus attempting to create self sufficiency within each zone. Geographical contiguity was taken into account. In July 1958 movement of wheat from Madhya Pradesh to areas outside the zone was permitted on limited scale. In the same month movement from Punjab to Jammu and Kashmir was allowed. Number of zones was increased from three to five on February 7, 1959. The new wheat zones were:

1. Punjab and the Union territories of Delhi and Himachal Pradesh.
2. Uttar Pradesh.
3. Rajasthan.
4. Madhya Pradesh.
5. Gujarat and Maharashtra.

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1 This policy was also followed in other states.

Movement of wheat on private account within a zone was permitted. However movement on private account was prohibited between zones. Surplus, if any, in a zone was to be procured by the state and exported to other zones, on government account. In addition, various local restrictions were imposed on movement of wheat as and when necessary. Partial procurement and distribution of wheat was undertaken by the government to combat rising prices. In November 1960, movement of wheat on private account was again allowed from Madhya Pradesh to Maharashtra and Gujarat.

All the zonal and other restrictions on movement of wheat were abolished on April 5, 1961 in favour of free trade and procurement of wheat on government account was discontinued. Pressure on wheat supplies again increased in the last few months of 1963. Wheat zones were once again reinstated on March 23, 1964. The number of zones increased significantly. The new zones were as follows:

Zone I	:	Punjab, Himachal Pradesh and Delhi.
Zone II	:	Rajasthan.
Zone III	:	Uttar Pradesh
Zone IV	:	Madhya Pradesh.
Zone V	.	Maharashtra.
Zone VI	.	Gujarat.
Zone VII	:	Bihar
Zone VIII	:	Andhra Pradesh, Madras, Mysore, Kerala and Pandicherry.
Zone IX	.	West Bengal, Oriss, Assam, Nagaland.

In May 1965, free movement of wheat was allowed on private account between Punjab, Himachal Pradesh, Delhi and Uttar Pradesh as a temporary measure. In April 1966 a change was introduced in the existing Punjab zone. It now consisted of Punjab, Himachal Pradesh, U. P., and rural areas of Delhi. Administration of this zone became so difficult that in March, 1967, single state zones were formed.

In the context of this study, there was free movement between Delhi and the primary markets of Punjab between 1955 and April 1966 when statutory rationing was introduced in Delhi. Bombay, however, received supplies from Punjab on private account only up to June 1957 and then later between April 1961 and March 1964. During the remaining period, Bombay received supplies on private account from Madhya Pradesh and through central and state government stocks composed mainly of imported P. L. 480 wheat and partly of internally procured wheat.

### Credit Control.

Credit control was a relatively minor weapon used frequently to combat speculative build-up. From September 1956 the Reserve Bank imposed restrictions on extension of credit to traders in order to prevent hoarding. Such credit squeezes continued to be exercised from time to time during the period of this study.

### Choice of the Area

Punjab is a major wheat producing state in India. In acreage U. P. accounts for as much as 31 percent and Madhya Pradesh approximately 22 percent of the total area under wheat and is followed by Punjab with approximately 16 percent of the total wheat area. However, in production Punjab ranks second only to U. P. contributing over a fourth of the all India wheat production.

TABLE 2.4: YEARLY PRODUCTION OF WHEAT IN FIVE MAJOR STATES  
IN INDIA 1955-56 TO 1964-65\*

('000 m. tonnes)

YEARS	STATES					TOTAL IN FIVE STATES	ALL-INDIA WHEAT PRODUCTION
	U.P.	PUNJAB	M.P.	RAJASTHAN	BIHAR		
1954-55	3337 (41)	1973 (25)	1477 (18)	869 (11)	429 (5)	8085	9043
1955-56	3090 (40)	1831 (24)	1566 (20)	921 (12)	363 (5)	7771	8760
1956-57	3122 (37)	2078 (24)	1731 (21)	1336 (16)	185 (2)	8452	9403
1957-58	2749 (38)	2009 (28)	1123 (16)	1049 (15)	274 (4)	7204	7998
1958-59	3084 (35)	2338 (26)	1978 (22)	1047 (12)	439 (5)	8885	9958
1959-60	3294 (36)	2215 (24)	2313 (25)	1048 (11)	355 (4)	9225	10324
1960-61	3945 (40)	2638 (26)	1952 (20)	1012 (10)	443 (4)	9990	10997
1961-62	4154 (38)	2784 (25)	2177 (20)	1268 (12)	522 (5)	10905	12072
1962-63	3211 (33)	2719 (28)	2154 (22)	1089 (11)	527 (5)	9702	10829
1963-64	2715 (31)	2834 (33)	1919 (22)	836 (9.9)	417 (4.8)	8715	9861
1964-65	3984 (37)	3360 (31)	1997 (18)	1097 (4)	398	10836	12078

Source: Bulletin on Food Statistics, Ministry of Food and Agriculture, Government of India. 1963, 1966.

\* Figures in brackets show percentage of total in five states.

Punjab has the highest per acre yield of wheat in India. Although yields have been showing an upward trend in all the major wheat regions, Punjab has continued to remain at the top for a considerable period of time. (Table 2.5). This is mainly because the proportion of irrigated wheat and improved strains in this state is higher than any other state. (50 percent of the area under wheat was irrigated in Punjab as against 44 percent in U. P. during the triennium 1955-56 to 1957-58).<sup>1</sup> The application of fertilizer is also believed to be much higher in Punjab as compared to other states.<sup>2</sup> The state has, therefore, been of considerable importance as a 'surplus' state in meeting the food deficit of the country.<sup>3</sup>

TABLE 2.5: TREND IN THE AVERAGE YIELD OF WHEAT

STATE	AVERAGE FOR THE TRIENNIUM (lbs. per acre)			
	1949-50 to 1951-52	1955-56 to 1957-58	1958-59 to 1960-61	1962-63 to 1964-65
Punjab	855	888	900	1,057
Uttar Pradesh	707	680	682	749
Rajasthan	508	814	720	750
Gujarat-Maharashtra	419	393	400	401*
Madhya-Pradesh	396	458	544	553

\* Refers only to Maharashtra

Source: 1. Averages for the first three trienniums were taken from the Report on the Marketing of Wheat in India, p. 11 Table VI.

2. Those for 1962-63 to 1964-65 were calculated from the Economic Survey of the Indian Agriculture, 1963-64, 1964-65, Table 2.4

1. Report on the Marketing of Wheat in India, p. 231, Appendix V
2. Ibid, p. 14, There is, however, not much statistical evidence available to support this.
3. It is difficult to estimate actual exports of wheat from Punjab to the rest of India during the period of this study. No statistics are available on road movement which constitutes an important component of the total exports. Exports on government account during the period of wheat zones are not a good indicator of the

Districts in which the primary markets selected for this study are located, namely Ferozpur, Sangrur, Bhatinda and Ludhiana are major wheat producing regions. The first three districts are the three largest wheat producing districts in the state in that order. In yields, the districts surpass the average per acre yield of wheat for the state. Together they occupy a little over a third of the wheat acreage in the state and produce approximately 40 percent of the total wheat production.

Only a single crop of wheat is raised in the rabi season (sowing October - Harvest - March/April). Other crops raised in rabi are gram, barley and oilseeds. Bajra, cotton, maize, urad, groundnut, and paddy are raised in the kharif season (mid June to mid October). As much as 20 percent of the total cropped area in the state was allotted to wheat and 24 percent to gram in 1959-60. More than two thirds of the total cropped area in the state is under foodgrains. Gram and wheat together occupy slightly less than half of the total cropped area in the state.

#### Location of the markets:

Jagraon and Khanna markets are located in Ludhiana district, Hoga in Ferozpur, Kotkapura and Barnala in Bhatinda and Sangrur districts respectively. All the five mandies are major assembling centres for wheat, Hoga being known as the biggest wheat market in Punjab. The following chart shows distances between the primary markets and between the primary markets and the terminal market. (Also see Figure 3 for location of markets.

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#### Footnote No. 3 continued from page 27.

actual surplus in the state. For there is always a tendency on part of a state government to spare as little quantity as possible for consumption in other states. The only other way of estimating wheat exports would be to deduct domestic utilization of the State (namely, human consumption, feed and seed), and net change in private and government stocks from the total state production. However, almost all the figures except those of production, required for this estimation elude a researcher. If per capita production is any indication of the extent of surplus, Punjab produced as much as 295 lbs. of wheat per capita in 1961-62 as against 135 lbs. in M.P., 115 lbs. in U.P., 35 lbs. in Gujarat and 25 lbs. in Maharashtra, all of which are major wheat consuming states. Although per capita consumption of wheat is much higher in Punjab as compared to the rest of the India where other grains such as rice, jowar, bajra are consumed in supplementary forms, this still leaves a great deal of surplus which can be exported to other states.

Figure 3 Maps of Punjab and Maharashtra States showing locations of markets and rails and roads joining them

Source Adapted from National Council of Applied Economic Research, Techno-Economic Survey of Punjab, National Council of Applied Economic Research, New Delhi, February 1962, and National Council of Applied Economic Research, Techno-Economic Survey of Maharashtra, National Council of Applied Economic Research, New Delhi, July 1963

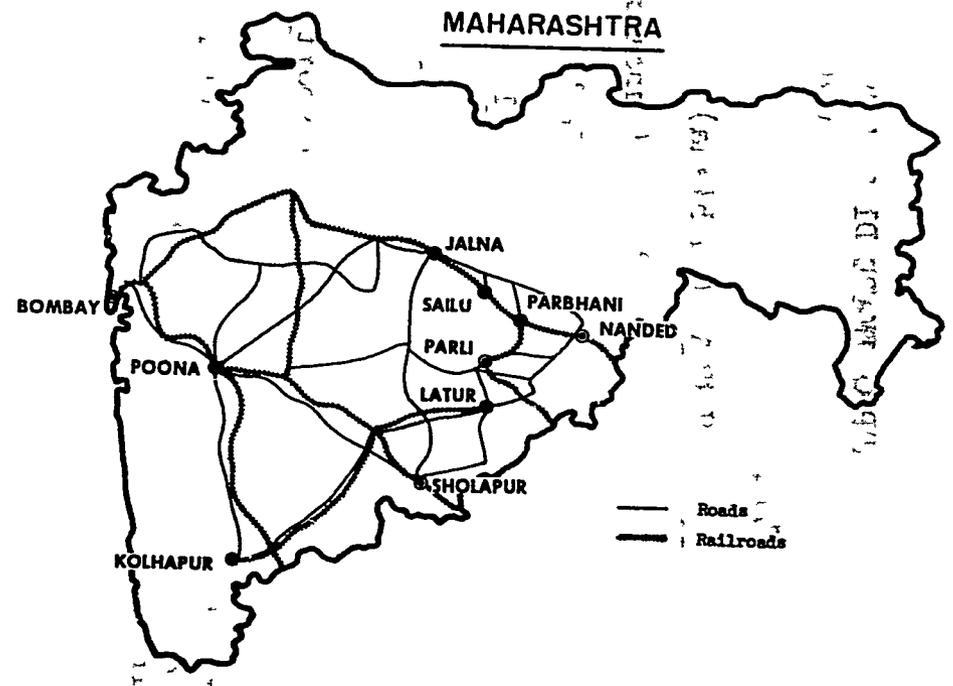
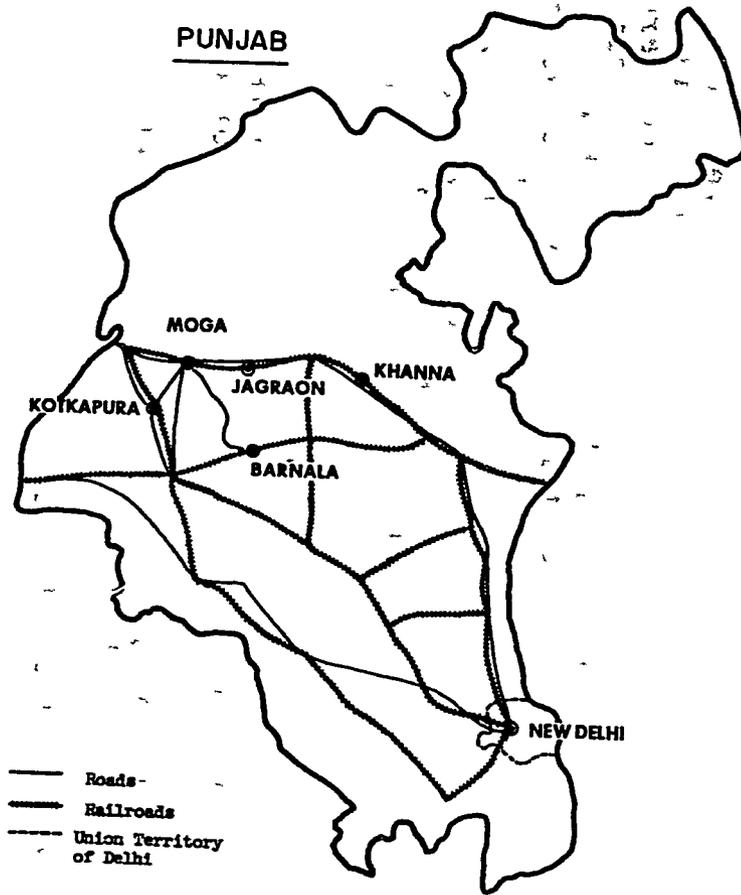


CHART 2.1: APPROXIMATE DISTANCES BETWEEN VARIOUS MARKETS, PUNJAB  
(in miles)

<u>DELHI</u>					
<u>180</u>	<u>KHANNA</u>	(Ludhiana)			
<u>215</u>	<u>50</u>	<u>BARNALA</u>	(Sangrur)		
<u>215</u>	<u>50</u>	<u>40</u>	<u>JAGRAON</u>	(Ludhiana)	
<u>247</u>	<u>68</u>	<u>42</u>	<u>19</u>	<u>MOGA</u>	
<u>275</u>	<u>96</u>	<u>45</u>	<u>48</u>	<u>28</u>	<u>KOTKAPURA</u> (Bhatinda)

### Transport

Map 1 shows the position of the various primary markets relative to each other and to Delhi. All the five primary markets are located on mainlines of the Northern Railway and are relatively close from important junctions. Barnala is on the Dhuri-Bhatinda line, Kotkapura on Bhatinda-Ferozpur line, Moga, Jagraon on Ferozpur-Ludhiana line and Khanna on Ludhiana-Delhi line, all of which are major railway junctions. As all the markets are on broad gauge lines there is no problem of transshipment of goods when shipments are sent to major terminal markets like Delhi and Bombay. Despite these good railway connections there are occasional bottlenecks resulting from unavailability of wagons.

All the above markets are equally well connected by roads. (Fig.3). The roads run parallel to the railway lines in case of almost all the primary markets except Barnala, providing an excellent alternative mode of transport. The grant-trunk road, a major national highway, runs between Delhi and Ludhiana. Khanna lies on this road. Moga, Jagraon and Kotkapura are well-linked with the grant trunk road by good feeder roads and can, therefore, utilize the highway for export of goods to terminal markets in Himachal Pradesh and eastern U. P. and to Delhi. Barnala is the only market that is relatively at a disadvantage in road transport due to lack of a good feeder road.

A good deal of traffic moves by road in Punjab. Utilization of roads is much more intensive in the state than in many other states<sup>1</sup>. Roads are preferred for short hauls.

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1. Number of trucks per 100,000 persons was 40 in Punjab as against 30 in all-India. Number of trucks on the road is also very high. See Techno-Economic Survey of Punjab, National Council of Applied Economic Research, New Delhi, 1962.

Most of the shipments of wheat from the primary markets to Delhi took place by trucks.

Table 2.6 shows the number of trucks located in each market town. The numbers do not necessarily indicate the exact availability of transport. For all the markets can exercise the alternative of using incoming trucks or railway wagons. However, the table shows the minimum number of trucks at the disposal of each market for out of town shipments.

TABLE 2.6. NUMBER OF TRUCKS IN THE PRIMARY MARKETS,  
PUNJAB

Khanna	200
Jagraon	50
Moga	200
Kotkapura	46
Barnala	50

Source: 1. Information obtained by research investigators in 1967.

For long distance haulages there is marked preference for railways. This is due to various reasons. First, difference in the cost of shipment by road and railway becomes much more substantial for a long distance as compared to a short distance haul (i.e. below 300 miles). Second, due to various legal restrictions on interstate movement by road the task of shipments by road has been formidable when number of state boundaries have to be crossed as in the case of a shipment from Punjab to Bombay.

#### Marketing Channels

In Punjab, on an average every town serves 106 villages as against 180 in India, and 239 square miles as against 390 square miles in all India. <sup>1</sup> All the primary markets selected for this study are served by about 150 to 300 villages within a radius of about 10 to 15 miles. The primary markets selected for this study are regulated under the Agricultural Produce Market Act and constitute few of the oldest regulated

<sup>1</sup> Ibid. p. 12

markets in India.<sup>1</sup>

Due to easy accessibility of primary markets in this region very little wheat is disposed of in the village markets.<sup>2</sup> It is estimated that in the districts of Ferozpur, Ludhiana, Jullunder and Bhatinda over 80 percent of the surplus is sold by cultivators directly in primary markets.<sup>3</sup> In certain areas like Kotkapura as much as 95 per cent of the surplus is marketed in a wholesale market directly by the grower as against 56 percent average for all India.<sup>4</sup> Consequently the share of village traders, itinerant dealers and commission agents who mostly purchase in village markets is small relative to the rest of India. (See Ch. 2.2 for channels of wheat marketing). It is difficult to estimate exact share of these various functionaries in marketing of wheat.<sup>5</sup>

In addition to the produce brought by cultivators and other functionaries the markets receive their arrivals from smaller primary markets in the nearby regions.<sup>6</sup> Being major exporters of wheat these markets generally offer prices that are slightly higher than those prevailing in small markets that mostly cater to local demand.

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1. Each market regulated under the Agricultural Produce Act has a market committee on which growers, traders and local bodies are represented. The Committees, in their by-laws, define market practices and fix market charges payable by various parties. Among the important functions of the committees are settlement of disputes, licensing of market functionaries and correct weightment of the produce. An attempt is made to centralise wholesale transactions in a market yard by popularising these markets so as to exercise supervision of transactions. Regulation is generally believed to have curbed malpractices of traders, brought about an open auctioning of produce and resulted in fair return to the cultivator.
  2. Village sales are also outlawed under the market act. However, low village sales are not necessarily a result of this phenomenon. For it is difficult to exercise the act in villages and is not enforced with any great strictness.
  3. Report on the Marketing of Wheat, op.cit. pp. 95-96.
  4. Ibid.
  5. For reasons of 'why' see this author's Efficiency of Jowar Marketing: A Study of Regulated Markets in Western India; Unpublished Ph.D. dissertation, Cornell University 1965.
  6. Kotkapura, for example, receives arrivals from Jaito, Bariwala, Faridkot, Baga Purana, Jagraon from Raikot and Khanna from Khamano, Nabha, Machhiwara, Sirhind and Samrala. Khanna also receives produce from much larger and distant mandies like Amritsar, Jullunder and Ludhiana.

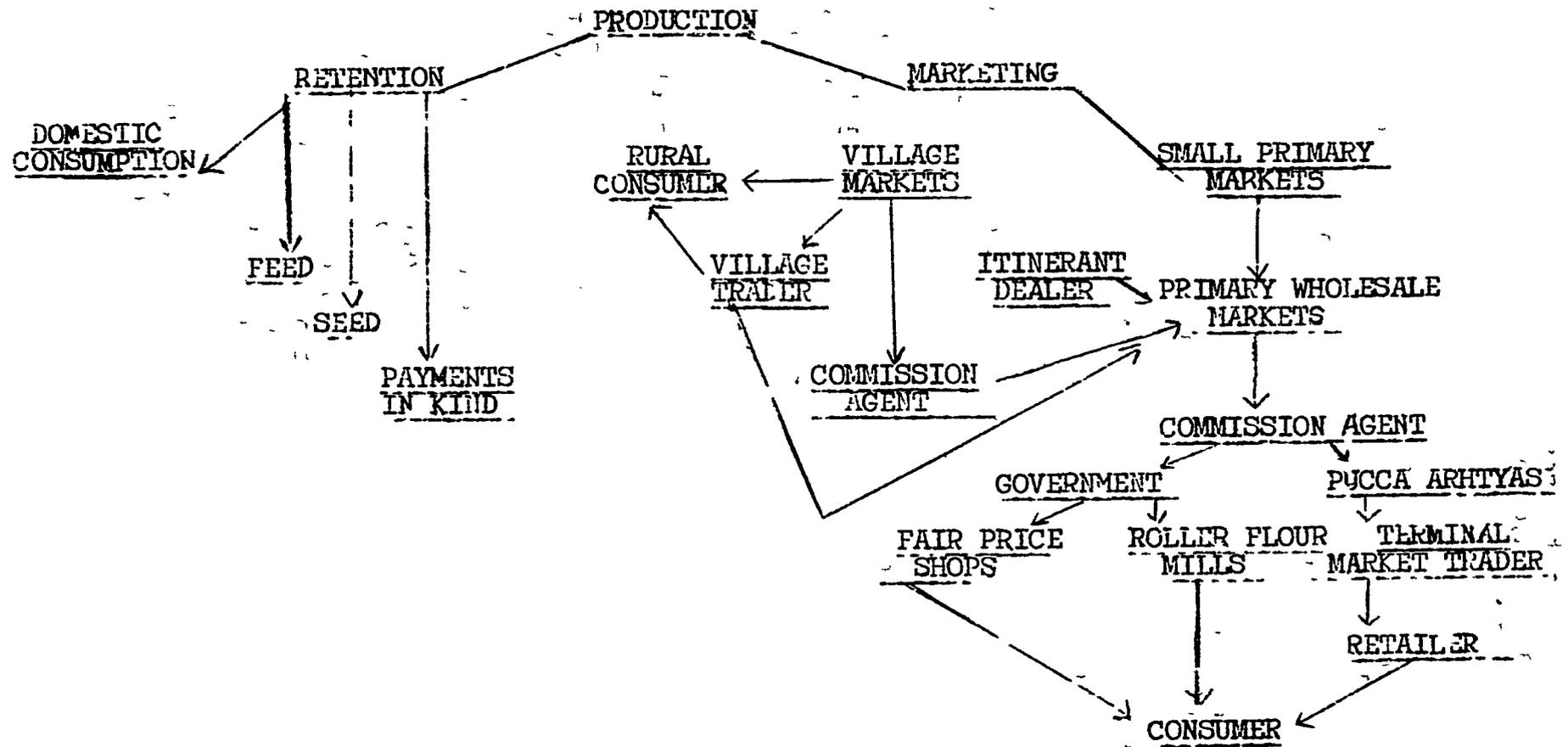
In most cases price difference between a small primary market and a major exporting mandi was stated to be 1's 2 to 1's 3 per quintal. This appears to be higher than actual cost of shipping wheat which would amount to approximately Rs. 1.00 to Rs. 1.50 per quintal depending on the distance. The slightly higher margin in the smaller mandies seems to be due to the small volumes transacted in those mandies. Beside the big assembly markets such as Moga and Khanna enjoy the privilege of attracting customers from major consuming centers, a status which has evolved only over a long period of time. Purchases are made by these consuming market traders in three different ways. (1) Many traders visit major export mandis in the market season because of their reputation as the big assembling markets. This itself usually causes a bullish tendency in the market. (2) The assembling markets receive orders from importing centers for large scale purchases. Traders in these importing centers do a careful survey of various price quotations that they receive from different assembling markets. Thus there is usually keen competition between various assembly markets for attracting orders. This keeps prices in various assembly markets at par with each other. If a price quotation from the next assembly market is slightly lower an importer would usually shift to that market.

However, the importers usually do not have contacts with smaller primary markets. The price level in small markets is mostly determined by the prices prevailing in nearby assembly markets. For both cultivators and itinerant traders would take their produce to the big assembly markets if the price in that market is significantly higher than the price in the nearby small primary market.

(3) Traders in importing centres advise their agents in assembling markets to purchase wheat on their account to be shipped to them later in the season. These latter two types of purchases require that there be mutual faith between the two traders. For instance when a trader directs his counterpart in the assembly market to purchase wheat on his behalf he has to rely on the latter for making sure that the quality and grade specifications are met. Particularly due to lack of standardization of grades in India, trustworthiness of the buyer plays an important role. An importer develops such a confidence in his principal only through personal knowledge and experience of dealing with him over a period of time. When a terminal market trader purchases wheat from his agent in the primary market he usually pays part of the value down. The balance is paid within a month after receiving the shipment. Such credit is extended by the primary market trader only when he is confident of the honesty and the financial integrity of his customer. When purchases are made for future delivery a buyer in the terminal market has to be assured that he will not be outsmarted by someone else who is willing to overbid him later if prices soar.

CHART 2.2:-

MARKETING CHANNELS OF WHEAT



The very nature of the intermarket transactions, therefore, requires that there be mutual trust between the transacting individuals.

Importance of this can be illustrated by the trade pattern of Khanna market. When the demand for wheat is from Bombay and Gujarat purchases are handled by only three pucca arhatyas who have long-standing business relations with traders in these areas. However, when U. P. and Bihar are open to Khanna two more firms enter the business.

The fact that personal relations play such an important role in intermarket transactions does not, however, result in a large price difference between small and large primary markets. If traders visiting assembling markets realize that there is a significant price advantage in visiting nearby small markets they usually do so. Through such personal visits new contacts and financial relations are established that maintain a check on the price differences between large and small markets.

### Flow of Supplies

During the period of free trade the primary markets sent wheat to Delhi, Bombay, Gujarat, Madhya Pradesh, Eastern U.P., Jammu and Kashmir and Himachal Pradesh. The relative importance of shipments to different centers varied from market to market. Barnala sent wheat mostly to the surrounding regions such as eastern U.P., Jammu and Kashmir, Himachal Pradesh and Delhi. It sent very little to Bombay and Gujarat. Kotkapura, Jagraon and Moga sent wheat mostly to Bombay and Delhi. Kotkapura also sent substantial quantities to Bhopal (M.P.). Khanna sent most of its wheat to Bombay and Ahmadabad (Gujarat) and some to Bangalore (Mysore State). Delhi was not a significant market for Khanna. An important reason for such a nature of this mandi was that the hinterland of Khanna mostly produced a fine variety of wheat, (known as the "golden variety") that attracted a large number of purchasers from distant markets. <sup>1</sup>

Wheat was usually sent to an important market within a region, for example, to Bombay City in Maharashtra or to Ahmadabad in Gujarat. Most of it was consumed locally, but substantial quantities would find their way to the smaller centers in the hinterlands. This is apparent from the popularity of Sharbati wheat and Basmati rice of Punjab in the countryside of Maharashtra and Gujarat.

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1 The data on percentages of arrivals in certain grades in 1963 and 1964 in Khanna market for approximately three weeks indicate that top quality wheat does predominate in Khanna. Two-thirds of the arrivals were graded as of 1st grade between 15 and 30th April in 1963 and 1964. About a fourth of the arrivals were of second grade and none of the fourth grade.

See Ralph Cummings, op. cit. p. 67.

Delhi market consists of about 190 wholesalers. Out of these about 130 are in Naya Bazar and about 60 are in Ravi-ki-Mandi.

Before the introduction of rationing in Delhi (April 1966) traders received wheat from Punjab and sold mostly to retailers in Delhi. Only a few traders have sent wheat to other markets. However, such cases have been very rare, usually occurring only when the price difference between Delhi and other consuming areas was exceptionally high.

#### Size of Wheat Marketings

Table 2.7 shows the annual volumes of wheat marketings between 1955-56 and 1965-66 in the five markets of Punjab.

Arrivals show substantial fluctuations from one year to another. However, there is no consistency in the year to year movement of arrivals between markets, i. e. - arrivals do not decline or increase over the previous year simultaneously in all the markets. While arrivals in some markets increase over the previous year in other markets they decline. This may be due to the flow of arrivals received from the nearby smaller primary markets. If the flows from such markets vary substantially from year to year, this may show an inconsistency in the movement of arrivals between various markets.

TABLE 2.7: ANNUAL VOLUME OF WHEAT ARRIVALS  
PRIMARY MARKETS, PUNJAB, 1955-56 TO 1965-66

(Quintals)

YEAR	KHANNA	MOGA	JAGTAON	BARNALA	KOTKA- PUTA
1955-56	165,143	284,236	80,552	120,355	143,877
1956-57	148,925	329,838	75,577	127,188	156,985
1957-58	205,770	353,940	121,160	192,345	188,686
1958-59	176,296	322,927	112,918	154,560	208,788
1959-60	116,781	297,036	90,778	168,953	153,429
1960-61	131,575	393,303	148,919	180,699	199,511
1961-62	292,124	411,765	423,207	227,754	225,198
1962-63	349,550	421,563	416,510	249,088	314,389
1963-64	315,110	450,095	460,292	208,905	291,600
1964-65	286,088	346,094	349,044	205,066	255,054
1965-66	305,571	467,761	448,258,	319,981	253,444

Source: Records of the regulated market committees.

Table 2.8 below shows the rates of increase between 1955 and 1966 in arrivals in the five primary markets and in the wheat production in the districts, in which they are located.

TABLE 2.8: RATE OF INCREASE IN ARRIVALS AND PRODUCTION OF WHEAT 1955-56 to 1965-66

(Percent per year)

Rates of Increase in Arrivals		Rates of Increase in Production	
Khanna	21.2	Ludhiana	16.1
Jagraon	61.0	Ferozpur	6.1
Moga	9.4	Sangrur	14.6
Barnala	19.0	Bhatinda	18.7
Kotkapura	16.4	Punjab	13.3
		All-India	7.1

The trend lines in all the cases showed a good fit and highly significant 'b' coefficients. It is not known why Jagraon shows such a high rate of increase. Except for Jagraon all the other markets show rates of increase in arrivals that are more or less commensurate with those in the production in the surrounding region.

Arrivals in a market year also show a statistically significant relationship with preceding wheat production in the district.<sup>1</sup> It would, therefore, seem that an increasing trend in the arrivals is mainly due to an increase in wheat production in the region. It should, however, be noted that during the period studied, there has probably been some shift in the marketing from village markets and small primary markets to major assembly centres. It is also likely that some increase in the volume of arrivals is due simply to better coverage of market arrivals, although this is not so important in Punjab as elsewhere.

1 Thus production in 1955-56 crop year (July-June) is regressed with market arrivals in the corresponding market year. (i.e. between April 1956 and March 1957). Except for Moga where the 'b' coefficient is significant at 90 % level, in case of all the other four markets the 'b' coefficient is significant at 95 % level of significance.

### Seasonality of Arrivals

Proportion marketed in the immediate post-harvest period has frequently been used as an index of the holding power of the cultivator, the assumption being that higher the holding power of the cultivator lower the proportion marketed in the immediate post-harvest months when the market price is low.<sup>1</sup>

Table 2.9 shows percentage marketed each month in the five wheat markets of Punjab. The percentages are averages of percentages for the 1955-56 - 1965-66 period. Wheat is harvested in the middle of April. Market arrivals increase in May, remain particularly heavy in June and taper off in July. In the earlier years, marketings commenced earlier in Khanna and were the heaviest in May. In the more recent years, however, they have been heavier in June as in the other four wheat markets.

In these markets between 63 to 73 percent of the arrivals are brought to the market between May and July, although there is some year to year variation in the proportion of arrivals marketed through July.<sup>2</sup> A study of the lowest and the highest proportion marketed indicates that, even in the years when cultivators withhold their supplies in anticipation of better prices later in the year, over half of the annual

- 1 See e.g. the Report on the Marketing of Wheat in India, Ministry of Food and Agriculture, Government of India, 1963, hereafter referred to as Wheat Marketing, 1963 edition. The Report studied five markets in Punjab (Ambala, Jullunder, Abhor, Bhatinda and Hissar) for seasonality of arrivals. On the basis of a three year average (1954-55 to 1956-57) the report concluded that only a little over a third of the arrivals are brought to the market during May, June and July. The report then compared these figures with similar prewar estimates for two other markets in West Punjab (Lyallapur and Cojra, now in Pakistan) for which data were available. After similar comparisons of prewar and postwar arrivals for a few markets in each major wheat producing state the report concluded that there has been a definite improvement in the holding capacity of the cultivator in Bihar, Madhya Pradesh, Punjab, Gujarat and Maharashtra over the prewar years.
- 2 These proportions are much higher than those of the Ministry. However, even for 1954-55 to 1956-57 period, the years to which the Ministry figures refer to, percentages marketed are much higher in these markets.

TABLE 2.9: MONTHLY PERCENTAGES OF WHEAT ARRIVALS  
PRIMARY MARKETS, PUNJAB  
(Averages for 1955-56 - 1965-66 period)

MONTH	KHANNA	MOGA	BARNALA	JAGRAON	KOTKAPURA
April	5	3	2	3	3
May	33	18	15	17	20
June	32	37	34	36	33
July	8	12	14	10	13
August	4	6	6	6	6
September	4	4	5	4	5
October	4	4	4	5	4
November	2	3	4	4	3
December	2	4	4	4	3
January	2	3	4	4	3
February	2	3	4	3	3
March	2	3	4	4	4
TOTAL	100	100	100	100	100

Source: Based on the market arrival data of the market committees.

arrivals are marketed by the end of July. The lowest proportion marketed through July varies from 54 percent in Barnala in 1957-58 to 67 in Khanna in 1955-56. The highest proportion marketed ranges between 71 percent in Barnala and 84 percent in Khanna. Among the five markets Barnala seems to experience the least degree of seasonality in arrivals and Khanna the greatest.<sup>1</sup>

In spite of this variability between markets, all the five markets show much greater seasonality in marketing than is

<sup>1</sup> The markets chosen by the Ministry for its report lie on one end of a scale showing minimal seasonality whereas Cummings' data on Khanna give an impression of excessively high seasonality as Khanna experiences greater seasonality than most other markets.

generally thought to be true of Punjab.<sup>1</sup> Nor is there any declining trend in proportion marketed through July in the last eleven years for which arrival data are available.<sup>2</sup>

A comparison of the arrival data for these five important wheat markets with various other markets in Punjab thus suggests that there is considerable variability in the proportion marketed from one market to another, and that, therefore, it is difficult to generalize about an overall decline in seasonality of marketings.

The high seasonality in the arrivals also implies that improved holding capacity may not necessarily result in decline in the marketings in the immediate post-harvest period. Rather the high seasonality may be due to various other reasons. -  
 a. risks in stocking for the off-season may be too great from the viewpoint of a cultivator. He may, therefore, choose to sell the produce soon after the harvest. -b. storage losses in storing on farms may be significantly greater than those incurred by traders.<sup>3</sup> If this is the case, the off-seasonal price rise has to be sufficiently large to cover storage costs. The high loss factor when coupled with high risks in predicting the off-seasonal price rise would further reduce the desire to hold produce for the off-season. The contention that cultivators sell their produce soon after the harvest because their economic conditions force them to do so may not be altogether true except for small sized cultivators. (Their marketings, however, are generally quite insignificant in the total marketed surplus). Seasonality of the marketing may have been pronounced because cultivators chose to market their produce early.

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1 In fact, average proportions for these two markets are comparable to the prewar estimates for Lyallapur and Gojra markets in Punjab. See - Report on the Marketing of Wheat in India, Ministry of Food and Agriculture Government of India (1937 edition) hereafter referred to as Wheat Marketing, 1937 edition.

2. Regression equations fitted to the proportions marketed over the period do not indicate either an increasing or a decreasing trend.

3. Cummings in his study of Khanna market suggests this to be the case although he has not presented any systematic data to support his contention. See - Cummings, op. cit. PP 77-78.

The report on the Wheat Marketing (1963) also states that losses due to vermin and weevil attack and due to dampness are higher in villages than with traders. op. cit. P. 145-153.

A cultivator would, however, choose to market less quantity if he finds: (1) either the harvest price too low or (2) if he expects a high price rise later in the year. His actions will be circumscribed by his knowledge of the market conditions. It is likely that due to the very restricted view of the grain market a cultivator's decision to withhold supplies may not always be determined by rational factors. For example, cultivators are known to withhold supplies when they find current harvest prices lower, and, therefore, unjust compared to previous year's. <sup>1</sup> The decision in this case is not based on current year's market conditions. Under such circumstances behaviour of the cultivators, and the quantities marketed thereby may be more erratic and less amenable to logical analysis.

It would therefore, be interesting to examine if, arrivals have been more erratic in recent years. <sup>2</sup> Here, again, one faces the problem of generalization as there is no uniform pattern of year to year variation in marketing, either absolute or proportional, in these markets. The proportion marketed was substantially lower compared to previous year in 1957-58 in four markets excepting Khanna and in 1959-60 in all the five markets. However, in later years there is no such uniformity. The proportion was low in 1964-65 in Khanna, Moga, Jagraon. It was low in 1963-64 and 1964-65 in Barnala and low in 1964-65 and 1965-66 in Kotkapura.

This may be due to the fact that the response of cultivators to a changing price structure is not uniform all over. In some areas cultivators may withhold more for the off-season than in others. However, this is not necessarily so. Lack of uniformity in the pattern may also be because of intermarket flows about which we know so little.

On the basis of its arrival data, the Report on Wheat Marketing states that there has been a definite improvement in the holding capacity of the cultivator in Punjab over the

1 See - Report on Market Arrivals of Foodgrains - 1958-59 season, Ministry of Food and Agriculture, Government of India.

2 In order to study fluctuations in the quantities marketed it will be necessary to examine arrival data for a sufficiently long period for the same markets. However, such data are not easily available.

prewar years. Our evidence suggests that there has not been an overall decline in the proportion of post harvest wheat marketings in all the major mandies. We also argue that proportion marketed in the immediate post harvest period is by no means an indicator of the holding capacity of the cultivator.

### Varieties of Wheat Traded in the Markets<sup>1</sup>

In Punjab the problem of varietal classification is very much simplified due to spread of improved varieties of wheat. Most of the wheat is semi-hard. Wheat is sold under four trade names. 1. Dara 2. Sharbati 3 Farm<sup>2</sup> 4. Farm Special.

Unlike Sharbati wheat, dara is not a name of a specific variety but is a mixture of various wheats, the nearest equivalent term for it being fair average quality... "dara is used in contradistinction to Sharbati and in many parts, it may be prefixed by the name of the market whence the wheat comes."<sup>3</sup> ....The composition of dara depends upon the predominant characteristics of the grain grown in that area. Due to absence of soft wheat in the state, the dara of Punjab is rarely, if at all, a mixture of hard and soft wheat.

Sharbati is the semi-hard wheat.<sup>4</sup> Improved varieties of Sharbati wheat are locally known as farm (or fine) and farm special and fetch premium over the traditional varieties. According to the official estimates 88 percent of the acreage under wheat was under improved varieties in Punjab in 1957-58/1958-59.<sup>5</sup>

1 Of the 18 species of wheat recognized at present, only 4 are found in India. The most important specie grown in India is *Triticum Vulgare*. Over 86 percent of the total production is of this specie. The commercial classifications however, depend mainly on colour and texture of the grain. Within *Triticum Vulgare* there are four popular classifications.

1. Hard or semi-hard white wheat; 2. Hard or semi-hard red wheat; 3. Soft white wheat; 4. Soft red wheat. See Wheat Marketing, 1963, for further details.

2 'Farm' variety is also interchangeably called 'fine' by wheat traders.

3 Ibid. p. 30

4 The literal meaning of the word 'Sharbati' is pink colour.

5 The red Mexican varieties which have recently shown spectacular results were not prevalent during the period of this study. In recent years substantial acreage has been planted to these varieties.

Commercial classification of the grain has therefore, become simple. Local trade descriptions now in vogue are 1. Dara. 2. Farm Sharbati. 3. Farm Special. The three varieties fetch prices in the same order. The classification used in Bombay and Delhi is fairly close to the Punjab classification although nomenclature is lot more complex and involved in central India as compared to Punjab and U. P.<sup>1</sup> The price quotations available for most of the markets are for dara trade name indicating fair average quality wheat. Prices for Farm (Sharbati) and Farm special wheat were also collected whenever available. However the series were often incomplete, or related to a short period.

As dara is a mixture of wheat there is substantial scope for price variation which is due to varying degrees of a mixture of varieties and of foreign matter.<sup>2</sup>

However, since most of the wheat produced in Punjab is either Sharbati or improved Sharbati, and since dara is mainly Sharbati mixed with red wheat, price comparisons do not pose a serious problem within Punjab. Delhi imports dara wheat both from Punjab and U.P. and Bombay imports dara wheat from Punjab, U.P. and Madhya Pradesh. Delhi dara prices are, therefore, less homogeneous than Punjab prices and Bombay prices are even less homogeneous than Delhi prices. This should be noted in interpreting the results of the analysis.

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1. Discussion of varietal differences is restricted only to the State of Punjab. There are innumerable commercial varieties of wheat sold under different trade names in India. Some indicate different qualities, while others are nothing more than synonyms. This creates a serious problem in comparing prices between different wheat regions. The problem has been somewhat simplified in this particular case as Punjab varieties are known by the same trade names in the primary, and terminal markets.
  2. In Barnala a trader, while estimating costs of a shipment of wheat to the terminal market, allows for cost of 'dara labour'. This involves mixing of various varieties of wheat of different prices so as to make the quality of wheat at par with prices quoted by the customer. Although this is not so obviously done in other markets, composition of a shipment does vary according to the price specification. A trader in Moga showed us three types of dara varieties
    - (a) Mill dara with 3½ percent admixture and 2 percent dust,
    - (b) Sharbati dara with 1½ to 2 percent admixture and
    - (c) safet (meaning white) dara with 1 percent admixture.
 The admixture usually consists of other kinds of dara, bajra, gram etc. Composition of the admixture changes with change in the quality and price of the lot. Cheaper lots of wheat usually have more admixture of bajra as compared to more expensive lots that have a greater gram content.

### Sources of Market Intelligence

The traditional channel of market intelligence namely, personal contacts, is the foremost source of information for traders in Punjab. Although crop conditions and prices are reported in newspapers and broadcast on radios heaviest reliance is placed on information gathered through personal contacts. A trader from a primary market acquires information about crop conditions in his region by talking to cultivators from nearby villages, who frequently visit his shop.

In order to establish trading contacts traders in primary and terminal markets send their managers, known as 'munims' in local parlance, to various major markets. This also enables them to acquire first-hand reports on crop outlook and demand conditions in important centers. This practice has been followed by traders for centuries. Once such contacts are established, there is a mutual understanding about free exchange of market intelligence. Traders from primary and terminal markets keep in continuous contact through postcards, telegrams and telephones. <sup>1</sup>

A trader in a primary market is also on the lookout for any orders that his fellow traders may receive from consuming areas. If he notices heavy orders from a particular terminal market he would usually contact his own counterpart in that terminal market in order to acquire business for himself. An interesting instance was quoted by some Khanna traders. When U. P. was made open to Punjab in 1965 Punjab started sending wheat to U. P. This affected supplies to Jammu and Kashmir and Himachal Pradesh, while U. P. was so overflooded with Punjab wheat that prices in U. P. fell. Supplies in many cases were brought back to Jammu and Kashmir and Himachal Pradesh from U. P. Many traders lost heavily in this mad rush of shipments to U. P.

Personal contacts, therefore, appear to be the most important means of market information, although traders invariably mentioned newspapers as usually a second important source of obtaining an overall view of the crop outlook, government policies, imports and general market conditions. It is difficult to evaluate the importance of All-India Radio broadcasts in disseminating market information. Some traders occasionally mentioned that they listened to the radio broadcasts. However, most of them stressed the importance of personal contacts and newspapers in that order.

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<sup>1</sup> While I was interviewing a major wheat trader in Khanna he indicated that he maintains printed postcards of a standard format with adequate blanks for filling in price and quality specifications. He sends 1,000 cards a day to various traders in the peak season of marketing.

## Traders in Punjab

### Kachha Arhatyas (Commission Agents)

Two types of traders operate in Punjab markets. 'Kachha Arhatyas' are commission agents who act as middlemen between a cultivator and a wholesaler. A cultivator brings his produce to his Kachha Arhatya for sale.

Kachha Arhatya receives commission from the purchaser.<sup>1</sup> The commission, known as dami, is fixed by the market committee at 1.5 percent of the value. Although Kachha arhatyas mostly work for commission they sometimes purchase small quantities of wheat on their own account. Their volume of business is, however, very small. They stock according to their capacity and generally sell either locally to wholesalers or to commission agents in adjoining mandies. They have no contacts in terminal markets. They usually sell their stocks to Pucca arhatyas or to local consumers later in the year. Under the Punjab regulated market act a trader can act both as a wholesaler and a commission agent. A trader who is registered as a commission agent can undertake wholeselling up to 200 quintals provided he has filled a security bond of Rs. 50/- with the civil supplies department. This limit goes up to 1800 quintals for a deposit of Rs. 200 and becomes unlimited for a security deposit of Rs. 500. It is deposited once and for all.

The relationship between a cultivator and his kachha arhatya resembles the medieval banking system in Europe. It has been customary for a Punjabi cultivator to deposit the returns from sale of his produce with the Kachha arhatya. This is usually done as a safe custody measure and as a matter of convenience. The cultivator withdraws money from the Kachha arhatya as and when he needs it.<sup>2</sup> Over a long period of time the kachha arhatya

- 1 The actual manner of sale varies considerably by markets, commodities and traders. In the area studied in Punjab, the cultivator usually cleans his produce before bringing it to the market. After the grain is dumped in the porch of the shop, the kachha arhatya surveys all the lots and puts the heaps to auction one by one. The auction is always an open auction. Kachha arhatya pays the cultivator some part of the value down and pays the balance when he is reimbursed by the wholesaler. The purchaser usually makes final payment within a week.
2. The widespread custom of depositing money with arhatyas comes as a surprise in view of the generally accepted picture of overall poverty of the agricultural sector. However, this goes to show the relative prosperity of the Punjabi cultivator who is usually not as hard pressed for money as his counterpart elsewhere and frequently has enough surplus income to deposit with a kachha arhatya.

has discovered that a cultivator rarely withdraws all the deposits. He, therefore, lends money from these funds to his customers. Loans are made both for consumption and investment purposes. It is understood that a cultivator does not receive any interest on the deposits. Loans are usually, but not necessarily, made to lower income cultivators.

Interviews with various market officials and traders in all the markets indicated that kachha arhatyas receive anywhere between 12 to 18 percent interest on short term loans.<sup>1</sup> Co-operatives still have failed to make a headway in this area. A variety of reasons was advanced by cultivators and traders to explain this phenomenon. First, a cultivator develops trust in his arhatya through financial relations that often go back to generations. He is, therefore, reluctant to sever these relations unless there is a reason to doubt the basic understanding. Even when a cultivator shifts his loyalties, he usually moves from one arhatya to another. There has not been mass scale changeover to the co-operative societies as is evident from the very small size of their operations over a considerable period of time. Second, co-operatives do not usually offer credit for consumption needs. Third, administrative procedures of the societies are generally too involved compared to those of the Kachha arhatyas.

There appears to be considerable extent of nonprice competition between kachha arhatyas to retain relations with as many cultivators as possible and to attract new business. This they do in various ways. Arhatyas inform their customers the prevailing market rates. They provide living and dining facilities to cultivators visiting the market place. They store produce for the grower if he does not find the going market rate satisfactory. They safekeep savings of the cultivators. However, it seems that nonprice competition does not take the form of interest free loans to cultivators.

#### Pucca Arhtyas (Wholesalers)

A wholesaler is locally known as a 'Pucca Arhtya'. A wholesaler purchases on his own account for selling locally and elsewhere to other secondary and terminal markets at a later date. Many wholesalers also engage in commission agency although to a very limited extent. Most of the big traders undertake commission agency only if the produce is brought to them. They do not solicit customers.

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1 Ralph Cumming in his study of the Khanna market indicates that such advances are made interest free. He argues that it is only in case of high risk loans that any interest is charged. Ralph Cumming Jr. op. cit.

The following table shows the number of kachha and pucca arhtyas registered with the market committees.

TABLE 2.10. NUMBER OF TRADERS BY THE TYPE OF BUSINESS, PRIMARY MARKETS, PUNJAB STATE

MARKET	KACHHA ARHTYAS	PUCCA ARHTYAS	TOTAL
Moga	104	25	129
Khanna	70	7	77
Jagraon	70	12	82
Kotkapura	66	6	72
Barnala	73	5	78

Source: Information obtained by Research investigators from market committees, 1967.

There are very few traders who specialize in a single commodity. Almost all the traders deal in a variety of agricultural commodities. The number, therefore, is a fair representation of the number of wheat traders in the markets. Since both kachha and pucca arhtyas purchase wheat on their own account, although in varying quantities, the total number of traders in Table 2.10 shows the potential competitors present in a market.

Since only pucca arhtyas purchase wheat on a significant scale only a few traders in these markets purchase a significant portion of the total volume traded in the market. A very rudimentary investigation of the volume of wheat purchased by large traders in three markets indicated that only a handful of traders deal in half of the total wheat transacted in the market. (see Table 2.11)

TABLE 2.11. AVERAGE SHARE OF LARGE TRADERS IN WHEAT TRADE

MARKET	NUMBER OF TRADERS	QUANTITY OF WHEAT PURCHASED AS PERCENT OF TOTAL VOLUME TRANSACTED IN THE MARKET
Barnala	2	50
Jagraon	4	60
Kotkapura	5	50

Source: Based on interviews conducted by investigators of traders and market officials.

In order to arrive at these estimates large traders were interviewed to find out their volume of business. The information that they provided regarding their size of operation was then checked by interviewing market officials and other traders in the market. The size of the operations of these traders appears to be so large relative to others that the figures can be taken to provide at least a rough indication of the concentration of volume in few hands.

### The Caste Structure.

In India there is a prevalent belief that trading business is dominated by particular communities that have traditionally been trading castes or communities. The Marwari community of Rajasthan has migrated to various parts of the country and is believed to have a virtual hold of the trading business in limited area. The bania (or trading) castes in individual states are the second community well known for its major share in the trading business.

A preliminary survey was made of the traders in the four states to examine their caste structure.<sup>1</sup> The following table shows breakdown of traders by their castes in the markets of Punjab.

TABLE 2.12: BREAKDOWN OF TRADERS BY CASTES OR COMMUNITIES

MARKET	CASTE OR COMMUNITY	TOTAL NO. OF TRADERS
Khanna	2 Marwari, 5 Jats, 6 Brahmins, 64 local Banias	77
Kotkapura	12 Marwari, 60 local Banias	72
Jagraon	12 Jats, 3 Brahmins, 67 local Banias (aggarwals, khatriis etc.)	82
Barnala	15 Marwaris, 63 local Banias	78
Moga	Mostly local Banias*	

\*No breakdown available.

Source: Interviews conducted by research investigators

1 Hindu society has been traditionally divided into four classes. (1) Brahmins (the priestly class). (2) Kshatriyas (the warriors), (3) Vaishyas\* (the trading communities), and (4) Shudras (the menial workers). The classes generally indicated occupational structure of its members. However, over a period of centuries there has been a great deal of intermingling of classes in terms of the occupations that they perform. Castes that did not belong to the traditional Vaishya classification took up trade or moneylending as their way of life and have been in it for generations. Consequently, they are known as trading communities, e.g. Khatri community in Punjab the name of which originates from Kshatriya

It is evident from the data that over 80 percent of the traders in the selected five markets belong to local bania communities.<sup>1</sup> Approximately 6 percent belong to the Marwari community (also a trading community) and only the remaining 14 percent come from traditionally non-trading castes such as Brahmins or Jats (cultivators).

Another interesting feature noted about the traders is that all the major traders in the markets are either banias or marwaris. There is no consistent pattern of a particular community dominating the grain trade. The major traders in Barnala and Kotkapura are all marwaris whereas the major traders in Jagraon and Khanna are local banias. Although some of these are newcomers to the foodgrain trade, most of these have been in trading business of some sort or the other for at least one, and in most cases two generations. In many cases these large traders are also foremost in other economic activities in their towns. In a large number of cases, they own oil mills, cinema houses, cloth mills, cotton ginning and pressing mills and rice mills. A number of these traders are also members of various educational and civic institutions, although this is in most cases a consequence rather than a cause of their success.

#### Extent of Partnerships

Family history was gathered of the same 18 firms from which stock figures and profit loss statements were collected. These firms are among the large firms that handle most of the terminal market trade.

Out of these eighteen firms six firms are partnerships with more than one family. All the others are partnerships either between immediate members of the family (such as brothers or brothers and father) or between distant family relations. A partnership between a clerk cum manager (munim) who provides the technical know-how and a trader who provides the name, goodwill and the capital appears to be popular among non-family type partnerships. It is, however, difficult to say how representative these statistics are of the traders in general. For it was generally observed that partnerships (either within

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(Footnote continued from previous page)

signifying warrior caste, have been in business and have been known as a business community. So is true about the Aggarwal community. Such communities are defined here as trading communities. The word 'Bania' widely used for a trading or a money lending profession originates from "Vaishya".

1 The percentages are based on the markets for which breakdown is available. They are, however, not likely to be significantly different for Moga.

or without the family) are more prevalent among larger traders, who see the advantage of pooling their resources and know-how. Smaller traders are usually single operators with small capital.

This does not answer the controversy about whether lack of capital is a deterrent to an entry into trade. From the fact that almost 90 percent of the traders in each of these markets are small or medium sized operators it is obvious that lack of capital is by no means an obstacle to entry. It probably suggests that unless trading skills are coupled with capital large volume of profit is not attainable.

The only other significant although much smaller<sup>1</sup> community in trading is the Jats. They have traditionally been cultivators. Most of them who have turned to trading in the two primary markets Khanna and Jagraon were also petty traders who collected surpluses of the fellow cultivators and brought it to the market for sale. The Jats in Jagraon have been full time traders for over 20 years, and are said to be very successful in their business. They are, however, not the major exporters of wheat to the terminal markets. The major exporters all belong to the bania community. The success of Jats has been attached to the patronage that they receive from cultivators of their own community.

#### Stocking Pattern

Stock figures (i.e. periodical purchases, sales and balance figures) were collected from stock books of traders. The records are confined to a four year period (1963 to 1967) and to 23 major traders in the five primary markets. The period for which records were available varies from one trader to another. However, they fall between 1963 and 1967 and usually extend to three years. These records are the same as the returns submitted to the Food and Civil Supplies Department of the Punjab Government. One cannot, therefore, judge the extent of reliability of these data. A practice of maintaining two record books is widespread among traders in India particularly when there are stringent controls on their activities and popular doubts about their intentions. Another possibility of course, is that any underhand dealing performed by a trader never enters his records.<sup>2</sup> One, therefore, has to use these figures with caution.

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<sup>1</sup> 86 percent vs. 6 percent.

<sup>2</sup> This was angrily suggested by a trader who was in his words "sick and tired of being suspected all the time".

The data show a consistent pattern in the purchases of the traders. Purchases are usually concentrated in the immediate post harvest period - May, June and July. This is not unexpected in view of the fact that the marketings are highly seasonal. Purchases become negligible after July. There is, however, a second, but much smaller peak in purchases sometime between September and November i.e. when monsoons are over, just prior to the new sowing season. Traders appear to replenish their stocks once again at this time to fill the demand for the off-season consumption.

The pattern of sales, however, varies from one year to another and even within a year from one trader to another. Sales are, sometimes, very heavy in the post harvest period (i.e. between May and July) whereas at other times they are insignificant in the immediate post harvest period, but very high in the off-season, i.e. between August and March. It can be generally observed, however, that even when a high peak is reached in sales in the immediate post harvest period not all stocks are disposed of in this period. Offtake is quite substantial in the off-season. Since a breakdown between the purchases made on one's own account and those on account of a principal in the terminal market is not available it is difficult to determine who does the stocking.

The extent of stocking done by primary and terminal traders, however, must vary considerably from one year to another depending on their personal view of the prospects for wheat as well as for other agricultural commodities. This is corroborated by the fact that the commodity wise profit loss statements of the traders show considerable year to year variation in the volume of operations of an individual crop. The total volume purchased in one year is sometimes 10 to 20 times as large as compared to the earlier or the following year. This shows the advantage of lack of specialization from the viewpoint of a trader. Investment can be easily diverted from one crop to another depending upon its apparent profitability.

Another factor which is noticeable from the records is that there is not much carry over of stocks from one crop year to another. <sup>1</sup> Purchases in a year almost always match sales in a year so that there is very little balance at the time of the new harvest.

Quantities purchased and sold on own account obtained from profit loss statements are always much smaller than stock figures obtained from stockbooks. This suggests that most of the purchases made by the primary market traders are for their principals in the terminal markets. It is likely that these quantities are stored in the primary markets and are shipped to the terminal markets on instructions from the principals.

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<sup>1</sup> This was stressed by all the traders interviewed in various parts of India.

It was not possible to collect any accurate information on storage capacity in the primary markets. Most of the storage is done in private warehouses of the traders. New modern state and central government warehouses have been built in all these markets during the period of this study. Their capacity is not adequate for storage of all the stocks built by traders. However, there is no indication that the total storage capacity in the primary markets (private and public combined) is inadequate in normal years.<sup>1</sup> Neither is there any indication of excessive storage losses in private godowns. Losses are somewhat lower in public warehouses. That, however, does not seem to be the main reason of their popularity. They are popular mainly because traders receive larger advances from banks on the pledge of their stocks with those warehouses. There is thus no reason to believe that seasonal price variations are excessive due to lack of storage facilities.

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<sup>1</sup> Punjab had a serious problem of storage in the harvest months in 1968 which was clearly due to inadequate storage space. However, this seems to have been mainly due to an unprecedented rise in wheat production in that year. (Preliminary estimates set the increase at about 40 percent over the previous year). The problem was further aggravated by the failure of the governmental agencies, which procured a major part of the arrivals, in moving the stocks out of the primary centers (as is usually done at least to some extent) due to their insistence on using the inadequate rail facilities.

## CHAPTER III

### MARKET INTEGRATION

The present chapter examines the extent of integration in the movement of wheat prices in selected markets. Market integration is defined as the extent to which price movements in one market are related to those in the other wheat markets.<sup>1</sup> Degree of correlation between prices in various markets is taken as an index of the extent of market integration.

Price relationships between primary markets in Punjab and their terminal markets Bombay and Delhi are examined. Price formation at the village level and its relationship to the primary market prices is not examined as limitations on time prevented collection of village level price data.

Relationship between village level prices and primary market prices is of considerable importance when a large proportion of the marketings are disposed of in the village markets. This is, however, not the case in the marketing of wheat in Punjab.<sup>2</sup>

Table 3.1 shows correlation coefficients between wholesale prices prevailing in the five primary markets of Punjab and in the terminal market Delhi during an eleven year period.

TABLE 3.1. CORRELATION MATRIX FOR WEEKLY WHOLESALE PRICES OF WHEAT, PUNJAB AND DELHI, January 1955 - December 1965

	(r)					
Market	Moga	Khanna	Barnala	Kotkapura	Jagraon	Delhi
Moga	1.00	0.94	0.97	0.97	0.97	0.95
Khanna		1.00	0.92	0.92	0.94	0.90
Barnala			1.00	0.95	0.96	0.94
Kotkapura				1.00	0.96	0.95
Jagraon					1.00	0.94
Delhi						1.00

<sup>1</sup> For methodology used in the analysis of market integration see pp. 10-15 above.

<sup>2</sup> See pp. 31-36 for the discussion of marketings.

The correlation coefficients between weekly wholesale prices are indeed high and show close relationship between price movements in various markets. The high correlation between markets generally supports the hypothesis that wheat markets are fairly competitive in Punjab and that price movements in one market are influenced by those in the related markets. Except for Khanna market, prices for all the other markets refer to dara variety of wheat. For Khanna prices refer to fine variety.<sup>1</sup> (Prices for dara variety in Khanna were available only beginning May 1957).

When correlations between fine variety prices in Khanna and dara prices in the other four markets are compared with similar correlations between dara prices in Khanna and elsewhere it is noted that dara prices in Khanna show slightly better correlation with dara prices elsewhere than do fine variety prices in Khanna.<sup>2</sup> Similar comparisons show that Farm variety prices in Noga are slightly better correlated with fine variety in Khanna than with dara variety in Khanna. Dara prices in Delhi show slightly better correlation with the dara prices in the primary markets than do farm and farm special prices in Delhi. As the correlations between markets are generally very high, the differences in correlation coefficients due to varietal differences are very small. This is mainly because, prices of different varieties of wheat move fairly closely with each other in a single market and between various markets, e.g. wholesale prices of dara variety wheat in Delhi market show a correlation coefficient of 0.96 with Farm variety prices in Delhi and of 0.93 with Farm special variety. Farm variety shows a correlation of 0.98 with prices of Farm special variety in the same market. (n= 515 weeks)<sup>3</sup>

So far we have been considering relationship between markets between which there has been an uninterrupted flow of supplies and between which the size of shipments has been large enough to exercise considerable impact on prices at either end of the flow. Now we will examine a relationship of these producing centres with a market which has a much more diversified trading pattern. Bombay is such a terminal market. It receives supplies not only from a large number of markets in Punjab but also from a number of markets in U. P. and in Madhya Pradesh.

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1. It should be recalled that fine variety is treated as being equivalent to 'farm' by wheat traders.
  2. See pp.42-43 above for discussion of varieties.
  3. Retail price of Farm wheat in Delhi shows a correlation of 0.97 with the wholesale price of the same variety and the retail price of dara wheat in Delhi shows a correlation of 0.96 with the Delhi wholesale price of the same variety. (n=516)

This raises new elements in price comparisons which were not encountered in the earlier case. (1) Due to the fact that wheat is imported from a wide geographical area, price quotations, although available by varieties, relate to less specific categories. The same general variety of wheat is received from a number of markets in a number of producing centres. There is considerable difference between the data wheat received from M.P. and that received from Punjab and U.P. Prices, therefore, refer to less homogeneous types of grain. (2) When a market has a diversified import pattern, such as Bombay, its prices are likely to show somewhat lower correlation with a single surplus region despite the high level of interaction between the two markets. Although the price in Bombay, under conditions of perfect competition, is expected to remain within the range of transport costs from the primary markets in Punjab, its fluctuations within this range may not necessarily correspond with those of the prices in Punjab due to the influence of U. P. and I.P. prices on Bombay prices. The share of various surplus regions in the total supplies of the terminal market is directly linked with the degree of correlation between prices in the two regions. (3) Flow of wheat between Bombay and Punjab has been interrupted during the period studied due to formation of wheat zones.

Correlation coefficients were calculated between Bombay prices and prices in the primary markets of Punjab.

Table 3.2 shows the correlation coefficients between Bombay and Moga wholesale wheat prices for three periods.

TABLE 3.2: CORRELATION COEFFICIENTS FOR WEEKLY WHOLESALE PRICES OF WHEAT, BOMBAY AND MOGA  
January 1956 to March 1964

(r)				
	MOGA DARA BOMBAY SHARBATI	MOGA DARA BOMBAY DALA	PERIOD OF REFERENCE	N
1	0.69	N.A.	January 1956- March 1957	65
2	0.21	N.A.	April 1958- March 1961	154
3	0.80	0.88 <sup>1</sup>	April 1961- March 1964	157

<sup>1</sup> Refers to November 1961 - April 1964 (n = 129)  
N. A. - data not available.

<sup>1</sup> These observations are based on my discussions with traders in both Bombay and Delhi and their responses to the questions such as how would news about a crop failure in major producing centres or a ban on interstate movement between various producing and consuming centres affect their decision to stock and the prices they would want to offer for wheat.

The first correlation refers to the period when there was free flow of wheat between Punjab and Bombay. It will be noted that the coefficient for this period is fairly high although not as high as that between Punjab and Delhi. The relatively lower correlation between Punjab and Bombay could be explained in terms of all the factors discussed earlier. (1) Prices in Bombay refer to Sharbati wheat whereas those in Punjab refer to dara wheat.<sup>1</sup> Dara prices were not available for Bombay for earlier period. A correlation between Bombay dara prices and Hoga dara prices for later period clearly illustrate the importance of varietal comparability in regional interdependence of prices.<sup>2</sup> (2) Bombay market price is influenced not only by Punjab prices but also by prices in other producing centres. (3) There is, however, another factor which could result in lower correlation coefficients between markets i. e. the costs of shipment. If the costs of shipment between the two markets are high<sup>3</sup> prices in the terminal market can move within the range of plus or minus costs of shipment without their being any movement of goods between the two markets. Higher the costs of transport, greater the range within which prices can move without a flow, thus resulting in greater residual and lower correlation. It is necessary to examine if the lower coefficients are a result of this phenomenon. We will come to this question when we examine magnitudes of regional price differences and the causes of such disparities.

The coefficient for the second period (April 1958 to March 1961) is very much lower. In this period there was no shipment of wheat from Punjab to Bombay on private account.<sup>4</sup> Price movements in Bombay were not influenced by prices in Punjab markets during this period.

The third correlation coefficient refers to the period of free trade between Bombay and Punjab. Relaxation of movement restrictions is obviously reflected in the price formation in Bombay market.

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1 For varieties see pp. 42-43.

2 See pp. 61-65 below for further discussion of varieties.

3 High costs may not necessarily be due to inefficiencies but may even be a result of long distances as in case of Punjab and Bombay.

4 See p23-5 for official policies.

### Regional Price Differences

So far we restricted the analysis of market integration to the degree of interdependence between various primary and terminal markets. We will now consider the extent of price differences between primary and terminal markets. In a competitive market with perfect knowledge, perfect mobility and perfect homogeneity of product price difference between a primary market and a terminal market will be just equal to or less than the costs of transport and handling between the two.<sup>1</sup> An occasional rise in the price difference would lead to an increased flow between the regions and thus will correct the excessive disparities. Consistently high price differences (i.e. higher than transport costs) suggest that the flow was not adequate. The inadequacy of flow could be due to (1) inherent market imperfections or (2) due to causes outside the system (such as government restrictions and transport bottlenecks). In the present section we will examine if price differences between primary and terminal markets were consistently higher than shipment costs and if so the factors behind it.

Price differences between the primary markets and Delhi have remained very low in the eleven year period. In Barnala, 9 percent of the times, the price difference was negative whereas in Khanna as much as 64 percent of the times the difference was negative. Even when the difference was positive, most of the times it remained below Rs. 2.5 per quintal - not enough to cover transport and handling costs. When price difference was above Rs. 2.5, most of the times it remained between Rs. 2.5 and Rs. 3.5 per quintal, barely enough to cover transport and handling costs. (See Table 3.4 for costs of shipment). For the remaining period it remained between Rs. 3.5-5 i.e. just enough to cover costs of shipment and normal profits. Price difference above Rs. 5 per quintal may be termed as excessive in the sense of providing opportunity for excessive profits for traders. In all the markets the difference became so high very few times indeed and did not remain consistently high for any major length of time.<sup>2</sup>

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- 1 Throughout this study shipment costs include costs of handling at both ends, plus the cost of transport. For the sake of brevity the terms shipment costs or transport costs, instead of shipment and handling costs are used.
  - 2 It should be of considerable interest that similar comparisons between Lyallpur Punjab (now in Pakistan) price and Calcutta prices made as early as 1935 showed similar results. Prices between the two markets occasionally showed differences greater than transport and handling costs. However, when difference rose, it was followed by increased wheat shipments from Lyallpur to Calcutta. (as indicated by statistics on railway bookings) (See Wheat Marketing Report (1937 edition). op. cit.)

Comparing the relative price difference in various markets it is seen that in Khanna and Jagraon prices remained below Rs. 3.5 per quintal more frequently than in other markets. This may be because Khanna and Jagraon are nearer to Delhi than Moga and Kotkapura.<sup>1</sup> It is, therefore, plausible that under competitive conditions, in order to make allowance for higher costs of transport, markets located farther away from the terminal centres have to have lower prices than the markets nearer the terminal market.

It is quite likely that the prices in these markets in fact, remained lower due to very keen competition between various primary markets for acquiring a share of the terminal market shipments.

Price differences between Khanna and Delhi may also appear to be slightly lower as Delhi prices refer to dara variety whereas Khanna prices refer to fine variety which is superior to dara.

The comparison of Punjab and Delhi wheat prices, thus strongly supports the hypothesis of high competitiveness in grain trade and consequent low differences where conditions of free mobility and homogeneity of product are fulfilled.

Table 3.3 shows the differences between Delhi wheat prices and the primary market prices in Punjab.

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1 In terms of road mileage Jagraon and Barnala are equidistant from Delhi. However, due to poor quality of the road from Barnala up to Patiala the trucking costs from Barnala to Delhi are usually higher than those from Jagraon to Delhi (Table 3.4). Even railway fare is slightly higher for Barnala - Delhi as compared to Jagraon - Delhi run. This may be because Jagraon is located on the Luchiana - Ferozpur line, a main line of Northern railway.

TABLE 3.3 FREQUENCY DISTRIBUTION OF DIFFERENCES BETWEEN DELHI AND PRIMARY MARKET WHOLESALE WHEAT PRICES, January 1955 to November 1965.

MARKET	FREQUENCY (no. of weeks)	LESS THAN 0	RS. PER QUINTAL							TOTAL NO. OF WEEKS
			0 -2.5	2.5 -3.5	3.5 -5.0	5.0 -7.0	7.0 -10.0	10.0 -15.0	15 above	
Moga	Absolute	119	256	91	49	43	8	3	0	569
	Percentage of total weeks	21.0	45.0	16.0	8.6	7.5	1.4	0.5	0.0	100
Khanna	Absolute	367	131	27	24	16	3	1	0	569
	Percentage of total weeks	64.5	23.0	4.7	4.2	2.8	0.5	0.2	0.0	100
Barnala	Absolute	51	189	101	109	75	37	7	0	569
	Percentage of total weeks	9.0	33.2	17.7	19.1	13.2	6.5	1.2	0.0	100
Kotkapura	Absolute	98	271	89	63	35	11	2	0	569
	Percentage of total weeks	17.2	47.6	16.6	11.1	6.1	1.9	0.3	0.0	100
Jagraon	Absolute	191	232	60	54	23	8	0	1	569
	Percentage of total weeks	33.6	40.8	10.5	9.5	4.0	1.4	0.0	0.2	100

TABLE 3.4 COSTS OF WHEAT SHIPMENTS FROM PUNJAB MARKETS TO DELHI

	KHANNA	MOGA	BARNALA	KOTKAPURA	JAGRAON
<u>I Mandi Expenses</u>					
1. Unloading, cleaning	0.22	0.25	0.22	0.28	0.12
2. Weighment	0.10	0.10	0.10	0.18	0.24
3. Cartage	0.18	0.13	0.15	0.12	0.12
4. Loading	0.08	0.05	0.05	0.05	0.05
5. Filling bag	0.04	0.04	0.06	0.04	0.06
6. Stitching & Twine	0.04	0.03	0.02	0.02	0.02
7. Dara Labour	nil	nil	0.16	nil	nil
Total	0.66	0.60	0.76	0.69	0.63
<u>II</u>					
1. Commission of the commission agent	1.5%	1.5%	1.5%	1.5%	1.5%
2. Commission of the local wholesaler	0.075%	0.075%	0.075%	0.075%	0.075%
3. Market Fee	0.04%	0.04%	0.04%	0.04%	0.04%
4. Sales Tax	1.5%	1.5%	1.5%	1.5%	1.5%
Total (Percent of the value of wheat)	3.115%	3.115%	3.115%	3.115%	3.115%
<u>III</u>					
1. Truck fare to 1, 2 Delhi OR	3.00	3.40	3.50	3.20	3.00
2. Railway fare to Delhi 2	1.00	1.67	1.43	1.57	1.50
Surcharge	3%	3%	3%	3%	3%
Illegal gratification	0.06	0.06	0.06	0.06	0.06
<u>IV Expenses in Delhi</u>					
1. Terminal Tax			0.10		
2. Labour charges			0.06		
3. Cartage			0.25		
4. Storage Costs			0.15		
5. Hundi charges			0.20		
Total Handling Expenses in Delhi			0.76		
Total Costs of Truck Shipment*	Rs.4.42	4.95	5.02	4.75	4.39
	+	+	+	+	+
	3.115%	3.115%	3.115%	3.115%	3.115%

\*If the wheat price is Rs.40/.00 per quintal the cost of movement from Moga to Delhi will be approximately Rs.6.20 per quintal by road and if the price is Rs.70/ per quintal the cost of movement will be approximately Rs.7.10 per quintal at 1967 truck fares. When allowance is made for lower truck costs RS.5/ would seem a reasonable shipping cost per quintal.

Footnotes to Table 3.4

1. Includes Goods Tax
2. Truck and railway fares are for 1967. It was stated by traders that truck fares have increased substantially in the last 10 years. The truck fare in 1962-63 was about Rs. 2.00 to Rs. 2.50 up to Delhi depending on the distance.

SOURCE: Interviews with traders in Punjab and Delhi.

Price Disparities and Varietal Differences<sup>1</sup>

The role of varietal differences and of free mobility in regional price disparities are most markedly brought out by the case of differences in Moga and Bombay wheat prices. For Bombay market prices were collected for four different varieties of wheat: Dara, Farm, Punjab, and Sharbati.

Dara and Farm quotations are comparable to those for Punjab markets. Farm is superior to dara variety. Prices of farm wheat remained as much as Rs. 10.0 per quintal higher than dara variety in Bombay. Punjab variety appears to be a general name given to the wheat arriving from Punjab. Sharbati is the most expensive variety, and has been greatly in demand in Bombay.<sup>2</sup> Quotations for Sharbati wheat are always higher than 'Farm' and remain as much as Rs. 12 to Ps. 15 higher per quintal than dara wheat.

Unfortunately, prices for all these varieties were not available for the total period studied. 'Punjab' wheat prices were available for the first period. (January 1956 to April 1957). They are, however, not comparable to any specific variety in the markets in Punjab. Farm and dara prices were available for the later part of the period. Prices for number of weeks were, however, missing for farm variety. Dara prices were complete for a little over a two year period. Sharbati prices were available for the longest time period. Sharbati prices were recorded from January 1956 to July 1964 except for one year between April 1957 and April 1958. We will compare differences between dara prices in Moga and Bombay with differences between dara and sharbati prices in Moga and Bombay respectively. Table 3.5 shows distribution of price differences between the same variety (i.e. dara) and between two different varieties (i.e. dara and sharbati). Differences between dara prices in the two markets are available only for the later period.

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- 1 For discussion of trade names and varietal classification see p42-3 above.
  - 2 This was stated both by the traders in Punjab as well as in Bombay. Sharbati in Bombay appears to be equivalent to farm sharbati (or farm special) in Punjab.

TABLE 3.5: FREQUENCY DISTRIBUTION OF DIFFERENCES BETWEEN BOMBAY AND MOGA WHEAT PRICES.

VARIETY	PERIOD OF REFERENCE	FREQUENCY (No. of weeks)	Rs. per quintal					TOTAL NUMBER OF WEEKS
			0-10	10-20	20-30	30-40	40 above	
	Jan. 1956 to March 1957	Absolute	5	46	13	1	0	65
Bombay - Moga Sharbati dara	Apr. 1958 to March 1961	Absolute	4	29	52	41	28	154
	Apr. 1961 to	Absolute	0	62	93	2	0	157
	Nov. 1961 to March 1964	Absolute	95	30	0	0	0	125
Bombay - Moga dara - dara								

The magnitude of price differences is fairly small when prices for dara variety are compared in both the markets. Eighty percent of the times difference between Bombay and Moga dara prices was less than Rs. 10.0 per quintal. This difference was just enough to cover costs of shipment from Moga to Bombay.<sup>1</sup> Only 20 percent of the times Bombay dara prices were higher by more than Rs. 10 per quintal than dara prices in Moga. Even then out of 30 times when price difference was above Rs. 10.0 per quintal, 26 times it was less than Rs. 15.0 per quintal. It was only 4 times out of 125 weeks that the price difference became excessive.

TABLE 3.6: COSTS OF SHIPPING A QUINTAL OF WHEAT FROM MOGA TO BOMBAY

1. Mandi Expenses <sup>1</sup>	Rs. 0.66	
2. Commissions, Market fee, sales tax <sup>1</sup>		3.115% of the value of the shipment
3. Cost of the Bag	Rs. 2.06	
4. Railway fare	Rs. 3.80	
5. Surcharge		3% of the value of the shipment
6. Expenses in Bombay <sup>2</sup>	Rs. 0.75	
7. Hundi charges		0.2% of the value of the shipment
<hr/>		
Total Shipping Costs	Rs. 7.27 +	(6.315% of the value of shipment)

1 Same as in Table 4.

2 Include Octroi, unloading, storage in Bombay for a month and Hundi charges.

Source Interviews with traders.

When sharbati prices in Bombay are compared with dara prices in Moga during the same period the differences are, however, much wider ranging between Rs. 10 to Rs. 30 per quintal most of the times. The analysis once again confirms the contention that when prices for the same varieties of grain are compared for markets between which there is a regular flow the price differences tend to be just enough to cover costs of shipment.

1 See Table 3.6 on costs of shipment from Moga to Bombay. If the price is assumed to be Rs. 40.00 per quintal the cost of shipment amounts to Rs. 9.70 per quintal of wheat shipped from Moga to Bombay.

Varietal Price Differences in Surplus and Deficit Regions

Prices of various varieties move much more closely with each other in a primary as compared to a terminal market. Even between terminal markets a market located in the heart of a producing region, such as Delhi, shows greater interdependence between prices of different varieties of wheat as compared to a terminal market located in a deficit region such as Bombay.

Table 3.7 shows correlations between different varieties of wheat in each of these markets.

TABLE 3.7: CORRELATION COEFFICIENTS BETWEEN DIFFERENT VARIETIES OF WHEAT PRICES

VARIETIES	(r) CORRELATION COEFFICIENTS	NO. OF WEEKS	YEARS
Moga Market Dara and farm prices	0.99	625	1955-66
Delhi Market Dara and Farm prices	0.96	516	1955-65
Farm and Farm sp. prices	0.98		
Bombay Market Dara and Sharbati prices	0.90	129	1961-64
Farm and Sharbati prices	0.92		

This is to be expected when the nature of the demand is considered in these various markets. In a primary market, a demand curve facing the traders is in terms of the purchases made by wholesalers from various terminal markets. The demand is, therefore, viewed more as a consolidated demand for wheat as a whole.

In a terminal market, product differentiation is of considerable importance due to the strong consumers' preference for individual varieties of wheat. Demand for wheat is, therefore, viewed by traders more in terms of specific varieties than for the grain as a whole. The prices of better grades, may, therefore, rise, without others following suit, if the pressure of demand exerted by high income consumers on these varieties is substantial. This also has a bearing on the extent of price differences between different varieties of grain in a market.

Price difference between Farm and dara variety of wheat is usually of the order of Rs. 2.0 to Rs. 4.0 per quintal in Delhi and as much as Rs. 14.00 in Bombay. The difference between Sharbati wheat and dara wheat has been frequently as high as Rs. 15 to Rs. 17 per quintal in Bombay. This also seems to be partly a result of the demand for the best quality of the superior varieties of wheat in the large urban, consuming centres.

### Movement Restrictions and Price Difference

Table 3.5 clearly indicates that difference between Sharbati wheat prices in Bombay and dara prices in Moga was low in the period of free trade (1956-57) increased significantly during the period of wheat zones (1957-61) and then declined significantly in the later period with abolition of zones in 1961.

Table 3.8 shows off-seasonal prices in Bombay and Moga before and after imposition of zones in the later years. The effect of barriers on price differences is clearly evident from the table.

TABLE 3.8: OFF-SEASONAL WHEAT PRICES IN BOMBAY AND MOGA BEFORE AND AFTER WHEAT ZONES

(Rs. per quintal)

MONTH	BEFORE ZONES 1964		AFTER ZONES			
	DOWRY 1	MOGA 2	1965		1966	
			BOMBAY 1	MOGA 2	BOMBAY 1	MOGA 2
January 1	65-70	57.50	170-180	65.50	155-160	55.00
February 1	65-75	59.25	170-175	59.35	120-125	60.00
March 1	75-85	62.00	95-105	64.50	127-130	57.00
April 1	80-90	61.00	100-105	66.10	110-120	53.50

- 1 Bombay price range is for farm and sharbati wheat.  
2 Moga prices are of farm variety.

### Seasonality in Price Differences

The question whether excessive price differences between the terminal markets and the primary markets show a marked seasonality, is of little interest in case of Punjab-Delhi price difference as price differences were rarely very high between the two regions. Price differences remained above Rs. 5.00 per quintal less than 4 percent of the times in Khanna. Even in Barnala which showed greater price differences with Delhi than did Khanna, they remained above Rs. 5 only 20 percent of the times out of which 13 percent of the times they remained below Rs. 7.0. The price differences above Rs. 5.0 per quintal were

fairly well distributed over a market year in Punjab and did not show any marked seasonality. <sup>1</sup> For even during the harvest season when arrivals are heavy, trucks are available in plenty even if wagons may be difficult to acquire. Due to proximity of Delhi to two major wheat regions - Punjab and U.P.-, Delhi prices do not show price rises that are out of line with the levels existing in the nearby producing centres.

The question of seasonality creates as little excitement in the case of Punjab-Bombay prices, since prices of dara varieties have not shown great disparities between 1961-64 period. Unfortunately, no data are available for dara prices for earlier period of free trade. In the later period, however, the occurrence of excessive price differences is well spread out during the whole period. Prices rose above Rs. 15 per quintal in Bombay only at the end of 1964 when there was (1) general scarcity resulting from poor harvest and off-season, and (2) talk of impending restrictions.

Price differences between dara and Sharbati prices are of considerable interest due to their very great magnitudes. During the first period i.e. between January 1956 to April 1957 price differences showed a marked rise between January 1957 and April 1957. This could have been a result of two factors. (1) January-April is the period when the stocks from the previous harvest are almost over. New harvest does not come in until March in Maharashtra and until April in the North. (2) Although the zones were enforced from April 1957, there was a great deal of speculation in the market about new restrictions on the movement of wheat. This created a scramble in Bombay, being located in the midst of a highly food deficit state. Since this was coupled with an off-seasonal period, this must have raised the prices in Bombay.

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1 When the price difference increased above Rs. 5.0 per quintal between these markets 60 percent of the times it occurred between January-June period and 40 percent of the times between July-Dec. period. Contrary to this, similar comparisons between Lyallpur-Calcutta prices and Lyallpur-Karachi prices for 1930-36 period showed a marked seasonality in price differences. Differences increased in the immediate post harvest period when the primary market experienced a sudden dip in prices. Terminal market prices declined only after a lag when the effect of increased shipments from surplus regions was felt. Differences also increased somewhat at the very end of the off-season when stocks from the earlier season dwindled and new arrivals had not yet reached the market. See Wheat Marketing (1937 edition). This pronounced seasonality appears to have been caused by the heavy dependence of Calcutta on rail shipments from Lyallpur as a result of the long distance between the two markets.

There is no marked seasonality in the price differences in the later period of free trade. Excessive differences (i.e. above Rs. 20.0 per quintal) are pretty well spread all around the year.

#### Trend in Regional Price Disparities

Price differences between regions may be studied over a time period to examine if there is an increasing or a declining trend in regional disparities. No such trend is noted in the case of Punjab-Delhi prices.

Periods of free flow between Bombay and Punjab have not been long enough at a stretch to judge any particular trend. In addition, prices have been influenced by rumours of restrictions, crop failures and various other factors which are difficult to isolate. However, considering the presence of these elements, price differences do not seem to show either a marked increasing or a declining trend.

## CHAPTER IV

### SEASONALITY OF WHEAT PRICES

In a perfect market the off-seasonal rise in the price of a commodity will be just enough to cover storage costs and normal profits of the stockist. In the present chapter we will compare the costs of storing a quintal of wheat until the off-season with the actual rise in wheat prices to examine the profitability of wheat storage.<sup>1</sup> The chapter will also deal with the extent of predictability of the off-seasonal price rise.

#### Storage Costs and Wheat Prices

For comparing the actual seasonal price rise with the cost of holding a quintal of wheat until the off-season, the following procedure is used. It is assumed that a trader purchases his stocks in May-June and disposes them off sometime between January and March in the following year. This is because the seasonal low in wheat prices is reached sometime between May and June and the off-seasonal high between January and March. (See tables and diagram below for seasonality of prices).

Storage costs are added to the average May-June wheat price to arrive at the cost of holding a quintal of wheat from May-June until January-March. The costs include warehouse rent, depreciation of the bag, if the produce was stored in bags or the cost of labour and material used in bulk storage, loss in weight due to pests, insects, rats, etc., and the interest rate.<sup>2</sup>

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- 1 It will be more appropriate to examine actual records of traders' incomes to resolve this issue. However, there are various difficulties in this approach. For their detailed discussion see the appendix to this chapter.
  - 2 The warehouse rent is taken to be Rs. 0.10 per bag per month. Depreciation of the bag was stated to be somewhere between 30 n.ps. and 50 n.ps. depending on the length of the storage. It is, therefore, taken to be between Rs. 0.35 and Rs. 0.45 between May - June and January - March. It is assumed that if the produce is bulk stored instead of bag stored, the same cost would account for the labour and material of bulk storage. This is not a very inaccurate approximation as the major depreciation of the bag occurs at the very beginning of the storage period (i.e. when a new bag becomes used) and increases only slightly with the length of storage. The cost of labour and material used in bulk storage is also incurred initially. The loss in weight was stated to be anywhere between 2 to 10 percent depending on the weevil attack, moisture content in storage, the type of storage facilities used, etc. These figures are much

The average price rise in the months of January, February and March each is compared with the average cost of storing a quintal of wheat between May-June and January-March each year.

Table 4.1 shows the off seasonal peak price as percent of lowest seasonal price, gross profit per quintal estimated by taking the difference between the average price in January, February and March in Moga and the cost of storing wheat from May-June until that period. The table also shows the rate of return on investment calculated by taking actual prices in January-March period as percent of the storage costs. The second column of Table 4.1 indicates the highest gross margin that could be earned by purchasing at the lowest and selling at the highest seasonal price each year (This is just a ratio of the highest and the lowest price and does not allow for any costs of storage). Columns 3 and 4 show the absolute and percentage gross margin that could have been earned by a trader by purchasing at an average May-June price and selling at an average January-March price each year. The estimates are obtained by deducting variable costs of storage. (i.e. the cost of borrowing, depreciation of weight and of bag.) In order to arrive at the net return to the trader for his labour and his entrepreneurial abilities it is necessary to deduct fixed costs of the enterprise such as maintenance of the shop, salaries of the permanent employees etc. These costs vary even more considerably from one trader to another than do variable costs. Therefore, no assumptions are made about fixed costs.

On an average the range between the highest and the lowest price in the year has been considerably wide despite the year to year variation in the offseasonal rise. When it is assumed that the trader purchased at an average May-June price and sold at an average January-March price out of eleven market years (April-March years) for which wheat prices are examined, in four years the price rise does not seem to have been enough to cover even the variable costs of storage. Another two years seem only marginally profitable i.e. the rate of gross profit in these years is not high. If one allows for overhead costs of the business the net profit rate is likely to be near zero or negative. However, in four out

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Footnote continued from previous page

higher than those obtained for jowar storage in Maharashtra and for paddy and rice storage in W. Bengal and Madras. Wheat is, however, thought to be more susceptible to insect and weevil attack as compared to other cereals. The average loss in weight was, therefore, taken to be 4% in eight months of storage. Loss due to driage was not included as any loss in weight before the beginning of monsoons was stated to be regained during monsoons when the humidity increased. Interest rate was taken to be 9 percent per annum.

of eleven years the rate of profit, so estimated, seems exorbitantly high. Despite the year to year variability the overall average return for the 11 year period seems quite reasonable and is comparable to similar estimates made for jowar prices in Maharashtra. <sup>1</sup>

TABLE 4.1: ESTIMATED GROSS RATE OF MARGIN FROM WHEAT STORAGE, MOGA, 1955-56 to 1965-66  
May-June - January-March

YEAR	OFF SEASONAL PEAK PRICE RISE AS PERCENT OF HARVEST LOW	GROSS PROFIT PER BAG (RS.PER QUINTAL) <sup>1</sup>	GROSS RATE OF PROFIT ON INVESTMENT <sup>2</sup> (PERCENT)
1955-56	63.00	8.45	27.79
1956-57	42.00	4.34	11.10
1957-58	12.00	-5.40	-11.54
1958-59	90.00	17.86	44.95
1959-60	19.00	-1.79	-4.02
1960-61	19.00	-0.58	-1.35
1961-62	26.00	1.63	3.89
1962-63	11.00	1.83	4.34
1963-64	70.00	14.35	33.32
1964-65	56.00	13.52	27.17
1965-66	20.00	-3.94	-6.65
AVERAGE	39.00	4.75	11.7

1 Average for January-March period. Gross profit per bag is the difference between the actual price and estimated costs of storing a quintal of wheat until the off-season.

2 Average for January-March period. Estimated as gross profit per bag as percent of the cost of storage.

It should be noted however that because the storage costs are based on an average May-June price, there is a built-in downward bias in the estimated storage costs and a consequent overstatement of the rate of gross profit.<sup>2</sup> For although the seasonal low is reached between May and June, purchases for the off-season are not restricted to these

1 See Section on Maharashtra.

2 The average of April-May-June prices was invariably higher than the average of May-June prices in all the markets in all the years except in 1966-67.

eight weeks. In fact, arrivals gather momentum around the middle of April. Traders begin their purchases in April and continue stocking up to the middle or the end of July.<sup>1</sup>

The above analysis suggests that there must be a pattern of year to year fluctuations in the profits earned that is consistent for all wheat traders. In other words, that the years of high off-seasonal price rise usually result in high profits for most of the traders etc. However, the profit loss statements of the traders do not show any such consistent pattern.

The gross profits per bag estimated from the actual profit loss statements of traders shown in Table 4.2 seem quite completely unrelated to the hypothetical estimates of the gross profit per bag for the corresponding three years in Table 4.1. Gross profits in Table 4.2 are much lower than the estimates in Table 4.1.<sup>2</sup> Nor is there any relationship between the year to year variation in the actual and the hypothetical gross profits. e.g. 1965-66 seems to have been a year of losses according to our hypothetical estimates whereas in actual practice 1965-66 turned out to be a relatively profitable year for most of the traders.<sup>3</sup>

It has been assumed in the preceding analysis that the trader purchases in the immediate post harvest period and stocks the produce for a period of 7 to 9 months before selling it in the market. Diag 7, 8, 9 show the actual monthly purchases and sales of wheat by three prominent traders of Moga during the period of 1964-65 and 1966-67. The diagram clearly illustrates the rather close correspondence between the quantities purchased and sold in each month. This evident

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1. Many traders, in their interviews, suggested that although the lowest price is reached some time in May or early June, they often prefer to wait to make their stocking decisions in order to get a feel for the market condition. This is corroborated by the stock data collected from major traders in these markets. Purchases were usually found to be heavy up to the end of July. See pp. 50-52 for the discussion of stocking practices.
  2. Gross profit figures in Table 4.2 are not directly comparable to those in Table 4.1 as the former do not account for the variable costs of storage as do the latter. They simply show the difference between the value of sale and of purchase. Actual profit rate will be still smaller than that in Table 4.2 when an allowance is made for storage costs; overhead and variable.
  3. This was stated to be due to the unexpected opening of U.P. markets to Punjab wheat under a new zonal arrangement in May 1965. Traders shipped considerable quantities of their stocks to the consuming centers in U.P.

high turnover of stocks is quite contrary to the assumption of a rigid stock policy assumed in the preceding analysis. This appears to be a result of the fact that the timing of the off-seasonal peak is not accurately predicted by all the traders. Too many traders, therefore, end up storing too small amounts or selling their stocks too soon or too late. Besides, the assumption made in estimating gross profits, namely, that the traders withhold their purchases until January is slightly unrealistic for although it is conceivable that an individual trader may follow such a policy it is impossible for the market as a whole to operate under such conditions. The other feature of the seasonal price movements is, of course, that even in the years of relatively steady price levels, there are some weeks when prices are low and others when they are high. For an intelligent or a fortunate trader it is possible to purchase and sell in these weeks and make a high profit. All the traders, therefore, may not necessarily purchase at the lowest price and sell at the highest and hence despite an enormous price rise may not reap the maximum profit from storage operations.

It is interesting that the realized rate of profit estimated from the profit loss statements of the traders shows less variability between years than the hypothetical estimates based on an assumption of a rigid policy of May-June to January-March storage. Rather the great deal of variability appears to be in the volume of operations. (Table 4.3) This variability is noticeable not only in a single trader's accounts. (Table 4.3) Although the data are much too inadequate to make any firm generalization Table 4.3 suggests a rather heavy build-up of stocks by some traders in 1963-64, a year of high off-seasonal price rise.<sup>2</sup> These traders also show relatively high gross profits in wheat operations in that year as compared to the remaining years.

Although our stock data do not go back to 1963-64 to suggest anything about the timing of purchase and sale operations of these traders, it is obvious from Tables 4.2 and 4.3 that the high volume of gross profit of these traders

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- 1 To some extent this is due to the varying amounts of market information available to different traders at different times and their unwillingness to share it with others. The varying rates of profit are also a result of "varying entrepreneurial abilities" which explain the different decisions taken by different traders under similar circumstances.
  - 2 Similar pattern is noted from profit loss statements of traders from the remaining four markets of Punjab. It must be emphasized, nevertheless, that out of five traders in each market only a couple of traders show large turnover in 1963-64.

TABLE 4.2: ACTUAL GROSS PROFITS FROM WHEAT STORAGE, MOGA, 1963-64 to 1966-67

YEAR	1 GROSS PROFIT PER BAG (RS. PER QUINTAL) TRADERS						2 GROSS RATE OF PROFIT ON INVESTMENT (PERCENTAGES) TRADERS					
	1	2	3	4	5	6	1	2	3	4	5	6
	1963-64	0.67	1.50	N.A.	1.59	0.94	2.25	1.4	3.3	N.A.	3.9	2.1
1964-65	1.99	2.16	3.54	4.78	2.00	0.35	4.0	4.2	7.4	9.5	3.6	0.6
1965-66	1.19	2.24	6.85	3.41	1.22	-3.03	2.2	4.0	12.9	6.5	2.1	-5.0
1966-67	N.A.	N.A.	8.31	16.75	1.72	3.05	N.A.	N.A.	12.6	28.4	2.4	3.8

1 Sale Price - Purchase Price = Gross profit per bag.

2 Gross profit per bag / purchase price.

N. A. data not available.

Source: Calculated from the profit loss statements of Moga traders.

TABLE 4.3: QUANTITIES OF WHEAT PURCHASED BY SIX MOGA TRADERS ON OWN ACCOUNT, 1963-64 TO 1966-67 1

YEAR	(QUINTALS)					
	TRADERS					
	1	2	3	4	5	6
1963-64	32,383	10,480	N.A.	3,102	23,400	10,540
1964-65	3,823	14,755	1,607	2,950	5,955	17,893
1965-66	2,047	6,088	2,828	4,282	2,974	4,106
1966-67	N.A.	N.A.	1,314	3,546	37,244	7,225

1 Quantities purchased are almost always equal to the quantities sold in a year.

N. A. Not available

is by no means due to high unit margin (in fact, the unit margin is lower in 1963-64 as compared to the remaining years) but due to the large volume implying, thereby, that even in the years of high price rise traders who have large stocks might not withhold them until the off-season. This suggests that the excessive price rise may result from 1) inadequate stock building by major traders and/or 2) from early disposal of stocks by those who possess them.

It is likely that in order to avoid losing heavily in one year and flourishing the next year, and thus averaging out the rate of profit over a number of years, which is what is implied in the rigid policy, traders undertake a more quick turnover of their volume and try to stabilize the rate of profit within certain limits.<sup>1</sup> Thus either with a flexible policy (as is actually followed by traders) or with a rigid policy regarding the period of stocking (as hypothesized in the above analysis) there appears to be considerable year to year variation in the volume of profit. The average return to a trader over a length of time, therefore, does not appear to be exorbitantly high.

An interesting feature brought forth by the examination of profit loss and stock statements is the uniqueness of individual trader's operations not only in case of volume of operations but also in case of timing of purchase and sale of stocks. This is a result of the great deal of flexibility in the stock operations. The interviews of the traders also emphasized the essentially short term view of the market as illustrated by their stock operations. Traders are constantly on the look-out for finding the best price for the stocks under the current circumstances and may decide to postpone a transaction for a week or 10 days but invariably formulate their policies in terms of weeks than of months. The idea of using a policy to store from the harvest to the off-season seems absurd to them basically because of the large number of uncertainties entering such an operation. This prompts them to undertake a quick turnover although it may imply a lower margin. The analysis of the actual market operations, therefore, suggests that the high off-seasonal price rise is not necessarily accompanied by high rate or volume of profit for all of the traders.<sup>2</sup>

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1 This is shown by the stock records of the traders.

2 The great variability in profit rates and the consequent high risks in storage may at least partially explain heavy arrivals of wheat marketings in the immediate post harvest season. (See p. 39 above). The contention put forth earlier that cultivators may be marketing heavily soon after the harvest more out of choice than out of compulsion appears convincing in view of the great variation in profits.

The preceding analysis brings forth the year to year variability in the seasonal pattern of wheat prices in Punjab. It also raises a question about the extent of predictability of the off-seasonal price rise. After having concluded, on the basis of available evidence, that in the long-run traders do not appear to make exorbitant profits in storage operations, the question still remains. Is the erraticness in the seasonal price pattern a doing of the speculative activities of traders or is it a result of the factors which are beyond the control of traders?

A very rudimentary analysis of the off-seasonal price rise suggests itself. That is to examine the interrelationship between wheat prices, wheat arrivals and wheat production.

First, arrivals of wheat in a wholesale market during April-March year were regressed with the preceding rabi wheat crop in the district.<sup>1</sup> In four out of five markets changes in arrivals showed a significant relationship with changes in production at 95 p.c. level of significance and in one out of five cases at 90 p.c. level.<sup>2</sup> The May-June price (i.e. harvest market prices of wheat) was then regressed with market arrivals in the following market year, an underlying assumption being that traders can predict the size of the annual marketings on the basis of their knowledge of the crop size.<sup>3</sup> The May-June price was also regressed with each of the following variables: preceding wheat crop in (a) the

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1 Since the rabi crop of 1954-55 crop year (July, 1954 - June, 1955) is marketed in the 1955-56 market year (May, 1955 - April, 1956) 1955-56 market year arrivals are related to 1954-55 rabi crop.

2. A.  $Y = 964 + 8.3 x$  Khanna  
(3.3)  
n = 11, r = 0.63
- B.  $Y = -311 + 17.8 x$   
(6.3) Jagraon  
n = 11, r = 0.68
- C.  $Y = -243 + 0.4 x$   
(1.4)  
n = 11, r = 0.90 Barnala
- D.  $Y = 1046 + 6.1 x$   
(2.5) Kotkapura  
n = 11, r = 0.62
- E.  $Y = 1481 + 6.8 x$   
(3.7) Moga  
n = 11, r = 0.52

Where Y = arrivals, X = production. The data refer to the period between 1954-55 and 1964-65. The insignificant relationship in Moga may be due to larger intermarket flows. Moga, it may be recalled is the largest wheat market in

district (b) the state (c) in India. The correlations between prices and production were a priori expected to be negative as an increase in the crop size would ceteris paribus result in lower harvest price. However, in all the cases both the 'b' coefficient as well as the correlation coefficient was positive. The high positive correlation in May-June price and production during the 1954-55 - 1964-65 period seems to have been due to the trend factor. Both the May-June price and the district, state and all India wheat production showed an increasing trend in this period.<sup>4</sup> No significant causal relationship could therefore, be obtained. Subsequently January-March price (off-seasonal price) of wheat and the percent rise in price from May-June to January-March were each regressed with district, state and all-India production of wheat in the preceding crop year.<sup>5</sup> Neither the post harvest price nor the percent increase in price until the post harvest time showed any statistically significant relationship with the size of wheat crop in the preceding year at any level. The regression analysis between various variables thus did not explain either the level of the harvest price, or the level of the off-seasonal price or the price rise from the harvest until the off-season. However the variables, (May-June price, highest price between January-March period, annual volume of arrivals in each of the five markets and district, state and all-India wheat production) showed an increasing trend during 1955-56 and 1965-66.

Table 4.4 shows the percent rates of increase in these variables during the period studied.

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Footnote continued from previous page

2. Punjab and receives substantial quantities of arrivals from other markets.
3. This assumption seems valid in view of the relationship between arrivals and production.
4. Trend lines fitted to each of the following variables, namely, annual arrivals, May-June price, January-March price, district level production, Punjab state production and All-India production showed good fits and highly significant 'b' coefficients.
5. 1956 November price of wheat was correlated with 1955-56 wheat crop at district, state and All-India level.

TABLE 4.4: RATES OF INCREASE IN PRODUCTION,  
ARRIVALS AND PRICES OF WHEAT  
1954-55 - 1964-65

ARRIVALS	PRODUCTION	PRICES
Khanna 21.2%	Ludhiana district 16.1%	May-June price
Jagraon 61.0%		9.0% in primary
Moga 9.4%	Ferozpur district 6.1%	market.
Barnala 19.0%	Sangrur district 14.6%	January-March price
Kotkapura 16.4%	Bhatinda district 18.7%	8.2% in primary
		market
	Punjab state 13.3%	
	All-India 7.1%	

Except in the case of Jagraon, arrivals in all the four markets show a rate of increase more or less commensurate with the rates of increase in the district level production. Khanna, Moga and Barnala show an increase which is slightly greater than the rates of increase in the district level production. This could have been due to a slightly elastic response of marketings to changes in production. However, it may also have been due to a gradual shift in the cultivator's marketings from village markets to primary markets and/or due to an increased flow of shipments from smaller primary markets to these major exporting centers. Allowing for these factors, one could say that the increase in arrivals has been more or less proportionate to the increase in production. It is not known why Jagraon shows such an enormously high rate of increase in arrivals.

Despite an increasing trend in wheat production and consequent increase in arrivals, both the average May-June price as well as the off-seasonal peak price between January-March showed an increasing trend. (Table 4.4) May-June price increased at 9 percent per year whereas the January-March peak price increased at 8.2 percent per year. Since the rate of increase in the off-seasonal peak price was more or less the same as in the harvest (i.e. May-June) price the percentage rise in price from May-June to January-March did not show a statistically significant increasing or decreasing trend. It should be recalled that although the extent of seasonality did not increase or decrease over these eleven years there was considerable year to year variation in the percent rise in price from May-June to January-March. (See Table 4.4)

It has been shown that this variation in the percent rise until the off-season cannot be explained either by variation in arrivals or in production.

Seasonality of wheat prices thus does not seem to be determined singularly or even mainly by wheat production (and hence by wheat arrivals) but by various other factors. Among the important ones are 1) imports and distribution of wheat, 2) All-India production of the rest of the cereals (there is usually some substitution in consumption between wheat and rice and between wheat and other coarse cereals 3) zonal restrictions on movements 4) procurement 5) changes in money supply etc. <sup>1</sup>

#### Seasonality and Movement Restrictions

Table 4.4 shows June price, February price, percent rise in price from June to February and the periods of free movements and zonal arrangements during 1954-55 and 1964-65. Despite relatively short periods of free movements and zonal restrictions the table suggests that years of zonal restrictions were not accompanied by low seasonality. On the contrary off-seasonal price rises have been about the same in periods of zones as in the periods of free trade.

This contention is usually countered by the argument that zones were imposed as a result of poor crops and consequent price rises, and that it is, therefore, not adequate to examine the actual price rise during a period of zones but that it is necessary to analyse the price rise which would have occurred in absence of zonal restrictions. The only way to examine this is to consider, if possible, the price increase in a year of equivalent crop size when there were no zonal restrictions. In 1956-57 market year, for example, with an All-India wheat crop of 8.7 million tons and free trade between regions, price showed a rise of 23 percent in Jagraon, whereas in 1958-59 with a crop of 8 million tons and much more massive wheat distribution off-seasonal price over the harvest price rose by 62 percent.<sup>2</sup>

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- 1 For role of money supply and carry over stocks in the level of April price see Ashok Dhar Domestic Terms of Trade and Economic Development of India 1952-53 to 1964-65. Occasional paper No. 4, U.S.A.I.D. Prices Project, Cornell University, 1967.
  - 2 In 1956-57, 1.555 million tons of wheat was distributed as against 3.470 million tons in 1958-59, most of which was imported. The increase in wheat imports was more than enough to allow for increases in population and in income during the two years.

The price of sharbati wheat in Bombay showed a 44 percent increase in March, 1957 over the previous harvest price in 1956 as against 55 percent in 1958-59 when Punjab wheat was cut off.

On the contrary in 1963-64, when there was free movement of wheat, prices in Jagraon rose by as much as 63 percent as a result of a crop failure whereas in the following year, with zonal restrictions on exports from Punjab, prices increased by only 38 percent with even a smaller wheat crop. It is noteworthy, however, that sharbati wheat prices in Bombay increased by about 60 percent in 1963-64 whereas they increased by about 90 to 100 percent in 1964-65.

TABLE 4.5: OFF-SEASONAL RISE IN WHEAT PRICES, JAGRAON 1955-56 to 1966-67

YEAR	RS. PER QUINTAL		PERCENTAGE RISE IN PRICE FROM JUNE TO FEBRUARY	NATURE OF TRADE
	June Price	February Price		
1955-56	29.15	39.36	35	Free Trade
1956-57	37.05	45.56	23	
1957-58	37.50	39.48	5	Free Trade
1958-59	36.11	58.39	62	
1959-60	39.20	45.06	15	
1960-61	37.03	42.47	15	
1961-62	38.14	46.50	22	
1962-63	38.28	40.91	7	Free Trade
1963-64	39.06	63.75	63	
1964-65	42.31	58.44	38	
1965-66	52.31	56.31	8	Zones
1966-67	64.31	94.46*	47	

\* December price

It is, therefore, apparent that with similar wheat supply prices of domestic wheat in deficit regions showed a much greater off-seasonal price rise in periods of movement restrictions as compared to the periods of free trade. The evidence regarding effect of zonal restrictions on off-seasonal price increases in the surplus regions is at best conflicting. There is no clear evidence that restrictions on movements reduced the extent of off-seasonal price rise. The effects of zonal restrictions are probably coupled with other factors such as procurement, distribution, etc.

Apart from the influence of the actual zones the frequent introduction and withdrawal of zones and numerous changes in the existing zonal arrangements created a degree of uncertainty in the market which affected the purchase and sale operations of traders, and must have had an effect on the seasonal price pattern. Traders in their interviews invariably complained about the effect of sudden withdrawal of zonal arrangements on prices through the pressure of demand from deficit areas and the contrary depressing effect on prices of the unexpected imposition of zones.

The question of seasonality is thus lot more complex and appears to be a product of numerous factors other than just the production or the arrivals of wheat. The analysis in this chapter suggests 1) that there was neither a decreasing nor an increasing trend in seasonality 2) that despite considerable year to year variability in the seasonality the profits earned from storage operations were not large, 3) production at the district, state and all-India level showed a considerable rate of increase during the period 4) arrivals showed an increase proportionate to that in production 5) Despite the increase in production and arrivals harvest and post harvest wheat prices showed a considerable increase.

## APPENDIX (1)

QUANTITIES OF WHEAT PURCHASED AND SOLD ON OWN  
ACCOUNT BY 6 MAJOR TRADERS, MOGA, 1963-64 TO 1966-67

TRADER	YEAR	QUANTITY PURCHASED (QUINTALS)	QUANTITY SOLD (QUINTALS)
1	1963-64	32,383.9	32,383.7
	1964-65	3,822.8	3,737.8
	1965-66	2,047.2	2,036.7
	1966-67	N.A.	N.A.
2	1963-64	10,480.8	10,480.8
	1964-65	14,755.3	14,755.3
	1965-66	6,088.2	6,088.2
	1966-67	N.A.	N.A.
3	1963-64	N.A.	N.A.
	1964-65	1,607.0	1,607.0
	1965-66	2,828.4	2,838.2
	1966-67	1,314.8	1,318.0
4	1963-64	3,102.2	3,097.6
	1964-65	2,949.5	2,952.2
	1965-66	4,282.6	2,532.9
	1966-67	3,546.2	3,472.7
5	1963-64	23,399.9	23,310.5
	1964-65	5,954.8	6,015.9
	1965-66	2,974.2	2,969.9
	1966-67	37,244.1	37,148.7
6	1963-64	10,540.8	10,545.0
	1964-65	17,893.0	17,898.0
	1965-66	4,106.3	4,374.4
	1966-67	7,225.1	7,195.1

1 The data refer to April-March year

N. A. Not Available

Source: Records of Traders

## APPENDIX (2)

## A NOTE ON PROFIT LOSS AND STOCK DATA

In order to examine the hypothesis of high profit rates in foodgrain trade, profit loss statements of the traders and records of quantities purchased, retained and sold should provide guidelines as to the accuracy of the hypothesis.

The profit loss statement generally specifies the quantities and values of the commodities purchased and sold. The difference between the value of the sale and the value of the purchase after proper allowance is made for changes in stocks gives us the gross income or profit of the trader. A statement of the maintenance and other costs can be used to arrive at the net income of the trader during the specified period. The periodical record of quantities purchased and sold which we may term a stock statement can be used to crosscheck the validity of the profit loss figures as provided by the traders.

There is considerable amount of doubt about the truthfulness of the profit loss statements as submitted by traders to the income tax authorities. It is a general contention that both the quantities and the value are juggled in such a way as to show a small margin of profit. The stock statement, therefore, should tell us something about the actual quantities purchased and sold.

Until early 1959 it was not obligatory for a trader to submit any periodical returns of his stock position to the Government. The stock records were, therefore, maintained mainly for the trader's own records. As the income tax authorities did not go into the stock books of the traders, one would expect a fairly accurate picture of the stock position of a trader from the stock books for earlier years. Under the circumstances it should be possible to compare such stock statements with the profit loss statements to verify the reliability of the latter.

Unfortunately, the simple approach is beset with many difficulties. Even if one decides to accept the profit loss statements on their face value, it is often difficult to estimate the rate of profit on a specific commodity over a period of years. For many traders do not maintain separate commodity accounts but only an overall account of all the foodgrains purchased and sold within a year. It is well known that the trade of agricultural commodities in underdeveloped countries is greatly lacking in specialization so that one finds the same trader dealing in various commodities ranging from oilseeds and cotton to chillies and inferior

local grains. One of the explanations often given by the traders for this lack of specialization is the high risk element in the trade of agricultural commodities. It is said that profits on any single agricultural commodity vary significantly from one year to another, and that therefore, it is not possible to make a living by dealing in only one commodity.

Besides the type of skill and experience required for dealing in different commodities is more or less the same. So that for a trader who is dealing in a few agricultural commodities, it is easily possible to enter into other related trades. It is, therefore, often possible to study the overall rate of profit but not the individual profit rate for different commodities.

If one is lucky, one may acquire data from a number of traders on single commodity accounts. From these accounts, one can discern the gross profit on that commodity in a year. It is, however, very difficult to estimate the net profit since the costs have to be allocated in proportion to the volume of business of that commodity in relation to the total size of the business of the trader.

As the quantities of any specific grain transacted vary substantially from one year to another, it is impossible to estimate the share of that grain in the total business of the traders in a single year unless one studies records of total business operations and their components for various years. Traders are often very reluctant to make all their income statements available.

From the profit loss statements one can examine if and how the gross profit and the rate of profit on a commodity varies from one year to another. In order to examine the validity of the profit loss statements one would have to turn to the stock records. Comparison of these periodical records of quantities purchased and sold with the annual total should tell us something about the reliability of the profit loss statements.

One, however, encounters a number of difficulties at this stage. As the traders do not specialize in trading a single commodity they also do not specialize in performing a specific function in the long chain of marketing. Just as there is no horizontal specialization in trade, there is no vertical specialization either. The same trader may, and often does, operate as a commission agent between a wholesaler and a cultivator, as well as acting as a wholesaler, who purchases goods on his own account. The same trader is then sometimes found to be operating as a retailer and often as a commission agent for a trader in the terminal market. So there are at least two accounts that are lumped

together in a stock-book.

- (a) the quantities that he purchases on his own account,
- and
- (b) the quantities that he purchases on account of a principal in a consuming market.

It is very difficult to separate the two accounts unless one goes into each single transaction and examines the origin of the transaction.

Then there is the question of examining the validity of the value figures, i.e. the value of the quantities purchased and quantities sold. It is difficult to examine hundreds of thousands of individual transactions to determine the reliability of these figures. Not much can be discerned from the stock figures themselves. For the stocks are always revolving. One can only determine how much was purchased, how much was sold and what was the balance. It is impossible to know which particular lot was purchased and sold at what prices.

Despite all these difficulties one may not want to discount the worth of the stock figures altogether. For there are a number of unknowns about the trading pattern of agricultural commodities that could be answered in this type of enquiry.

One of the questions often encountered is "at what stage of marketing is stocking undertaken on a very significant scale?" Till very recently, it was the general contention (and was supported by the available data on arrivals) that the marketings were highly seasonal and that most of the stocking is done by the trader. One can study the seasonality of arrivals and of the stocks and say something about this. Another unknown, of course, is the extent to which stocks are held by the traders in the terminal markets (either locally or in the producing centres) as against those held by the traders in the primary markets. This question could remain unanswered in a rudimentary survey. These questions would be answered only through an exhaustive study of a few stock records. As is amply evident from the present study such information will not be available to a relative stranger given the cultural and the environmental prejudices of the traders in India. It could only be attempted by establishing good contacts with these traders.

PART II

MAHARASHTRA



## CHAPTER V

### INTRODUCTION TO MAHARASHTRA MARKETS

#### Sources of Data

The basic source material used in the study is comprised of weekly wholesale prices of jowar, monthly arrivals of jowar, production of jowar, storage costs, transportation costs, information about flows of arrivals and dispatches, information on the working of the markets and the disputes arising thereby and marketing practices of the traders.

The weekly wholesale prices of various varieties of jowar for the period 1955-56 to 1963-64 were collected from the records maintained by the regulated market committees. Similar data are being collected by the Maharashtra State Marketing Research Office and the Directorate of Economics and Statistics, Ministry of Food and Agriculture since 1959. Data obtained from the original source were nevertheless superior to those maintained by the official agencies for various reasons. First, the data on weekly wholesale prices available with the official agencies related to a very short period of time. The quality of the data maintained by the official agencies was not as good as the data available from the records of the market committees. Often varieties to which prices relate are not specified in the reports submitted to the data collecting agencies. In the case of some markets, prices were found to be reported for different varieties at different times, which rendered them incomparable over time. Price quotations for some weeks were found to be missing as the reports were not received. It is difficult to obtain price data for comparable varieties for a number of markets from the official agencies. Weekly prices were, therefore, collected from the committees of the regulated markets. Sometimes the data obtained from the original source were found to be in disagreement with those maintained by the official agencies. Discussions with the officials in the Marketing Research Office revealed that the data obtained from the original source were likely to be more reliable as reporting and clerical errors tended to be minimized.

Data on monthly arrivals were also collected from the regulated market committees for similar reasons. An additional factor which prompted collecting data from the original source was the revision in the estimates of arrivals. The records maintained by the market committees on market arrivals are revised on the basis of the late reports submitted by traders of their purchases. Such revised estimates are often not forwarded to the official agencies

and thus result in discrepancies in the official data series. Reporting and clerical errors were found to be much more serious in the case of data on arrivals as compared to those on prices. Data on yields per acre and acreage were collected from the Maharashtra State Department of Agriculture. Data on storage costs were obtained by interviewing traders as no data are collected on storage costs by official agencies. Numerous traders were interviewed in a number of markets to discuss with them storage costs, and the factors on which storage decisions depend.

Data on transportation and handling costs were obtained in a similar manner by interviewing traders. Such interviews not only provided the statistical information but also provided an opportunity to discuss with traders a variety of aspects of marketing such as the arbitrage operations, difficulties in obtaining transport as a source of price disparities, the attitude of traders towards the present price policy, uncertainty as a source of instability, etc. General information was obtained through informal discussions with traders and market officials on the working of the regulated markets, the trading practices of the merchants, and their role in creating monopoly power of the trading class.

For prices of comparable varieties of jowar in Bombay market data were collected from the Grain, Rice and Oilseeds Merchants Association in Bombay. Similar data had previously been collected from the marketing research office of the Maharashtra State Government for an earlier investigation. However, since the data of the Merchants' Association is maintained by the traders themselves as a daily record of prices there was reason to believe that these price records would be superior to those maintained by an official agency.

#### Choice of Area and Product

Maharashtra is the largest jowar producing state in India. It occupies a third of the total jowar acreage in India and contributes a little over a third to the all India jowar production. (Table 5.1) Jowar is a major crop of the State. Poor soil, low rainfall and meagre irrigation in the state are mostly conducive only to the production of millets. Over half of the area under cultivation is under millets and pulses. Jowar constitutes two-thirds of this acreage. A relatively high proportion of the area is under commercial crops, mostly under cotton and oilseeds for which the Deccan soils are well suited. But neither of them yield high returns. Agricultural incomes are low and millets constitute the main food of a large section of the population living in rural and semi-urban areas.

Excepting occasional movement restrictions there was no control on jowar trade in Maharashtra in the period of this study. (i.e. between 1955-56 and 1963-64). It was in November, 1964, when jowar prices reached an all time high that free trade in jowar was completely abolished and replaced with monopoly procurement. The period of this study was thus relatively free of any governmental restrictions. This makes it possible to study efficiency in the traditional trade channels.

### Location of Markets

The six regulated primary markets selected for this study are located in a major jowar region of the state.<sup>1</sup> Sailu and Parbhani are in Parbhani district, Parali - Vaijanath in Bhir, Latur in Osmanabad, Jalna in Aurangabad and Nanded in Nanded district. The five districts are located in Central Maharashtra and have been traditionally known as the Marathwada region. The region occupies a little less than a third of the state acreage under jowar and produces a little over a third of the total jowar production in the state.<sup>2</sup> (Table 5.1. Also see Figure 3 p. 29 above for location of markets.

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- 1) All the six markets have been regulated under the Hyderabad Agricultural Produce Market Act No. 2 of 1930. Marathwada Region was part of the princely state of Hyderabad before the reorganization of states in 1956. Subsequent to the reorganization when Marathwada was brought in the state of Maharashtra the markets have been regulated under the Maharashtra Agricultural Produce Marketing and Regulation Act, 1963. These markets are few of the earliest regulated markets in India. Parli was regulated in 1940. Parabhani in 1942 and Latur was regulated as early as 1931.
  - 2) Both in area and production of jowar the districts rank next only to Sholapur and Ahmadnagar districts of Western Maharashtra. Jowar markets in both these districts were studied earlier. See Uma Lele, Ph. D. Thesis, op. cit.

TABLE 5.1. PRODUCTION OF JOWAR, MARATHWADA,  
MAHARASHTRA STATE AND ALL-INDIA,  
1954-55 to 1964-65

(million tons)

YEAR	MARATHWADA	MAHARASHTRA STATE	ALL-INDIA
1954-55	0.81	3.09	9.056
1955-56	0.58	2.30	6.62
1956-57	0.87	3.02	7.21
1957-58	0.86	3.00	8.45
1958-59	1.05	3.20	8.89
1959-60	0.83	2.84	8.00
1960-61	1.40	4.15	9.21
1961-62	1.02	2.92	7.90
1962-63	1.00	3.29	9.47*
1963-64	1.00	3.15	9.99*
1964-65	0.91	3.25	9.66+

\* Partially Revised Estimates

+ Final Estimates

Source: 1. Department of Agriculture, Government of Maharashtra.

2. Bulletin on Food Statistics, 1963 and 1966,  
Ministry of Food and Agriculture, Government of  
India.

The Marathwada region lies to the east of the scarcity tract, traditionally known as the Western Maharashtra. Rainfall increases as we move from Western Maharashtra to Marathwada and becomes more dependable. The average annual rainfall in this region varies between 30" to 45". Throughout this tract there has been very little irrigation development. The proportion of irrigated area was only three percent in Marathwada in 1956-57. Less than five percent of the jowar acreage is irrigated in this region.

Around a third of the total cropped acreage in this region is under jowar.<sup>1</sup> Cotton and groundnut follow jowar in acreage. Nanded has the highest proportion of land under commercial crops (over 50 percent). The other food crops grown in the region are wheat, bajra, gram and Tur.

1 It varies from one district to another. Aurangabad has 27 percent of the cropped area under jowar, Bhir has 33 percent and Nanded, Osmanabad and Parabhani have 37 of the area under jowar.

The seasonal price pattern in a year is influenced to a considerable extent by the number of crops grown in an area. Unlike Sholapur and other districts in Western Maharashtra which are only rabi districts, the Marathwada districts produce jowar both in rabi and kharif seasons. The seasonwise production of jowar in the five Marathwada districts is shown in Table 5.2. Nanded is a predominantly kharif district and Bhir is a predominantly rabi district. The other three districts produce jowar in both the seasons in substantial amounts.

Rabi jowar is sown in October and harvested in February - March. Three major types of kharif jowar are raised in this region. The long maturing kharif jowar is known as Varadi. It is sown in July and harvested in November. The inferior early maturing kinds are known as yellow jowar and malli jowar. They are also sown in July but harvested earlier, in October. Malli jowar is more prevalent in the hinterlands of Latur market. Its arrivals are quite insignificant in the other five markets.

Rabi arrivals are generally heavy between the end of February and beginning of May. Arrivals of yellow jowar begin in October and are usually heavy in November. Arrivals of late maturing Varadi jowar begin in November and continue to be heavy in December and January. (See pp. 101-102 for varietywise arrivals of jowar in the markets). Prices, usually, reach an off-seasonal peak in October - November and begin to decline with the coming of the kharif harvest, continue to decline until March and reach a seasonal low around March - April when the rabi arrivals are the heaviest.

### Transport Facilities

Maharashtra State is poorly served by transport facilities compared to the rest of India. The length of railway lines and roads relative to area, population and industrial output in the State is lower than the all-India average.<sup>1</sup> The State is further ridden by multiplicity

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1 Maharashtra has 2.25 miles of railways per 100 sq. miles as against 2.98 miles in India as a whole. For 9 percent of population in the country and 22.23 percent share in industrial output, the state has 7.6 percent of India's railway mileage. In 1958 the State had 0.17 mile of road per square mile of area as compared with 0.26 miles for all India. See The Techno-economic Survey of Maharashtra, 1963, NCAER, pp. 130-145. This is partly because of the low density of population relative to the geographical area and the high concentration of the industrial output of the state in the two areas of Bombay and Poona, both

of gauges. This necessitates transshipments at break of gauge points causing serious handling problems and delays in shipments.

The effectiveness of transport facilities depends not only on the availability of railway lines and roads but on the number of vehicles. Even here Maharashtra lags behind the rest of India. The State has 15.7 vehicles per 100 sq. miles as against 32 vehicles in India as a whole. On the population basis, Maharashtra has 47.3 vehicles per 100,000 inhabitants compared to the all-India average of 100 vehicles.<sup>2</sup>

Unlike Western Maharashtra or Nagpur, Marathwada is not served by any major highways. The rail route connecting Manmad and Sikandarabad is the main line of communication with other regions. Though the external transport facilities are reasonably good, the region seriously lacks facilities for internal communication.<sup>3</sup> (Figure 3, p. 29.)

Nanded, Sailu, Parbhani and Jalna lie on the Manmad-Sikandarabad line of the central railway. All the four markets are thus connected to major terminal markets in central and south India. Grain is sent via Manmad to Bombay, via Dound to Poona and via Kurduwadito Kolhapur in western Maharashtra. At each of these junctions grain is transhipped on to a broad gauge line. The line running to Sikandarabad connects these markets to Hyderabad in Andhra Pradesh and further south to Madras. Until recently there was no rail line connecting these markets directly with Madhya Pradesh and Vidharbha. It was only in 1964 that a new line was constructed between Hingoli and Khandwa.

Recently, surface roads have been constructed connecting the four markets with each other which join them to the main roads going towards Poona and Bombay in the west and to Hyderabad, Sikandarabad etc. in the South. During the period of this study (1955-56 to 1963-64) Parbhani was not connected with any of the six primary markets by a direct all weather road. All the roads were of poor quality and without any overbridges. There were,

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Footnote continued from previous page

of which factors underrate the railway mileage relative to the two magnitudes. However, the fact still remains that transport facilities are poorly developed excepting Poona division and the Northern half of the Bombay division, the heart of the industrial activity of the state.

2. Ibid.

3. There are 7.1 miles of road per sq. mile in Marathwada as compared to the State average of 17.6 Ibid.

therefore, mostly closed in Monsoons. Even a distance of 50 miles between Sailu and Parbhani was not covered by a direct road. There was a road via Jintur which increased the distance between Sailu and Parbhani to 120 miles. The same was true of Jalna. All weather roads have been constructed between Parbhani and Nanded in the last two years. The map shows the roundaboutness of the rail and road connections between these markets and the rest of the state. Jalna was the only market where truck traffic played an important role during the period of this study

The fifth market Parli, is a junction of a meter gauge and a broad gauge line. The meter gauge line runs up to Parbhani. The broad gauge line runs down via Latur road to Hyderabad. The meter gauge line connecting Parli with Parbhani makes Parli accessible to all the centers to which Parbhani is connected by rail and road (see Fig. 3). Parli is connected to Latur and Nanded by a motorable road. It is, however, not connected to any other center by a good road. The small roads joining Parli are closed in Monsoons. The metergauge railway, therefore, is the main means of communication with the rest of Maharashtra.

The sixth market, Latur, is the major market center of Osmanabad district. It has been a major assembly center of jowar, cotton, groundnut, gur and pulses. It is the last station on Latur-Kurduwadi-Niraj narrow gauge railway line (Fig. 3) It is thus connected to Sholapur district and to the rest of the western Maharashtra. A considerable amount of Kharif jowar is exported from Latur to the assembling centers in Sholapur to take advantage of the high prices in those markets. A broad gauge line going to Hyderabad is 20 miles from Latur. Produce to be shipped to Andhra Pradesh has to be transferred by trucks to this broad gauge line.

Chart 5.1 shows distances between various primary and terminal markets.

CHART 5.1 APPROXIMATE DISTANCES BETWEEN VARIOUS PRIMARY AND TERMINAL MARKETS, (RAILWAY MILES)  
MAHARASHTRA

Bombay								
120	Poona							
370	150	Kolhapur						
280	160	200	Latur					
615	665	200*	63	Parli				
351	601	- *	170	64	Parbhani			
610	659	300*	95*	122	58	Nanded		
508	558	- *	314	107	43	101	Sailu	
437	486	300*	242	179	115	173	72	Jalna

\* No direct railway connections. Distances are in road miles.

Due to the poor road development in the area railway wagons were a major means of shipment for the traders in these markets. However, all the traders interviewed showed distinct preference for trucks for short distance hauls and indicated that wherever good roads are available use of trucks has been on the increase. The popularity of trucks is mainly due to quickness of the transport. Jowar sent to Bombay by trucks reaches the destination the next day whereas wagons take 4 or 5 days from the day of availability. There are times when wagons are not available for weeks.

### Flows of Supplies

During the period of free trade jowar was shipped from the primary markets to a number of consuming centers in Maharashtra. All the six markets under study sent jowar to Poona, Bombay, Kolhapur, Sangli etc. in Maharashtra and to various centers in Andhra Pradesh. Latur and Nanded sent considerable quantities to assembling centers in Sholapur district. Jalna sent substantial amounts to Gujarat. Jowar was also occasionally sent to Punjab, U. P. and Mysore from these markets.

### Varieties of Jowar<sup>1</sup>

As in the case of wheat and rice, numerous varieties of jowar are grown in India. More than a hundred varieties of jowar are known to be grown in India. Only a few of them enter trade on a large scale. Prices of jowar vary from one variety to another. Prices of two lots of the same variety may also vary according to the grade of the lot. The grade usually depends on various factors such as proportion of admixture of other varieties, foreign matter, and infested immature or rain affected grain in a lot, lustre, uniformity of grain etc.

Few popular varieties of jowar produced in Marathwada are Talki, Rabi white, Varadi, yellow and Malli. Talki is a rabi variety of cream colour and bold grain. It fetches premium over rabi white jowar. Varadi is white in colour. It fetches somewhat lower price than Talki. Yellow and Malli varieties of jowar are known as poor man's diet and fetch the least price of all. Even the best varieties grown in Marathwada usually fetch a little lower price than the two well known varieties of Western Maharashtra, Maldandi and Dagadi. In consuming markets like Bombay and Kolkapur broader classifications are used, so that various varieties produced in Sholapur are known as Sholapur varieties in Bombay. The trade name "Shalu" in Kolkapur includes a number of rabi varieties from Sholapur, Marathwada, Madhya

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1 The discussion is confined to the varieties grown in Maharashtra State.

Pradesh, Andhra Pradesh and Mysore. Prices of individual shipments would generally depend upon the colour and lustre of the grain (white or yellowish), boldness and various other factors.

Prices have been collected for rabi jowar and kharif jowar for Sailu and Jalna, for rabi, kharif and yellow jowar for Parbhani, Parli and Nanded and for rabi, kharif, yellow and malli jowar for Latur. Except for Parbhani for which price quotations are available for Talki variety of rabi jowar, it is not known what variety the rabi prices refer to. All Kharif prices refer to Varadi variety. Prices for Bombay market were collected for rabi white jowar and Sholapur jowar.

#### Channels of Jowar Marketing

Although a substantial proportion of the jowar production is retained for payments in kind, seed and domestic consumption and thus never leaves the farm, there is still a large part of the produce which is marketed. <sup>1</sup> The producer either takes his produce directly to the wholesale market or sells it to one of the several intermediaries who then brings it to the wholesale market. (Chart 5.2 below). Large landholders often collect the produce from their own and neighbouring villages and sell it in the wholesale market. There are also village merchants and itinerant dealers, brokers and commission agents who bring the produce to the markets. The intermediaries either approach the cultivators directly or visit the weekly markets held in the villages and purchase the surplus. <sup>2</sup> Co-operative societies also play

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1 There is no reliable estimate of the actual proportion of jowar production which enters the market channels. There are inter market flows about which very little information is available. Nor is it possible to relate the arrivals in a particular market with the production in a particular area. For it is difficult to delineate the area from which a market receives its arrivals. Cultivators residing between two primary markets may go to either one depending on the price, road connections etc. The area from which the market receives supplies, therefore, may change from time to time, and makes the problem of determining the market area even more difficult. Most of the estimates made by various agencies and research workers are educated guesses and range between a third and a half of the total jowar production.

2 See section on Jowar Traders in Maharashtra for the description of the financing operations.

TABLE 5.2: SEASONWISE PRODUCTION OF JOWAR, MARATHWADA,  
1954-55 to 1964-65

('00 M. Tonnes)

	AURANGABAD			PARBHANI			BHIR			NANDED			OSMANABAD		
	Kha rif	Rabi	Tot.	Kha- rif	Rabi	Total									
1954-55	NA	NA	1292	NA	NA	1582	NA	NA	1383	NA	NA	1741	NA	NA	2130
1955-56	NA	NA	1130	NA	NA	1284	NA	NA	914	NA	NA	974	NA	NA	1448
1956-57	385	1032	1417	1143	1011	2154	322	982	1304	1767	195	1962	1101	767	1868
1957-58	358	1277	1635	971	1133	2104	384	1595	1979	1030	270	1300	698	926	1624
1958-59	406	1867	2273	731	1404	2135	411	1339	1750	1240	448	1688	890	1744	2634
1959-60	441	1126	1567	639	1040	1679	455	1237	1692	617	332	949	1443	964	2407
1960-61	898	1199	2097	1475	1743	3218	693	2016	2709	1977	642	2619	1687	1736	3423
1961-62	618	1673	2291	601	963	1564	448	1436	1884	1000	395	1395	1335	1696	3031
1962-63	436	2243	2679	742	1183	1925	230	1172	1402	1278	279	1557	1085	1369	2454
1963-64	637	1598	2235	786	1158	1944	230	1388	1618	1508	319	1827	975	1382	2357
1964-65	705	1508	2213	758	893	1651	337	773	1110	1344	353	1697	1249	1182	2431
Average Product- ion	542	1502	2045	872	1170	2041	390	1326	1716	1306	359	1666	1162	1307	2469
Average Percent	26.5	735	100.0	43.0	57.0	100.0	23.0	77.0	100.0	78.0	22.0	100.0	47.1	53.0	100.0

Source: Department of Agriculture, Government of Maharashtra NA - Not Available

a role in marketing the produce although to a very limited extent. It is difficult to estimate the share of various functionaries relative to that of the cultivator in the marketing of jowar. No available statistics on market arrivals are amenable to this kind of analysis.

### Village Markets

There are a large number of small village markets that assemble once or twice a week. Each village or a cluster of small villages has one market. Most of the transactions in these markets take place in small lots where producers sell their surpluses and purchase supplies for their daily requirements. Small retailers purchase jowar in these markets and then sell it to the rural consumers later in the season. The rest of the jowar is purchased by various intermediaries and finds its way into the wholesale market. The days on which these markets meet are fixed so that itinerant traders can visit the area.

The village markets are very poorly equipped. Most of the markets are uncovered and without storage, stallage or drainage facilities. The quality of the roads joining most of these markets to the towns and wholesale markets is so poor that often only a bullock cart can travel on these roads and then only with considerable difficulty. Some markets totally lack roads. Hardly any of these markets have telephones, telegraphic or even postal facilities. Producers in the vicinity of 5 to 10 miles gather to sell their surpluses in these markets. It is only those who live near wholesale markets or those who have relatively large surpluses that go to the larger wholesale markets.

### Primary Wholesale Markets

The wholesale markets are held in a fixed place where large volumes of business are transacted daily. Arrivals emanate mostly from the cultivators and the village markets discussed above. Some markets also serve as assembly points for distant producing centers. Most of these wholesale markets are located in district or taluka headquarters or important business centers. The primary markets are much better equipped than the village markets. These markets are usually connected with major consuming and terminal markets by rail and road and are equipped with such other facilities as post and telegraph offices and frequently by telephones.

Wholesale traders and commission agents interviewed in all the wholesale markets claimed that there has been an increasing shift in the market arrivals from the village markets to the wholesale markets as a result of increased market consciousness of the cultivator. It is, however,

difficult to make any quantitative estimate of such a shift in the marketing pattern. <sup>1</sup>

### Market Intelligence

As elsewhere in India, information on changing market conditions is obtained by traders mostly through personal contacts with their counterparts in other markets. This is usually done by writing numerous postcards to the traders in various markets, through telephone conversations and telegrams. Traders in the primary markets usually obtain information about crop outlook in their region from the visiting cultivators residing in the hinterlands.

Newspapers constitute the major source of information for obtaining an overall view of the crop conditions in the various parts of the country and for acquiring a feel for the constantly changing government policies towards trade. Almost all the traders emphasized the importance of newspapers in providing such information. Very few traders attached much importance to the radio as a channel of market intelligence.

Orders for shipments are placed by postcards, telegraphs and telephones.

### Seasonality of Market Arrivals

A major portion of the rabi crop is marketed between March-June period. (Table 5.3). The average proportion marketed in this period is lower in Latur and Nanded compared to the rest of the markets. The major portion of the kharif, yellow and malli crop is marketed between November-February. It will be noticed that the kharif marketings are also less pronounced in Nanded and Latur compared to the rest of the markets.

The relatively low seasonality of rabi and kharif jowar marketings in Nanded may be due to the fact that compared to other districts a very large proportion of the area under cultivation is allotted to cash crops in this region.<sup>2</sup> The cultivators, therefore, may have somewhat greater holding capacity than those in the surrounding districts.

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1 See sections on market arrivals and on traders for further discussion on this point.

2 In 1956-57 55 percent of the total area cropped was under cotton and groundnut in Nanded district as compared to 22 percent in Aurangabad, 19 percent in Bhir and Osmanabad and 27 percent in Parabhani.

The phenomenon in Latur, however, is mainly due to substantial diversion of jowar to the nearby markets in the adjoining Sholapur district. Osmanabad district has been sending considerable amount of jowar to Sholapur. The prices in these markets are usually attractive. The district is connected to Sholapur by rail and road. Consuming centers like Kolkapur, Bombay and Poona purchase quite a lot of jowar from Sholapur due to good rail and road connections. In fact, exports from Osmanabad to Sholapur are so great that although Sholapur is only a rabi district Barsi market in Sholapur attains a second peak of arrivals in November-December due to the flow of kharif jowar from Osmanabad.<sup>1</sup> The existence of such flows is a good indication of the intelligence available to traders regarding intermarket price differences and of their willingness to exploit it through movement of goods.

TABLE 5.3: AVERAGE PROPORTION OF JOWAR ARRIVALS IN A MARKET YEAR, MAHARASHTRA, 1955-56 to 1963-64

(Percent of total arrivals)

CROP	PERIOD	PARBHANI	JALNA	NANDED	SAILU	PARLI	LATUR
Rabi	March-June	68.0	64.0	57.7	67.5	59.5	50.0
	July-October	17.5	16.0	26.3	14.5	18.8	30.7
	Nov.-February	14.5	20.0	16.0	18.0	21.7	19.3
Total		100.0	100.0	100.0	100.0	100.0	100.0
Kharif	March-June	19.0	9.5	33.4	15.0	11.1	22.5
	July-October	7.1	10.7	18.3	7.0	14.6	14.2
	Nov.-February	73.4	79.8	48.3	78.0	75.3	63.2
Total		100.0	100.0	100.0	100.0	100.0	100.0
Yellow	March-June	1.3	-	22.6	65.0	11.0	19.7
	July-October	2.8	-	10.2	0.0	9.0	11.2
	Nov.-February	95.9	-	67.2	35.0	80.0	69.0
Total		100.0	100.0	100.0	100.0	100.0	100.0
Malli	March-June	-	-	-	-	-	26.0
	July-October	-	-	-	-	-	14.0
	Nov.-February	-	-	-	-	-	60.0
Total		-	-	-	-	-	100.0

Source: Calculated from the arrival data collected from The Agricultural Produce Market Committees.

1. The rabi and kharif arrivals show greater seasonality in the Marathwada markets as compared to those in Sholapur. However, this is because the arrival figures are reported by the crops in these markets whereas rabi kharif and yellow arrivals are all lumped together in Sholapur district. See Uma J. Lele., Ph. D. Thesis, op. cit.

Yellow and Malli jowar is harvested in October. Arrivals are heavy between November-February. All the markets show pronounced seasonality in the arrivals of yellow and malli jowar (Table 5.3) <sup>1</sup>

Tables 5.4 to 5.7 show the annual arrivals of rabi, kharif, yellow and malli jowar in the six markets of Marathwada. Jalna and Sailu are undisputedly the two largest rabi markets in the area. Nanded receives the highest amount of kharif jowar followed by Sailu, Latur and Jalna. Nanded, Parli and Latur also receive significant amounts of yellow jowar. Its arrivals in the other three markets are insignificant. Only Latur receives malli Jowar.

In all the six markets arrivals show a tremendous year to year variability in the volume. The highest volume of arrivals during a year is as much as 6 times higher than the lowest volume of arrivals in the same market (Sailu rabi). Although the variability is less pronounced in other markets there still are considerable fluctuations in arrivals from year to year. Fluctuations in arrivals are more than proportionate to the fluctuations in production. There is, however, no statistically significant relationship between the movement of arrivals and of production. i. e. increases and declines in production in a district are not always followed by a corresponding movement in arrivals. It is likely that the coverage of arrivals recorded varies considerably from year to year so that in the years of a poor crop and poor arrivals most of what comes to the market gets reported whereas in the years of heavy arrivals only a proportion gets recorded.

Despite fluctuations market arrival data show some upward trend between 1955-56 and 1963-64. <sup>2</sup> This can,

1 It is only the Sailu market which shows high proportion of yellow jowar arrivals in March-June period. Very little quantities of yellow jowar are reported in Sailu market, and in some years arrivals are reported only between March-June period. This results in excessive weightage to those months and thus distorts the seasonal pattern. It cannot be said if this seasonal pattern is because arrivals are not reported very carefully or if it is because they really show such an unusual pattern. It is likely that data have not been recorded with great care as the quantities are so insignificant.

2 A trend line fitted to the arrival data, however, does not show a good fit or a significant 'b' coefficient except in case of Jalna and Latur.

TABLE 5.4: VOLUME OF RABI JOWAR ARRIVALS  
IN PRIMARY MARKETS, MAHARASHTRA  
1955-56 to 1963-64 1  
(Quintals)

YEAR	NANDED	PARBHANI	PARLI	JALNA	LATUR	SAILU
1955-56	8,380	19,579	19,371	50,952	27,043	24,776
1956-57	5,452	7,065	6,394	40,325	7,484	17,270
1957-58	8,093	61,984	28,179	85,881	6,181	72,531
1958-59	5,560	41,850	52,030	195,490	46,350	105,251
1959-60	4,790	60,120	45,420	235,270	28,550	303,421
1960-61	7,090	38,642	34,787	172,299	30,206	156,018
1961-62	11,858	64,627	38,543	186,300	59,014	189,975
1962-63	7,320	36,479	26,437	165,975	36,364	61,888
1963-64	6,980	42,321	43,933	168,520	21,039	103,057

1 March - February year

Source: Agricultural Produce Market Committees

TABLE 5.5: VOLUME OF KHARIF JOWAR ARRIVALS  
IN PRIMARY MARKETS, MAHARASHTRA  
1955-56 to 1963-64 1  
(Quintals)

YEAR	NANDED	PARBHANI	PARLI	JALNA	LATUR	SAILU
1955-56	9,002	1,982	226	4,755	1,704	509
1956-57	26,328	7,834	1,892	11,976	4,273	5,848
1957-58	29,090	5,276	1,732	9,500	11,896	2,937
1958-59	22,830	9,579	4,469	11,190	25,480	26,689
1959-60	16,490	3,255	2,223	42,960	24,210	18,958
1960-61	67,556	2,911	1,947	9,885	38,263	18,447
1961-62	86,242	4,341	2,026	10,564	37,242	38,509
1962-63	9,042	3,290	3,278	6,185	18,909	4,493
1963-64	8,384	945	2,189	3,589	14,626	315

1 March-February year

Source: Agricultural Produce Market Committees

TABLE 5.6: VOLUME OF YELLOW JOWAR ARRIVALS  
IN PRIMARY MARKETS, MAHARASHTRA  
1955-56 to 1963-64<sup>1</sup>

(Quintals)

YEAR	NANDED	PARBHANI	PARLI	JALNA	LATUR	SAILU
1955-56	656	000	639	-	854	7
1956-57	21,689	383	4,479	-	2,371	0
1957-58	3,225	90	4,262	-	7,784	119
1958-59	5,742	121	10,880	-	19,260	23
1959-60	3,981	204	10,598	-	31,120	114
1960-61	14,272	577	11,843	-	58,701	76
1961-62	11,943	10	12,572	-	66,552	113
1962-63	5,137	238	12,545	-	37,176	85
1963-64	954	30	11,188	-	21,495	140

<sup>1</sup> March-February year

Source: Agricultural Produce Market Committees

TABLE 5.7: VOLUME OF HALLI JOWAR ARRIVALS  
PRIMARY MARKETS, MAHARASHTRA  
1955-56 to 1963-64<sup>1</sup>

(Quintals)

YEAR	NANDED	PARBHANI	PARLI	JALNA	LATUR	SAILU
1955-56	-	-	-	-	63	-
1956-57	-	-	-	-	2,595	-
1957-58	-	-	-	-	5,100	-
1958-59	-	-	-	-	7,030	-
1959-60	-	-	-	-	12,500	-
1960-61	-	-	-	-	21,699	-
1961-62	-	-	-	-	20,847	-
1962-63	-	-	-	-	9,926	-
1963-64	-	-	-	-	2,057	-

<sup>1</sup> March-February year

Source: Agricultural Produce Market Committees

however, be interpreted in various ways. The upward trend may be due to 1) an increase in the marketings by the cultivators 2) It may even be due to a shift in the marketings from the village markets to the primary markets as was suggested by the traders in these markets. In that case this does not form a real increase in the quantities marketed but only a change in the marketing pattern. 3) The apparent upward trend may also be due to a better coverage of the market arrival data by the market committees.

The available data on market arrivals do not lend themselves to explain which of these factors singly or in combination are responsible for such a trend.

#### Profit Loss Statements for Maharashtra

Obtaining information on profit loss statements was much more difficult in Maharashtra than in Punjab. Daily stock records for a three year period could be obtained from only two traders - one in Sholapur and one in Kolhapur where the author had previous contacts with the traders. Monthly stock records were produced by one trader in Pandharpur - also due to earlier contacts. A few traders showed their profit and loss statements which included annual volumes of sales and purchases. They, however, flatly refused to show their daily, weekly or monthly stock-books for those years.

The observations made in the following paragraphs are, therefore, based on very fragmentary data. The available records indicate the following.

1. The daily or monthly stock books show purchase and sale figures that are much higher than those in the annual profit loss statements. This corroborates with the information of the traders that they purchase very little on their own account and that most of the purchases are made in the names of their principals in the terminal markets. The purchases made in the name of principals earn the traders fixed commission to the extent of 1% to 2% value of the purchases. It is difficult to guess if the purchases on own account are as small as are indicated in the profit and loss statements.
2. The weekly stock figures available for the trader in Sholapur, who is the largest jowar trader in the market, do not show any marked seasonality in purchases contrary to what one usually expects in a primary market. The purchases between March and June, the marketing season for the rabi crop, are not particularly higher than in the rest of the year. Considering that the market arrivals do show seasonality in this region it is difficult to understand

why the purchases are not heavy at this time of the year. It is particularly intriguing as the stock figures relate to the largest and the most skillful trader in the market. The stocks suggest that purchases are usually high in January and February, often higher than the purchases between March and May. January, February is the marketing season for kharif jowar which comes to the markets in Sholapur district from the neighbouring kharif districts. However, the total market arrivals of kharif jowar are much smaller than those of rabi jowar. It is, therefore, difficult to explain why his purchases are heavier in January-February than in March-May period when the prices are usually lower. All these considerations make one question the reliability of the stock figures.

3. The profit loss statements in Maharashtra indicate the same degree of variability in the profits from one year to another, as is noticed in Punjab. Sometimes the gross profits are as much as 30 times higher than those in the previous or the following year. This is both due to variation in the rate of profit and in the volume handled.

4. As in Punjab, neither profits nor quantities purchased by various traders show any consistency in their movement over a period of time, i.e. stocks and gross profits of all the traders do not seem to increase or decrease simultaneously. In any year stocks of some traders show an increase over the previous year whereas those of others show a decline. Although the stock figures probably are not indicative of the absolute volumes they probably are a good indication of the year to year and trader to trader variation in the margin of profit. The interpretation of changing market conditions is, in all probability, a highly subjective matter so that various traders interpret the same situation in a different manner and stock varying amounts of grain in a year.

5. That stocks are usually not carried on from one year to another in markets appears to be valid in Maharashtra as it was in Punjab. The total purchases and the total sales in a year do not show as good a balance in Maharashtra as they do in Punjab. However, this is mainly because Punjab raises a single crop of wheat and therefore the market year corresponds with the harvest of the new crop. However, two crops of jowar are raised in Maharashtra, so that bulk purchases are made twice a year in March-May and October-December. There is usually some carry over of stocks from the Kharif to rabi and vice versa. The October to September year (based on the Indian Calendar) thus does not

correspond with a single market year.<sup>1</sup>

6. Rate of Profit: From the available data it is impossible to estimate the rate of return to the investment in agricultural trade. It was impossible to obtain any information from the traders on the capital invested in the business. It is also difficult to estimate net profit of an individual trader unless one has information on gross profit on all commodity accounts and total costs which constitute variable and fixed costs of the business. Gross profit on jowar account and total overhead costs were available from the traders' accounts. This gross profit per bag was estimated by deducting the average purchase price of a bag from the average sale price of a bag. The average purchase and sale prices were calculated by dividing the total purchase and sale values by the total number of bags purchased and sold respectively. Neither variable nor fixed costs are subtracted from earnings. It is difficult to estimate the overhead costs that are due to jowar, as the share of every commodity traded by the trader varies substantially from one year to another.

#### Jowar Traders of Maharashtra

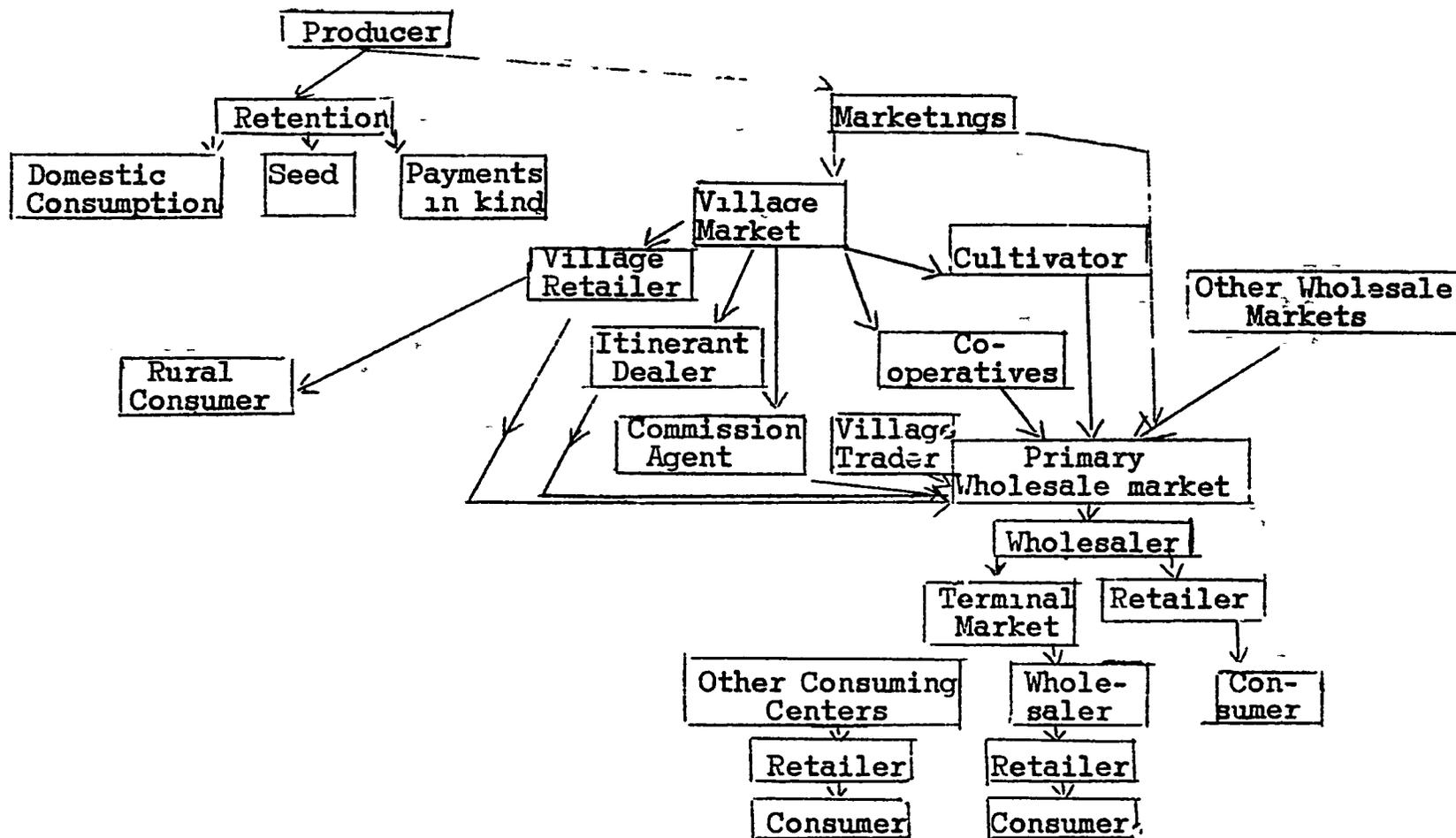
As in Punjab two types of wholesale traders operate in the regulated markets of Maharashtra. A kachha arhatya is a commission agent who operates as a middleman between a producer and a buyer.<sup>2</sup> A cultivator usually brings his produce to the shop of the arhatya who grades all the jowar that comes to his shop in various lots according to the size of the grain, moisture content, the foreign matter etc. In the regulated markets the sales are held in open auction. A number of buyers move from shop to shop to participate in bidding. The producer usually receives the payment for his produce on the day of the sale. Sometimes the commission agent would pay the cultivator a small advance on the produce and pay the balance later when he received the payment from the purchaser. In order to assure prompt payment to the cultivator some market committees in

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1 According to one Indian calendar a new year begins from Diwali, the Hindu festival of lights, which usually falls between the end of October and the middle of November according to the English calendar. It, therefore, does not always correspond with a particular day or even a particular week of October. Traders follow this calendar for their financial operations.

2 Kachha arhatya is often simply known as an 'adatyā' in Maharashtra.

CHART 5-2 CHANNELS OF JOWAR MARKETING



Maharashtra have made a provision in their by-laws which makes it obligatory for the purchaser or the commission agent to pay the cultivators living expenses in the market town in case of a delay in payment. It is not known to what extent this provision needs to be enforced and if it is actually enforced.

In addition to acting as a middleman a kachha arhatya performs various other functions for the cultivator. He would usually hold the produce in his warehouse for the cultivator if the latter does not find the going market price satisfactory. The kachha arhatya also lends money to the cultivator for his consumption and investment needs. It is not known what interest rate is charged on such loans. Often a commission agent would recover his loan through the sale proceeds and make a deduction for interest charges. Although there is considerable variation in the deduction depending on the quality and price of the grain the interest does not seem to amount to more than 12% a year. Money lending appears to have been considerably on the decline in the recent years. This is partly a result of the complete suspension of private trade in jowar since November 1964 which has severed the traditional relationship between the adatya and the cultivator. Money lending has been an integral part of the private marketing system. Recovery of loans was easier when the cultivator went to the commission agent for selling his produce. Besides, money-lending also took the form of nonprice competition to bind the cultivators for selling their produce through the same commission agent. Monopoly procurement has made this competition unnecessary. Even otherwise the commission agents claim that their advances to the cultivators have declined due to the increased 'intrusion' of the governmental and co-operative agencies on the money lending business. They indicated that even before the procurement scheme came into existence the loans were of much smaller magnitudes, usually ranging between Rs. 50/- and Rs. 100/- used merely to induce the producer to retain the same commission agent.

Besides acting as intermediaries commission agents also purchase jowar on their own account. The small scale operators usually sell their stocks to the large wholesalers in the market or to local consumers later in the season. The line between a commission agent and the wholesaler is, however, not as clearcut as it is in Punjab where commission agents purchase only small quantities on their own account and the wholesaler's commission agency operations are peripheral. In Maharashtra, many big wholesale traders, who account for a major share of the intermarket purchases in the primary markets are found to act as commission agents. They also conduct lending

operations like the rest of the commission agents. The main difference between a kachha arhatya and a pucca arhatya (i.e. a wholesaler) <sup>1</sup> is that the latter is basically a large scale operator who purchases large quantities, either on his own account or on account of his principal in the terminal market for intermarket purchases. If he purchases on his own account he sends his supplies to the commission agents in the terminal markets, who sell the quantities for him for a small commission (usually between 1% to 2% of the value of the jowar). If, however, he purchases jowar for his principals in the consuming markets the pucca arhatya receives a fixed commission for the service. He ships the stocks to the terminal markets as per the instruction of the principal in whose name he purchases the quantities.

TABLE 5.8: NUMBER OF TRADERS IN THE MARKETS <sup>2</sup>, 1966-67

MARKET	'A' CLASS WHOLE- SALERS	'A' CLASS COMMISS- ION AGENTS	'B' CLASS TRADERS	'C' CLASS	TOTAL	NO. OF 'A' TRADERS OPERATING IN JOWAR	NO. OF TRADERS WHO OPE- RATE THE MAJOR VOL. OF BUSINESS
Latur	281*	0	0	281	562	200	10-12
Parli	28	65	63	2	158	75	4-5
Parbhani	31	40	0	108	178	40	5-6
Nanded	111*	0	193	0	304	80	3-4
Sailu	71*	0	35	0	106	30	3-4
Jalna	72	115	176	0	363	100	10

\* No breakdown on number of wholesalers and commission agents.

Source: Information collected by a research investigator in July 1967.

<sup>1</sup> Known as "Thoke Vyapari" in the vernacular.

2. The data show the present number of traders in the market. It was not possible to collect the data for earlier years except when Annual Market Committee Reports were available. The figures for Latur and Parli for 1960-61 and 1961-62 show some drop in the number of traders from 1960-61 to 1967 except in case of 'C' traders in Latur. This may be due to the monopolization of rice and jowar trade which has put a lot of traders out of business.

Table 5.8 shows the number of traders registered with the market committees. In regulated markets a trader has to acquire a license to operate in the market. They are usually classified in three categories. 'A' type traders can purchase quantities up to any amount. They usually purchase locally and export the produce to terminal markets. 'B' and 'C' type traders are small operators. There is usually a limit specified by the market committee to the extent of their operations.<sup>1</sup> This, however, varies from one market to another. Some markets categorize all retail operators as either 'B' or 'C' type traders. License fee paid by the 'A' type traders is usually between Rs.30 to Rs. 45 per year. It is much less for 'B' and 'C' type licensees.

Traders registered as 'A' type operators are either commission agents, or wholesalers or both. As there is not much specialization of functions in grain trade most of the market committees do not make a distinction between a wholesaler and a commission agent in giving him an operating licence. Breakdown of the traders by the type of operations is available for some markets (See Table 5.7). However, this should not be considered as very exact. A large number of traders operate both as wholesalers and commission agents although they are registered only as wholesalers or only as commission agents.

The table also shows the number of 'A' traders who deal in jowar. It will be noticed that jowar, being an important crop in the region, a large number of traders deal in it. The table shows the number of big jowar traders in each market. This information was collected by interviewing various traders and market officials to enquire about the number of traders who together handled half or more of the jowar business in the market. The figures are not very accurate. However, they indicate the marked disparity in the size of operations of the traders. In all the six markets, it will be noticed that less than 12 percent of the traders handled most of the business. Most of these large traders have traditionally been in trading business of one sort or the other.

Table 5.9 shows the distribution of traders by their castes and communities. In case of those who are of local origin the breakdown is available by their castes. However in case of those who have migrated to Maharashtra from other regions, such as Marwaris and Tamilians no breakdown is available by their castes. Marawaris, Jains and Gujarathis have been traditionally trading communities.

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1 A 'B' type licensee, e. g., can purchase up to Rs.500 worth of goods and a 'C' type up to Rs. 100.00 worth of goods per day in Parli. They sell their produce locally usually as retailers.

Co-operative societies are treated as single firms and, therefore, are included in the breakdown of the traders.

TABLE 5.9: BREAKDOWN OF 'A' TYPE TRADERS BY CASTE AND COMMUNITIES, MAHARASHTRA

CASTE	LATUR	PARLI	PAREHANI	NANDED	SAILU	JALNA
1. Marwari	79	35	18	43	30	121
2. Gujrathi	12	4	6	6	10	38
3. Vani	60	18	6	-	4	4
4. Jain	2	-	16	-	4	-
5. Komti	3	-	-	20	-	-
6. Musalman	5	3	-	-	-	5
7. Elam Reddi	14	-	-	-	-	-
8. Maratha	77	22	15	10	16	19
9. Rajput	5	-	-	7	-	-
10. Brahmin	5	5	4	2	3	-
11. Dhangar	1	-	2	-	-	-
12. Mali	3	-	-	-	-	-
13. Teli	1	-	-	-	-	-
14. Tamilians	1	-	-	-	-	-
15. Co-operative Societies	15	2	-	2	-	-
16. Others	-	4	4	22	4	-
TOTAL	281	93	71	111	71	187
Marwari	50%	55%	33%	40%	50%	67%
+ Vani						
+ Gujarathi	55%	58%	40%	45%	60%	87%

Source: Market committees of the regulated markets.

Predominance of traditional trading castes (such as marwaris, Gujarathis, and vanis - the bania caste in Maharashtra) in the trading business is apparent from the table. The number of Marathas in grain trade (a traditionally cultivating community) is, however, much larger in the markets in Marathwada compared to those in Western Maharashtra. <sup>1</sup>

1. In the 6 markets studied from Western Maharashtra, (Sholapur, Akkalkot, Pandharpur, Kolhapur, Wadgaon and Poona) 96 percent of the traders were observed to belong to the traditional trading communities. They were either marwaris, or a local trading caste.

Partnerships

It was not possible to obtain any reliable information on the extent of partnerships, either within or between families in these markets. It was indicated that a large number of traders add names of members of their family and create a partnership that exists only on paper. This is done to take advantage of the basic income tax exemption allowed a family unit. This way a trader can earn considerable amount of taxfree income depending on the number of partners. The practice of creating such paper partnerships has been on the increase in the recent years. Traders are, therefore, reluctant to divulge any information about their financial operations.

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1 In the 6 markets studied from Western Maharashtra (Sholapur, Akkalkot, Pandharpur, Kolhapur, Wadgaon and Poona) 96 percent of the traders were observed to belong to the traditional trading communities. They were either marwaris, or a local trading caste.

## CHAPTER VI

### MARKET INTEGRATION

The present chapter examines the hypothesis of high degree of interdependence between price movements of jowar in the wholesale markets of Maharashtra. Degree of correlation between weekly wholesale prices of jowar in two markets is used as an index of market integration. Thus higher the correlation between prices greater the market integration between those two markets. It also analyses the extent of price difference between primary market prices and the terminal market prices. <sup>1</sup> It is hypothesized that because of the competitive nature of the wholesale trade price differences between primary and terminal markets are not greater than transport costs.

There is a popular belief that price formation at the village level does not fall into the realm of the competitive exchange and that due to the poor bargaining power of the cultivator he receives a price for his produce which is often much lower than that prevailing in the nearby wholesale market. A wide variety of stereotypes about the traditional agriculture, are offered as arguments to support this contention. <sup>2</sup> A study of the market structure suggests that these factors are not so overwhelming as to result in widespread exploitation of the cultivator. The information available on village level prices is at best scanty and not very reliable.

As in other states, farm harvest prices, despite their limitations, provide the only index of village level prices. <sup>3</sup> Table 6.1 shows the state averages of the farm

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- 1 For the methodology used in the analysis of market integration see pp. 10-15 above.
  - 2 Those already familiar are (1) ignorance of the cultivator, (2) poor transport facilities between villages and primary markets, (3) poor bargaining power of the cultivator resulting from indebtedness.
  - 3 These prices have some obvious limitations due to the difficulties of collecting information from such scattered transactions. Village transactions do not take place in terms of standard weights and measures and are reported in approximate terms. Cultivators rarely keep records of transactions. Farm prices, therefore, rely heavily on the farmers' memory. They represent an average price for the harvest season obtained by aggregating prices for a number of varieties in a number of villages.

harvest prices of jowar in the districts of Maharashtra and the March prices of jowar in the two primary markets under study. A state price is an average of the Kharif and the Rabi harvest prices in all the districts. <sup>1</sup> In all the years except in 1956-57 farm harvest prices were equal to or greater than the March prices prevailing in the two markets. The slightly higher farm harvest prices seem to be due to the fact that they are averages for two seasons. Although prices decline with the coming of the kharif crop the seasonal low is reached only with the coming of the rabi crop.

TABLE 6.1: STATE HARVEST PRICES AND PRIMARY MARKET PRICES OF JOWAR, MAHARASHTRA, 1955-56 to 1960-61

(RS. PER QUINTAL)

YEAR	FARM HARVEST PRICE*	PRIMARY MARKET PRICE IN MARCH	
		Parbhani	Jalna
1955-56	18.80	15.58	14.75
1956-57	27.20	34.73	32.57
1957-58	36.00	35.52	36.57
1958-59	32.50	28.93	28.95
1959-60	34.50	32.41	31.94
1960-61	38.00	36.83	36.62

\* Farm (harvest) prices as reported in Maharashtra relate to the agricultural year July-June. The harvest price for 1956-57 refers to the Kharif harvest of December 1956 and the Rabi harvest of March 1957. As the market year is taken to be March-February in the present study, farm price for 1956-57 is compared with the March price of 1957-58 market year.

Source: 1. Season and Crop Reports, Bombay State, 1957-58 and 1959-60.  
2. Data from the regulated market committees.

At least the harvest prices, as recorded by the Department of Agriculture, do not support the belief about underpricing in the village markets. <sup>2</sup>

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- 1 The share of Kharif and Rabi crop in total jowar production is approximately equal in Maharashtra.
  - 2 Comparison of jowar prices in Sholapur markets and harvest prices for the district lead to a similar conclusion see Uma Lele, op. cit.

Price Formation in a Wholesale Market

A more rigorous statistical analysis is possible of the primary market prices. The degree to which price formation in one market is dependent on prices in other markets is estimated by calculating correlation coefficients between weekly wholesale prices of jowar in these markets. All prices used in these correlations refer to Rabi white jowar.

TABLE 6.2. CORRELATION MATRIX FOR WEEKLY WHOLESALE PRICES OF JOWAR, MAHARASHTRA JANUARY 1956 to NOVEMBER 1964  
(r) n=453

MARKET	PRIMARY MARKETS						TERMINAL MARKET
	Latur	Nanded	Jalna	Parbhani	Sailu	Parli	Bombay
Latur	1.00	0.95	0.90	0.92	0.88	0.91	0.73
Nanded		1.00	0.93	0.96	0.91	0.93	0.75
Jalna			1.00	0.95	0.94	0.94	0.74
Parbhani				1.00	0.92	0.93	0.75
Sailu					1.00	0.93	0.73
Parli						1.00	0.72
Bombay							1.00

Table 6.2 indeed shows a very high correlation between prices in various markets. Bombay prices, however, show somewhat lower correlation with the primary market prices compared with the correlations between various primary market prices. It is interesting that the r's for Bombay, although lower than the others, are extraordinarily consistent with one another. Similar results were obtained when Bombay prices of 'Sholapur jowar' were correlated with prices in primary markets of Sholapur district, although the difference between terminal-primary and primary-primary, correlations was a little less than obtained here. <sup>1</sup> Various explanations seem plausible. In the present case Bombay prices refer to 'rabi white jowar' which is a much less specific category than 'Sholapur jowar' used in the earlier analysis. Bombay receives rabi white jowar not only from the markets in Marathwada but also from Jalgaon, Ahmadnagar, Satara, Sangli and Sholapur districts of W. Maharashtra, and from several other markets in Vidharbha and Madhya Pradesh. There is a great deal of difference in the rabi white varieties grown in different regions, which arises from variations in soil and weather conditions, in rainfall and in cultivating practices.

1 Uma Lele, op. cit.

In fact, so significant are the differences that there has developed, over a period of years, an elaborate nomenclature, consisting of numerous subcategories of varieties which classifies the grain according to its colour, lustre, boldness, and even according to the place of its origin. It is, therefore, possible that this results in somewhat lower correlation between Bombay price quotations as recorded by the Association and the primary market prices.

The second factor, of course, is the cost of transport. Shipments to Bombay involve considerably more costs as compared to the rest of the markets considered in Table 6.2 due to the fact that Bombay is much further away from these markets than any of the other markets.<sup>1</sup> This implies higher margin between which Bombay price can move without there being any shipment from the particular primary market to Bombay. This would mean a larger residual term and lower correlation. It is, therefore, necessary to consider the absolute price difference between Bombay prices and prices in the primary markets.

### Regional Price Spread

It needs to be examined if the low correlation between Bombay and the primary markets is a result of such high absolute price difference between markets. A low correlation may also prevail if price differences have frequently increased beyond transportation costs and have not been corrected by increased shipments from surplus to the deficit region. If that is the case it is necessary to examine the factors responsible for such excessive price differences.

### Costs of Shipment

Table 6.3 shows costs of shipments from the primary markets to Bombay.

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1 It must be noted that high transport costs may not be a result of inefficient transport system but simply of long distances as in the case of Marathwada and Bombay.

TABLE 6.3. COSTS OF SHIPPING A QUINTAL OF JOWAF FROM THE PRIMARY MARKETS TO BOMBAY

COSTS	LATUR	PARLI	PARBHAMI	SAILU	NANDED	JALNA
1. Handling charges in the primary market (cleaning, filling, stitching, loading, cartage)	Rs.0.50	Rs.0.50	Rs.0.50	Rs.0.50	Rs.0.50	Rs.0.50
2. Depreciation of the bag	Rs.0.50	Rs.0.50	Rs.0.50	Rs.0.50	Rs.0.50	Rs.0.50
3. Market fee	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%
4. Commission of the C. A.	1%	1%	1%	1%	1%	1%
5. Truck fare	Rs.3.50	Rs.4.00	Rs.5.00	Rs.4.00	Rs.5.00	Rs.3.50
6. Insurance	0.025%	0.025%	0.025%	0.025%	0.025%	0.025%
7. Handling charges in Bombay (Octroi, unloading, storage Hundi charges, etc.)	Rs.0.75	Rs.0.75	Rs.0.75	Rs.0.75	Rs.0.75	Rs.0.75
8. Commission of the seller (% value of the sale)	1%	1%	1%	1%	1%	1%
9. Total of 1,2,5,7	Rs.5.25	Rs.5.75	Rs.6.75	Rs.5.75	Rs.6.75	Rs.5.25
10. Total of 3,4,6,8	2.05%	2.05%	2.05%	2.05%	2.05%	2.05%

Source: Interviews of traders

Truck fares are given in Table 6.3 as they are generally higher than railway fares. The cost of railway shipping varied between Rs. 2.00 to Rs. 3.50 per quintal depending on the distance from Bombay. There are, however, other costs, such as cartage to and from the railway shed, small tips paid to the railway booking clerks for acquiring wagons, which add up to transport costs. Costs of shipping by railway are, therefore, only slightly lower than the costs shown in Table 6.3. Items 1 and 7 in Table 6.3 are, however, much lower than similar estimates of Akkaltot-Bombay, Malegaon-Bombay shipments by the Marketing Research Office.<sup>1</sup> The total costs as shown in Table 6.3 should, therefore, be fairly close to the actual costs of shipment.

#### Actual Price Differences Between Markets

Table 6.4 shows absolute differences between Bombay prices and prices in the primary markets. In view of the costs in Table 6.3, the cost of shipment appears to be somewhere between Rs.6.00 and Rs.7.75 per quintal. For if it is assumed that during the period studied, the price of jowar remained between Rs.30 and Rs.50 per quintal most of the times, row 10, Table 6.3 would range between Rs.0.60 and Rs.1.00. Since most of the produce is shipped by railways it would appear that shipments were marginally profitable when price difference between Bombay and the primary markets was somewhere between Rs.5.00 and Rs.7.00. A difference of more than Rs.7.00 must have brought windfall profit to the trader.

Table 6.4 indicates that price difference between Bombay and the six primary markets remained between Rs.5.00 and Rs.7.00 per quintal less than 10 percent of the times. Difference increased above Rs.7.00 less than 2 percent of the times in all the six markets.

#### A Question About Price Records

It should be recollected at this stage that the Bombay prices of jowar used in the preceding analysis were collected from the records maintained by the Grain, Rice, and Oilseeds Merchants Association in Bombay. Primary market prices were obtained from the records maintained by the regulated market committees of the most common prices prevailing in the market. The most common price is supposed to refer to the price at which bulk of the produce is marketed. Similar

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1 See Report on the Marketing of Jowar and Bajra, Marketing Research office, Government of Maharashtra, 1963, p. 37-39.

TABLE 6.4: FREQUENCY DISTRIBUTION OF DIFFERENCE BETWEEN BOMBAY PRICES AND THE PRIMARY MARKET PRICES - JANUARY 1956 to NOVEMBER 1964

MARKETS	FREQUENCY (NO. OF WEEKS)					TOTAL NO. OF WEEKS
	LESS THAN ZERO	RS. PER QUINTAL				
		RS.0.00 -3.00	RS.3.00 -5.00	RS.5.00 -7.00	RS.7.00 and above	
Bombay-Latur	252	137	53	10	1	453
Bombay-Parli	178	138	79	41	17	453
Bombay-Parbhani	163	141	108	31	10	453
Bombay-Sailu	142	162	89	39	21	453
Bombay-Nanded	268	135	43	5	2	453
Bombay-Jalna	161	162	92	30	8	453

comparison of Bombay jowar prices, collected from the Marketing Research Office in Bombay, with the prices in primary markets of Sholapur district for the same period made earlier showed equally low difference between prices in Sholapur markets and Bombay. <sup>1</sup> As using two different sets of prices for Bombay shows equally small price difference between various primary markets and Bombay, any doubts about the price data are justifiably directed towards the primary market prices. Is this due to an overstatement of the most common price in the primary market? Kulkarni in his study of paddy prices in Ghoti market suggests that there is a likelihood of such overestimation of primary market prices due to the method used by the Ghoti market committee in recording most common prices. In Ghoti market "the most common price as recorded by the Market Committee is neither the price prevailing in the largest number of transactions nor the price at which bulk of the produce is sold. It is simply the price prevailing in a single transaction in which the largest quantity is sold." <sup>2</sup> Kulkarni further states that the local supply has a significant influence on the price paid for the largest consignment marketed in bulk. However, even with this knowledge it cannot be established that the bias in the most common prices as recorded by the market secretaries is consistently upward. It is also difficult to conclude anything about the relationship, if any, between the price of the largest consignment and that at which bulk of the produce is sold. Nor is it known if market secretaries, who are responsible for the maintenance of price records, commit the same error in price maintenance in all the markets. To find this out would indeed be a tedious task involving a study of number of individual transactions in a fairly large number of markets for a sufficiently long time period.

The conclusion emerging out of this analysis is, therefore, that the price data for comparable varieties of jowar, as recorded by agencies in these primary markets and Bombay, show price differences which are most of the times not enough to cover costs of shipment. This may not necessarily imply that there are, in fact, no shipments of the grain between markets when price difference is less than costs of shipment, because, even within a week when difference between most common prices (as recorded in the two markets) is less than shipment costs, some transactions can be conceived at prices other than most common prices. For example, it is conceivable that some jowar was purchased in the primary market at a price lower than the

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<sup>1</sup> Uma Lele, op. cit.

<sup>2</sup> A. P. Kulkarni, "Prices of Paddy in the Regulated Market of Ghoti", Artha Vijnana, Vol. 7, No. 1, March 1965.

most common price in that market and sold in Bombay at a price higher than the most common price in Bombay. One also must not lose sight of the fact that here the analysis of price difference pertains to weekly quotations. There is, therefore, sufficient time span to ship consignments from the primary market to Bombay at prices other than the most common price, within a week.

One would also have to examine prices prevailing in various terminal markets to which a single market ships its supplies and examine price differences between these various terminal markets and the specific primary market to arrive at a conclusive result about the profitability of inter-market shipments. A study of the working of markets indicates that traders in terminal markets constantly keep in touch with price movements in primary markets (and vice versa) to take advantage of a sudden drop in the price in a primary market (or a rise in the price in the terminal market) before moving supplies. <sup>1</sup> There is also the possibility of an intermarket shipment with a timelag (such as purchases in the season and shipments to the terminal points in the off-season) which needs to be examined to complete the analysis. This will, however, be best examined in the analysis of seasonal price movements.

Despite limitations of the price data the analysis of Bombay prices and prices in Marathwada indicates that when there is a fairly free flow of supplies towards a single terminal market from various producing centres and from a single producing centre to various terminal points the price difference between a producing region and any of its terminal markets is not likely to remain above transport costs for any consistent length of time. Any increase in the terminal market price or a decline in the primary market price is corrected through increased shipments from the latter to the former.

So few times has the price difference been large enough to cover transport costs that a study (1) of seasonability in the gross margin or (2) of effect of movement restrictions on price differences is of no significance. The case of Bombay and Marathwada markets, rather clearly illustrates the efficiency in marketing where basic competitive conditions are fulfilled.

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1 A study of the prices in two terminal markets (Bombay and Kolhapur) made earlier, for example, indicated that shipping to Kolhapur from Sholapur district was much more frequently profitable than shipping to Bombay.  
Uma Lele, op. cit.

CHAPTER VII  
SEASONALITY OF JOWAR PRICES

Before moving to the analysis of seasonal price movements we will recapitulate the jowar seasons. Unlike other states, in Maharashtra jowar is produced both in rabi and kharif seasons. Kharif sowing begins with the coming of the first monsoon in June - July. The crop is harvested sometime in November or December depending on the variety grown. Kharif crop comes to the market in January. Arrivals remain heavy until March. There is an overlap of kharif and rabi marketings in March. Rabi crop is harvested in February - March and arrivals remain heavy until June, after which they taper off <sup>1</sup>.

Even within Maharashtra there are three distinct jowar belts. Most of the western districts are predominantly rabi. The central districts in which the markets studied are located are both rabi and kharif and the eastern districts are predominantly kharif.

Rabi prices in Marathwada, therefore, reach a seasonal low in March after which they gradually increase and reach an off-seasonal peak sometime in October before the kharif arrivals reach the market. Stocks of rabi jowar are held between the period of rabi and kharif harvest.

It is the purpose of this chapter to study seasonal price movements of jowar between 1955-56 and 1964-65 in relation to (1) the costs of storage and (2) storage operations.

#### Storage Costs for Jowar

In order to compare off-seasonal price rise with cost of storing a quintal of jowar following procedure is used.

Storage costs are added to the average March price, the harvest price of jowar. Storage costs include rent of the warehouse, loss in weight, depreciation of the bag and interest rate. This is taken to represent the cost of holding a quintal of jowar between March and the off-season (September, October and November). Warehouse rent is assumed to be 6 nps. per month. Traders stated that rents have increased in the recent years and have gone up to as much as 10 to 12 n.ps. per month. Loss in weight due to pests and insect attacks was stated to be between 2 to 3 percent during the period of storage. It is, therefore,

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<sup>1</sup> See p. 98 Chapter V for seasonality of market arrivals.

taken to be 3 percent in eight months. Jowar is mostly stored in gunny bags. Depreciation of a bag in a period of storage was stated to be approximately 40 n.ps. in eight months. Interest rate was 9 percent.

The rate of gross margin in the off-season is calculated by taking September, October and November prices as percentages of the March price and storage costs. Such rates are calculated for each year to compare the year to year variability in the rate of profit.

Table 7.1 shows average estimated rates of margin for the three off-seasonal months.

TABLE 7.1 ESTIMATED GROSS RATE OF MARGIN FROM JOWAR STORAGE\*, MAHARASHTRA, 1955-56 to 1964-65

(percent)

YEAR	PARBHANI	SAILU	PARLI	LATUR	NANDED	JALNA
1955-56	22.0	21.6	4.6	21.3	14.6	24.0
1956-57	26.0	28.0	21.6	27.6	25.3	34.3
1957-58	-1.3	1.6	3.0	3.0	-4.3	-2.0
1958-59	8.0	10.0	4.6	6.6	4.6	7.6
1959-60	20.3	25.3	24.6	19.6	21.6	22.3
1960-61	5.3	1.3	0.3	1.0	2.6	5.6
1961-62	-10.6	-11.3	-8.6	-7.3	-3.0	-12.3
1962-63	19.0	18.0	19.0	20.3	19.3	19.6
1963-64	-6.3	-3.3	-4.3	-3.0	-4.0	-4.3
1964-65	53.3	36.3	50.3	65.3	41.3	56.6
Average for 10 years**	13.6	13.7	11.5	15.4	11.8	15.1

\* average of September, October and November

\*\* to arrive at more realistic average rates individual months should be weighted by the volumes. However, no systematic data are available.

The hypothetical estimates, on an average, show fairly good returns on storage operations. The actual net profit rate in each of these cases should be smaller than the estimated gross rate of profit for the following reasons:

- (1) The estimates in Table 7.1 do not take into account overhead costs of the trader which consist of maintenance of the shop, salaries of permanent employees and various other items. It has not been possible

to make even a rough judgement about the extent of such expenses on jowar as they vary from trader to trader and from one year to another. As the quantities handled of various commodities by an individual trader vary substantially from one year to another, it is difficult to estimate the share of jowar in the total overheads of a trader. Besides, the share also varies between traders.

- (2) In estimating these profit rates March price is used as the price at which all stocks are purchased. The seasonal low is usually reached in March. This causes a downward bias in the cost of holding jowar and a consequent upward bias in the gross rate of profit since the average March price represents the lowest cost of stocking jowar. Nevertheless, substantial quantities are purchased up to June. Traders indicated that they purchase their normal pipeline stocks early in the season. However, any decision as to how much more to store than this "normal" depends upon the market outlook for the off-season. Traders are usually able to make a judgement about this only later in the season when they have information on the actual crop size and demand conditions in the terminal markets.<sup>1</sup> The figures in Table 7.1, therefore, overstate the rate of profit to this extent.
- (3) The third reason why the actual profit rate will not be as high as indicated in Table 7.1 is the unrealistic nature of the assumption that all the sales are withheld by traders until September. This is impossible where (a) the number of traders within a market is large and (b) where they compete with traders in other markets to acquire a share of the stocks, earlier purchases being disposed of earlier in the season.<sup>2</sup>

Unless this is the case, the supplies in the terminal markets will dry up in June, July and August and in absence of continuous supply of the grain would result in price levels that are higher than the ones actually reached. This will induce traders to part with their supplies earlier.

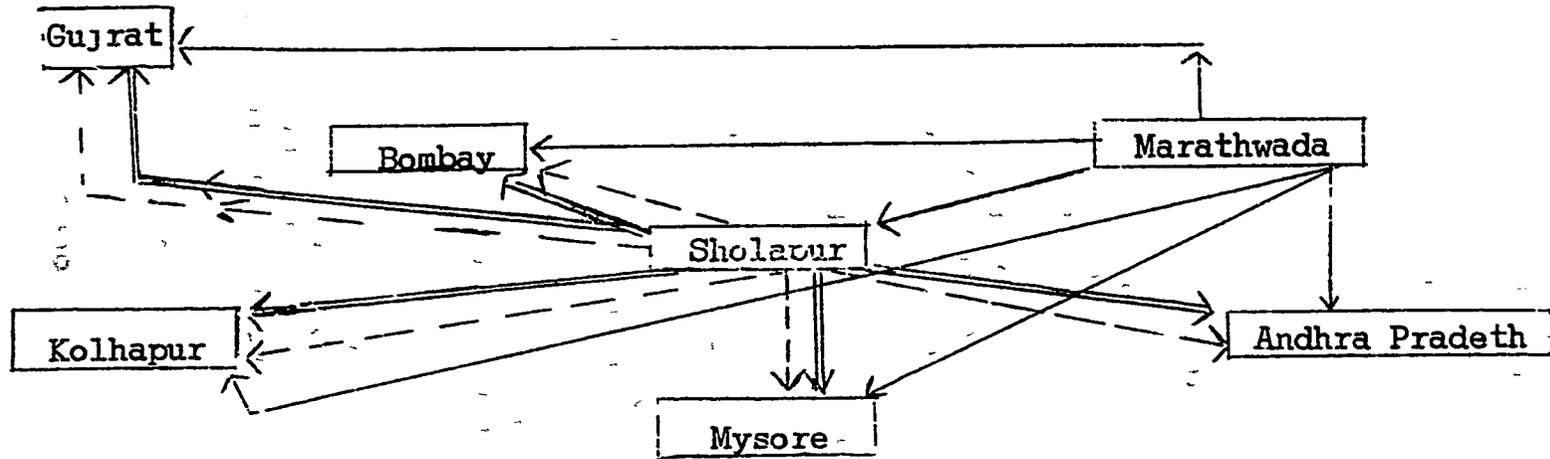
Due to the revolving nature of stocks (i.e. due to purchase and sales at prices other than the two extreme levels) the actual gross rate of profit earned by traders has to be much smaller than the estimates shown in Table 7.1.

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1 This corroborates with similar observations made by traders in the Sholapur district.

2 This is illustrated by the traders' stockbooks.

CHART 7-1: PATTERN OF JOWAR SHIPMENTS, MAHARASHTRA



==== Shipment of original Sholapur jowar to secondary and terminal points.

---- Shipment of Marathwada jowar to secondary and terminal points from Sholapur.

—— Shipment of original Marathwada jowar to secondary and terminal points.

The hypothetical estimates in Table 7.1 only effectively illustrate the year to year variability in the seasonal price pattern. In three years out of ten the price rise was not enough even to cover storage costs whereas in other five years price rise provided opportunities for exorbitant profits. In reality even in years of no price rise, there are weeks of low and high prices when an intelligent trader can purchase and sell and make some profit; whereas in years of high price rise because of the revolving nature of stocks, the greatest possible margin is not necessarily earned as implied in the hypothetical example above.

Table 7.2 shows the actual gross margins of twelve jowar traders in some markets of Maharashtra. <sup>1</sup> The data are not directly comparable to the hypothetical gross profit rate in Table 7.1 for two seasons. (1) Margin in Table 7.2 is calculated by deducting purchase price from the sale price. (Purchase and sale price is calculated by dividing value of sale and purchase each by the quantity sold and purchased respectively.) The margin thus does not even account for the variable costs of storage as do figures in Table 7.1. <sup>2</sup> (2) The figures refer to October - October year. <sup>3</sup> Whereas the estimates in Table 7.1 refer to a March - February year.

- 1 The first three profit loss statements are of traders in Sholapur, next two of those in Pandharpur, the following four of traders in Akkalkot and the last three of traders in Kolhapur. Similar statements could not be obtained from traders in Marathwada. Due to monopoly procurement traders were unco-operative. These statements were obtained because of longstanding contacts with the traders. However, because of the very close correspondence between prices in Marathwada, Sholapur and Kolhapur the statements are of considerable value. See Uma Lele op. cit. for estimated profit rates in Sholapur district.
- 2 It is difficult to make any estimate of variable costs of storage. (i.e. interest, rent of warehouse, loss in weight, etc.) The revolving nature of stocks creates variety of problems. (a) costs vary according to the length of storage. (b) it is difficult to trace individual lots of grain for estimating storage periods. (c) length of storage of stocks varies not only from trader to trader and from season to season but also from lot to lot for a single trader in a single season.
- 3 See p. 105 earlier for explanation of this year.

TABLE 7.2 ACTUAL GROSS PROFIT AND RATE OF PROFIT OF  
JOWAR TRADERS, 1960-61 to 1963-64- 1

TRADER No.	1960-61		1961-62		1962-63		1963-64	
	GROSS PROFIT PER BAG <sup>2</sup> Rs.	GROSS RATE OF PROFIT <sup>3</sup> Percent	GROSS PROFIT PER BAG <sup>2</sup> Rs.	GROSS RATE OF PROFIT <sup>3</sup> Percent	GROSS PROFIT PER BAG <sup>2</sup> Rs.	GROSS RATE OF PROFIT <sup>3</sup> Percent	GROSS PROFIT PER BAG <sup>2</sup> Rs.	GROSS RATE OF PROFIT <sup>3</sup> Percent
1	0.50	1.3	4.38	10.12	N.A.	N.A.	2.53	6.00
2	-0.26	-0.7	13.42	46.63	1.00	2.45	1.13	2.67
3	N.A.	N.A.	N.A.	N.A.	N.A.	-	N.A.	N.A.
4	0.64	1.7	0.82	2.04	2.29	6.85	2.93	7.42
5	-2.06	-5.08	-0.21	-0.48	1.54	4.31	-8.74	-14.42
6	0.39	1.03	1.08	0.94	2.19	5.05	1.27	2.50
7	N.A.	N.A.	N.A.	N.A.	2.63	6.55	2.84	5.86
8	0.75	1.70	7.88	19.61	0.78	1.94	0.79	1.43
9	0.90	2.28	1.89	-4.38	0.74	1.65	0.06	0.11
10	N.A.	N.A.	1.61	3.64	0.63	1.62	4.06	7.55
11	9.20	18.40	-1.48	2.97	0.17	0.28	0.99	2.33
12	1.00	2.46	0.94	2.01	-12.17	-21.66	1.07	2.06

1 Data refer to October - October year.

2 Gross profit per bag = Average sale price - Average purchase price.

3 Gross rate of profit = Gross profit per bag / purchase price

N. A. Not Available

Source: Profit loss statements of traders

The records of the traders are noteworthy for two reasons: (1) They show a much lower rate of return than shown by Table 7.1, as is to be expected in reality in view of the revolving nature of stocks. As even the margin between the sale price and the purchase price is smaller than the hypothetical estimates in Table 7.1 no arbitrary deductions are made for variable costs to make figures in Table 7.2 comparable to those in Table 7.1. (2) Table 7.2 also suggests that although there is considerable variability in the profit rate from one year to another it is much less than is implied under the hypothesis of rigid sale policy. Despite a great deal of variation in the pattern of seasonal price movements the traders appear to work towards stabilizing the rate of return within limits. It is also interesting that the profit loss statements of various traders do not show any consistency in the year to year variability as is implied in the hypothetical estimates in Table 7.2. So that all the traders do not necessarily earn a high margin in years of great price rise and vice a versa.

Table 7.3 shows the volume of operations of these traders during the four years.

TABLE 7.3 NUMBER OF BAGS<sup>1</sup> SOLD BY JOWAR TRADERS 1960-61 to 1963-64 <sup>2</sup>

TRADERS	1960-61	1961-62	1962-63	1963-64
1	3,738	4,269	N.A.	6,043
2	98	398	505	49
3	211	209	2,577	563
4	1,326	2,459	4,747	1,348
5	2,833	1,436	2,990	3,750
6	1,085	833	418	1,672
7	N.A.	N.A.	392	504
8	3,331	2,074	245	2,352
9	895	1,609	564	4,426
10	N.A.	11,615	11,425	4,718
11	349	3,159	1,391	875
12	4,179	6,734	6,668	5,252

1 A bag is approximately equivalent to one quintal of jowar.

2 Year is October - October.

N. A. - Not available.

Source: Profit Loss Statements of Traders

<sup>1</sup> Profit Loss statements of Punjab traders show similar results, see section on Punjab.

The table illustrates the considerable amount of variation in the volume handled by individual traders in different years. There is, however, no consistency in the change in volume handled by various traders from one year to another. In a single year volume handled by some increased while that handled by others declined over the previous year. This suggests that there is a great deal of variation in the interpretation of market intelligence by various traders.

TABLE 7.4 HARVEST AND OFF-SEASONAL PRICE OF RABI JOWAR, PARBHANI, 1955-56 to 1964-65

YEAR	AVERAGE MARCH	AVERAGE NOVEMBER	NOVEMBER PRICE MARCH PRICE
	PRICE	PRICE	
RS. PER QUINTAL			
1955-56	15.58	22.76	1.46
1956-57	34.73	49.00	1.41
1957-58	35.53	38.63	1.09
1958-59	28.93	33.44	1.16
1959-60	32.41	42.80	1.32
1960-61	36.83	41.38	1.12
1961-62	33.86	33.33	0.98
1962-63	37.40	48.62	1.30
1963-64	36.45	37.37	1.03
1964-65	43.14	72.50	1.68

The analysis of the off-seasonal price rise and storage operations indicates the following:

- There is considerable variation in the pattern of seasonal price movements from one year to another. In some years off-seasonal prices reached enormously high levels compared to the prices prevailing in the harvest times. Whereas in other years off-seasonal prices were not high enough even to cover costs of storage. (see Table 7.4) The overall profit rate earned by the traders over a period of time, therefore, does not appear to be very high. This is supported by the actual profit loss statements of the traders, although they show less variability in the rate of profit than obtained under the assumption of rigid sale policy. (i.e. policy of purchasing in March and selling during September-November period).

Another fact revealed by the analysis of off-seasonal price rise is that the seasonal price pattern in any one year is similar between the six markets of Marathwada. All the markets experience excessive or moderate price rises in the off-season simultaneously. This is to be

expected in view of the high degree of market integration prevailing in these markets. <sup>1</sup> It is of considerable interest that the behaviour of rabi prices in these Marathwada markets was similar to the prices prevailing in the adjoining Sholapur district. <sup>2</sup> Earlier analysis of prices in Sholapur markets during 1956-57 and 1962-63 indicated that just as in Marathwada 1956-57, 1959-60 and 1962-63 were years of high off-seasonal prices, whereas 1957-58, 1958-59, 1960-61 and 1961-62 showed only moderate or no price rise at all. <sup>3</sup> It appears, therefore, that surplus regions, between which there is considerable flow of supplies and which together ship grain to the same deficit regions have similar seasonal patterns due to the high degree of market integration. The pattern of flows between Marathwada, Sholapur and various terminal points is illustrated in Chart 7.1.

It seems, therefore, plausible to assume that the pattern of seasonal prices in these markets is formed by competitive bidding for sales and purchases between a number of markets and is not a result of manipulative actions of a few traders. It seems impossible for a handful of traders to manage prices for a considerable time period without facing competition from traders in other primary and terminal markets.

It is therefore, of interest to examine the factors which influence the seasonal price pattern. A number of inter-relationships are, therefore, explored below to analyse, the causal relationship, if any, between various variables.

Primary market arrivals (rabi, kharif and yellow) in each year between December and June were regressed with the preceding jowar crop in the district. <sup>4</sup> Neither the 'b'

1 See Chapter VI.

2 See Uma Lele, op. cit.

3 Ibid

4 Only December-June arrivals were considered for various reasons. a) Production data are available only for a July-June year. b) For earlier years production estimates are not available separately for rabi and kharif production. c) Since the kharif market year commences in December and rabi market year in March there is an overlap between a production year and a market year. This makes it difficult to separate arrivals from an old and a new crop. Since most of the kharif marketing is over by June and since a large proportion of the rabi marketing takes place between March-June, (see Table 5.8 above) it is assumed that December-June totals provide a good index of the annual size of marketings.



PART III

WEST BENGAL



## CHAPTER VIII

### INTRODUCTION TO WEST BENGAL MARKETS

#### Sources of Data

Regulated markets are conspicuous by their absence in West Bengal. Just as in Madras State, the Department of Agriculture in West Bengal had been collecting wholesale prices of paddy and rice for important markets through its investigators. However, a major part of the data collection began only with the Integrated Scheme for Improvement of Market Intelligence initiated by the Ministry of Food and Agriculture in 1958. The records maintained by the West Bengal Department of Agriculture for earlier years are scanty. Sometimes there are major gaps in the recorded data. For the present study, wholesale prices of rice and paddy were collected for five primary markets and of rice for Calcutta, a terminal market. The price data mostly refer to Kalma variety, a medium quality paddy. Wholesale prices for Burdwan, Gushkara and Sainthia were collected from the records maintained by the marketing branch of the Agriculture Department, Government of West Bengal, while those for Ahmadpur and Bolpur were collected from the market reporters stationed at those places. For Calcutta and Sainthia prices for Kalma variety were not available for certain periods. Therefore, prices for Bhasamanik and Nagra variety, close substitutes for Kalma, were collected for Sainthia and Calcutta respectively.

Harvest prices were collected from selected millers in each of these markets for the two months of harvest. As the markets are not regulated, no data were available on market arrivals. Due to the monopolization of wholesale trade in West Bengal since 1965 it was not possible to acquire similar information from millers and traders. They were most unco-operative in supplying any information regarding trade. Absence of any market agency such as a regulated market committee inhibited collection of past records. Information on storage and transport costs was collected from traders, millers and railway officials. Production figures and farm harvest prices were collected from the Department of Agriculture. Traders were interviewed to obtain information regarding the market structure and the market practices.

#### Review of the Rice Price Policy in West Bengal

##### 1955 to 1964

The perpetual shortage of rice supplies in the state necessitated a variety of restrictions on rice trade during the decade of 1955 and 1964. The restrictions ranged from simple credit control to partial procurement and distribution of marketable surplus. The frequent governmental interference

with the free market had varying degrees of influence on the price movements of rice. This section surveys these various policies.

As elsewhere in India, there were two successive good crops in West Bengal in 1953-54 and 1954-55. Market prices declined sharply in 1953-54. The state Government introduced a price support scheme with effect from the middle of November, 1953. The second bumper crop of 1954-55 made West Bengal a surplus state for the first time after many years. Crop position was also good in Bihar and Orissa. Consequently food-grains were decontrolled in July 1955.

1955 The year 1955 was a comparatively drought year and government undertook a liberal policy of issuing cereals through Test Relief Works and Fair Price shops. In 1955 over 100,000 tons of rice were distributed in this manner. The outcome of the large scale issue of rice through relief was that the average price did not increase significantly in 1955 over 1954 although the deficit in 1955 was of the order of 681 thousand tons, compared to the net surplus position in 1954.

1956 The Second plan began from 1956 and with the increasing developmental expenditure in the country the upward trend of prices began to manifest itself. The deficit of 1956 was estimated by the state government to be of the order of 444 thousand tons. The year 1956 was a bad year for West Bengal, as on top of the rising price index, a large number of rice-eating refugees came from East Pakistan. This influx was followed by a terrible cyclone in May and a devastating flood in September. There was no credit squeeze and banks advanced huge amounts of money against rice and paddy at the beginning of 1956. West Bengal Government initiated a policy of issuing rice through Fair Price Shops; later the Government switched to "Modified Rationing" in Calcutta area by issuing "Family Identity Cards". Modified Rationing was also introduced in the districts where price went beyond Rs. 20/- per maund (Rs. 5.40 per kg.). <sup>1</sup>

1957 In 1957, the deficit was nearly wiped out with the allotment from the Centre. Nevertheless, West Bengal Government promulgated Food Laws under the Essential Commodities Act of 1955. Some stocks were requisitioned from the rice mills under the provisions of the Essential Commodities Act. Under this Act, the West Bengal Rice and Paddy Control Order was promulgated with the concurrence of Government of India. This order enabled the state Government to license wholesalers and rice millers. Power was also given to the West Bengal Government to cordon districts. The state

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1 100 Kilograms = 1 Quintal

Government put up cordons around surplus districts and took steps to prevent smuggling to Pakistan. Movements were regulated from surplus to deficit areas under permits.

1958 Ban on the movement of rice and paddy on the borders of the State was continued in 1958. Licensing of traders, rice mills and husking machines and submission of the fortnightly returns of stocks and transactions by the licensees was continued. Wheat requirement of West Bengal was entirely met by the Government of India in 1958 from the imported stocks. Ban was imposed on the movement of wheat into West Bengal from other parts of India. A levy of 25% on the production of rice mills in eight surplus districts (in which a large number of rice mills are situated) was imposed. West Bengal Government fixed the maximum prices of paddy and rice. All through 1958, maximum prices of paddy and rice were officially in force at the wholesale level. In practice, the ceilings were, however, not enforced with any rigour or regularity and the actual open market prices in the market were always higher than the prescribed ceilings.

There was an inter-State ban on movement of rice and paddy. There was also, in the early part of 1958, a ban on inter-district movement within the State. This cordoning was however, withdrawn later in favour of a Zonal system, under which movement was permitted with the approval of the Government.

A retail distribution programme through modified ration shops continued in 1958. Approximately 980,000 tons of cereals were distributed during the year.

TABLE 8.1: MAXIMUM STATUTORY PRICES OF PADDY AND RICE, WEST BENGAL, 1958.

<u>AREAS</u>		(RS. PER QUINTAL)	
BURDWAN, BIRBHUM		PADDY	RICE
<u>From 15/1/58 to 5/2/58</u>			
1.	Fine (Kalma)	32.40	52.65
2.	Other than fine	26.16	43.20
<u>From 6/2/58 to 31/12/58</u>			
1.	Fine (Kalma)	32.40	52.65
2.	Medium	28.30	46.53
3.	Coarse	26.16	43.20

1959 The food deficit of 1959 was of the order of over one million tons. This huge deficit was met with the cereals supplied by the Central Government. In addition on 1.1.59 the Government of West Bengal raised minimum and maximum prices of rice and paddy, and carried out most of the programmes undertaken in 1958. However the food situation gradually worsened in May; and in order to increase the availability in the market the 25% levy order on the production of the rice mills was withdrawn with effect from June 1959. The price control order was also withdrawn from that date. As a result open market prices of rice and paddy increased significantly.

1960 On 21.12.59 Eastern Rice Zone comprising of West Bengal and Orissa was created. As a result Orissa rice flowed freely into West Bengal. In 1960 traders imported 320 thousand tons of rice from Orissa. Good harvest and imports from Orissa kept the rice and paddy market in West Bengal quite steady in 1960.

1961 In 1961, rice crop in the state was good. Good crop and the central Government allotment practically wiped out the deficit in the year. Nevertheless, the West Bengal Rice and Paddy Control Order, 1960, was promulgated by the State Government on 7.12.60. The order involved submission of stock records by and licensing of traders. The order came into force on the 1st January 1961. The re-issue of the Order was necessitated by the creation of the Eastern Rice Zone.

1962 The crop was slightly worse in 1962, and the retail price showed an upward trend. The average retail price of rice increased by 15% in 1962 over 1961.

West Bengal Government appointed a Price Enquiry Committee in 1962. The committee calculated West Bengal's requirements on the basis of a per capita figure of at least 16 oz. per day, and found that total availability of cereal including imports (mainly central supplies) fell short of the requirements by as much as 260,000 tons in 1959, 330,000 tons in 1960, 40,000 tons in 1961 and 460,000 tons in 1962.

1963 The year 1963 was a bad year for West Bengal. Internal production was quite low. Orissa Government imposed restrictions from time to time and only 150 thousand tons of rice came to West Bengal in 1963. Central Government increased their supply, but the increased supply could not meet the net deficit which was estimated at 550 thousand tons. The October wholesale price rose to an unprecedented level of Rs. 120.00 per quintal in several markets.

The Government of West Bengal made an amendment to the Rice and Paddy control order, 1960, on the 18th October 1963. The order was that no person other than a dealer or a producer shall store or have in his possession more than 18.7 quintals of rice and/or paddy in the aggregate at any time except under and in accordance with a storage permit granted to him by a competent authority.

The traders executed a "Gentleman's Agreement" not to allow prices to go beyond Rs. 94.50 per quintal. But soon after this 'agreement', rice tended to disappear from the open market. The Government seized rice from rice mills and from wholesalers and distributed it in small quantities to customers of all categories through Modified Ration shops. Interdistrict barriers to free movement of paddy and rice were once again imposed.

1964 Despite a record crop in 1964 the Government of West Bengal took certain measures to control the market for paddy and rice. It fixed maximum prices in respect of rice and paddy which could be charged by the producer/miller, wholesaler and retailer in the specified districts and areas of the State. These were as follows:

TABLE 8.2: MAXIMUM STATUTORY PRICES OF PADDY AND RICE  
FIXED BY WEST BENGAL STATE GOVERNMENT\*, 1964

AREA	PRICES CHARGEABLE BY			
	PRODUCER/MILLER	WHOLESALE	RETAILER	
(RS. PER QUINTAL)				
<u>RICE</u>				
Calcutta Industrial Area	S. Fine	73.68	76.65	80.00
	Fine	69.32	72.17	75.52
	Medium	62.29	65.06	64.41
	Coarse	58.27	60.95	64.30
Birbhum & Burdwan	S. Fine	73.03	75.97	79.31
	Fine	68.65	71.50	74.85
	Medium	61.62	64.38	67.73
	Coarse	57.60	60.28	63.63
<u>PADDY</u>				
Whole State	S. Fine	42.87	43.54	44.21
	Fine	40.19	40.86	41.53
	Medium	37.51	38.18	38.85
	Coarse	34.83	35.50	36.17

\* Naked grain and excludes the cost of gunny bag.

The above maximum prices of paddy and rice were also the procurement prices for Government purchases.

The 25% levy on the production of rice mills was re-introduced and later in November it was raised to 50%. Modified rationing was extensively undertaken; and in Calcutta it was run on the statutory ration scale. One kilogram of rice and one kilogram of wheat was supplied per week per adult in the Calcutta Industrial Area. This was possible because of the internal procurement which amounted to 160 thousand tons in 1964, and because of the 100,000 tons of rice which came to West Bengal from Orissa. In spite of these measures there was a net deficit (not covered by internal production and imports) of 270,000 tons in 1964. West Bengal was cut off from Orissa and was made a separate zone towards the end of 1964.

The West Bengal Rice (Movement Control) order, 1964, was issued by the Government on 27th November, 1964, whereby export from and import into West Bengal of rice and paddy including broken rice and products of rice or paddy other than husk and bran were prohibited except under permits. Formation of single state zones and controls on free trade gradually led to a Government Monopoly procurement.

#### Choice of the Area

In India, rice is grown in almost all the states. Andhra Pradesh, Assam, Bihar, Maharashtra, Gujarat, Kerala, Madhya Pradesh, Madras, Mysore, Orissa, Uttar Pradesh and West Bengal together account for 96 percent of the area under rice. Table 8.3 shows the production of rice in major rice producing states.

West Bengal is the largest rice producing state in India, contributing approximately 15 percent to the all-India rice production. Paddy is the most important crop in the state. Approximately 70 percent of the gross cropped area is under paddy. The climate, temperature and soil of the region offer favourable conditions for the cultivation of rice. The state also has the highest percentage of land under cultivation in India.<sup>1</sup>

Despite high rainfall and fertile alluvial soils only 16 percent of the area is double cropped compared to

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<sup>1</sup> Approximately 60 percent of the geographical area is cultivated in the state. This is 15 percent higher than the all-India average. The TechnoEconomic Survey of West Bengal, The National Council of Applied Economic Research, New Delhi 1962, p. 35.

30 percent in Punjab and Madras. <sup>1</sup> Although a little over a fifth of the net area sown is irrigated (in 1956-57) the irrigation facilities in the state do not lend themselves to double cropping. For they do not offset the water scarcity in the winter months when the lands lie fallow. <sup>2</sup> In 1956-57 only 25 percent of the area under paddy was irrigated as against 90 percent in Madras and 94 percent in Andhra Pradesh. <sup>3</sup>

Despite superior fertility, favourable natural conditions and extensive cultivation the state does not produce enough rice to meet its local requirements. Rice is the staple food of the people of West Bengal. It accounts for about 89 percent of the total cereal consumption. Except for an occasional bumper crop the state has consistently been deficit in food supplies in general. Low use of fertilizers, little irrigation, cultivation of marginal lands and backward methods of cultivation all result in poor crop yields per acre. <sup>4</sup> The average per acre yield of rice in West Bengal is 900 lbs. compared to 1,000 lbs. in Madras. <sup>5</sup>

Because approximately four-fifths of the land under cultivation is under foodcrops there are no crop regions as are noted in other states. Midnapore and 24 Paraghanas are the two largest rice producing districts followed by Birbhum and Burdwan. <sup>6</sup> Midnapore, Burdwan, Birbhum and Bankura are considered to be the four surplus districts in rice. Midnapore stands first because of its size followed by Birbhum, Burdwan and Bankura. Of these only Burdwan and Birbhum are connected to Calcutta by rail and road. Burdwan and Birbhum, therefore, send most of their surplus to Calcutta. A large number of rice mills are concentrated in this region with trade connections with the Calcutta market. The supplies from these two districts, therefore, exercise considerable influence on the general food price level in the state. These two districts are selected for this study.

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1 TechnoEconomic Survey, op. cit.

2 The rainfall is concentrated in the four summer months (June to September) in West Bengal.

3 Calculated from Land Utilization Statistics.

4 West Bengal ranks second only to Kerala in density of population.

5 The average yields for nine years 1949-50 to 1957-58.

6 The production in Bankura and West Dinajpur districts has increased considerably in the last decade and now stands almost at the level of Birbhum district.

TABLE 8.3: RICE PRODUCTION IN IMPORTANT RICE PRODUCING STATES <sup>1</sup>, INDIA, 1955-56 to 1964-65

YEAR	(Thousand Metric Tonnes)							TOTAL IN SEVEN STATES	TOTAL PRODUCTION IN INDIA
	WEST BENGAL	BIHAR	ANDHRA PRADESH	MADRAS	ORISSA	MADHYA PRADESH	UTTAR PRADESH		
1955-56	4515 (16.6)	3423 (12.6)	3099 (11.4)	3012 (11.1)	2124 (7.8)	2919 (10.8)	2588 (9.5)	21680 (79.9)	27122
1956-57	4646 (16.3)	3795 (13.3)	3407 (11.9)	3247 (11.4)	2303 (8.1)	3326 (11.6)	2323 (8.1)	23047 (80.6)	28576
1957-58	4376 (17.1)	3225 (9.1)	3346 (13.1)	3288 (12.9)	1729 (6.8)	2131 (8.3)	2338 (9.2)	19533 (76.5)	25525
1958-59	4123 (13.3)	4490 (14.4)	3765 (12.1)	3133 (10.1)	2195 (7.1)	3331 (10.7)	3032 (9.8)	24069 (77.6)	31031
1959-60	4239 (13.5)	3887 (12.4)	3733 (11.9)	3460 (11.0)	3717 (11.8)	3212 (10.2)	2464 (7.8)	24712 (78.6)	31460
1960-61	5454 (16.0)	4545 (13.3)	3661 (10.7)	3559 (10.4)	3729 (10.9)	3457 (10.1)	3151 (9.2)	27556 (80.6)	34171
1961-62	4799 (13.6)	4405 (12.5)	4515 (12.8)	3908 (11.1)	3723 (10.6)	3489 (9.9)	3344 (9.5)	28183 (79.9)	35258
1962-63	4410 (14.0)	4281 (13.6)	3501 (11.1)	3861 (12.2)	3677 (11.7)	2356 (7.5)	3135 (9.9)	25221 (80.0)	31520
1963-64	5334 (14.7)	4525 (12.5)	4294 (11.8)	3917 (10.8)	4309 (11.9)	3331 (9.2)	3278 (9.0)	28988 (79.8)	36311
1964-65	5763 (15.1)	4987 (13.1)	4605 (12.1)	4048 (10.6)	4421 (11.6)	3426 (9.0)	3312 (8.7)	30562 (80.2)	38123

<sup>1</sup> Numbers in brackets show percentage of total all India Production.  
 Source: 1. Rice Economy of India, Ministry of Food and Agriculture, Government of India, 1961. pp. 117-118, Table 1.1.  
 2. Bulletin on Food Statistics, 1963 and 1966, Ministry of Food and Agriculture, Government of India

### Location of the Markets

Birbhum and Burdwan districts, together, occupy a little less than a fifth of the total area under rice in West Bengal and contribute about a fifth to the total rice production of the state. Birbhum had 80 percent of its total cropped area under paddy in 1961-62 and Burdwan had 85 percent. The two districts have the largest concentration of irrigated land next to Midnapore. <sup>1</sup> Birbhum has the largest proportion of the net area sown irrigated in the state. Almost all the irrigated land is under paddy (98 percent). Even then only 46 percent of the total area under paddy was irrigated in 1960-61.

Five primary markets have been selected for this study from Burdwan and Birbhum districts. Burdwan and Gushkara markets lie in Burdwan district. Bolpur, Ahmadpur and Saithia are in Birbhum district. Calcutta is selected as the terminal market. Chart 8.1 shows the distances between the various primary markets and Calcutta - the main terminal market for this region. (Also see Figure 4.)

CHART 8.1. APPROXIMATE RAILWAY DISTANCES BETWEEN VARIOUS PRIMARY MARKETS AND THE TERMINAL MARKET, WEST BENGAL (miles)

<u>Calcutta</u>					
67	<u>Burdwan</u>				
90	23	<u>Gushkara</u>			
100	38	10	<u>Bolpur</u>		
111	44	21	11	<u>Ahmadpur</u>	
119	52	29	19	8	<u>Saithia</u>

Burdwan market is by far the biggest of the five markets having within its jurisdiction the largest number of rice mills, husking machines and commission agents. <sup>2</sup> It has 34 rice mills, 15 husking machines and a large number of arats.

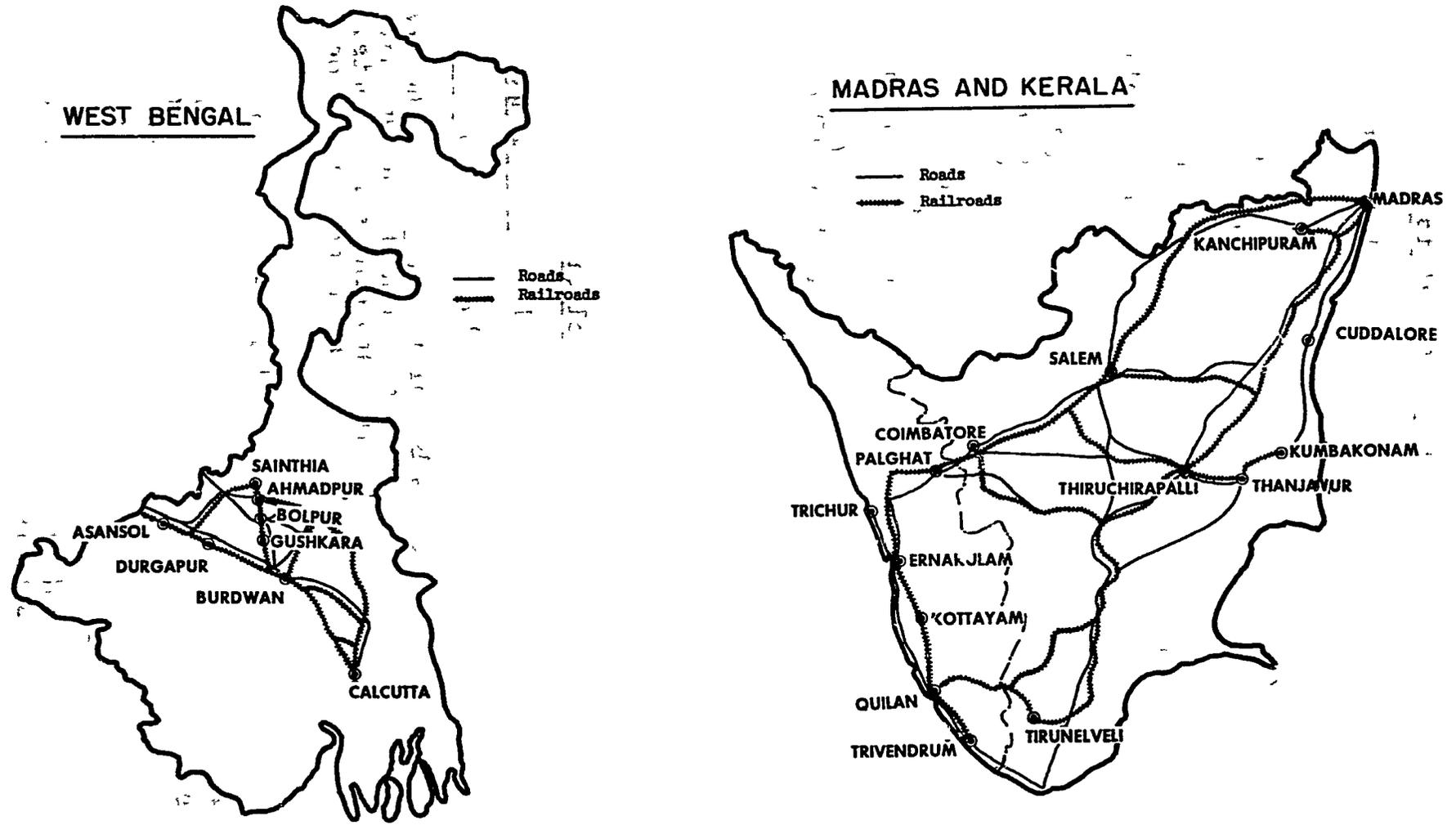
Burdwan market is an old and expanding one. It is not a close-knit market like Bolpur. It consists of a cluster of localized markets separated from one another by a distance ranging from one to five miles. Because of a network of good feeder roads in the interior, the area of the hinterland extends to over 20 square miles.

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1 About 36 percent of the irrigated land in the state was in the two districts in 1958-59 compared to 20 percent in Midnapore.

2 Known as 'aratdars' in local parlance.

Figure 4 Maps of West Bengal and Madras States showing locations of markets and rails and roads joining them



Source Adapted from National Council of Applied Economic Research, Techno-Economic Survey of Madras, Department of Industries, Labour and Co-operation, Madras, October 1960, and National Council of Applied Economic Research, Techno-Economic Survey of West Bengal, National Council of Applied Economic Research, New Delhi, November 1962

Gushkara is an old market in Burdwan near the northern border of the district. The market is situated on the Ajoy river which marks the boundary of Birbhum and Burdwan districts. There are several important rice markets on the north and south of Gushkara. The hinterland serving the market runs as a strip of land extending over 15 to 20 miles in the east-west direction. Price changes considerably influence the inflow of paddy from the hinterland into these primary markets. The hinterland of the market is very fertile. It is enriched by the deposit of alluvial soil by two nearby rivers - Ajoy and Kunur. The area is also well served by canals of the Damodar Valley Corporation.

Situated within a rich rice belt, Bolpur has evolved to be the most important rice market in the district of Birbhum during the last two decades. Bolpur is a close-knit market and milling centre at the southern end of the Birbhum district. The hinterland serving Bolpur market extends to over 20 square miles. With development of road facilities, some feeder markets have been developed from where paddy generally moves to mills in Bolpur by trucks.

Rice mills and aratdars purchase paddy directly from growers. Sometimes, paddy is sold to the mills by commission agents and traders working in the interior. The market has 18 rice mills, 19 husking machines and a large number of aratdars. Husking machines generally husk paddy for cultivators' consumption. Rice husked by them scarcely moves out. The production of the market is approximately 18 lakh maunds (67,000 in tons) of rice per year.

Ahmadpur is situated in the heart of Birbhum district. The hinterland of Ahmadpur falls on the lower slope of the hill region of the Santhal Parganas. In this region paddy occupies more than 90 percent of the cropped area. Rabi crops like wheat, barley, gram and pulses represent about 5 percent of the cropped area, while sugar cane and vegetables occupy 3 percent and 2 percent respectively.

The hinterland is of a radius of 10 - 12 miles. The market is well-linked with the neighbouring markets Labpur and Kirnagar situated in the east at a distance of 10 miles and 15 miles respectively. There are seven rice mills with an average annual production of 5 to 6 lakh maunds (18.6 thousand to 22.4 thousand in tons) of rice. The mills are sparsely situated, distance from one another being 2 - 3 miles. The market is mainly a milling and dispatch centre. There is very little local demand for milled rice. Most of the rice produced in the mills is exported to Calcutta and to the coalfields of West Bengal

and Bihar. There are 22 aratdars whose main function is to collect paddy from the local farmers and sell it to the rice millers at a small margin. Fourteen husking machines operate in the area.

Sainthia is a small town in the Suri subdivision of Birbhum district, situated on the southern side of the More river. The market is situated eleven miles east of Suri, the district headquarters. The land in this area is very fertile. Paddy is the most important crop. The area is also an important producer of pulses, potato, and other vegetables such as cabbage and cauliflower grown in the 'More belt'. The average yield of crops in this area is significantly high. Canal water is available for paddy cultivation. Wells, constructed on the river belt, and tanks are the source of irrigation for other crops.

Sainthia is one of the most important trading centres in the state of West Bengal. Although rice is the main item of trade the market also exports potatoes, pulses and gur. A cold storage opened in the market during recent years caters to the needs of the potato growers. The hinterland of the market has a radius of about 15 - 20 miles. It is linked with a number of roadside markets which serve as feeder markets.

There are eight rice mills in this town, of which one remained closed in 1967. The average turnover of rice is about 500 mds. (185 quintals) of rice per mill per day. Quite a large number of arats (the number sometimes goes up to about 50) are located at different points around the market. Their function is to collect paddy from local farmers and supply it to the mills. Rice millers of the market also import paddy by rail from Nalhati (about 30 miles) and Rampurhat (about 20 miles). Both of these market centres are in the northern part of the district.

The fifteen husking machines in the market mainly convert paddy for local consumption.

All the three markets in Birbhum district (Bolpur, Ahmadpur and Sainthia) are major milling centres. Most of the paddy brought to the market is converted into rice before it is dispatched to Calcutta. As against this, Burdwan and Gushkara dispatch considerable amounts of paddy to the terminal markets.

Table 8.4 shows the number of rice mills and husking machines in the five primary markets.

TABLE 8.4: NUMBER OF RICE MILLS AND HUSKING MACHINES  
IN THE PRIMARY MARKETS, WEST BENGAL, 1967

	BURDWAN	GUSHKARA	BOLPUR	AHMADPUR	SAINTHIA
No. of Mills	34	7	18	7	10
No. of Husking Machines	15	10	19	14	15
No. of aratdars	N.A.	N.A.	78	22	50

N. A. - Not Available

Source: Information collected by research investigator, 1967.

#### Transport and Flows of Supplies

Railways play a very important role in the transportation of paddy in these five markets. All the markets are located on the loop line of the Eastern Railway which bisects Burdwan and Birbhum districts from south to north.

Burdwan is a very important railway junction on the Eastern Railway. It is only 67 miles from Calcutta, and serves as a gateway to the western and northern India. The market is closely linked with its hinterland by good metalled roads in three directions, east, west and north. The river Damodor running just on the southern side of the market acts as a great barrier to the free flow of paddy from the region lying on the other side of the river. However, in winter when major bulk of the crop is marketed, the market is made accessible by constructing a fair-weather road over the river. Grand Trunk Road, a major national highway, passes through the heart of the town touching its eastern and western ends separated by a distance of about six miles.

Bolpur is now well connected with its hinterland by road in all directions. It has been connected by railways for a long time. Prior to 1963 it was at a disadvantage in road connections because of the unbridged river Ajoy on its western side and remained more or less isolated. Since the opening of "Bidhan Bridge" in 1963 it is now closely integrated with the western side of the river.

Bolpur is directly connected with Calcutta, the major terminal market for Bolpur. With the opening of "Bidhan Bridge" some rice is sent to the industrial and coal belts of West Bengal and Bihar.

An all-weather pucca road from Suri (a distance of about 15 miles) to Katwa (40 miles) passes through the heart of Ahmadpur. A second road running north - south through the town is more or less, parallel to the loop line of the Eastern Railway. Ahmadpur is also a railway station on that line. Ahmadpur - Katwa narrow gauge line also starts from Ahmadpur.

When there was free trade rice was dispatched to Calcutta, Asansol, Raniganj and U. P. Dispatches were made mainly by rail. With the opening of a new road linking Sainthia with Bolpur in 1963, considerable quantities of rice are sent by trucks.

Sainthia falls on the loop line of the Eastern Railway, and is an important railway junction on a branch line to Suri and Ondal. It is fairly well connected by road and railway with the other parts of the district. It is also connected with Berhampur - the district town of Murshidabad, with a metalled road. Murshidabad, being deficit in rice, imports huge amounts of rice from Sainthia. Because of the proximity of the Indo-Pakistan and the Bengal-Bihar borders a considerable amount of rice is smuggled from Sainthia into these areas.

Gushkara is in a very favourable position. It is a railway station lying on the Howrah - Sahibganj loop of the Eastern Railway. Previously rice was dispatched only to Calcutta by rail but with the development of metalled roads during the last two decades considerable amount of rice is sent by road to Durgapur, Asansol and to the coal fields of Bengal and Bihar.

#### Varieties of Rice Traded in the Markets <sup>1</sup>

Comparison of rice prices would generally pose as much a problem in West Bengal as it does in Madras. <sup>2</sup> The Economic Botanist of the Directorate of Marketing had estimated that no less than 500 varieties of fine rice are grown in the State of West Bengal. <sup>3</sup> Hundreds of varieties

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1 Discussion of varieties heavily draws from the Brochure on the Marketing of Rice in West Bengal. Directorate of Agriculture, Govt. of West Bengal, 1955 and from the Report on the Marketing of Rice in India.

2 See Madras section for the discussion of varietal differences and the consequent difficulties in comparing rice prices.

3 See Report on the Marketing of Rice in India, op. cit.

of medium and coarse rice are grown in the State. The nomenclature is usually confusing as these numerous varieties are given various trade names that are derived from outstanding physical attribute of the grain, or from the place of its origin, or even from characters in Hindu mythology.

As elsewhere in India, sometimes the same variety is known by different names in different regions and often two different varieties are known by the same name in different regions. <sup>1</sup> However, most of these varieties are only of local significance. There are only a few varieties in fine, medium and coarse rice that are of commercial importance. Among the well-known fine varieties are Patanai, Ballam, Chamormani, Rupsail, Kataribhog, Bhasamanik, Kataktari, Bachphul, Jota Bashpul, Joshwa, Badshabhog, Kalankatti, Sitala, Ramsal, Govindbhog and Dadkhani. Some of these such as Patanai and Sitala have been popular in as far away places as Africa and Europe during the British rule.

Some well-known medium varieties are Bankatulsi, Bhasamanik, Kajal, Nagra, Bankchur, Sarjamukhi, Pathurkuchi, Indrasail, Kalambhog, Jhingasail, Kojolsail, Dudsar, Latisal, Kastiksal, Dudhakalma and Jatkalma. Of these Kalma, Nagra, Indrasail and Banktulsi enter trade on a large scale. Kalma and Bhasamanik are sometimes also graded as fine varieties, although they are usually known as medium.

The coarse varieties are generally unattractive and are usually consumed locally in the rural areas. Very small quantities of these enter trade channels. <sup>2</sup>

While collecting paddy and rice prices it was possible to collect data for a single variety - Kalma - for most of the period under consideration. When prices were not available for Kalma, prices for such other medium varieties as Bhasamanik or Nagra were collected for that period. The collection of prices for a uniform variety has introduced an element of comparability in the data which

- 1 e.g. The Patanai of West Bengal is known as Kalambank in Orissa. Whereas Patanai, when handpounded in raw form is known as 'Seeta'. The name Patani is elsewhere known as Patna after the city in Bihar. However, the rice is mostly grown in West Bengal and Orissa.
- 2 It must be pointed out, however, that when prices reach inordinately high levels there is some substitution of coarse rice for medium grades in urban areas.

is absent in the case of Madras State.

Kalma is mostly grown in Birbhum and Burdwan district, and, therefore, is a major commercial trade name in the region. Two sub-varieties are known within Kalma variety, Dudhkalma and Jatakalma. The prefix 'dudh' which means 'milk' signifies the colour of the rice. Dudhkalma is more white in colour as compared to Jatakalma. Jatakalma is produced from a kind of paddy having tufty ears and is, as such, termed Jatakalma (Jata meaning a tuft of hair).

#### Structure of Rice Marketing in West Bengal

A striking feature of the rice marketing as compared to wheat and jowar is the relatively unorganized and localized nature of the trade. Despite its importance in consumption over a wide region in India, there are no rice markets that are comparable to the wheat markets like Moga and Hapur in their size and in their influence in signalling prices to other distant markets. When there is free trade the Keralites consume coarse rice imported from Eastern and Southern Madras, and the Tamilians in the Northern part of Madras import rice from across the border in Andhra. Most of the West Bengal's production is consumed locally and some commercially imported from the neighbouring Orissa State. <sup>1</sup> The traditional trade linkages have, therefore, been limited to the neighbouring areas, e.g. between Kerala, Madras and Andhra, between West Bengal, Orissa and Assam, between Andhra, Maharashtra and Madhya Pradesh etc. It was only when rice prices were record high in 1957, that there was some movement of rice from Andhra Pradesh to Calcutta. Most of the trade names of rice are only of local significance. There are only some fine varieties of rice such as Basmati grown in U. P. and Punjab, Kamod grown in Madhya Pradesh and Maharashtra, Nellore of Andhra and Patna of West Bengal that enter channels of interstate trade. However, demand for most of these high priced varieties is confined to the discriminating and comparatively well off. Consequently their turnover tends to be relatively small implying little interlinking of markets located at long distances from each other. Out of the total rice production in the country only ten percent of the crop is of fine variety, about thirty percent of medium variety and some sixty percent of the crop is of coarse quality <sup>2</sup> which is low-priced and commonly consumed

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1 Some rice has been trickling through East Pakistan through illegal means. However this does not qualify as a regular commercial trade channel; nor does the central allotment made to the state. Some Basmati rice is imported from Punjab. However, it is consumed by only a small proportion of high income consumers.

2 The Rice Economy of India, p. 9.

in the rural areas by cultivators and other rural families who purchase it in small village markets.

This nature of the rice trade may be partly due to the strong preferences for the local varieties in most of the areas. <sup>1</sup> The structure of rice marketing is, therefore, much more complex than of other crops. Rice marketing is much more dispersed with more intermediaries and stages of marketing (Compare charts showing channels of rice, wheat and jowar marketing). A great deal of the production is marketed at the paddy fields, and purchased by various types of agents who take it to rice mills for conversion. It must be pointed out, however, that this is not only due to the nature of rice marketing. For in Punjab and Andhra Pradesh where there is a long history of market regulation rice markets constitute important assembly centers. <sup>2</sup> In West Bengal considerable amount of paddy is sold directly to the millers at the mills. That is why there are no big assembly centres for rice similar to those for wheat, cotton or ground-nut.

Chart 8.1 describes the general process through which paddy moves from the producer to the consumer in West Bengal. The relative importance of a specific channel of marketing varies from one region to another. (Also see Figure 4 for rail and road connections).

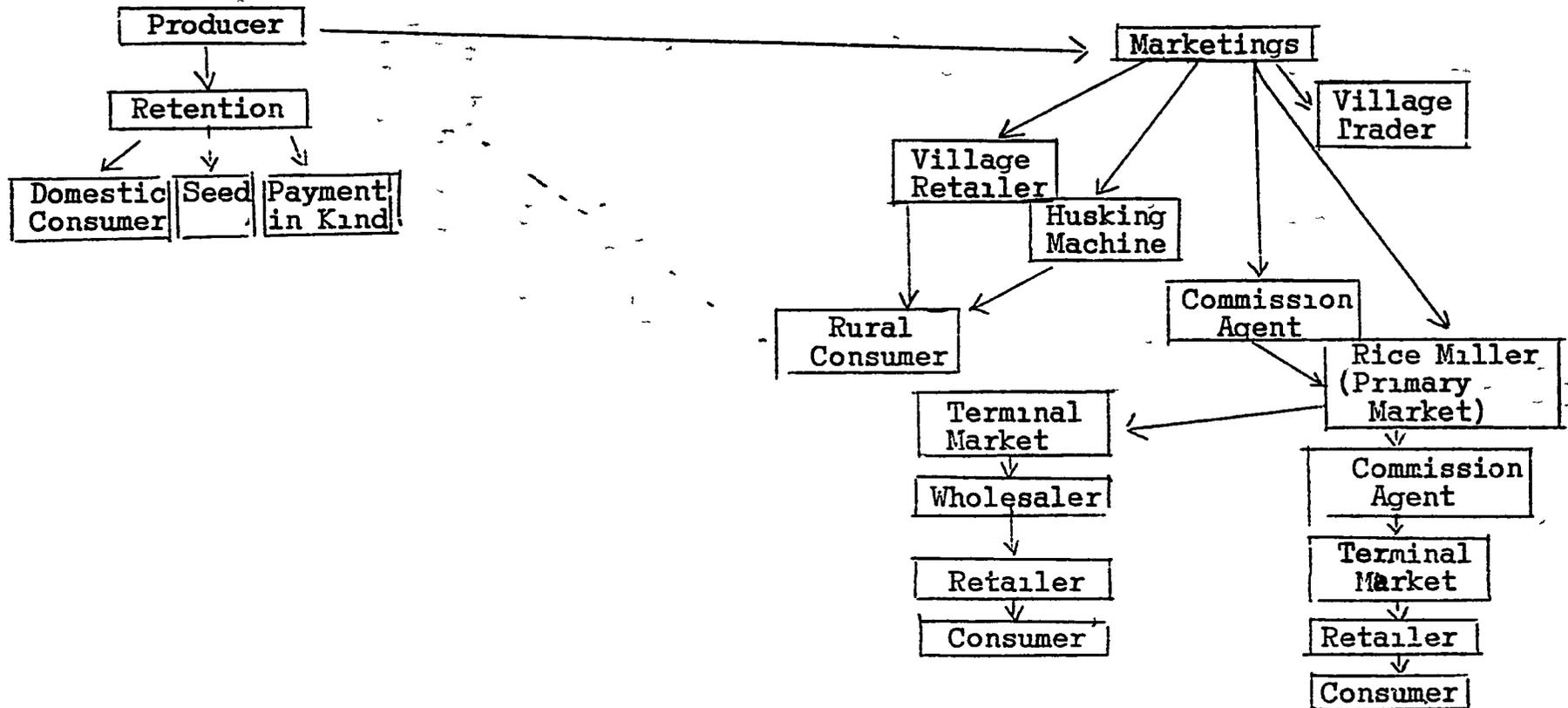
It is well-known that in a subsistence economy a large part of the total food production is retained for domestic consumption and, therefore, never leaves the farm. Agricultural production has been traditionally divided in Indian literature in two parts (a) Retention, (b) Marketing. The quantities retained are used for: (1) domestic consumption, (2) seed, and (3) for making payments in kind to farm labourers. Due to the prevalence of very high rice prices in the last two decades, hardly any paddy is used as cattle feed.

#### Share of Various Processing Agencies

A great deal of the paddy retained for domestic consumption in West Bengal is hand-pounded. Some of the village retention goes to husking machines (usually located within the village or in a nearby village) for

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- 1 For discussion of varieties see 146-148.
  - 2 See for instance results of the survey of the relative importance of different agencies conducted by the Directorate of Marketing and Inspection in the Rice Economy of India, op. cit., p. 17. Table 1.

CHART 8.2 CHANNELS OF RICE MARKETING IN FREE TRADE  
WEST BENGAL



conversion. Very little milled rice is consumed in rural West Bengal. It was estimated that as much as 84 percent of the total paddy production of the state was hand-pounded before the Second World War. The percentage had declined to 70% in 1953-54. <sup>1</sup> A few prominent traders in West Bengal estimated the present extent of hand-pounding at about 30 to 40 percent of the total production, with the husking machines processing more than two-thirds of the balance. <sup>2</sup> The estimate of the total milling of paddy by the organized rice mills has not been, even in the best years, over 1 million tons (i.e. 20 to 25 percent of the production) by either the trade or the government. The declining trend in hand-pounding is a result of various factors. (1) The output per day is very low and hand-pounding in comparison to the mechanical devices involves much hard labour. (2) The cost structure is very unfavourable to hand pounding. The cost of hand-pounding ranged from Rs. 2.50 to Rs. 2.80 per maund in 1959 as compared to the charge of Rs. 0.75 per maund by rice mills.<sup>3</sup> But the declining trend in hand-pounding is most of all due to the mushrooming of husking machines in rural areas which have provided more competition than rice mills that are much less accessible. The husking machines, of which there are approximately 12,000 in West Bengal, play a threefold role. <sup>4</sup>

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- 1 Estimates of the Rice Milling Committee 1955 op. cit.
- 2 In my conversations with the millers.
- 3 The Rice Milling Committee's Report of 1955 estimated the cost of hand-pounding to be Rs.1.50 to Rs. 1.75 per maund compared to Rs. 0.35 to Rs. 0.65 in case of small machines and Rs.0.25 to Rs. 0.50 in case of rice mills. It is not known how the labour component in these costs is estimated. It is likely that the opportunity cost of labour used in hand-pounding is much lower than that used in the rice mills. In that case the difference in the cost in the two processes may not be as great. The district handbooks on marketing published by the West Bengal Government, for example, state the cost of hand-pounding and milling to be Rs. 1.50 and Rs. 1.00 per md. of paddy respectively. See District Handbooks on Agricultural Marketing for the districts of Birbhum, Midnapore and Howrah. It should be noted that the costs of milling in these estimates are not as low as those of the Rice Milling Committee.
- 4 An estimate made by the president of the East India Rice Millers Association and of the Federation of all-India Food-grain Dealers' Association.

1. They mill rice for the producer who boils his own paddy at home and brings it for milling. The producer uses this rice either for domestic consumption or as payment to his landless workers. This system of milling is known as Bani.
2. Husking machines mill paddy for a small trader who buys paddy from the cultivator and takes it to a husking machine for hulling. Under various government controls this practice is almost extinct now.
3. Owners of husking machines also purchase paddy on their own account and sell it in the wholesale market. Under monopoly procurement scheme huskers are not permitted to purchase paddy on their own account. It is said, however, that many of them still deal in paddy and, if caught, claim immunity, professing that the paddy belongs to a cultivator who wants to get it milled for his personal use.

Such hullers are growing in numbers and have proved to be an important competitive force for the large size miller as well. Compared to a rice mill, a husking machine requires a very small amount of capital. This is an important cause of their growing numbers. Millers, however, believe that there is an additional factor which has been responsible for diverting paddy from mills to husking machines. With various official controls (such as a percentage levy on the rice milled, etc.) which have been imposed frequently in the last decade, the share of the husking mills has gone up considerably. Due to their dispersed and unorganized nature, these machines have been less amenable to strict checks and controls and have, therefore, thrived at the cost of organized rice mills.

#### Intermediaries:

A cultivator either brings his paddy directly to a wholesale market or sells it to one of the intermediaries. An intermediary would bring it to a wholesale market or sell it to a rural consumer. Several different agencies work as intermediaries. There are village retailers, small hullers, commission agents, paddy wholesalers and village agents who all operate as intermediaries.

Village retailers purchase paddy in small quantities and convert it into rice through local husking machines. Village retailers may or may not own a husking machine. Rice

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1. At the 1967 prices, installation of a husking machine cost approximately Rs. 8,000 as compared to Rs. 150,000 to Rs. 450,000 for fixed establishment of the latter.

is sold to rural consumers in small quantities. Many cultivators, themselves, hand-pound paddy and sell small quantities of rice locally.

A substantial amount of paddy is directly sold by the cultivator to the rice miller. Almost all the rice consumed by the urban consumer is milled rice. Millers, therefore, handle the largest proportion of the total marketed surplus. Cultivators either bring their surplus to the rice mill or the millers send their agents to purchase paddy from the villages.

Agents of rice mills are sometimes regular employees but more frequently are commission agents who bring rural surplus to the miller for a small commission. It is difficult to estimate the extent of paddy directly sold to the millers. A large number of mills are located in secondary and terminal markets. <sup>1</sup> A secondary market may be generally described as the one which purchases paddy from primary centres located in rice producing regions, converts it into rice and forwards it to the major consuming centres. A terminal market is the one located in a major consuming centre, catering mostly to the needs of the local populace.

Elsewhere in India commission agents procure paddy on behalf of wholesalers or millers located in such secondary or terminal markets and send it to the millers for a small commission. This is not very prevalent in Burdwan and much less so in Birbhum district. Almost all the paddy is converted into rice locally before it is shipped to Calcutta.

Paddy wholesaler is another important agency in rice trade in India. There are traders who simply purchase and sell paddy. They do not own a rice mill. Paddy traders in main producing centres purchase paddy from cultivators on their own or through commission agents and sell it to rice millers in the nearby primary markets. A large number of paddy traders operate in Madras State. They get paddy converted into rice locally from a rice mill at a fixed cost and then sell it to a wholesaler in a secondary or a terminal market, or they simply sell paddy to a miller in secondary or terminal markets. Such paddy traders do not operate in Birbhum and Burdwan districts in West Bengal. A basic difference in the pattern of marketing in these two districts of West Bengal and in Madras is that most of the marketed surplus of paddy is assembled and processed at the primary market level in West Bengal, whereas in Madras a large percent of it is purchased by paddy wholesalers and

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1 Out of 729 mills in West Bengal in 1967, 105 mills are located in three urban centres, Calcutta, Siliguri and Asansol.

commission agents of millers for direct dispatches to secondary and terminal markets. In Bengal commission agents and traders in villages assemble paddy mostly for local rice millers in the nearby market. The millers and wholesalers in the terminal markets of West Bengal thus have less direct access to and contact with paddy surplus areas. One would therefore, a priori, expect less vigorous competition in assembly of paddy in Birbhum and Burdwan as compared to Tanjavur district in Madras.

A rice mill operator is not necessarily an owner of the mill. In number of cases rice mills are given on lease by owners on annual basis. Rice mills are, therefore, not necessarily in the hands of those who have the capital to invest in a mill. In West Bengal the larger local commission agents lease rice mills for long durations.

Most of the mills purchase their stock of paddy soon after it is harvested. In order to avoid deterioration, stocks for the off-season are generally kept in the form of paddy. As millers in the primary markets receive orders from secondary and terminal markets paddy is converted into rice and shipped to the destination. Shipments are both on own account as well as for commission. It is difficult to state whether most of the marketed paddy is stocked at the primary market or by the wholesaler at the terminal market.

Milled rice from primary markets moves from the rice mill to the wholesaler in the terminal market. It is then sold to a retailer and eventually to a consumer.

#### Credit Operations

Rice millers interviewed in this survey indicated that during free trade they advance credit to cultivators. It is not known how extensive the practice is. Credit is generally extended at the time of sowing. It is difficult to state the exact rate of interest charged on loans. Some rice millers stated that they advanced credit only to selected large landowners, as there was little risk in such advances. They, therefore, charged a nominal rate of six to seven percent per year. The millers indicated that the sowing time is the off-season for trade when most of the capital of the trader is free. They, therefore, found it profitable to advance short term loans that earned them some income in the generally slack season.

In some cases millers stated to have charged a small deduction in the price of the paddy when it came to the market for sale. In many cases millers charged regular interest. In both the cases whether there was a deduction in the price or an outright payment of interest the rate of interest generally seems to have amounted to twelve percent to eighteen percent per year.

### Caste and Communities

Caste does not appear to be a barrier to an entry into the trade. Rice milling or commission agency is not restricted to any particular caste in West Bengal as is the case in many other parts of India. In West Bengal, a significant number of rice mills are owned by Marwaris. <sup>1</sup> Table 8.5 shows the Bengali - Non Bengali division of rice mill ownership in Birbhum district.

TABLE 8.5: THE BENGALI - NON BENGALI DIVISION OF RICE MILL OWNERSHIP IN BIRBHUM DISTRICT

MARKET	TOTAL NO. OF MILLS	BENGALI	NON BENGALI <sup>1</sup>
Bolpur	18	9	9
Sainthia	10	3	7
Ahmadpur	7	4	3
Total	35	16	19

<sup>1</sup> (Mainly Marwari, some muslims and Biharis).

Source: Birbhum district Rice Mills Association, 1967.

### Capital and Entry into Trade

Very little information is available on concentration, if any, of economic power in grain trade. Some very rudimentary enquiries conducted in the surveys of this study in various states suggest that despite a large number of commission agents and wholesalers, there is a rather high concentration of volume of operations in wheat trade in Punjab and in jowar trade in Maharashtra. Similar information could not be obtained in West Bengal as the timing of the enquiry (in 1967 there was 100 percent levy on millers) proved to be inopportune for acquiring past records from millers. Mukherjee's study of paddy purchases by various mills in Bolpur in 1933-34 and in 1961-63 suggests that there probably has been an increase in the degree of concentration of rice milling business in West Bengal.

<sup>1</sup> Out of 729 rice mills in the State, 169 are owned by Marwaris.

the three decades. <sup>1</sup> On the basis of his data and other records (not documented) Mukherjee contends that "the control of the mills has largely passed on to financially stronger parties, mostly of Calcutta, having a wide interstate network of procurement and storing centres. <sup>2</sup>

It is apparent from the cost of fixed establishment of a rice mill that ownership of a rice mill requires a great deal of capital investment. Ownership is, however, not a necessary condition for rice trading. A large number of rice mill operators are not mill-owners. They lease mills on long duration from rice millers.

Despite such concentration, paddy trade in West Bengal seems as crowded as the rest of the agricultural trade in India. Number of rice mills has grown from 253 in 1953 to 729 in 1967. <sup>3</sup> Despite the increase in rice production of the state and some increase in the share of millers in husking paddy there still remains a great deal of underutilized capacity in the rice mills. <sup>4</sup> In addition to this underutilized capacity, there are numerous husking machines located in the primary markets as well as in the surrounding rural areas. <sup>5</sup>

1 Chittapriya Mukherjee, "Productivity and Profitability of Rice Milling Industry in Birbhum", Khadigramodyog, December, 1966, pp. 241-263. It should be noted, however, that if concentration is defined as the percent of firms handling half of the total volume of operations in a market in a year, Mukherjee's estimates for Bolpur indicate much less concentration in rice milling as compared to wheat and jowar trading in Punjab and Maharashtra respectively. For the discussion of concentration in wheat and jowar trade see

2 Ibid. p. 248

3 Figures are supplied by the West Bengal Rice Mills Association, and includes both huller type and sheller type mills.

4 Mukherjee's study of the Bolpur rice mills indicates that in 1933-34 the average period of running for 17 rice mills was 8.5 months a year in which 1.29 million maunds of paddy was hulled per mill. In 1962-63 the 19 rice mills each milled 1.4 million maunds of paddy in a year. Mukherjee shows that neither the utilization nor the working pattern of the mills has changed over the three decades.

5 The number of husking machines in West Bengal has been growing at a very high rate, and is currently estimated at 12,000 by West Bengal Rice Mills Association.

Table 8.6 shows the approximate daily capacity of a rice mill as shown by daily production in the peak milling period and the actual annual milling of rice in five major districts in West Bengal.

TABLE 8.6: APPROXIMATE AVERAGE QUANTITY OF RICE MILLED IN NORMAL TIMES IN WEST BENGAL 1

DISTRICT	NO. OF MILLS	DAILY MILLING	AVERAGE	ACTUAL	ESTIMATED NO.
		OF RICE IN THE DISTRICT AT PEAK	DAILY CAPACITY PER MILL	ANNUAL QUANTITY OF RICE MILLED	OF WORKING MONTHS
		(000 mds.)	(mds.)	(000 mds.)	
24 Paraganas	111	30	270	5,000	5.60
Burdwan	64	20	310	3,200	5.30
Birbhum	58	18	300	2,500	4.66
Midnapore	64	20	310	3,000	5.00
Houghly	31	7	225	1,200	5.75

1. Data are for late 1950's and early 1960's.

Source: West Bengal Rice Mills Association

Due to absence of market regulation and abolition of free trade no reliable information was readily available on the number of commission agents and traders presently in business. However, in 1957-58 there were 76 licensed dealers in rice and paddy in Bolpur. <sup>1</sup> In 1958-59 the number increased to 87. <sup>2</sup> The number in a small primary market in Burdwan district increased from 62 to 72 in the year. <sup>3</sup> In 1959, 1751 traders in Birbhum district applied for a license to operate in rice and paddy out of which 1,704 were actually granted licenses. <sup>4</sup>

This across the board surplus capacity (in husking machines, rice milling and wholeselling) should, in fact, result in keen competition among various functionaries, to acquire the maximum share of the market arrivals. Some

1 Market Arrivals of Foodgrains, 1958-59 season, op. cit. p. 143.

2 Ibid.

3 Ibid.

4 Ibid.

investigations suggest that this competition is not only restricted to the traders within a market but extends to a number of market areas. The Centre's study of the Bolpur market in 1958-59 noted that "neighbouring markets have competed with Bolpur for drawing market supplies. This was due largely to low volume of arrivals and the existence of surplus milling and dealing capacity in all the markets. In short, there was competition not only among dealers in a market, but in some cases also between markets for buying supplies from the hinterland." <sup>1</sup>

It is, therefore, the overcrowding and the consequent underutilization of capacity coupled with concentration of volume in a few hands which is of prime interest to us from the viewpoint of its effect on prices.

Large scale purchases of the millers are bound to have some impact on the market price of the paddy. In Bolpur, for example, 6 mills (i.e. a third of the mills) purchased slightly less than half of the total paddy purchased in the market during 1960-63. <sup>2</sup> Whether millers manoeuvre prices to their own advantage, totally out of the market context, could be examined by various comparisons.

1. By comparing harvest prices of a particular rice mill with the district average farm harvest prices maintained by the department of agriculture. <sup>3</sup>

2. Whenever possible by comparing harvest prices paid by two mills in the same market.

3. By comparing harvest prices paid by various rice mills in the five primary markets.

4. By comparing miller's harvest prices with the paddy wholesale prices and rice wholesale prices maintained by official agencies.

5. By comparing wholesale rice and paddy prices in the primary markets with those in Calcutta.

1 Ibid.

2 Mukherjee op. cit. p. 249, Table 7.

3 The Dept. of Agriculture obtains district average harvest prices by collecting prices received by cultivators at the village site for their paddy.

For although prices in a primary and a terminal market mutually interact with each other in stabilizing at a particular level, it is the price in a large terminal market such as Calcutta which has the stronger influence on the other. If there is a great deal of disparity in these various prices it is likely that the millers fix their paddy prices out of line with what a competitive market would demand. Under such circumstances it is necessary to investigate factors that are likely to lead to such price distortions.

### Sources of Market Intelligence

Rice millers sell paddy to consuming centres, both on commission as well as on their own account. The network of informal contacts with wholesalers and commission agents is a major source of market intelligence. As in other parts of India trading contacts are established by sending one's own agents to the important rice producing areas. Traders in primary markets also send their agents to important terminal markets for establishing contacts. Once such contacts are established, market information is exchanged between them usually by sending postcards, telegrams and telephones. It is through these contacts that traders acquire information about general crop conditions, demand in consuming centres, etc. Newspapers are also used extensively for studying crop outlook and possible changes in governmental policies. No governmental agencies or radios are used for acquiring market intelligence by the traders in West Bengal. Mainly due to the basic distrust of the traders, the government has done hardly anything for extending market intelligence to the trader. The practice of using personal contacts for acquiring market intelligence has been an age old one, and still continues to be the most popular due to lack of any other source of acquiring such information. Orders are sometimes placed by writing a post-card but mostly through telegrams and telephones.

A significant feature of market intelligence is that rice traders and millers appear to acquire market information about rice for very limited areas. Traders in West Bengal usually were knowledgeable about the conditions in Orissa, Bihar and to a lesser extent in U. P. They, however, did not have either trading contacts with, or market information on any other part of India.

### Crop Seasons

West Bengal has three rice crops in a year, Autumn (Aus), Winter (Aman) and Summer (baro) crops known according to the season in which they are harvested. The winter crop is by far the most important of the three crops. Over 90 percent of the total production in the two districts is

produced in winter season. The crop is usually sown between June and August and harvested between November and January. The remaining ten percent of the rice is produced in Autumn. This crop is sown between May and June and is harvested in September. The summer crop which is sown between November and January and harvested between April and June is insignificant in this region.

### Seasonality of Paddy Marketing

No reliable information is available on paddy arrivals in the primary markets. As most of the marketed surplus passes through rice mills, quantities purchased by the milling sector in the primary markets should give us some idea about the seasonality of the market arrivals. However, such data could not be collected due to (i) lack of comprehensive records with most of the mills, <sup>1</sup> and (ii) due to unwillingness of the millers to part with milling records. <sup>2</sup> Whatever, therefore, is discerned about the seasonality is based only on secondary data.

Rail and river borne traffic in rice and paddy during post harvest months as proportion of the annual traffic is most commonly used as the index of seasonality in paddy marketing. Six year data for prewar period for three major areas converging on Calcutta indicated that 50 percent of the total annual arrivals of paddy and rice moved to Calcutta between January - April period. <sup>3</sup> Paddy arrivals in Calcutta were the heaviest in January and February (28 percent of the annual) while rice movement was the heaviest in February and March (also 28 percent of the annual total). Arrivals diminish gradually after March, the months of the least activity being July and August in the case of paddy and September to November in the case of rice. The degree of seasonality was slightly more pronounced

1 This is partly a result of the frequently changing ownership and/or management of most of the rice mills.

2 Concealment of records is an old phenomenon. Even as early as 1958-59, the Agro-Economic Research Centre at Santiniketan found it impossible to collect reliable market arrival data from traders and millers. This attitude is more pronounced in periods of severe government restrictions. A very prominent rice miller in Bolpur was put in jail during my visit to the market in March 1967 for having supplied false records to the Civil Supplies Authorities.

3 Rice Marketing Report, pp 23-24.

in case of paddy as compared to rice. <sup>1</sup>

Data for more recent years assembled by the Agro-Economic Research centre at Santiniketan indicate various interesting aspects of marketing in West Bengal. The data collected in 1957-58 and in 1958-59 from six hinterland villages each of Bolpur and Saktigarh, a primary market in Burdwan district, show that the heaviest proportion of the arrivals is marketed in the first two quarters (i.e. between November - April). The proportion marketed in the two years in Bolpur was 67 percent and 74 percent of the annual arrivals. It was 71 percent and 74 percent in Burdwan. <sup>2</sup> Estimates of total arrivals during the following year are not available from the Centre's follow-up study in 1959-60. However, the data for the first quarter (December - February) confirm the high seasonality in mill arrivals. <sup>3</sup> The investigation also suggests that (i) the poorer the crop, the higher the proportion marketed in the early part of the market year and (ii) that there is a distinctly different pattern of marketing between a small and a large cultivator. <sup>4</sup> Small cultivators were observed to have marketed their surplus earlier in the season probably due to the relatively low staying power. The data also indicated that in recent years larger landowners have been further delaying disposal of their surplus to the later part of the year. <sup>5</sup> This behaviour of the medium and large cultivators, being contrary to the long term pattern, has proved to be an important destabilizing force in the market operations. The study also shows that a high proportion of the post harvest arrivals between December - February were converted into rice and shipped to Calcutta in these three months. In 1959-60, the dispatches constituted 69 percent of the arrivals in mills. <sup>6</sup> The estimates corroborate the high seasonality in utilization of milling capacity observed earlier in West Bengal.

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1 Ibid. p. 24

2 Report on Market Arrivals, op. cit., p. 134

3 A Brief Report on Arrivals, Stocks, Prices, etc. in the Rice Market at Bolpur, W. Bengal, Agro-Economic Research Centre, Visva Bharati, Santiniketan, (unpublished manuscript.)

4 Report on Market Arrivals, op. cit. p. 134.

5 Ibid. e.g. the proportion marketed in the fourth quarter increased at the cost of the proportion marketed in the third quarter.

6 Ibid.

## CHAPTER IX

### MARKET INTEGRATION

This chapter will examine the degree of interdependence in the formation of paddy and rice prices in West Bengal markets. The following hypotheses are tested in the present analysis:

1. A hypothesis of interdependence between village level prices and primary market prices of paddy.
2. A hypothesis of interdependence (a) of paddy prices between various primary markets and (b) of rice prices between various primary and terminal markets.
3. A hypothesis of interdependence of paddy and rice prices within a primary market as in a competitive market the margin between the prices of rice and paddy will not be greater than the costs of processing.
4. A hypothesis that because of the competitive nature of the wholesale trade differences between prices of rice in the terminal and the five primary markets are not greater than transport costs. <sup>1</sup>

There is very little information available on the prices prevailing in the village markets. Occasional village level surveys conducted by various agencies provide some information which is, however, scanty and not easily available. The only other source of information available is the data on Farm Harvest prices collected by the various state departments of agriculture. <sup>2</sup> The data have obvious

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1 For the methodology used in the analysis of market integration see pp. 10-15.

2 "The Farm (Harvest) prices of rice and other agricultural commodities are collected by the state governments generally in accordance with a scheme drawn up by the Ministry of Food and Agriculture, Government of India. Under this scheme the farm price is defined as the average wholesale price at which the commodity is disposed of by the producer to the trader at the village site during the specified harvest period. This period is fixed by each state government, having regard to the local harvesting time for the crop. Usually six to eight weeks after the commencement of the harvest are taken to be the period for reporting farm (harvest) prices. In each district a few villages are selected at the rate of 1 to 3 villages for each tehsil (sub-district) depending upon the extent to

limitations as there is usually only one harvest price available for a whole district for a whole harvest period. It is, therefore, an average of a number of prices collected from a number of villages for a number of varieties. However, the data at least roughly indicate the general price level prevailing in the village level markets.

Table 9.1 shows the Farm Harvest Prices in Burdwan and Birbhum districts and corresponding wholesale prices in the primary markets in the two districts for a seven year period between 1955 and 1962. The table illustrates the close correspondence between the movement of primary market prices and of the district harvest prices during the period. The table also shows high correlation between Birbhum and Burdwan harvest prices for all the years except 1959 when the ceiling price of rice was fixed by the government at Rs. 47.93 per quintal. Harvest prices reflect the prices prevailing in the open market. It can be noted that the open market prices were much higher than the official ceiling price.<sup>1</sup> The high harvest price in 1959 reflects the competition prevailing in the countryside for acquiring supplies.

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Footnote continued from previous page

which the crop is grown in the tehsil. Generally, ten villages are selected in each district. In each selected village, the average price at which the commodity is sold by the producer is recorded by the primary reporter, generally the revenue official, on every Friday or any other day fixed for the purpose. If no sales take place on the appointed day, the price at which the commodity was sold last during the week is recorded. In cases where village site transactions do not take place, the price relates to what the farmer received for his produce and is obtained by subtracting transport and other marketing charges from the wholesale price quoted in the assembling market where the produce is disposed of. The average price for the district for each season is obtained as the simple arithmetic average of the tehsil prices, which are in turn, the simple arithmetic averages of village prices. The most commonly produced variety and quality of rice in each district is fixed and farm (harvest) prices for that variety and quality alone are collected."

- Rice Economy of India, p. 91.

- 1 For further evidence see Appendix, p185 for miller's harvest prices for 1959. These are the prices paid by the primary market millers to cultivators in the harvest of 1959.

TABLE 9.1: HARVEST PRICE AND WHOLESALE MARKET PRICE OF RICE, WEST BENGAL: 1955 to 1962.

YEAR	BURDWAN DISTRICT			BIRBHUM DISTRICT			
	Harvest Price <sup>1</sup>	Burdwan Market Price <sup>2</sup>	Guskara Market Price <sup>2</sup>	Harvest Price <sup>1</sup>	Bolpur Market Price <sup>2</sup>	Ahamad-pur Market Price <sup>2</sup>	Sainthia Market Price <sup>2</sup>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1955	43.20	44.82	44.47	39.83	N.A.	N.A.	N.A.
1956	44.55	50.54	46.06	41.85	N.A.	N.A.	44.89 <sup>4</sup>
1957	54.16	54.17	53.90	52.65	N.A.	N.A.	59.74 <sup>4</sup>
1958	59.19	64.80	64.37	59.05	N.A.	N.A.	56.70 <sup>4</sup>
1959	56.70	47.93 <sup>5</sup>	47.93 <sup>5</sup>	63.46	N.A.	N.A.	47.93 <sup>5</sup>
1960	65.48	65.07	64.40	62.10	61.48	N.A.	63.32
1961	58.73	56.53	55.86	55.35	54.16	53.16 <sup>3</sup>	54.68
1962	60.08	56.62	56.20	60.75	53.67	54.68	54.25

1 For Definition and collection of harvest price see: page p.162 footnote 2.

2 Wholesale market prices are the January averages of weekly open market price quotations collected by the Dept. of Agriculture from respective primary markets.

3 Refers to four weeks of February - March.

4 Refers to the price of Bhasamanik Rice; all the remaining prices listed are for Kalma Rice.

5 Statutory maximum price fixed by the State Government - not an open market price.

Source: 1. Records of Rice Mills.  
2. Department of Agriculture, West Bengal.

It should also be noted that in 1959 for the first time the difference between the Birbhum harvest price and the Burdwan harvest price increased well above Rs. 6.00 per quintal - more than the costs of transport and handling would justify. This may be because, at the beginning of 1959, there was an interdistrict ban on the movement of paddy and rice from the surplus districts in West Bengal. This inhibited free flow of supplies and, consequently, resulted in a great price disparity between the two neighbouring districts.

Price Formation in a Wholesale Market

A Case of Rice Prices

The degree of interdependence between prices in various primary markets and the terminal market is estimated by calculating correlation coefficients between weekly wholesale prices of rice in these markets. Table 9.2 shows correlation coefficients between weekly wholesale rice prices in the terminal market, Calcutta and those in the primary markets.

TABLE 9.2: CORRELATION MATRIX FOR THE WEEKLY WHOLESALE PRICES OF RICE IN THE WHOLESALE MARKETS, WEST BENGAL, FEBRUARY 1961 to DECEMBER 1963. <sup>1</sup>

MARKET	(r)					n=150
	PRIMARY MARKETS					TERMINAL MARKET
	Bolpur	Burdwan	Gushkara	Sainthia	Ahmadpur	Calcutta
Bolpur	1.00	0.99	0.98	0.97	0.96	0.96
Burdwan		1.00	0.99	0.97	0.97	0.96
Gushkara			1.00	0.97	0.97	0.97
Sainthia				1.00	0.97	0.95
Ahmadpur					1.00	0.95
Calcutta						1.00

<sup>1</sup> r's given above relate to the period February 1961 to December 1963 as data for earlier years were not available for some markets. r's calculated for Burdwan, Gushkara from January 1955 to December 1964 (n=470) and for Sainthia, Burdwan, Gushkara, Bolpur and Calcutta from April 1959 to December 1964 (n=224) show equally high correlations.

All the prices used for calculating correlations matrix in Table 9.2 are of Kalma variety of rice. The high correlations obtained for these markets, when compared with Madras correlations and with primary-terminal correlations in case of Maharashtra, illustrate the importance of grain specification in price movement. This can also be illustrated within West Bengal with some more comparisons. For earlier years, Calcutta price quotations were available for Nagra instead of Kalma variety. Similarly, Sainthia market quotations were available for Bh samanik variety. Both these varieties of rice are medium quality and usually range in price at par with Kalma. Table 9.3 shows correl-

ations between Calcutta prices of Nagra variety and primary market prices of Kalma variety. Table 9.4 shows correlations between Sainthia prices of Bhasamanik variety and other market prices of Kalma variety.

TABLE 9.3: CORRELATIONS BETWEEN NAGRA RICE PRICES IN CALCUTTA AND KALMA RICE PRICES IN OTHER MARKETS, JANUARY 1955 - NOVEMBER 1961

	'r'		n=361
	GUSHKARA	BURDWAN	
Calcutta (Nagra)	0.96	0.95	

It will be noticed that the correlation coefficients between Calcutta and the other two markets are slightly lower than those in Table 9.2. The difference is, however so insignificant that, given the quality of the data, it will be stretching the point too far to claim that the lower correlations are due to varietal differences. In case of Sainthia prices, however, the drop in the correlation coefficient is more obvious (Table 9.4). The correlation coefficients between Sainthia and other markets are much higher when Sainthia prices are of Kalma variety than when they are of Bhasamanik variety.

TABLE 9.4: CORRELATIONS BETWEEN BHASAMANIK PRICES IN SAINTHIA AND KALMA PRICES ELSEWHERE, DECEMBER 1955 to AUGUST 1958

	'r'			n=154
	BURDWAN (KALMA)	GUSHKARA (KALMA)	CALCUTTA (KALMA)	
Sainthia (Bhasamanik)	0.92	0.83	0.85	

The analysis illustrates that when all the price quotations refer to a single variety, correlation coefficients are indeed very high and show close relationship between price movements in various markets. The rice prices in these particular primary markets and Calcutta, therefore, support the hypothesis that price formation in an individual market takes place through a competitive process and is not a result of monopolistic manoeuvring by a few traders.

A Case of Paddy Prices: (Market Price Quotations)

Table 9.5 shows a similar correlation matrix for weekly wholesale prices of paddy in the five primary markets.<sup>1</sup>

TABLE 9.5: CORRELATION MATRIX FOR THE WEEKLY WHOLESALE PRICES OF PADDY IN THE PRIMARY MARKETS, WEST BENGAL, FEBRUARY 1961 to OCTOBER 1963<sup>1</sup>

'r'

MARKET	BOLPUR	BURDWAN	GUSHKARA	SAINTHIA	AHMADPUR
Bolpur	1.00	0.97	0.96	0.96	0.96
Burdwan		1.00	0.98	0.96	0.96
Gushkara			1.00	0.94	0.95
Sainthia				1.00	0.97
Ahmadpur					1.00

- <sup>1</sup> r's given above relate to the period February 1961 to October 1963 as data for earlier years were not available for some markets. r's calculated for Gushkara, Sainthia and Burdwan for the period May 1959 to October 1963 (n = 233) and for Burdwan and Gushkara for the period January 1955 to October 1963 (n = 459) show equally high correlations.

The wholesale paddy prices in the five markets also provide firm support to the hypothesis of interdependence in market price formation.

Millers' Paddy Price Quotations

The weekly wholesale prices of rice and paddy used in the preceding analysis are weekly open market prices prevailing in the wholesale markets. It is, however, possible that the open market quotations as recorded by the Department of Agriculture do not accurately reflect the prices paid by individual millers in the market. This would happen, if millers are in a strong bargaining position and undercut the prevailing market rate. Data on paddy prices were, therefore, collected directly from

- <sup>1</sup> Paddy prices are not available for Calcutta, a terminal market which mostly deals in rice. Even if paddy is imported into Calcutta, it is purchased at the price prevailing in the primary markets and sold after being converted into rice. There is, therefore, no active paddy market in Calcutta.

prominent individual millers in these primary markets. Such records were maintained by some millers in each market and related to the paddy prices paid to the cultivators during the months of January and February of each year: the harvest period when most paddy purchases are made.

Such records are of considerable value in studying various aspects of market integration.

1. A comparison of paddy prices paid by millers in various primary markets would show us the degree of interdependence between these markets in the price formation at the miller's level, and will thus be a further verification of the hypothesis of overall competitiveness in paddy marketing.

2. A comparison of prices paid by millers with wholesale paddy prices prevailing in the same market will tell us something about the presence of monopolistic elements, if any, in these markets since any such monopolistic forces are bound to be reflected in the effective prices paid by millers. As the millers' price records are maintained only for their own use, and are not meant for submitting to any official agency, as in the case of stock records, there is an element of reliability in these data which is of considerable value in judging the extent of competitiveness in the primary markets.

Table 9.6 shows a correlation matrix for miller's paddy prices. It, once again, illustrates the high degree of interdependence between prices paid by millers in the various markets. Appendix 1 shows the wholesale market prices and millers' prices of paddy in the five markets in January and February of each year.

TABLE 9.6. CORRELATION MATRIX FOR MILLERS' PADDY PRICES BETWEEN JANUARY AND FEBRUARY FOR EACH YEAR PRIMARY MARKETS, WEST BENGAL, 1959-1962 1

	'r'					
	n = 36					
	BOLPUR	GUSHKARA	GUSHKARA	SAINTHIA	AHMADPUR	AHMADPUR
		MILL #1	MILL #2		MILL #1	MILL #2
Bolpur	1.00	0.95	0.87	0.95	0.94	0.92
Gushkara #1		1.00	0.93	0.97	0.97	0.96
Gushkara #2			1.00	0.89	0.92	0.92
Sainthia				1.00	0.98	0.98
Ahmadpur #1					1.00	0.99
Ahmadpur #2						1.00

- 1 Correlations in Table 9.6 refer to 1959-62 period. Similar correlations were calculated for Bolpur, Gushkara #1 and #2, Sainthia and Ahmadpur #1 for 1956-62 period (n=63) and for Bolpur, Gushkara #2, Sainthia and Ahmadpur #1 for 1955-62 period (n=81). They also show similar high correlations. Correlations were not calculated for Burdwan as price records were missing for a number of weeks. See Appendix below for Burdwan prices.

The wholesale prices show a close correspondence with the millers' prices in all the markets,

#### Interdependence of Rice and Paddy Prices

Having dealt with the market prices at the village level, miller's level, primary market level, and the terminal market level, we will now deal with the degree of interdependence between paddy prices and rice prices within a primary market. In a competitive market price movements of rice and paddy will be highly correlated with each other. Table 9.7 shows the degree of correlation between the prices of rice and paddy within each of the primary markets.

TABLE 9.7 CORRELATION BETWEEN WEEKLY WHOLESALE PRICES OF RICE AND PADDY IN PRIMARY MARKETS: WEST BENGAL  
(r)

PADDY PRICES	RICE PRICES			
	BOLPUR	BURDWAN	GUSHKARA	SAINTHIA
Bolpur	0.98			
Burdwan		0.97		
Gushkara			0.96	
Sainthia				0.98

The high interdependence between prices of rice and paddy within each market is evident from Table 9.7.

Relationship between the paddy and rice prices in a market will depend upon the following factors:

1. Percentage recovery of rice from paddy.
2. Percentage recovery of other by-products from paddy.
3. Cost of conversion
4. Value of the by-products acquired.

1. The data of the Ministry indicate that recovery rate of rice in handpounding is greater than in machine milling. The data show following rates of outturns from paddy by different processes. These rates are, however, not supported by tests conducted by Dorris Brown. His data show much lower yield in handpounding. They also show much greater difference in huller and sheller milling rates. <sup>1</sup>

TABLE 9.8 RECOVERY RATE OF RICE FROM PADDY BY DIFFERENT PROCESSES

PROCESS	PERCENTAGE RECOVERY OF RICE (INCLUDING BROKEN RICE)
Handpounding	70 to 73
Hullers or Huller type mills	68 to 69
Sheller type mills	69 to 70

Source: Rice Economy of India, Ministry of Food and Agriculture, Government of India, 1961, p. 36

Outturn of rice also appears to vary considerably with varieties, type of storage, moisture content and degree of polishing which is normally absent in handpounding due to the labourious and expensive nature of the procedure.

2. When the degree of polishing is relatively high, as is the case in machine milling, the proportion of bran removed increases with the corresponding reduction in the proportion of rice. <sup>2</sup>

The recovery and the utility of the by-products also varies with the method of processing. "The first handpounding of paddy in a Dhenki or pestle and mortar removes the husk and part of the bran. As this bran gets mixed up with husk, it cannot be used for feeding animals. But the subsequent handpounding which is intended to polish rice, gives pure bran. On the other hand, in the huller type of mills, all bran is mixed up with finely powdered husk and is, therefore, lost as cattle feed. In sheller type of mills, bran comes out in unadulterated form. <sup>3</sup> The yield

1 Dorris B. 's unpublished data.

2 Rice Economy of India, op. cit. p. 36.

3 Technically known as 'Engleberg Huller'.

of bran is also much greater in Sheller mills. Thus, in respect of useful by-products, sheller type mills have considerable advantage over huller type of mills, which account for a major part of the mechanized sector.

3. The cost of conversion is much higher in handpounding as compared to machine milling, although there is considerable variation in the cost depending, in the case of handpounding, on the type of equipment used and in the mechanized sector on the size and type of the plant. According to the Rice Milling Committee's estimates in 1954-55 the cost of processing ranged from Rs. 6.00 to Rs. 7.00 per quintal of rice processed by small mills and Rs. 1.00 to Rs. 2.00 per quintal of rice processed by rice mills. <sup>1</sup>

As handpounded rice constitutes a very small proportion of the total marketed surplus, the overall effect of higher costs of handpounding on market prices is unlikely to be significant.

4. The relationship of paddy and rice prices also depends upon the price of the by-products, namely husk and bran. Paddy husk is not of much commercial importance. A major part of it is used as cattle feed by producers or as fuel in the boilers of rice mill engines and in the parboiling equipment. Rice bran has high feed value and is mainly used as feed when obtained in unadulterated form. It should be recalled that pure bran is obtained only in sheller mills which are insignificant in numbers in West Bengal.

Rice bran is of great potential value as a source of oil. This industry is, however, still in an infant stage in India and, therefore, not of great importance at present. The market price of husk has varied between Rs. 2 to Rs. 5.00 per quintal; that of bran from Rs. 20 to Rs. 45 per quintal during the period of this study. A mill owner in Bolpur gave the following break up of rice and by-products as being the normal milling rate:

From 150 kg. of paddy:	96 kg. rice
	5 kg. brokens
	40 kg. husk
	5 kg. bran
	4 kg. wastage

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1 Ibid. p. 37

Using lower and upper limits of the market prices as the opportunity cost of the by-products, the value of by-products from a quintal of milled rice amountec Rs. 1.20 to Rs. 4.25 in a huller type mill during the period studied.1 In sheller mills as much as 8 to 12 kgs. of bran is obtained.

### Margin Between Rice and Paddy Prices

In a perfect market, prices of rice and paddy should bear the following relationship:

$$\begin{aligned} &\text{Price of rice per quintal} \\ &= (1.5)^2 \text{ price of paddy per quintal plus the cost} \\ &\quad \text{of conversion of 1 quintal of rice - the value} \\ &\quad \text{of the by-product from a quintal of rice.} \end{aligned}$$

We have data only on the general range but not on actual prices of by-products during the period of this study. However, in a perfectly competitive market given a stable rate of recovery of rice and by-products from paddy, higher prices of by-products could result in decline in the margin between the price of rice and its paddy equivalent. When the market value of the by-products is zero (which seems to be a reasonable assumption since most of the by-products were used as fuel in the mills although in reality prices of these by-products have shown a steady increase over the period of this study), the margin between the price of rice and its paddy equivalent will be equal to the cost of milling paddy into rice.

Table 9.9 shows the extent to which the actual price of rice was greater or smaller than 1.5 times the price of paddy.

If the Ministry's estimates of milling costs (on p.151) are assumed to apply to West Bengal and if one assumes the value of by-products to be nil, a difference of up to Rs. 5.00 per quintal between rice and its paddy equivalent should be adequate to cover milling costs and normal profits for the miller.3 Table 9.9 shows the

- 1 With Rs. 2 and Rs. 5.00 per quintal as the price of husk and Rs. 20 and Rs. 45 per quintal as the price of bran.
- 2 The normal rate of outturn is usually taken to be 66% of the amount of paddy in the official literature. See Report of the Rice Milling Committee 1955.
- 3 Milling costs usually show the operating costs of mill, and do not include depreciation and returns to management. These costs depend on a complex set of factors, vary from one mill to another and therefore, complicate the problem of making assumptions. Rs. 5.00 is arbitrarily used.

numbers of times that the difference between price of rice and paddy remained less than Rs. 5.00 in these markets. Price of rice remained more than Rs. 5.00 and less than Rs. 8.00 above its paddy equivalent most of the times during each of the years between 1955 and 1964. The price difference between rice and paddy has not shown any trend during this period.

The margin between the price of rice and paddy appears to have been higher than most of the estimates of milling costs cited earlier and was more commensurate with the costs of handpounding than of milling<sup>1</sup> although a major portion of the marketed surplus is handled by rice mills. This phenomenon thus contradicts the argument usually advanced that decline in handpounding is a result of the keen competition faced by the indigeneous sector from the milling sector. The lower costs of milling do not appear to have been reflected in the market price of rice.

The phenomenon of high margin between the price of rice and paddy is still more curious in view of the strong evidence of competition, not only between millers within a market and between various primary markets but also between primary and terminal markets for acquiring a share of milling. This is amply illustrated earlier by the analysis of intermarket price relations.

TABLE 9.9. DIFFERENCE BETWEEN THE PRICE OF 1 QUINTAL OF RICE AND 1½ QUINTAL OF PADDY, PRIMARY MARKETS, WEST BENGAL, 1955 to 1964

YEAR	NUMBER OF WEEKS WHEN PRICE DIFFERENCE REMAINED LESS THAN RS. 5 PER QUINTAL			
	BURDWAN	GUSHKARA	SAINTHIA	BOLPUR
1955	9	10	N.A.	N.A.
1956	19	19	N.A.	N.A.
1957	3	6	N.A.	N.A.
1958	0	1	N.A.	N.A.
1959	1	7	N.A.	N.A.
1960	2	1	19	N.A. <sup>2</sup>
1961	0	3	5	33
1962	17	10	7	29
1963	4 <sup>1</sup>	4 <sup>1</sup>	5	32 <sup>3</sup>

1 Out of 41 weeks  
 2 Out of 47 weeks  
 3 Out of 43 weeks  
 N.A. - Data not available

<sup>1</sup> See p. 151 above.

Since a large number of rice mills are located in terminal markets the terminal market traders do not have to depend on the mills in producing centres for their supplies of rice. They are, therefore, in no likely position to be dictated by the price terms of the millers in primary markets. The argument is also supported prima facie by the presence of excess capacity in the milling industry in general which should provide further initiative to the millers to acquire the maximum share in milling.

A more careful study of Table 9.9 indicates that the margin between rice and paddy price has been lower in Bolpur compared to the other three markets. However, this seems to be more due to the poor transport facilities and consequently low prices of rice in this market rather than due to any other factor.

In view of the evidence of competition it seems unlikely that the millers would add an exorbitant profit component to the processing costs when arriving at the mark-up for the rice price. The only logical explanation of the presence of high margin seems to be the high cost of milling in West Bengal. The figures quoted by the Birbhum District Rice Mill owners Association in their memorandum submitted to the state government lend support to this hypothesis. Table 9.10 shows the milling costs for 1949-50 as estimated by the Minimum Wages Committee and those presented by the Mill Owners' Association for 1963-65.

TABLE 9.10: MILLING COSTS PER QUINTAL OF RICE IN 1949-50 and 1963-65 (Rs.)

COSTS	1949-50 <sup>1</sup>	1963-65 <sup>2</sup>
i. Wage cost	0.95	1.52
ii. Other costs (excluding paddy)	0.45	2.50
	<u>1.40</u>	<u>4.02</u>
iii. Additional costs (1965 estimates)		0.48
iv. Shortage in recovery of rice		3.00 <sup>3</sup>
v. Total of items 1 to 4	<u>1.40</u>	<u>7.50</u>
vi. Profit realized/expected	0.89	1.35
vii. Amount to be added to paddy price	<u>2.29</u>	<u>8.85</u>

1 1949-50 estimates are derived from the Report of the Minimum Wages (Rice Mills) Committee.

2 1963-65 figures are estimates of the Birbhum Rice Mill Owners' Association.

3 Percentage of broken rice or loss in weighing etc. stated in quantity and converted at the current price of rice.

Source. Chittapriya Mukherjee, "Productivity and Profitability of Rice Milling Industry in Birbhum", Khadiagramodyog, December 1966, p. 261, Table 15.

"Comparing the two sets of figures, it is evident that those for 1963-65 (particularly items iii and iv and at least part of item ii) are loaded with such items of expenditure which ordinarily are not required to be incurred by normally efficient mills." <sup>1</sup> In that case milling costs are quite comparable to those of handpounding <sup>2</sup> and do not present a more efficient alternative to traditional processing.

Milling costs allowed by various state governments under the monopoly procurement programmes provide a further indication of the higher milling costs in West Bengal. Andhra Pradesh and Madras allow Rs. 1.50 per quintal of paddy (i.e. Rs. 2.25 per quintal of rice) for milling. There has been increasing demand from the millers in Madras to raise this to Rs. 2.50 per quintal of paddy (i.e. Rs. 3.75 per quintal of rice). In West Bengal, however, the government allowed Rs. 6.70 per quintal of paddy (Rs. 10.00 per quintal of rice). The cost of milling had been reduced subsequently to Rs. 8.00 per quintal of rice. Since the procurement of paddy has been taken over by the Food Corporation of India in West Bengal, the cost allowed by the government has been fixed at Rs. 5.36 per quintal of rice. This is still much higher than the milling charges allowed in other states. And millowners still charge Rs. 7.75 per quintal of rice to customers who approach mills directly for conversion of paddy into rice.

Several factors seem to be responsible for the relatively higher costs of milling in West Bengal. Milling outturn is relatively lower in West Bengal. First, the improved varieties of rice now grown in West Bengal are much more prone to lodging than the varieties in Southern India. <sup>3</sup> The old West Bengal varieties such as Kalma and Bhasmanik are also more chalky than most of the varieties commonly grown in Madras and Andhra Pradesh. The greater lodging factor and chalkiness both result in heavier milling losses in West Bengal than is true in Madras. <sup>4</sup> Secondly,

1 Ibid. p. 261.

2 See P. 151 above.

3 I am indebted to Dr. Dorris Brown for providing information on these points.

4 This is supported by the estimates of normal recovery of rice from paddy given in the Report of the Rice Milling Committee for West Bengal and Madras. The recovery rate for West Bengal is 67 percent in milling and husking. Similar rates for Madras are 71 percent to 73 percent in mills and 72 percent to 74 percent in small hullers. Report of the Rice Milling Committee, 1955, Ministry of Food and Agriculture, Government of India, pp. 134 and 145.

technological improvements in milling have been almost completely negligible in West Bengal as compared to most other areas which have made considerable strides in introducing new sheller type mills. These mills yield higher outturn of rice and pure bran than is obtained through huller type mills. Little reliable statistics are available on the number and on year to year increase in sheller type rice mills. <sup>1</sup> However, the data for 1960 indicate that in that year there were 461 sheller type mills in Mysore, 128 in Gujarat, 131 in U. P., 95 in Madras and 85 in Punjab, as compared to 5 in West Bengal. <sup>2</sup> While there was a general governmental policy of discouraging establishment of new rice mills so as to revive the hand-pounding industry, the restrictionist policy was followed with much more fervour in West Bengal than elsewhere in India. This may have been at least partly due to the pressure brought about by the preponderant handpounding interests in the state. <sup>3</sup>

The third factor, which is rarely reflected in recorded statistics is the relatively higher component of illegitimate costs in West Bengal. Due to the frequent imposition of restrictions on trade movement and stocking restrictions, compulsory levy and ceiling prices often accompanied by official raiding of stocks etc., tipping law enforcement officers is much more prevalent and much more extensive in West Bengal than in Madras. Such costs have been perpetuated due to the impending nature of controls. <sup>4</sup> The frequent imposition of restrictions also

1 This is apparently because of two factors. Often a miller would go ahead and set up a new rice mill while his application for a license to operate is being processed. Secondly, there is considerable delay in the coverage of new rice mills.

2 Rice Economy op. cit. pp. 34-35. The Rice Milling Committee's Report indicates that in 1955 there were 7 sheller mills in West Bengal, see: Report of the Rice Milling Committee, 1955, p. 60. It is not known why the number declined from 1955 to 1960. The statistics, at least show that there was no increase in the number of sheller mills between 1955 and 1960.

3 Some rice millers in West Bengal took considerable initiative in introducing sheller type mills and rice bran solvent plants in the state during the period of this study, but with little success. The only bran solvent plant in the state in 1966 operated mostly on the bran imported from U. P. and M. P. See V. S. Aggarwal's address to the Seminar on Modern Technology of Rice Milling in August 1966, Calcutta.

4 Consequently relations between rice millers and the state government have also been less harmonious in West Bengal than in Madras.

cause diversification of stocks as millers tried to avoid raiding of their stocks by law enforcement officers.<sup>1</sup> The paddy was usually milled before it was stocked. It is conceivable that storage losses were heavier when stocks were kept in the form of rice than in the form of paddy. Besides, whenever levy was imposed on millers by the state government, the procurement was made in the form of rice. Then paddy was immediately processed and maintained in the form of rice.

All these factors seem to result in much greater milling costs and higher market margins in West Bengal. The actual returns to millers, however, do not seem to be higher.

### Regional Price Spread

So far we have been examining the degree of interdependence between various prices. The high correlations between various prices suggest a high degree of interdependence between prices. Now we will examine (i) the magnitude of price difference between prices in the terminal and the primary markets in relation to the costs of transport, and (ii) if the price difference is greater or less than the cost of transport.

Table 9.11 shows the cost of handling and shipping a quintal of rice from the primary markets to Calcutta.

The costs are given for truck transport rather than for rail transport as the former indicate the upper limits.

TABLE 9.11: COSTS OF RICE SHIPMENTS FROM THE PRIMARY MARKETS TO CALCUTTA, 1963  
(Rs. per quintal)

ITEMS	BURDWAN	GUSHKARA	BOLPUR	AHMADPUR	SAINTHIA
Weighing, Stitching, Twine	0.19	0.19	0.25	0.25	0.21
Cost of Bag	0.50	0.50	0.50	0.50	0.50
Loading	0.10	0.10	0.10	0.10	0.10
Truck Fare	1.50	1.50	1.50	2.00	2.50
Unloading, Hand- ling, Postage & Storage					
Charges in Calcutta	0.75	0.75	0.75	0.75	0.75
Total Costs	3.04	3.04	3.10	3.60	4.10
Plus Commission of the Seller	1.5%	1.5%	1.5%	1.5%	1.5%

Source: Interviews of the traders

<sup>1</sup> See p. 193 for further discussion.

The rail fares per quintal of rice were as follows in 1963:

TABLE 9.12: RAILWAY FARE PER QUINTAL OF RICE, 1963

	BURDWAN	GUSHKARA	BOLPUR	ADHMADPUR	SAINTHIA
Rail fare per quintal	0.48	0.64	0.73	0.93	0.90

Source: Booking Clerk, Eastern Railways

It will be noted that transport by road appears to be considerably more expensive compared to the rail costs. However, this may be due to the fact that the transport costs given in Table 9.11 are for the year 1963. It was stated by the traders interviewed in the markets that the trucking charges went up by as much as 50 to 75 percent between 1955 and 1963. The relative increase in the railway fares was much lower.

The sharp rise in the trucking costs at the end of the period could have been due to the increased demand for trucks as a result of the construction of a bridge on the Ajoy river in 1962-63 which connected Birbhum district with Calcutta and thus made truck movements out of Birbhum district possible. Trucking costs have also risen due to high road taxes on commercial vehicles, higher road risks due to highjacking etc. and of course due to the relative rise in the popularity of trucks due to their quick movement.

It should, however, be noted that the costs of rail shipment in fact are not as low as they appear from Table 9.12 as there are other handling costs (such as movement to and from the railway station, a tip to the railway booking clerk for acquiring wagons etc.) which add up to the costs of shipment. <sup>1</sup>

Table 9.13 shows the extent of price difference between Calcutta and the primary markets.

1 The cost of moving a quintal of rice from a warehouse to the railway station varied from 8 n.p.s. to 15 n.p.s. in primary markets and was approximately 30 n.p.s. in Calcutta. The tip varies according to the relative supply of wagons, urgency of the shipment and the size of the consignment.

It will be noted that the price difference between Calcutta and the primary markets was not always positive, so that shipment to the terminal market was not always profitable. In Ahmadpur the difference remained negative about 1/3 times, whereas in Burdwan it remained negative about a fourth of the time period.

Considering only the positive difference, price difference between Calcutta - Burdwan and Calcutta - Gushkara remained lower when compared to the other three markets. <sup>1</sup> This could partly be a result of the fact that Burdwan and Gushkara are nearer to Calcutta as compared to the remaining three markets. <sup>2</sup> It is, therefore, possible that in order to be competitive with Burdwan and Gushkara price levels in the other three markets had to be slightly lower to make up for the slightly higher transport costs to Calcutta.

Price difference between the remaining three markets and Calcutta, however, remained greater than transport costs much more frequently than in the other two markets. e.g. during the same period of time price difference between Burdwan - Calcutta and Gushkara - Calcutta remained above Rs. 4.00 per quintal for only 21 weeks and 31 weeks respectively whereas the difference remained above Rs. 4.00 129 times in Bolpur and 82 times in Sainthia (Table 9.13). In case of Ahmadpur the difference remained above Rs. 4.00 for 56 weeks in a much shorter time period. (Table 9.13).

This phenomenon could be partly a result of the relatively poorer transport facilities between Calcutta and the three markets in Birbhum district. <sup>3</sup> Burdwan and Gushkara are well linked with Calcutta both by road and rail. Grand trunk Road, a major national highway, passes through Burdwan. In case of road communications, however, Birbhum district was at a disadvantage during the period of this study because it was poorly connected by roads with

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- 1 Similar comparisons of Burdwan and Sainthia prices with Calcutta prices for January 1955 to December 1958 period showed that price difference remained negative 77 percent of the times in Burdwan and 78 percent of the times in Sainthia.
  - 2 See pp.141-2 for distances and location.
  - 3 See p.145-6 for discussion of transport facilities and location of markets.

TABLE 9.13. FREQUENCY DISTRIBUTION OF THE DIFFERENCES BETWEEN CALCUTTA AND PRIMARY MARKET WEEKLY WHOLESALE PRICES OF RICE.

MARKET	FREQUENCY	DIFFERENCE IN RS. PER QUINTAL								TOTAL NO.OF WEEKS	PERIOD OF REFERENCE
		LESS THAN Rs.0	Rs.0-2	Rs.2-3	Rs.3-4	Rs.4-5	Rs.5-6	Rs.6-7	Rs.7 AND ABOVE		
Burdwan	Absolute	57	85	35	16	7	5	2	7	214	Nov.1959 to Dec.1963
	Percentage									100	
Gushkara	Absolute	42	75	42	24	16	6	2	7	214	Nov.1959 to Dec.1963
	Percentage										
Bolpur	Absolute	16	27	21	21	33	42	25	29	214	Nov.1959 to Dec.1963
	Percentage									100	
Sainthia	Absolute	22	49	37	24	27	17	13	25	214	Nov.1959 to Dec. 1963
	Percentage										
Ahmadpur	Absolute	30	28	20	17	22	13	8	13	151	Feb.1961 to Dec.1963
	Percentage										

100

the neighbouring areas. <sup>1</sup> An overwhelming proportion of the dispatches from the markets in this district were sent by railways. <sup>2</sup> The poor transport usually leads to a greater uncertainty regarding timeliness of shipment and results in lower bidding of prices by terminal market traders in such markets.

Further analysis of the price difference shows that the excessively high price difference (arbitrarily defined as difference above Rs. 6 per quintal between the two markets) occurred most frequently between November and February.

Table 9.14 shows the percentages for various markets.

TABLE 9.14 PERCENT OF THE TIMES THE EXCESSIVE DIFFERENCE LYING BETWEEN NOVEMBER AND FEBRUARY

(percentage)					
	BOLPUR	SAINTHIA	AHDMADPUR	GUSHKARA	BURDWAN
Percent	80	80	99	100	100

The excessively high difference was completely restricted to November - February period in Burdwan, and Gushkara and almost completely in Ahmadpur, whereas it was slightly more spread over the year in Bolpur and Sainthia markets.

A few explanations can be offered for the phenomenon of high price difference being concentrated in November-February period.

1. Prices reach an off-seasonal high in October-November in West Bengal both in the primary and in the terminal markets. However, when the harvest of the new crop commences the prices in the primary markets show a downward tendency a week or ten days before those in the terminal markets. The reports of the expected arrivals discourage traders from offering high prices for the old paddy. Prices in the terminal markets follow suit only after a time lag, when an impact of the new crop is felt on the supplies in the terminal markets.

<sup>1</sup> It should be noted that a bridge on Ajoy river connecting Birbhum district with Calcutta was built only in 1961.

<sup>2</sup> See: West Bengal Section of the Report on Market Arrivals and a Brief Report on Market Arrivals at Bolpur, op.cit. for discussion of transport problems.

2. Even when the two markets are well linked with transport facilities, there is usually a heavy pressure on railway wagons and trucks when heavy arrivals start pouring in the primary markets in January and February. This causes transport bottlenecks and consequent glutting of the primary markets. Prices thus reach a seasonal low slightly earlier in the primary markets. Terminal market prices follow the trend only with a time lag which is often greater than it would be under conditions of a smooth flow.

In addition to this there are several other factors such as moisture, admixture and milling losses, milling lags etc., all of which are particularly more important in the immediate post harvest period. <sup>1</sup>

This is why price differences between markets may have increased more than transport costs in this period. Such differences were, however, temporary and corrected themselves with the movement of goods between markets.

Price differences, therefore, appear to have been completely restricted to this period in Burdwan district. In Birbhum, however, excessive price differences are noticed to have occurred occasionally during the rest of the year. This may have been due to the poor transport facilities between Birbhum and Calcutta which restricted movement only to rail shipments, so that when railway wagons were not available, and the supplies could not be shipped by trucks, the markets must have experienced depressed prices that could be corrected only with a free flow of commodities. Although no evidence is available to support this contention it was advanced as a possible explanation by the traders interviewed.

#### Trend in the Price Difference

Trend in the price difference between primary and terminal markets may be studied to examine if regional price disparities have decreased or increased over a period of time. Table 9.15 shows the percentages of the times that the price difference lay in various ranges in the two periods studied. The comparison of Kalma prices in Burdwan and Gushkara markets with the Calcutta prices of Kalma varieties for the two periods 1955-58 and 1959-63 indicates that price difference remained negative much more frequently in the earlier as compared to the later period. Price difference remained positive most of the times during the later period. The frequency of excessive price differences

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<sup>1</sup> I am indebted to Mr. Brown for this point.

(arbitrarily defined as being above Rs. 6 per quintal) increased slightly in the later period. Although the price difference remained positive most of the times during the later period it remained between Rs. 0 to Rs. 1.00 per quintal most of the times. (i.e. just enough to cover transport and handling costs and a nominal commission. Thus, despite a trend of rising price difference between the two primary markets and the terminal market price disparities remained commensurate with the rising transport costs and rarely remained exorbitantly high. It is difficult to state if this increase in the price difference noticed in the later portion of the period studied was entirely independent of the rising transport costs. It is plausible that it was a consequence of the steep rise in the costs of trucking which has increasingly taken away rail traffic in these two markets.

TABLE 9.15: PRICE DIFFERENCE BETWEEN THE TERMINAL AND THE PRIMARY MARKETS IN TWO PERIODS

MARKET	PERIOD	PERCENT OF THE TIMES THE PRICE DIFFERENCE BETWEEN CALCUTTA AND THE PRIMARY MARKET REMAINED.			
		LESS THAN 0	0-4	4-6	6 AND ABOVE
		Rs. per quintal			
Burdwan	Dec. 55 - Dec. 58	78	17	3	2
	Nov. 59 - Dec. 63	27	63	5	5
Gushkara	Dec. 55 - Dec. 58	77	19	4	0
	Nov. 59 - Dec. 63	19	61	11	9

#### Concluding Remarks

The analysis of paddy and rice prices at various levels illustrates a high degree of interaction between prices at various levels in the price formation at a specific level. Prices of paddy at the village level seem to be closely linked to the miller's price of paddy and to the primary and the terminal market price of paddy and rice.

Price differences between terminal and primary markets do not show price differences that are consistently higher than the costs of transport. Occasional disparities as do occur, can be explained in terms of transport bottlenecks seasonal factor and do seem to correct themselves with movements of supplies.

The only departure of the rice markets is in respect of the margin between the price of rice and its paddy equivalent. The disparity between these two price levels is of particular interest in view of the competitiveness of the market as evident from the study of the intermarket and intramarket relations in paddy and rice prices. The phenomenon of high margin between rice and paddy prices and the evidently high milling costs in the state open a new range of questions relating to technological and economic efficiency of the structure and functioning of the milling industry which is beyond the scope of this study but which no doubt needs further investigation.

APPENDIX TO CHAPTER IX

WHOLESALE MARKET PRICE AND MILLER'S PRICE OF PADDY; PRIMARY MARKETS; WEST BENGAL, 1955 to 1964\*

(Rs. Per Quintal)

Year	Week <sup>3</sup>	AHAMADPUR		BOLPUR		BURDWAN		GUSKARA <sup>4</sup>		SAINTHIA <sup>5</sup>	
		Whole-sale Price <sup>1</sup>	Millers Price <sup>2</sup>								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	1	---	24.62	---	---	27.32	24.30	27.00	25.65	---	21.25
	2	---	23.63	---	---	25.65	24.30	25.30	25.97	24.30	21.25
	3	---	24.30	---	---	26.33	25.65	25.30	25.97	---	22.95
	4	---	23.98	---	---	25.65	25.97	25.30	25.81	---	21.60
1955	5	---	24.30	---	---	24.98	26.33	24.62	29.03	---	21.60
	6	---	24.30	---	---	25.30	25.97	24.98	25.65	22.95	22.95
	7	---	24.30	---	---	25.65	25.97	25.30	28.35	24.30	23.63
	8	---	24.30	---	---	25.65	26.33	25.30	24.62	24.30	23.63
	9	---	24.30	---	---	24.98	26.33	24.62	24.46	24.30	23.63
	1	---	25.97	---	---	29.03	28.67	25.30	27.68	27.00	25.65
	2	---	25.65	---	---	27.00	---	25.30	27.68	25.65	22.95
	3	---	25.65	---	---	27.00	---	25.30	26.65	24.98	22.95
	4	---	26.33	---	---	27.00	---	24.98	27.00	24.98	22.65
1956	5	---	25.65	---	---	24.98	---	24.62	27.00	24.30	27.00
	6	---	25.65	---	---	25.81	23.30	25.81	26.65	27.00	23.95
	7	---	26.33	---	---	26.33	25.30	26.33	26.33	28.35	26.65
	8	---	28.00	---	---	27.00	25.65	27.00	28.35	28.35	27.68
	9	---	28.35	---	---	30.38	26.33	30.02	27.00	33.08	27.68
	1	---	31.73	---	25.65	29.70	31.05	29.70	30.54	32.40	30.38
	2	---	31.05	---	24.30	30.38	28.35	30.02	30.54	32.40	30.38
	3	---	31.73	---	25.30	31.05	28.35	30.70	30.89	32.40	30.38
	4	---	32.72	---	25.65	33.08	28.35	32.72	31.37	32.40	31.05
1957	5	---	34.34	---	25.65	33.08	28.35	32.72	31.32	32.72	31.05
	6	---	34.34	---	25.65	33.08	32.40	32.72	32.72	32.72	32.05
	7	---	33.08	---	26.33	33.08	32.40	32.72	34.94	32.72	32.05
	8	---	33.75	---	26.65	33.08	32.40	32.72	34.94	32.72	31.73
	9	---	33.08	---	27.00	33.08	32.40	32.72	34.94	35.10	32.05

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		1	---	29.03	---	29.70	40.50	37.80	40.50	35.10	28.35	27.68
		2	---	29.03	---	28.51	32.40	31.73	31.05	32.40	28.35	29.03
		3	---	31.05	---	29.03	33.08	32.40	32.40	32.40	30.70	30.38
1958		4	---	28.35	---	28.67	33.08	32.40	32.72	33.08	31.05	30.70
		5	---	31.73	---	28.67	35.78	33.08	35.10	34.07	31.73	30.70
		6	---	33.08	---	31.05	34.43	35.10	34.43	35.10	32.40	31.05
		7	---	33.08	---	30.70	34.43	33.75	34.43	36.77	33.08	32.05
		8	---	33.75	---	32.40	35.10	33.75	35.10	36.45	34.07	32.40
		9	---	33.75	---	35.10	35.10	33.75	35.10	36.45	33.75	33.75
		1	---	29.70	---	32.40	27.00	---	34.42	31.05	28.35	27.68
		2	---	29.70	---	31.73	27.00	33.08	34.42	31.05	28.35	29.03
		3	---	29.70	---	29.70	27.00	---	34.42	31.05	28.35	30.38
1959		4	---	29.70	---	29.70	27.00	28.35	29.70	31.05	28.35	30.70
		5	---	29.70	---	29.70	27.00	---	29.70	31.05	28.35	30.70
		6	---	29.70	---	29.70	27.00	25.33	27.00	31.05	28.35	31.05
		7	---	29.70	---	29.70	27.00	25.65	27.00	31.05	28.35	32.05
1960		8	---	29.70	---	29.70	27.00	25.65	27.00	31.05	---	32.40
		9	---	29.70	---	29.70	27.00	25.65	27.00	31.05	---	33.75
		1	---	38.48	39.66	35.78	36.10	35.10	35.42	37.80	37.13	27.68
		2	---	37.80	39.82	35.10	37.80	36.45	37.13	39.15	37.80	37.68
		3	---	39.83	42.17	38.48	37.80	36.45	37.13	40.50	38.12	27.68
		4	---	42.53	41.85	38.12	41.85	40.50	41.18	42.20	42.17	27.68
1960		5	---	41.85	41.50	38.12	40.50	39.83	39.83	44.55	40.82	27.68
		6	---	43.88	42.69	40.50	43.20	42.53	42.53	45.23	43.20	28.35
		7	---	42.17	42.17	41.18	40.50	39.47	39.83	44.55	41.85	28.35
		8	---	41.50	42.17	42.53	40.50	39.83	39.83	44.20	41.18	28.35
		9	---	41.18	41.18	43.20	41.18	39.83	40.50	43.20	41.85	28.35
		1	32.40	33.08	33.08	33.08	33.08	32.40	32.40	33.75	31.37	36.45
		2	32.40	32.40	32.72	33.40	32.72	32.40	32.40	34.26	31.05	37.13
		3	33.08	33.08	32.40	33.40	33.75	32.40	33.08	34.26	31.37	37.80
		4	33.08	33.40	32.72	32.72	33.40	32.40	33.08	33.75	31.73	39.15
1961		5	33.75	33.40	31.73	32.72	33.08	N.A.	32.40	34.43	31.37	40.50
		6	32.40	33.40	32.91	33.08	32.72	32.40	33.75	33.24	30.38	42.53
		7	32.05	32.05	33.08	33.08	31.73	32.40	33.08	32.40	31.37	41.50
		8	32.40	32.40	32.40	32.40	31.37	29.70	32.40	31.73	30.70	40.50
		9	32.40	33.08	32.40	32.40	31.05	29.70	31.73	32.40	30.38	41.18

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	1	32.40	32.40	32.40	32.40	32.72	31.37	32.05	36.45	30.38	31.05
	2	32.40	32.40	32.75	31.73	32.72	31.73	32.05	35.78	31.05	31.05
	3	32.40	32.40	32.75	32.40	32.72	31.73	32.05	36.77	31.37	31.05
	4	32.40	32.40	32.75	33.08	33.08	32.40	32.40	37.13	30.38	31.37
1962	5	33.08	32.40	32.75	33.08	32.40	---	32.05	37.13	30.70	31.37
	6	33.08	32.40	32.75	32.72	33.08	31.05	32.40	37.13	30.70	31.05
	7	35.10	33.75	32.75	32.40	33.40	32.40	32.72	37.80	31.73	31.05
	8	36.45	35.10	35.78	33.08	33.75	32.40	33.08	39.15	32.05	30.38
	9	37.13	35.10	36.45	33.40	36.77	32.40	36.10	41.85	34.07	30.38
	1	42.50	42.50	40.00	42.75	40.00	38.33	39.33	44.00	42.50	40.67
	2	42.30	42.50	39.00	42.20	41.33	40.00	40.67	45.00	42.00	41.67
	3	42.30	42.00	41.00	43.54	41.33	40.00	40.67	45.00	41.00	40.67
	4	42.30	42.50	41.50	42.20	42.67	40.00	42.00	45.55	41.51	41.33
1963	5	42.80	43.00	42.00	42.20	44.00	40.00	43.33	45.55	41.63	41.33
	6	43.30	42.50	42.00	42.50	44.00	42.00	43.33	46.22	42.25	41.33
	7	42.30	43.00	43.00	43.50	43.33	42.00	42.67	47.39	42.75	42.00
	8	42.00	42.00	43.25	43.50	42.67	40.67	42.00	46.55	42.00	42.67
	9	43.50	42.50	43.25	43.87	42.67	40.00	42.00	46.55	42.51	41.67
	1	---	42.00	---	42.87	---	---	---	---	---	---
	2	---	40.19	---	42.20	---	---	---	---	---	---
	3	---	40.19	---	43.00	---	---	---	---	---	---
	4	---	40.19	---	40.19	---	---	---	---	---	---
1964	5	---	40.19	---	40.19	---	---	---	---	---	---
	6	---	40.19	---	40.00	---	---	---	---	---	---
	7	---	40.19	---	40.19	---	---	---	---	---	---
	8	---	40.19	---	40.19	---	---	---	---	---	---
	9	---	40.19	---	40.19	---	---	---	---	---	---

- \* Dashes have been used throughout to show that data were not available.
1. Open market price quotations collected by the Department of Agriculture; Government of West Bengal.
  2. Collected from the records maintained by the Rice Mills.
  3. The weeks refer to first 9 weeks of each year; except in the following cases:
    - (a) Bolpur - Year 1960; the wholesale price refers to 10th to 18th week.
    - (b) Ahamadpur - Year 1961; the wholesale price refers to 6th to 14th week.
  4. Millers Price for Guskara refers to Miller No. 2.
  5. The Wholesale Prices for Sainthia for the years 1956, 1957 and 1958 are for Bhasmanik variety.

## CHAPTER X

### SEASONALITY OF RICE AND PADDY PRICES

In order to examine profitability of the off-seasonal storage of rice and paddy in West Bengal, costs of storing a quintal of paddy and rice are compared with their corresponding market prices in the off-season. Profitability of storage and milling operations is examined by comparing costs of storage and milling of paddy with the off-seasonal prices of rice in various months. <sup>1</sup>

Storage costs are obtained by adding costs of borrowing, loss in weight etc. to the harvest prices. Tables 10.1 and 10.2 show the estimated gross profit rate in storage operations of rice and paddy in Burdwan.

TABLE 10.1: RATE OF GROSS PROFIT IN STORAGE OF PADDY, BURDWAN, <sup>1</sup> 1955 to 1963

(Percent)

YEAR	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	AVERAGE
1955	1.0	-1.0	4.0	2.0	1.5
1956	14.0	20.0	15.0	15.0	16.0
1957	16.0	17.0	17.0	16.0	16.5
1958	21.0	21.0	17.0	2.0	15.25
1959	46.0	59.0	40.0	15.0	40.0
1960	-4.0	-9.0	-12.0	-10.0	-8.5
1961	1.0	0.0	1.0	1.0	0.5
1962	18.0	20.0	25.0	25.0	22.0
1963	27.0	48.0	11.0	-13.0	18.25
Average	15.5	19.5	13.0	5.6	13.5

<sup>1</sup> Rate of Gross Profit is a ratio of monthly price of rice in the off-season and January price + cost of storing paddy until that off-seasonal month. Gross profit rate does not allow for (1) the fixed costs of maintaining the business and (2) returns to the management.

<sup>1</sup> For estimating storage costs incurred by millers interest rate is assumed to be 9 percent per year, loss in weight due to driage is assumed to be 2 percent and that due to weevil, rodents and pests is assumed to be 0.6 percent until July. It is assumed that after July there is a gain in weight of up to 0.25 percent per month until November. Warehouse rent is not included in storage cost as warehouses of the rice mills constitute an overhead cost to the miller. The opportunity cost of this space is nil. Paddy is stored in bulk by rice millers. Rice straw is used as lining on the walls and floors. This has no commercial value, and, therefore, is not included in storage costs.

TABLE 10.2: RATE OF GROSS PROFIT IN STORAGE  
OF RICE, BURDWAN, <sup>1</sup> 1955 to 1963

YEAR	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	AVERAGE
1955	3.10	2.0	2.0	2.0	2.25
1956	2.0	8.0	5.0	4.0	4.75
1957	17.0	14.0	13.0	13.0	14.25
1958	11.0	8.0	4.0	-6.0	4.25
1959	42.0	51.0	31.0	14.0	34.50
1960	-3.0	-8.0	-8.0	-10.0	-7.25
1961	0.0	1.0	1.0	-2.0	0.0
1962	14.0	14.0	18.0	7.0	13.25
1963	19.0	31.0	13.0	-9.0	13.5
Average	11.6	13.5	8.8	1.5	8.8

1 Rate of gross profit is a ratio of monthly price in the off-season and January price + cost of storing rice until that off-season month. Gross profit rate does not allow for (1) the fixed costs of maintaining the business and (2) returns to management.

Various aspects of storage returns are evident from Tables 10.1 and 10.2. The columns of average return in Tables 10.1 and 10.2 show considerable year to year variability in the estimated rate of gross profit. 1955, 1960 and 1961 were years of poor returns both in the case of paddy and rice storage. Price rise was not enough even to cover variable costs of storage in 1960. It just barely covered variable costs in 1955 and 1961. If allowance is made for overhead costs such as salaries of permanent employees, rent of the shop, costs of obtaining market intelligence and returns to management, the net return appears to have been negative even in 1955 and 1961. As opposed to this 1959 appears to have been a year of excessive returns. It should be noted that the enormous price increase noted in 1959 was due to the fixation of maximum prices by the state government. Most of the purchases were, however, made at prices higher than the statutory maximum. The records of wholesale market prices show only the fixed prices for this period. However, the harvest prices collected from millers show that in Bolpur a miller paid Rs. 29.70 per quintal of paddy when the statutory maximum price was Rs. 27.00, and in Gushkara prices prevailed at Rs. 31.00 per quintal of paddy. The farm harvest prices collected by the Department of Agriculture show the open market price of rice to be Rs. 56.70 per quintal in Burdwan district and Rs. 63.46 in Birbhum

TABLE 10.3: COMPARATIVE GROSS PROFITS IN STORAGE OPERATIONS OF RICE AND PADDY AND IN OPERATIONS OF STORING AND CONVERTING PADDY INTO RICE <sup>1</sup>, BURDWAN, 1955 to 1963

	GROSS PROFIT PER 1½ QUINTAL OF PADDY 2	GROSS PROFIT PER QUINTAL OF RICE 2	GROSS PROFIT PER 1½ QUINTAL OF PADDY SOLD AS RICE 3	RATE OF PROFIT IN STORAGE OF PADDY 4	RATE OF PROFIT IN STORAGE OF RICE 4	RATE OF PROFIT IN CONVERTING PADDY INTO RICE 5
	Rs.			Percent		
1955	0.74	1.29	2.39	1.50	2.60	5.20
1956	7.52	3.05	8.00	16.00	5.45	16.80
1957	8.55	6.31	11.86	16.50	10.10	22.50
1958	9.00	3.44	12.05	15.25	4.78	20.50
1959	18.00	18.62	21.55	40.00	35.02	46.00
1960	-5.62	-4.95	-2.21	-8.50	-6.89	-3.40
1961	0.54	0.13	2.18	0.50	0.20	3.84
1962	12.27	8.76	12.39	22.00	11.38	21.60
1963	14.25	10.94	16.14	18.25	11.36	21.10
AVERAGE	7.25	5.29	7.15	13.5	8.8	17.04

- 1 The figures are averages for the period September - December.
- 2 Average price (from September to December) - (January price + storage costs), converted into an equivalent of 1 quintal of rice.
- 3 Average price of rice (from September to December) - 1.5 (January price + storage costs for paddy + Rs. 5.36).
- 4 Gross profit per quintal / January price + storage cost.
- 5 Gross profit per 1½ quintal of paddy  
1.5 (January price + storage cost + 5.36)

when the statutory maximum was set at Rs. 47.93.<sup>1</sup> The actual profits, therefore, must have been much lower in 1959.

The years 1956, 1957, 1958, 1962 and 1963 showed moderately high returns. Average return over a period of nine years seems somewhat higher in paddy operations as compared to rice operations. The overall gross profit rate over the nine year period in Tables 10.1 and 10.2 is, however, exaggerated both in case of rice and paddy due to the use of statutory maximum price as the purchase price for 1959.

It should also be noted that the estimates of loss in weight both due to drilage as well as due to weevil, rodents and pests assumed in these estimates are much lower than estimates of other researchers. Dorris Brown estimates loss due to weevil between 10 to 15 percent between January and November.<sup>2</sup> He also argues in favour of greater loss due to drilage than assumed here. If Brown's estimates are used, the net profit rate would indeed show very low returns. The net profit rate will be still smaller after allowance is made for fixed costs.

Due to a rather high margin between the price of rice and its paddy equivalent noted earlier it is of interest to examine if combining storage operations with processing of paddy is more profitable than simply stocking and selling rice or paddy. The off-seasonal value of the stored paddy plus milling costs are converted into rice equivalent and then compared to the off-seasonal rice prices. Table 10.3 shows profit rates so estimated for this integrated operation of storage and milling. Milling costs are assumed to be Rs. 5.36 per quintal of rice.<sup>3</sup> The increase in the rate of profit by combining the two operations is noticeable from Table 10.3. It should, however, be noted that the gross rate of return calculated in Table 10.3 is based on the revised milling charges now allowed by the Food Corporation of India. This estimate is much lower than the milling costs allowed by West Bengal government under the monopoly procurement programme and the estimates of costs submitted by the Birbhum Millowners' Association.<sup>4</sup> It is not known

1 See Chapter IX earlier.

2 Dorris Brown's unpublished data.

3 See the previous chapter.

4 See the previous chapter.

which of the two estimates, in fact, represent the real milling costs in West Bengal. If the milling costs are in fact as high as claimed by rice millers, storage and milling of paddy for sale of rice would not indicate higher rate of return than in simple storage operations.

It should be pointed out that the hypothetical estimates shown in Tables 10.1 to 10.3 are based on an assumption that all the purchases are made in January, when arrivals are heavy and when market prices prevail low and that all the stocks are sold between September and December. This assumption of a rigid storage policy is far from reality. For paddy arrivals are usually heavy until the middle or the end of March and millers' purchases stretch over this period.

Table 10.4 shows distribution of total paddy purchases by Birbhum rice mills in different quarters.

TABLE 10.4: PROPORTION OF ANNUAL PURCHASES AND MILLING OF PADDY BY ALL RICE MILLS DURING THE FOUR QUARTERS OF 1960 and 1961, BOLPUR.

(Percentage)				
MONTHS	1960		1961	
	PADDY FLOW	RICE MILLED	PADDY FLOW	RICE MILLED
January - March	36.7	35.2	38.4	30.9
April - June	16.2	21.8	23.2	24.3
July - September	9.3	11.1	13.1	16.7
October - December	37.8	31.9	25.3	28.1
TOTAL	100.0	100.0	100.0	100.0

Source: Chittapriya Mukherjee, "Productivity and Profitability of Rice Milling Industry in Birbhum", Khadigramodyog, December 1966, p. 251. Original data obtained from Food and Civil Supplies Department.

The table indicates that only a little over a third of the total supplies are purchased between January and March. In 1960 paddy purchases were higher between October - December than between January - March period. In 1961 a significantly high proportion of purchases were made between April - June and later between October - December.

If purchases are considered in terms of a rice year, in 1960 - 61 approximately 70 percent of the year's paddy was purchased over a six month period, between November 1960

and April 1961. <sup>1</sup> The lowest price of the season, however, was not reached until the second week of March. This is also supported by the arrival data collected by the Food and Civil Supplies Department. In 1957-58 in Bolpur, 75.7 percent of the annual arrivals came to the market between November and April. In Saktigarh market (Burdwan district) 68.5 percent of the annual arrivals came to the market between November and April. <sup>2</sup> The data collected on cultivators' sales directly from villages near Bolpur indicated that 66.8 percent of the annual sales took place between November and April in 1957-58, and 74.0 percent in 1958-59. <sup>3</sup> The report, however, states "that this has happened in an area where in average to good crop years a much smaller proportion of the total produce comes to the market during these two quarters as has been observed by us in our continuous village surveys". <sup>4</sup> It should be noted that the proportion of paddy marketed in this region over a six month period (November - April) is comparable to the proportion of wheat marketed in Punjab markets in the first three months after harvest (i.e. between May and July). <sup>5</sup>

Another interesting feature of stocking by the millers is indicated by the milling pattern over the year. It had been pointed out by the millers in their conversations that they usually mill paddy only when they receive orders for rice from the consuming centres. It was also indicated by the millers that a major portion of the dispatches to the terminal markets is in the form of rice. <sup>6</sup>

Table 10.4 indicates that a major part of the paddy purchased is milled during the first two quarters. In 1960-61 when 70 percent of the paddy purchases were made between November 1960 and April 1961, 64 percent of the total paddy processed during the year was milled in these

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1 Mukherjee, op. cit. p. 251.

2 Report on Market Arrivals, op. cit. p. 203. Table w.7

3 Ibid. p. 134.

4 Ibid. p. 134.

5 See Punjab section for seasonality of wheat marketing.

6 Similar observations are made by the investigators of the Agro-economic Research Centre at Santiniketan, see: A Brief Report on Arrivals, Stocks, Prices etc. in the Rice Market at Bolpur, West Bengal. Unpublished manuscript.

two quarters. <sup>1</sup> There is also evidence that an overwhelming proportion of this milled rice was shipped to Calcutta at this time. In 1958-59 railway dispatches of paddy from Bolpur during December and February constituted 86.1 percent of the local paddy arrivals. In 1959-60 the percentage was 69.1. <sup>2</sup>

The evidence available on pattern of purchases, milling and dispatches, therefore, suggests a high turnover of stocks. It is not known who does the stocking in Calcutta. Millers contend that they sell most of their rice stock outright to wholesalers in Calcutta who in turn sell it to retailers. There is no doubt, however, that they send part of their stock to Calcutta on their own account to be sold by their agents (hopefully) at some profitable price in the future.

It appears from the evidence that storage is not restricted to any specific level of marketing but that short period storage is undertaken at all levels. Millers store paddy for some time and then send it to the terminal market where it is stored either for the miller or by a wholesale trader. It is also conceivable that in periods of free trade middle and high income consumers purchase their consumption needs in bulk and store them over the season. It is well known that there is a high value placed by consumers on old rice.

In either case, i.e. whether the stocks are sold to wholesalers or held on own account for speculative transactions, profits accruing to the wholesaler or the miller will not be as high as those shown by the rigid policy if the turnover is high. Only if the stocks are held well until the off-season will the maximum estimated profits be earned. Very little factual information is available on the actual length of storage. Mukherjee's study and the studies of the agro-economic research centre observe an increasing trend of an immediate transfer of rice from mills to the stores in Calcutta. <sup>3</sup> This suggests that

1 Mukherjee, op. cit. p. 251.

2 A Brief Report, op. cit. Most of the dispatches to Calcutta are made by railways. Even if allowance is made for under-reporting of purchases by millers in 1958-59 due to various official controls, the centre believes that the ratio of dispatches to purchases must have been of the magnitude of 70 to 75 percent.

3 See Report on Market Arrivals, op. cit. p. 140-141. Mukherjee, op. cit.

although the dispatch figures may give an impression of a high turnover they only indicate movement but not necessarily sale of stocks. The tendency to disperse stocks away from the primary markets was believed to have been a result of severe government controls on trade, popular hostility towards millers and a general shortage of rice in the market. Data on retail distribution are so scanty that very little can be said about the size of flow from the wholesaler to the retailer over a year. Until this is known it cannot be said that a major portion of the stocks are held until as late as October, November.

However, even if it is assumed to be true, Tables 10.1 and 10.2 show that the average profit over a period of nine years, assuming that stocks are sold between September and December, is not very high when allowance is made for fixed costs of business. The average for nine years would have been still lower than shown in Tables 10.1 and 10.2 had the profit rate for 1959 been calculated by using open market prices for January. The highest average profit (for 1955-63) both in the case of rice and paddy was earned in October. However, there is such an enormous variability between years in the rate of profit that could be earned in October, that a trader is very unlikely to have followed a rigid policy of selling in October even when it involved losing in one year only in the hope of making a high profit in October in the following year to balance the rate of profit over years. It seems most unlikely, therefore, that a trader would follow a rigid policy of a purchase in January and a sale in October. <sup>1</sup> Usually, there appears to be a tendency among the millers to aim at stabilising their profit rate in a year rather than accepting variation from year to year. In either case, the prices in these nine years do not suggest an overall high rate of profit for the millers.

Table 10.3 suggests a high profit rate in the purchase and milling of paddy. It should be recalled, however, that these estimates are based on the assumption that the milling cost is Rs. 5.36 per quintal of paddy. These estimates although higher than milling costs in several other provinces appear considerably lower than the estimates for West Bengal.

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1 In fact the year to year variability in October price relative to the previous January price is so great that an inclusion of a few earlier years such as 1953-54 would depress the October profit rate considerably since prices did not rise in the off-season in these years.

That the overall profit rate is not likely to be high in rice trade is also supported by the increasing elimination of middlemen in trade noted by millers in their interviews. It was indicated that in the recent past a major portion of paddy has been acquired by millers directly from cultivators. Larger cultivators who have large surpluses brought their paddy to rice mills. Those who had small quantities to sell sold these to the agents of millers. Small traders and paddy dealers who collected paddy on their own account for sale to mills had almost completely disappeared from the trading scene in the later years of free trade. This was stated to be a result of low margins consequent upon small volume of operations which had to be shared by a large number of intermediaries. Similar observations are made by the Agro-economic research Centre in its survey of market arrivals.<sup>1</sup>

#### Patterns of Seasonality

The curious feature of the seasonal price movements of rice and paddy is their enormous variability from one year to another as reflected in the estimated profit rates in storage operations.

Table 10.5 below shows January and November price in Burdwan and the latter as a percent of the former.

TABLE 10.5: HARVEST AND OFF-SEASONAL WHOLESALE  
PRICE OF RICE BURDWAN 1955 to 1963  
(Rs. per quintal)

YEAR	JANUARY PRICE	NOVEMBER PRICE	PRICE RISE IN NOVEMBER OVER JANUARY
1955	44.82	50.97	14
1956	50.54	59.41	17
1957	54.17	68.31	26
1958	64.80	74.93	16
1959	47.93*	70.03	46**
1960	65.07	66.62	2
1961	56.53	63.54	12
1962	56.62	75.60	34
1963	70.67	90.05	27

\* This is the statutory maximum price fixed by the government. The actual open market prices were much higher. Farm harvest price is recorded to be Rs. 56.70 per quintal for Burdwan district.

\*\* If open market price for 1959 is considered to be the real January price the price rise is only 23 percent in November.

1 Report on Market Arrivals, op. cit.

The table shows a steep rise in the seasonal low and the high price of rice over a period of nine years, indicating a rising trend in the price level of rice during the period studied. Off-seasonal price as a relative of the January price, however, varied considerably from year to year.

No information is available on arrivals of paddy and rice in the market yards that could be used to analyse seasonality of price movements. The nature of paddy assembly has been so dispersed in the past that any secondary data on arrivals coming to yards would, in all likelihood, not be an adequate indicator of marketed surplus. Besides, the increasing trend noted earlier towards concentration of arrivals at mill sites is likely to distort any fluctuations in arrivals resulting from changes in production. Even elsewhere in India, where arrival data are available, arrivals in market yards do not necessarily show a good relation with production in the surrounding area. <sup>1</sup> Arrival data, therefore, constitutes a rather poor explanatory variable in seasonality patterns. The high degree of integration between prices in various producing and consuming markets suggests that factors that cause a specific seasonal pattern are common to a group of markets spread over a region, and that an increase or a decline in arrivals in an individual market does not exercise a great deal of influence on prices in that market unless it is accompanied by similar movements in other markets. Prices in a single market are to a considerable extent influenced by prices in various other markets.

In order to examine the effect, if any, of rice production on the seasonality pattern January price, November price and the percent rise in price from January to November in Burdwan during 1955-56 to 1963-64 were each regressed with each of the following variables. Rice production in the preceding year in 1. Burdwan district 2. in West Bengal state 3. in Bengal and Orissa states and 4. in all India. No statistically significant relationship was obtained.

Neither the level nor the extent of price rise showed a statistically significant relation with rice production at any single level, but seem to have been influenced by numerous other factors. This appears to be mainly because West Bengal being a deficit state in rice production depends to a considerable extent on supplies allocated by the Central government. Besides, during the period under study price formation was not left to the open market forces but was considerably interfered with by frequent adoptions of such policies as price fixation, movement restrictions, credit controls, levy, fair price distribution etc. Apart from the actual intervention in trade, the impending nature of such restrictions created

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1 See Maharashtra Section.

a great deal of uncertainty among millers and traders as to the future needs and availability of supplies. Sudden impositions of movement restrictions resulted in excessive stocks with the millers whereas sudden restrictions of imports from Orissa cut off a major source of paddy supply for the millers in Birbhum and Burdwan. Alongside the uncertain nature of the governmental restrictions, farmers' market behaviour created an additional uncertainty regarding farm level stocks and their release in West Bengal during the period studied. <sup>1</sup> It is also likely that the millers and traders could not gauge the overall supply situation given the nature of the market intelligence available to them.

Despite a drop in production of rice in West Bengal, Orissa and India in general prices did not show a very great off-seasonal increase in 1955. The state government had undertaken a liberal policy of distributing cereals through relief works and fair price shops. In 1955, over 100,000 tons of rice were distributed in this manner. Prices, therefore, did not show a steep rise. The year 1956 experienced both higher price level as well as greater off-seasonal rise than 1955. (Table 10.5) This seems to have been a result of influx of rice eating refugees, a terrible cyclone in May and a devastating flood in September, all of which were accompanied by an absence of credit squeeze which resulted in speculative build up of stocks. The price rise was arrested only by introducing "modified rationing" in Calcutta and elsewhere.

Both absolute and relative prices went up still further in 1957 over the previous year. Increased investment under the second plan coupled with deficit financing had increased the money supply with public. Increase in rice production was much too inadequate to meet the increased demand resulting from population and income effect. Later in 1957, export of Orissa rice was banned on private account which resulted in a widespread shortage in Calcutta and surrounding areas.

The seasonal low and high in 1958 were still higher than the corresponding prices in the previous year. Price rise in November was nevertheless both relatively and absolutely lower in 1958 as compared to 1957. This was despite a drop in production over a previous year. Market arrivals were low in 1958 because of withholding of stocks

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<sup>1</sup> See Report on Market Arrivals, West Bengal Section op. cit. Apart from the unusual behaviour of cultivators, just the year to year variation in the production may cause a great deal of variation in the carry over stocks on farms from one year to another and may have an influence on the price. See Ashok Dar, op. cit.

by larger cultivators in anticipation of high prices. <sup>1</sup> Licensing and submission of fortnightly returns of stocks and transactions was demanded by the state government from traders to check speculation. Ban on movement of rice and paddy out of the state borders was continued. A 25% levy was imposed on rice mills located in surplus districts and maximum rice and paddy prices were fixed. 980,000 tons of cereals were distributed through ration shops.

The excessively high price rise noted in 1959 is due to the fixation of maximum rice price by the state government in early 1959 which was later abandoned in July for difficulties in administering prices. Open market prices, therefore, once again reached a high level consequent upon a poor crop in the state. Although price rise seems steep in 1959 it is more apparent than real.

The year 1960 did not show any rise in price and 1961 experienced only a slight price rise. This may have been because of a good harvest in Bengal and a formation of eastern zone in December 1959 which allowed free flow of Orissa rice into West Bengal in the following two years.

Prices, however, showed a steep rise in 1962 when the seasonal high reached an unprecedented level of Rs. 75.00 per quintal. This was due to a poor crop in West Bengal and Orissa. Local production and imports from Orissa and the central government fell short of the state requirements. The year 1963, once again, experienced high absolute and relative prices in the off-season. This was due to a poor crop in succession for the second year in West Bengal and Orissa which was followed by frequent restrictions on exports of rice by Orissa government. The central government's increased shipments were not adequate to meet the deficit.

The size of the harvest was thus not the only or even the most important factor in the determination of the seasonal pattern. The seasonal pattern was as much determined by various policies followed by state and central governments. The off-seasonal price rise depended upon the size of market arrivals, the actual imports of, and prospects of imports from Orissa, upon the supplies made available by the central government, the extent of retail distribution and upon the prices fixed by the state government at various times.

Besides, the year to year variation in policies, even their enforcement, varied considerably from year to year.

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<sup>1</sup> See Report on Market Arrivals, West Bengal Section, op. cit.

If traders usually use their past experience about the crop size to determine the off-seasonal price rise, the seasonal pattern in West Bengal could hardly be anticipated on the basis of the rice crop during the last nine years. The variability in the official policies and the consequent uncertainty about how the prices were going to move in the off-season, the unprecedented behaviour of the farmers as reflected in low marketings in 1958-59 and later, all caused a great deal of uncertainty among the traders. The preceding brief survey of the factors responsible for the variation in the seasonal pattern underscores the variety of factors that affect off-seasonal pattern. It is predictable only to the extent that the factors which determine it are predictable.

PART IV

M A D R A S



## CHAPTER XI

### INTRODUCTION TO THE MADRAS MARKETS

#### Sources of Data

##### Recording Agencies

The nature of data collection had to be considerably different in Madras as compared to Punjab and Maharashtra, mainly because during the period studied very few regulated markets existed for paddy. There was, therefore, no agency at the market level which maintained any records except for the market reporters of the Madras State Department of Statistics, which on its own initiative has been collecting price intelligence statistics over a fairly long period of time by appointing its own staff in major market centres. The number of markets covered under this scheme (which was eventually integrated with the Price Intelligence Scheme of the Ministry of Food and Agriculture) has been growing over a period of time. There are, however, not many important markets for which data could be available for a major length of time. Price and arrival data were collected from the records of the Department of Statistics for as many markets for as many years as possible.

##### Problem of Grades

There are other difficulties in collecting paddy and rice prices which are not encountered in case of jowar or wheat. First, unlike wheat and jowar paddy and rice prices are not collected for different varieties but for different grades. We noted that in Punjab wheat prices are collected for 'dara' which is more a fair average quality than a variety. However, since there are only a few varieties of wheat as compared to rice it is much less difficult to compare wheat prices. In Madras State paddy (and rice) prices are collected for first sort, second sort and third sort paddy (and rice). The same classification is elsewhere known as fine, medium and bold (coarse). There are numerous varieties of paddy that are classified under each of these grades. <sup>1</sup> An Indian trader believes that there are as many varieties of rice as there are paddy fields in India. This does not appear to be too much of an exaggeration when one realizes that of the 7,000 botanical varieties known to science, 4,000 are found in India. Most of these are purely of local nature.

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1 See P. 207 footnote 1 below for the Government of Madras classification of varieties by sorts. (grades).

### Factors that Determine Quality

There are numerous factors that determine the quality of rice. These factors also tend to vary considerably from one region to another. However, the two basic elements in the determination of quality are the size and the shape of the grain. A long, slender grain is usually typed as fine rice whereas short, thick grain is treated as coarse or bold. <sup>1</sup> There is such a fine gradation of this ratio of length and breadth that no distinct classification is possible. However, this is where the categories for price quotations end. There are numerous other factors that enter into the fixation of price about which nothing is known from the price data. Chart 11.1 shows these various factors in a rather systematic manner. First of all, the fact that paddy has to be processed before it is converted into rice itself affects the price of rice. This is an added complicating factor which does not exist in case of other cereals. Paddy is usually converted into rice either by hand-pounding, the traditional way of using a pestle and a mortar, or by machine milling. Machine milling implies use of power driven hullers for removing husk from paddy. Hulling out-turn is usually higher when paddy is handpounded than when it is machine-milled. However, the colour of the handpounded grain is not as white as it is of the machine milled rice. There is, therefore, a distinct preference for machine-milled rice in urban areas.

### Parboiling

Rice which is handpounded or machine-milled can be either raw or parboiled. Parboiling implies a process of steeping paddy and subsequently applying heat before it is husked. Raw rice is not subjected to any treatment before it is husked. Out-turn is usually higher when paddy is parboiled. Parboiled rice is also more nutritious. Popularity of parboiled rice in consumption has been increasing substantially and presently raw rice is consumed only by high income groups, and usually by brahmins in Madras. <sup>2</sup> Raw rice is also used in rituals. It is generally made of only high quality paddy, whereas medium and coarse varieties are parboiled. However, a significant proportion of the fine

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- 1 Although this is a good generalization, it may not hold true in specific cases. e.g. number of fine varieties in Madras are by no means long and slender.
  - 2 This is based on our interviews of millers in Madras state, is also supported by the survey of the department of statistics and by the observations in the Rice Economy of India, op. cit. P. 40.

paddy is also parboiled. <sup>1</sup> Thus within these handpounded and machine-milled raw and parboiled types there are three or four grades: superfine, fine, medium and bold. Often superfine is lumped with fine grade for the purposes of recording data. However, there is often substantial difference between the prices of superfine and fine grades. Within each of these grades or sorts there are numerous varieties of rice. A Madras Government notification that announced fixation of maximum paddy and rice prices for 1966 lists 38 specific varieties of Madras origin under fine quality, 22 in medium and 27 in coarse in addition to which a number of other local varieties are mentioned, but not specified. <sup>2</sup> Even within each of these varieties there are numerous factors that would enter the fixation of price.

### Other Characteristics

The Report on the Marketing of Rice in India classifies these factors in two categories: <sup>3</sup>

1. general characteristics and,
2. special characteristics (see chart). Among the general characteristics include translucency or chalkiness, colour, polish, fragrance, uniformity, age and cooking quality.

Rice that is translucent fetches a premium over that which is chalky. The preference for colour, however, varies significantly from one region to another. Consumers in Kerala prefer rice that is yellowish in colour, whereas those in Madras place a premium on white rice. Rice is even artificially coloured in some parts of India to suit the local taste. Polished rice is greatly in demand in the urban sector but does not attract a rural consumer. Rice with inherent natural fragrance fetches a higher price over other varieties. Similarly grain that is uniform in size and quality fetches premium over mixtures. Older rice is preferred to new rice which is usually watery in test. The cooking quality of rice depends on all these factors including age.

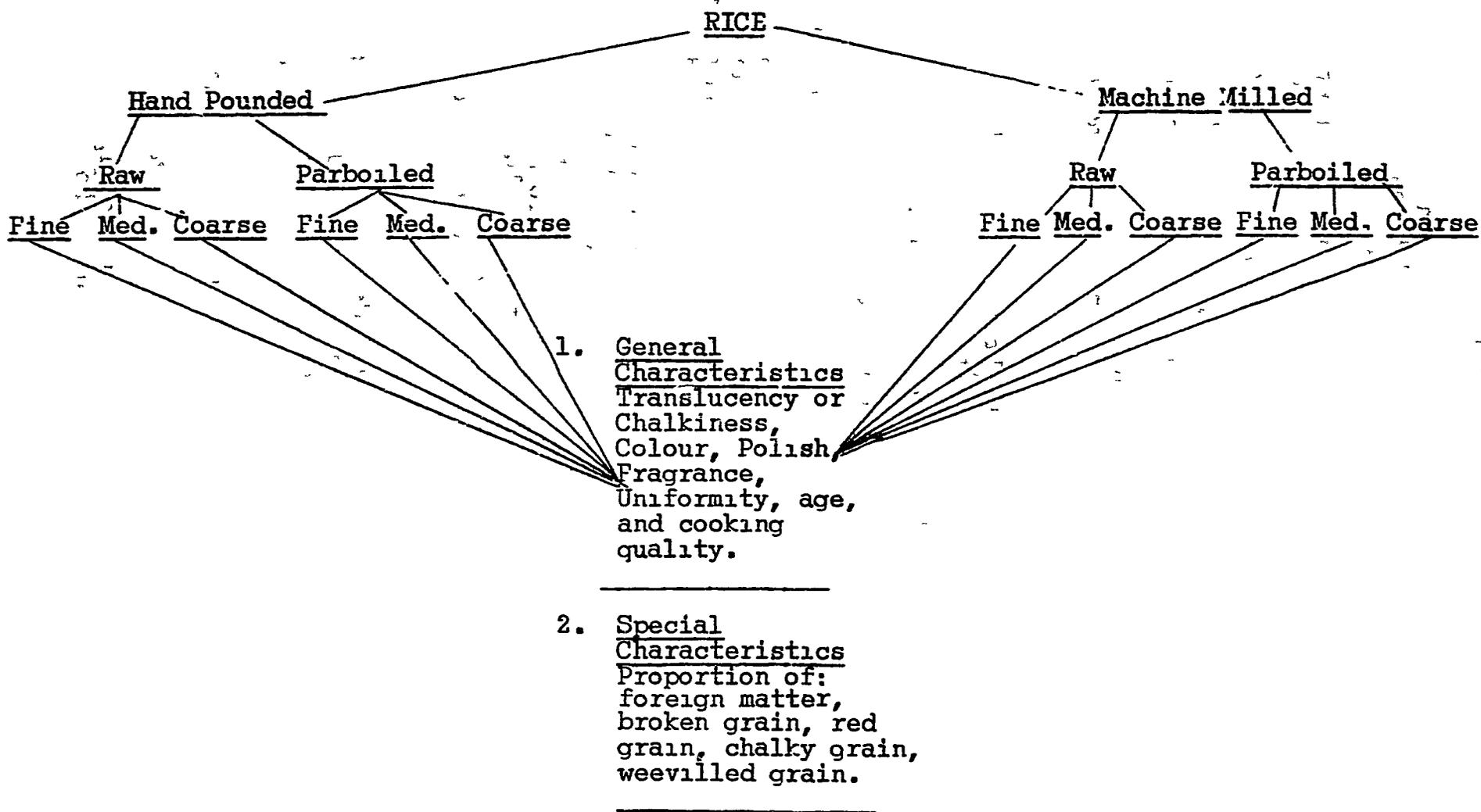
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1 Between one-half and two-thirds of the total rice production is estimated to be from parboiled paddy. According to rough estimates, parboiled rice annually produced in India consists of 60 percent coarse, 30 percent medium and 10 percent fine varieties. Rice Economy, *ibid.* p. 40. It should be noted that share of the three grades in total rice production is the same as that in parboiled rice.

2 See Appendix I for the trade names of the varieties.

3 Report on the Marketing of Rice in India, Agricultural Marketing in India, Marketing Series No. 75, 1955 p.

CHART 11.1 FACTORS ENTERING THE PRICE OF RICE



The special characteristics that determine price of rice depend upon the extent of the following factors in the grain, namely proportion of foreign matter, broken grains, damaged grains, red grains, chalky grains, and weevilled grains.

The above discussion indicates the variety of factors that enter into the fixation of rice prices and consequently the formidability of the problem of comparing prices. The task is worsened still by the fact that many of these qualities are not universal but purely of a local nature. A point that needs to be stressed is that determination of consumers' preferences is much more complex in the pricing of rice, more so than in the case of other crops.

- For the present study data were collected for sort I (fine) and sort II (medium) paddy and sort I rice. 1 For
1. The Food Department's classification of the three grades includes following varieties.
    - (1) Pine-Garudan Samba, Kuruvai Sirumani, ADT.27, ADT.20, Thuyamalli (fine), Vellai Samba, Nellore Samba (fine), Red and white Sirumani, Chingleput Sirumani (Co.19), Sadai Samba, Pattarai Samba, Kothamalli Samba, Kudiraival, Thanga Samba, Milagi or Gundu Samba, Co.2 or Poombalai, Peria Kichili, PTB. 15, PTB. 16, Co.5 or Chinna Samba, Ottokichili, Karthigai Samba, Ambasamudram (ASD II), Ikl 1 Samba, Sithayan Samba, Tiruchengodu Samba, Bayyakonda, GEB 24, Doppi, Anaikomban, Ayan Samba, Konakuruvai, Thidam Kichidi, Kichadi or Arcot Kichadi, Co. 30, Komban Samba Basumathi, Jeeraga Samba and other local fine varieties.
    - (2) Medium-Kattai Samba, Vellaikar, Vadan Samba, Muthu Samba, Thuyamalli (coarse), Rangoon Samba, Onnarai Samba, Nellore Samba (coarse), Vasaramundan, Thattaravallai, Arai Samba, Co. 25, Kodivellai, Rubber Samba, Cross Sirumani, Korangu Samba, Moongil Samba, Vellakattai, Gova Akkulu, (SLO 13) Nanjil Nad Samba, Kottar Samba, Arikkiravi and other local medium varieties.
    - (3) Coarse-Red Kar or short duration Red Kar varieties, Madu Muzangi, Sembalai, Kullan Samba, Kallimatter, Puzhuthiperatti, Mosanan, Manavari, Pisan, Menakathi, Red Vadan Samba, Kolavazhi, Kuruvikalayan, Motta Kuruvai, Maikuruvai, Mozhikaruppu, Swarnavari, ADT 3 (Kuruvai) ADT 4 (Kuruvai), Sarapalli, Poonkar, Arapathankodai, Chitrakali, Valan, Ponnuruvi, Co. 29 Kottaram Samba, Malkova and other local coarse varieties.

Source: G.O No. 572, 8th August 1966, Department of Food, Government of Madras, P. 3.

Madras city prices were also collected for raw rice although it constitutes a rather small proportion of the total consumption in the state.

It was not possible to compile complete data on market arrivals of paddy for the study. Such data have been collected by the Department of Statistics. However, in the earlier years the Department did not have special staff at the districts to report data on arrivals and persons performing other duties were assigned to collect arrival data. The number of gaps in the data denote non-reporting either due to non-availability of data or lack of staff. They do not mean that there were no arrivals in the market. Besides, since a great deal of arrivals are not assembled in market yards before they are sold to various agencies, the records are not very comprehensive. They exclude a very important component of the market surplus, namely, sales at the paddy fields. And as will be discussed later this component is more significant in case of paddy than other cereals such as wheat and jowar.

Data on storage and transportation costs were collected from selected markets by interviewing rice millers and paddy traders. Data on paddy purchases and sales were collected from some of these markets for selected traders. Traders were also interviewed to acquire information on trading practices and working of the markets.

Review of the Rice Price Policy with Special  
Reference to Madras State. 1955 to 1964

Decontrol of rationing was complete in March 1955 just two months prior to the period of this study. Prices of almost all the agricultural commodities started declining with the coming of a good harvest and depletion of unauthorized stocks consequent upon the initiation of decontrol (1953-54). However, soon after complete free trade was restored there was a rising trend in the prices of major cereals. This was mainly due to a poor crop in 1955-56 and a similar prospect for the following year. Rice from Andhra, the only surplus state in the south, was moving to West Bengal and Bombay. This was pushing up rice prices. The southern rice zone was, therefore, formed on July 9, 1957 constituting of Andhra Pradesh, Mysore, Madras and Kerala with a view to creating self sufficiency within the zone. Movement in and out of zone was banned except on government account. Maximum controlled prices of rice and wheat were fixed on January 28, 1959. A 50 percent levy on mills, 25 percent levy on wholesale dealers of rice and 50 percent on wholesale dealers of paddy was imposed from 31st January 1959. Subsequently millers were required to

sell, on what was called 'link up' basis, 25 percent of their production to bulk consumers at controlled prices in addition to the government levy. In order to make the procurement programme effective, movement of paddy outside Tanjavur district was banned from February 28, 1959. Procurement was, however, discontinued from November 1, 1959. The Madras Paddy Export Control order and the Madras Paddy Transport Restriction order both of 1959 were rescinded subsequent to the discontinuation of procurement. There was no significant procurement of rice in Madras state until 1964.

Selective credit controls on an all India basis were exercised in this period beginning for the first time, in May 1956 by directing banks to increase their margin in respect of their loans on stocks and by imposing a ceiling on the credit extended. Similar measures were introduced off and on in the later part of the period.

A major offensive against the price rise was also launched by increasing the distribution of rice to the public through fair price shops.

The southern rice zone was abolished in October 1964, and Madras was declared a separate zone. Surplus in Madras state went to Kerala. However, due to the restrictions on imports into Madras state prices showed a steep rise. Partial procurement and distribution of rice was undertaken by cordoning off surplus districts. Free trade in paddy and rice thus came to an end in October 1964.

### Choice of Area

Madras is also a major rice producing state in India. It produces approximately a tenth of the total production ranking fourth in the order of rice production. <sup>1</sup> As a net exporter Madras has been less important than Orissa, Andhra and Madhya Pradesh. However, unlike West Bengal, it has been gaining ground in the last two decades due to the remarkable increase in rice production in the State. From 1949-50 to 1965-66 rice production has slightly more than doubled with approximately a third increase in acreage under paddy in that period. This production increase has converted the state from a net importer in 1949-50 to a marginal exporter of rice. Average yields have been uniformly higher for nearly every crop in Madras than the all-India average and during 1953-56 in case of several crops (such as paddy, groundnut, jowar, tobacco) the

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1 See Table 8.3 P. 140 in West Bengal Section.

average yield in Madras was higher than in any other State.<sup>1</sup> This position has been retained more or less in the following years.

Eastern districts of the State, Thanjavur, South Arcot, Chingleput, North Arcot and parts of Tiruchirapalli constitute the rice tract of the State.<sup>2</sup> Together they occupy and produce approximately two-thirds of the State acreage and production, with Thanjavur having the highest proportion of land under rice (89.1 percent) and North Arcot the lowest (17.3 percent).<sup>3</sup>

Almost all alluvial soils of the state are concentrated in the delta of Cauvery in Thanjavur and in a belt along its bank in Tiruchirapalli. Deltaic alluvial is the most fertile soil of the State. Other districts have predominantly red soils mixed with black soils. A majority of the markets selected for the study are located in the rice tract of the State.

#### Location of Markets

The following table shows their location<sup>4</sup> (also see Figure 4, p. 142 above.)

- 
1. National Council of Applied Economic Research, Techno Economic Survey of Madras, 1961, p. 70.
  2. The estimates of production and consumption made by the food department of Madras for 1964-65, 65-66 and 1966-67 show the districts of Thanjavur, South and North Arcot and Chingleput as being surplus and all the other districts as deficit in rice.
  3. Technoeconomic Survey of Madras, op. cit., p. 77.
  4. Names of places in Madras State have been traditionally spelled in a most wide variety of ways. For example, Thanjavur is also spelled as Tanjore, Tanjour, Thanjour, etc. Tiruchirapalli is often known as Thiruchirapalli, Trichi, Tiruchi, etc.

TABLE 11.1: LOCATION OF SELECTED MARKETS, MADRAS STATE

	<u>DISTRICT</u>	<u>MARKETS</u>
1.	Chingleput	Kanchipuram, Madras City.
2.	S. Arcot	Cuddalore
3.	Thanjavur	Kumbakonam, Tiruvarur, Mannargudi.
4.	Tiruchirappalli	Manachanallur, Tiruchirappalli.
5.	Tirunelveli	Tirunelveli, Tuticorin.

### Flows of Rice

Unlike the three other states where the selected primary markets serve one or two major terminal markets, flows of rice are much more dispersed in Madras State.

Markets from Chingleput district send a major part of their arrivals to Madras City. During the period of free trade, however, Madras city received a major portion of its supplies from the adjoining district of Nellore in Andhra Pradesh. Two other districts of Andhra Pradesh, viz. Krishna and Godavari, have also been supplying considerable quantities. In fact, Nellore rice is the most popular variety of rice in Madras city. Cuddalore, a market located in South Arcot is not a significant supplier of rice for outside regions. It mainly supplies rice to the local population.

All markets selected from Thanjavur district supply rice to Coimbatore district, a major industrial centre in Madras, and to markets in Kerala. Centres in Kerala that receive rice from Thanjavur are spread throughout the state and include among others Trivandrum, Palghat, Calicut, Trichur, Ernakulam and Kottayam.

There are direct shipments of paddy and rice by rail and road from Thanjavur to Coimbatore and Kerala. Thiruchirappalli which is a major assembly market acquires paddy locally and from Thanjavur, and ships it to Coimbatore and Kerala both in the form of paddy and

rice. <sup>1</sup> Manachanallur is only seven miles away from Thiruchirapalli. It also assembles surplus paddy locally and from Thanjavur and sends it to Coimbatore and Kerala.

Tirunelveli is also a rice producing district. It is adjoining the State of Kerala and the District of Kaniyakumari. <sup>2</sup> It sent rice to Nagercoil in Kaniyakumari and to Trivendrum and Kottayam in Kerala. Rice coming to Nagercoil from Tirunelveli was again shipped to Kerala in large quantities.

Thus, except in case of Madras City and its satellite primary markets in Chingleput district, price relations between various primary and secondary markets are more indirect than direct. For example, price movements in Tanjavur and Tirunelveli may coincide because they both are influenced and affected by the same sort of demand conditions, not because there is any direct trade between the two centres.

### Transport

The markets studied are located in eastern and southern part of Madras State which is predominantly served by meter gauge railway (Fig.4). Tiruchirapalli is the only market (other than Madras City) which is served both by broad gauge and the meter gauge railways and is a major railway junction located on a main line. Mixing of gauges, however, creates less problem of transshipment of goods in Madras than in other states because the two gauges are not intermixed as they are in some other states. Transshipments, therefore, do not have to be repeated.

Paddy and rice moving from Tanjavur district to Coimbatore and Kerala mostly moved by railway via Tiruchirapalli, where they were transferred from meter gauge wagons to broad gauge wagons. From Tiruchirapalli the produce moved both by rail and road. A number of trucks coming from Kerala and Coimbatore carried rice and paddy on their way back. Often paddy was moved up to

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1 This pattern of trade, namely, imports from Andhra and exports to Kerala evolved much before the present Madras State was formed in 1956. Before re-organization of States a rice tract of Andhra Pradesh comprising districts of East Godavari, West Godavari, Krishna, Nellore and Guntur was in Madras Province. Malabar, a rice consuming region of Kerala, was also in the Province. Northern districts of the present Madras State received fine rice from the rice tract of the present State of Andhra Pradesh and eastern districts of Madras exported coarse rice to Kerala. Deficit of the province was met mostly through imports from Burma and other eastern countries, but hardly ever through imports from other provinces within the country.

2 Kaniyakumari originally formed part of Kerala before its transfer to Madras during the reorganization of states.

Coimbatore by trucks and then sent to Kerala by railways. Rice could be hauled from Thiruchirapalli to Kerala in two days by trucks. It took almost a week or ten days to ship it by rail. Rail shipments were particularly difficult at the time of Kuruwai harvest (in September - October). Wagons were difficult to acquire in the rainy season. Paddy, therefore, was hauled in a relatively wet condition to Kerala and would often develop a musty odour.

Madras state is better served by roads than most other states. The quality of feeder roads in Madras is also much superior to those in most other states. Road transport, therefore, serves a good compensatory role in agricultural exports from Tiruchirapalli and Thanjavur. Problems occurred mainly because of the interstate nature of the rice trade. Most of the trucks that ply between Kerala and Tiruchirapalli were from Kerala. Hardly any trucks from Tiruchirapalli operated between the two States. When wagons were not available, traders were mostly at the mercy of the incoming lorries for shipments by road.

CHART 11.2. APPROXIMATE DISTANCES BETWEEN VARIOUS PRIMARY, SECONDARY, AND TERMINAL MARKETS <sup>1</sup> MADRAS (miles)

Madras							
50 *	-Kanchipuram						
119 *	92 †	Cuddalore					
181 *	160 *	65 *	Kumbakonam				
250 *	192 *	95 *	35 -	Mannargudi			
160 *	200 *	65 *	40-*	26 *	Tiruvarur		
204 *	168 *	83-*	25 *	24-*	35 *	Thanjavur	
198 *	160 *	100 *	60 *	55 *	65 *	30 *	Tiruchirappalli
372 *	350 *	275 *	220 *	215 *	233 *	198 *	175 * Tirunelveli
300 *	280 *	215 *	200 *	190 *	200 *	165 *	136 * 230*Coimbatore

<sup>1</sup> As far as possible distances are for the most direct route between the two markets and according to the availability of transport refer to rail or road distances.

\* Railway miles  
- Road miles

### Crop Seasons

In Madras, where a wide range of natural conditions prevail, sowing and harvesting of paddy goes on almost all year round. At least five harvest seasons are noted in a year. An early crop, known as Kar-Samba, is harvested in August and September in Kanyakumari and parts of Tirunelveli district. An early Kar or Kuruwai crop is harvested in September-October in parts of Thanjavur, Madurai, Thiruchirapalli and Tirunelveli districts and in

Chidambaram taluka of South Arcot district. An early Samba crop is harvested in December-January. It is raised widely in Thanjavur district and is a major single crop in Tirunelveli district under river fed channels and under rain fed tanks in all places in the state. A late samba crop is harvested in February-March in Thanjavur, Tiruchirappalli, Madurai, Tirunelveli, South Arcot, North Arcot and other districts where long duration paddy is under tanks, channels and wells. A hot weather crop is harvested between April and June. It is raised as a second crop in certain portions of Madurai, Ramnathpuram, North Arcot, Chingleput and South Arcot districts depending upon the availability of water in the wells and tanks. Table 11.2 shows seasonwise production of paddy in the five districts of Madras chosen for the study. A major portion of the paddy is harvested between October and January in these districts. This period consists of two major harvests, namely Kuruwai in October and early samba in November and December. Tirunelveli and Chingleput raise substantial amounts of late samba paddy maturing in February, March relative to their total production, although in absolute terms, it is not comparable to the crop size in Thanjavur (Table 11.2).<sup>1</sup>

Because of the way the crop seasons are lumped together the table does not point out the fact that there are two major harvests in Thanjavur, Tiruchirappalli and Tirunelveli (namely Samba from November to February depending on whether it is an early maturing or late maturing and Kuruwai in October<sup>2</sup> whereas the rest of the districts (Chingleput, South Arcot and North Arcot) have a single major harvest of early and late samba varieties.

#### Marketing Seasons and Arrivals

Marketing seasons vary from one region to another according to the harvest seasons in the areas. Thus markets in South Arcot, North Arcot and Chingleput usually experience a peak period of marketing between January and March. The lean season is usually between June and August. Markets in Thanjavur and Tiruchirappalli have two marketing

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- 1 The harvesting seasons shown in Table 11.2 conform with those given in the Report on the Marketing of Rice in India. They, however, differ from those in the Rice Economy of India where harvesting seasons for first, second and third crop are given as August-December, October-January, March-June respectively. See p. 8.
  - 2 There is also a Thaladi crop which is harvested around February-March.

seasons, January to March when samba paddy is marketed and October to November when Kuruwai is marketed. Marketing season commences somewhat later in Tirunelveli. Its first season lies between March and April and the second between October and November.

Table 11.3 shows arrivals of paddy and rice in Kanchipuram, Cuddalore, Kumbakonam, Tirunelveli and Mannachanallur in 1961. Table 11.4 shows monthly arrivals as percent of the annual total. The data, as available, do not show marked seasonality in marketing of paddy and rice. This could be for various reasons. First, because a number of rice crops are grown and are spread throughout the year, it is likely that there is a more steady flow of arrivals than is generally noted in the case of wheat and jowar, or rice in other parts of India. However, an important explanation also lies in the marketing pattern of paddy and rice in Madras state. As was indicated earlier, a large proportion of the marketed surplus is assembled by the village agents directly at the paddy fields, whereas the arrival data only record the arrivals coming to a primary market place. The data, therefore, exclude a substantial amount of paddy that is directly purchased by millers from the villages. It is likely that arrivals in village markets show a much greater seasonality than is indicated by the primary market data. <sup>1</sup>

#### Structure of Rice Marketing: Share of Processing Agencies <sup>2</sup>

Importance and role of various agencies in financing, purchasing, processing, and sale of rice varies significantly from one region to another in India. In Andhra Pradesh and Punjab, a large proportion of the marketed surplus is sold directly by cultivators in wholesale markets, whereas in Madras, Orissa and U. P. most of the surplus paddy is

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- 1 A study made by the Agro-Economic Research Centre, Madras assumes that there is no pronounced seasonality in marketing of paddy in Madras State as is noticed in other States. Their conclusions seem to be based on the same data that I have collected from the Department of Statistics. However, the data are too inadequate to arrive at conclusions based solely on these records. See The Behaviour of Agricultural Prices in the Southern Region 1950-60. An unpublished Report, Agro-economic Research Centre, Madras.
  - 2 The description of the market structure in this section is based on my own and the investigator's interviews of rice millers, and traders. No statistical documentation was possible to support many statements made in the text due to 1) the nature of trade and 2) due to the fact that the study was conducted during a period when there was a 100 percent levy imposed on millers. This made it difficult to collect statistics relating to free trade. The statements, although not supported by statistical information should, therefore, be taken as informed opinions.

TABLE 11.2 SEASONWISE PRODUCTION OF RICE, MADRAS STATE<sup>1</sup>

YEAR	DISTRICT	CROP I (SEPTEMBER-JANUARY)		CROP II (JANUARY-MARCH)		CROP III (APRIL-JUNE)		TOTAL PRODUCTION
		Tons	Percent	Tons	Percent	Tons	Percent	
1959- 1960	Chingleput	271,250	67.8	116,980	29.3	11,500	2.9	399,730
	S. Arcot	283,000	79.9	60,370	17.0	10,970	3.1	354,340
	Trichi	180,610	71.3	67,360	26.6	5,410	2.1	253,380
	Tanjavur	767,260	88.02	104,210	11.95	150	0.02	871,620
	Tirunelveli	138,230	53.47	118,790	45.95	1,530	0.58	258,550
	STATE	2,480,600	75.62	748,930	22.83	50,940	1.55	3,280,470
1960- 1961	Chingleput	252,760	71.28	90,800	25.61	11,020	3.11	354,580
	S. Arcot	305,780	74.72	83,190	20.32	20,290	4.96	409,260
	Trichi	186,220	61.44	109,880	36.26	6,970	2.30	303,070
	Tanjavur	748,210	84.36	138,270	15.59	420	0.05	886,900
	Tirunelveli	168,030	57.71	120,040	41.22	3,110	1.07	291,180
	STATE	2,560,560	73.09	877,710	15.06	64,820	1.85	3,503,090
1961- 1962	Chingleput	281,040	70.52	98,660	24.76	18,800	4.72	398,500
	S. Arcot	361,270	78.83	79,900	17.43	17,120	3.74	458,290
	Trichi	202,560	64.34	105,100	33.39	7,150	2.27	314,810
	Tanjavur	842,550	84.23	157,160	15.71	610	0.06	1,000,320
	Tirunelveli	177,620	53.93	149,240	45.32	2,480	0.75	329,340
	STATE	2,833,280	73.68	924,580	24.04	87,650	2.28	3,845,510
1962- 1963	Chingleput	325,830	75.01	83,460	19.22	25,070	5.77	434,360
	S. Arcot	321,050	75.85	83,660	19.76	18,560	4.38	423,270
	Trichi	221,340	64.54	114,780	33.47	6,810	1.99	342,930
	Tanjavur	767,020	84.14	144,320	15.83	270	0.03	911,610
	Tirunelveli	169,170	56.23	130,590	43.40	1,100	0.37	300,860
	STATE	2,911,080	73.5	949,170	23.97	100,370	2.53	3,960,620

<sup>1</sup> Production estimates for 1959-60 as given in the above table are significantly different from those published in the Rice Economy of India. Since the estimates in Rice Economy were only final estimates and hence subject to revision, it is assumed that the figures presented here are the most up-to-date.

Source: Department of Statistics, Government of Madras.

TABLE 11.3: MONTHLY ARRIVALS OF RICE AND PADDY IN SELECTED  
PRIMARY MARKETS, MADRAS STATE, 1961.

MONTH	(Quintals)									
	KANCHIPURAM		CUDDALORE		KUMBAKONAM		MANACHANALLURE		TIRUNELVELI	
	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice
January	N.A.	N.A.	11,650	12,420	6,032	11,711	27,181	16,917	11,691	9,423
February	32,043	16,639	11,460	14,650	42,844	11,718	59,108	13,145	13,870	13,113
March	19,464	17,920	12,965	15,480	39,585	14,965	47,411	22,895	14,547	19,121
April	21,817	13,692	10,800	11,200	16,364	14,071	25,347	18,510	12,937	9,475
May	54,054	28,048	11,070	12,580	5,256	11,967	23,937	18,058	8,524	10,447
June	42,634	32,110	13,475	14,320	11,329	14,581	37,712	23,794	10,850	11,970
July	17,499	9,984	11,800	10,670	5,251	10,498	277,675	22,492	6,130	6,560
August	23,278	13,956	17,485	10,070	9,664	11,078	202,470	20,513	11,670	8,098
September	49,087	25,112	15,947	11,902	18,047	13,338	19,120	21,803	29,550	12,990
October	47,350	27,216	20,176	19,776	73,752	10,772	92,578	32,349	26,600	8,920
November	27,396	24,363	17,360	13,982	32,013	11,618	220,029	23,502	14,960	6,690
December	98,645	55,566	23,825	16,104	12,474	17,195	26,600	22,653	11,130	10,675
<b>TOTAL</b>	<b>432,267</b>	<b>264,616</b>	<b>178,013</b>	<b>163,154</b>	<b>272,611</b>	<b>153,492</b>	<b>1,059,168</b>	<b>261,631</b>	<b>172,459</b>	<b>127,482</b>

N. A. Not Available.

Source: Department of Statistics, Government of Madras

TABLE 11.4: PERCENTAGE DISTRIBUTION OF RICE AND PADDY ARRIVALS  
OVER A YEAR, MADRAS STATE, 1961.

	<u>KANCHIPURAM</u>		<u>CUDDALORE</u>		<u>KUMBAKONAM</u>		<u>MANNACHANALLURE</u>		<u>TIRUNELVELI</u>	
	<u>Paddy</u>	<u>Rice</u>	<u>Paddy</u>	<u>Rice</u>	<u>Paddy</u>	<u>Rice</u>	<u>Paddy</u>	<u>Rice</u>	<u>Paddy</u>	<u>Rice</u>
January	N.C.	N.C.	6.5	7.6	2.1	7.6	2.6	6.5	6.8	7.4
February	N.C.	N.C.	6.4	9.0	15.7	7.6	5.5	6.9	8.0	10.3
March	N.C.	N.C.	7.3	9.5	14.5	9.7	4.5	8.7	8.4	15.0
April	N.C.	N.C.	6.0	6.7	6.0	9.1	2.4	7.0	7.5	7.4
May	N.C.	N.C.	6.2	7.7	1.9	7.8	2.2	6.9	4.9	8.2
June	N.C.	N.C.	7.5	8.8	4.1	9.5	3.6	9.1	6.3	9.4
July	N.C.	N.C.	6.6	6.5	1.9	6.8	26.2	8.6	3.5	5.1
August	N.C.	N.C.	9.8	6.1	3.5	7.2	19.1	7.8	6.7	6.3
September	N.C.	N.C.	8.9	7.3	6.6	8.7	1.8	8.3	17.1	10.2
October	N.C.	N.C.	11.3	12.1	27.0	7.0	8.7	12.3	15.4	7.0
November	N.C.	N.C.	9.7	8.5	11.7	7.5	20.7	9.0	8.6	5.2
December	N.C.	N.C.	<u>13.4</u>	<u>9.9</u>	<u>4.5</u>	<u>11.2</u>	<u>2.5</u>	<u>8.6</u>	<u>6.5</u>	<u>8.4</u>
TOTAL			<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

N. C. - Not calculated since data for January missing.

disposed off by cultivators in small village markets or on the paddy fields and then moved to larger markets by various middlemen. <sup>1</sup> Even in those states where village sales are predominant, important of various processing agencies varies from one state to another. For example, in Orissa and West Bengal major proportion of paddy was handpounded in villages. In Madras, however, machine-milling has been foremost and handpounding more or less non-existent in the recent past. In 1953-54, 87.2 percent of the total rice produced in Orissa and 70.2 percent of the rice produced in West Bengal was handpounded whereas only 8.2 percent of the total production was handpounded in Madras. <sup>2</sup> In more recent years, handpounding is estimated to have declined to barely one percent of the total rice production in Madras State. <sup>3</sup>

Almost all the paddy retained for domestic consumption is converted into rice through husking machines and rice mills. Marketed surplus in Madras is handled by a complex network of intermediaries. Channels of rice marketing in the state could well be described with the aid of a flow chart such as Chart 11.3.

### Intermediaries

Village sales are most predominant in Madras and contrary to general expectations they are believed to be on the increase in the recent past. <sup>4</sup> Of late, rice millers

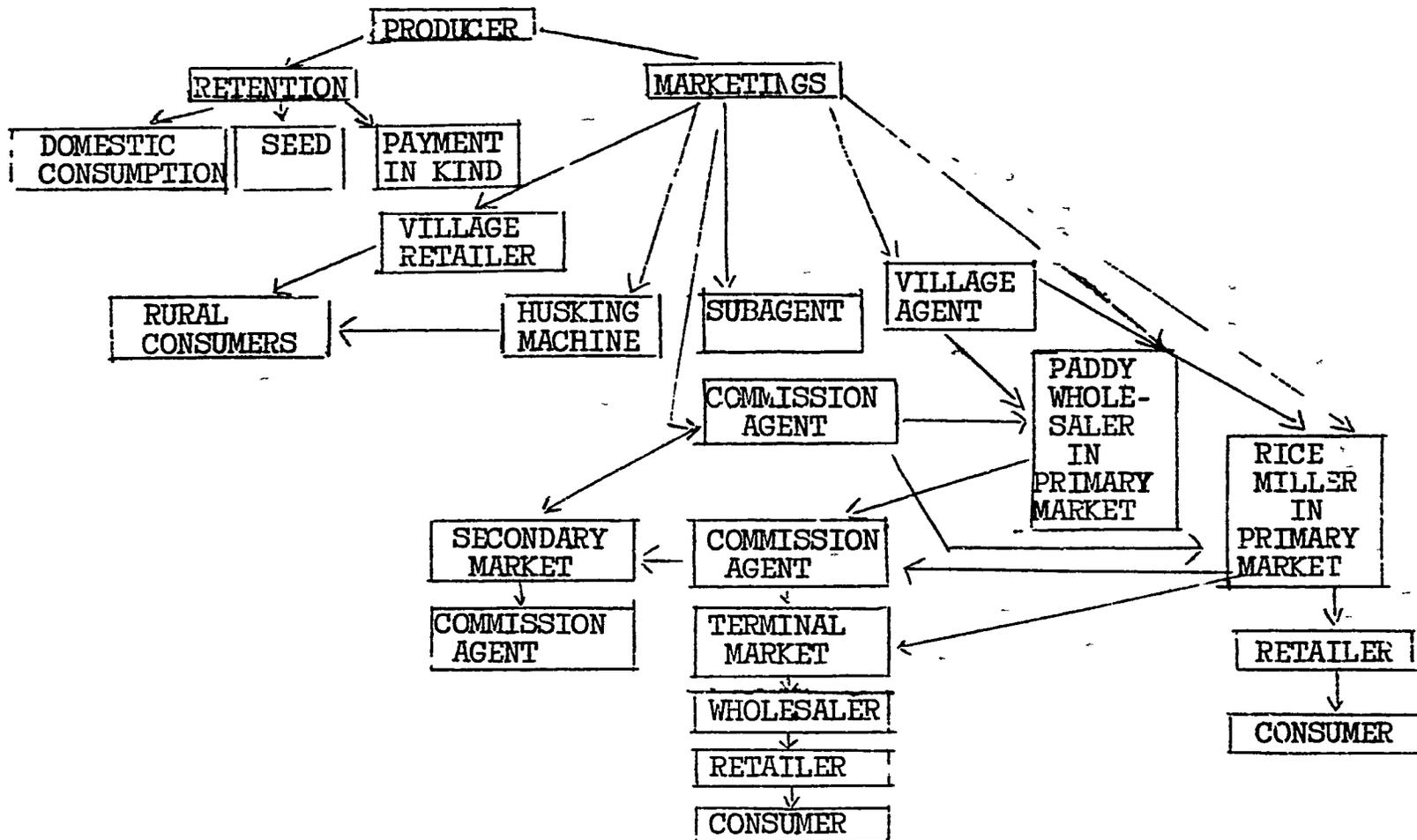
1 It is estimated that in Andhra Pradesh and Punjab 82.5 percent and 76.2 percent of the total arrivals in wholesale markets are brought by cultivators respectively as compared to 10 percent in Madras, 20 percent in Orissa and 30 percent in U. P. Rice Economy of India, p. 17.

2 Rice Economy of India, p. 33.

3 Report on the Marketing of Rice in Madras, office of the Madras State Agricultural Marketing Officer, 1963.

4 Relatively high levels of market sales in Punjab, Andhra Pradesh and Maharashtra are generally believed to be due to spread of market regulation in these states. In 1958 33 paddy markets were regulated in Andhra, 62 in Punjab and 114 in Bombay. Whereas in predominantly rice producing states such as Madras and West Bengal no paddy markets were regulated. (Rice Economy of India p. 23) There is evidence that market regulation has helped to bring about progressive reduction in village sales in these states. Reduction in village sales is not so much due to their being illegal, for it is virtually impossible to enforce market acts in rural areas - but due to more favourable marketing conditions provided by the regulated markets. However this phenomenon is not evident in Madras State. As

CHART 11.3: CHANNELS OF RICE MARKETING UNDER PRIVATE TRADE, MADRAS STATE



in surplus as well as in deficit areas have been arranging to buy paddy directly from villages through petty traders and brokers to avoid unnecessary expenses such as commissions of various intermediaries, incidental charges, taxes, etc. Many village agents, brokers, commission agents and their subagents purchase paddy for rice millers directly from villages. In addition, there are village retailers, paddy wholesalers and professional dehuskers who purchase paddy from cultivators in varying amounts. Role of landlords and large producers in assembling had never been very significant in Madras.

Among all these numerous intermediaries, village agents are the most important assembling agency throughout the state. They purchase paddy in villages and then move it to major assembling centres where they sell it either to a local rice miller or a paddy wholesaler or an agent of a rice miller in a distant terminal market. They usually lend cash to cultivators a month or two before harvest. They, in turn, are often financed by rice millers and paddy wholesalers. The rate of interest charged on these loans remains as much a mystery in Madras as elsewhere in India. Some rice millers claim that they lend cash when it is least needed in trade and, therefore, do not charge any interest but consider it to be a good way of keeping cultivators tied. Others claim that they charge a small deduction in price. From the figures quoted of deduction, interest does not amount to more than 10% in a period of six months. Village merchants keep in continuous contact with market conditions and prices through their frequent visits to the nearby wholesale market.

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Footnote continued from previous page

late as 1966, 79 markets were regulated in Madras, most of these for paddy. However, paddy arrivals in these markets have been negligible. Out of 15 regulated markets in South Arcot district, paddy arrivals in the market as percentage of marketable surplus was nil in three markets, very poor in five markets, less than 5% in four, and over 20% in three markets. This is true of more or less all the districts in Madras. K. Shriraman, A Critical Study of Regulated Markets in Madras State, 1966. This may be due to the keen competition in paddy assembly in Madras state which discourages cultivators from spending their time and effort in taking paddy to a primary market.

Due to the dominant role of millers in purchases, wholesalers occupy a secondary position in paddy trade at the primary market level. They are, nevertheless, important in surplus areas where they purchase paddy on their own through commission agents and send it to millers in secondary and terminal markets. Their turnover is usually very rapid and the margin and the amount of capital usually small. Some of these traders deal only in paddy while others convert paddy into rice by paying fixed milling charges and sell rice locally or in terminal markets.

Rice millers purchase paddy through numerous commission agents, village merchants, and brokers whom they usually pay a fixed commission per bag of paddy. Milling is not concentrated in major rice producing areas but has spread to a number of terminal markets located in deficit areas and hence an elaborate network of agents and subagents has evolved over a long period of time. Terminal markets receive great deal of paddy which is then converted into rice and sold to local consumers. There are a large number of rice mills in Kerala and Coimbatore that purchase paddy from Thanjavur. In addition, there are numerous centres such as Tiruchirapalli which may be termed as secondary markets. Traders in these centres purchase paddy from a surplus region such as Thanjavur district, convert it into rice in local mills and send it to Kerala for sale on own account. Table 11.5 shows the number of rice mills in various districts in Madras State.<sup>1</sup> It will be noted that only 55 percent of the rice mills are located in the major rice producing districts of Thanjavur, North Ariot, Thiruchirapalli, South Ariot, Tirunelveli and Chingleput. The rest are located in major consuming centres.

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<sup>1</sup> These figures show a much smaller number of rice mills as compared to the Ministry's figures published in The Rice Economy of India and in the Bulletin on Food Statistics. Comparison of the figures in the Report on the Rice Marketing in India with those in the later publications suggests that the Ministry's figures include single hullers whereas the Madras state government's figures show only the larger establishments. The distinction between the two types of establishments is difficult to make. There are usually a number of single hullers scattered around in rural areas. A mill is distinguished from a single huller on the basis of one or all of the various attributes 1. A rice mill may have a parboiling equipment with it. 2. It may be a cluster of single hullers with larger milling capacity. 3. It may have a rice polishing equipment. Both the estimates (i.e. those given here and those of the Ministry) underestimate the actual milling units due to the delays in licensing and in coverage. (See West Bengal section earlier for further discussion of this.)

Due to the dispersed nature of milling and wholeselling in paddy it is difficult to state whether stocks are held in the primary markets or in terminal markets. Unlike the primary market traders of jowar and wheat who mostly purchase on behalf of the principals in the terminal markets, most of the rice millers in the primary markets seem to trade on their own account. After doing a careful survey of the prices in various markets millers usually send rice to their own agents in terminal markets with specific instructions about when and how much to sell. Stocks are usually held in the form of paddy and converted into rice just before the shipment is sent to the terminal market.

As generally two or three crops of paddy are raised in Madras, mills operate almost all year round and stocks are not held for more than three or four months at a time.

TABLE 11.5: DISTRICTWISE DISTRIBUTION OF RICE MILLS, MADRAS, 1961-62

<u>S. NO.</u>	<u>NAME OF THE DISTRICT</u>	<u>SHELLER TYPE</u>	<u>HULLER TYPE</u>	<u>TOTAL</u>
1.	Thanjavur	12	1568	1580
2.	North Arcot	-	874	874
3.	Salem	-	652	652
4.	Kanyakumari	-	206	206
5.	Madras	-	22	22
6.	Thiruchirapalli	-	762	762
7.	The Nilgiris	-	3	3
8.	South Arcot	2	423	425
9.	Coimbatore	-	568	568
10.	Tirunelveli	1	620	621
11.	Ramanathapuram	-	497	498
12.	Chingleput	-	636	636
13.	Madurai	-	565	565
	<b>TOTAL</b>	<b>15</b>	<b>2,396</b>	<b>2,411</b>

Source: Report on the Marketing of Rice in Madras State, 1963 issued by the Madras State Marketing Office .

#### Caste and Entry Into the Trade

Caste does not appear to be a barrier to an entry either into paddy trade or into milling. Persons from all communities such as Chettiyars, Nadars, Naidus and Brahmins have been operating rice mills in Madras State. Chettiyars dominate in numbers in Thiruchirapalli district whereas Nadars are more predominant in Tirunelveli district. No particular community seemed predominant in Thanjavur and South Arcot. The dominance of some communities in the

specific areas may be due to the tradition of financing one's own relatives to start a new business.

### Capital and Entry into Trade

Little systematic information is available on the role of capital in grain trade. It would appear at the outset, that since ownership of a rice mill calls for great deal of capital and since trading business is usually operated within a family that there is great deal of scope for emergence of monopoly of those who possess such capital. However, due to the practice of leasing rice mills on long durations, ownership of a rice mill is no more a constraint on entering trade.

Apart from the custom of leasing mills, partnerships are widespread in paddy trade in Madras where a big rice mill may be owned by a number of partners who conduct their business individually and get paddy processed through the jointly owned mill at a scheduled rate. <sup>1</sup> This service is also availed by paddy wholesalers who get paddy milled on a large scale and pay a scheduled rate to the mill. <sup>2</sup>

### Sources of Market Intelligence

As elsewhere in India, an elaborate network of personal contacts is a major source of market intelligence in paddy trade in Madras.

Contacts are established by sending agents to various market places. Agents of traders in Kerala visit Thanjavur and Tiruchi district frequently (1) to get a feel for the crop outlook (2) to maintain and create new contacts with traders and (3) to enter into contracts after making a careful survey

- 1 Many mills are found to maintain two separate accounts called milling account and trading account. The milling account includes capital cost of machinery, its maintenance charges and collections realized for processing undertaken. Under the trading account, details of buying and selling and costs of conversion, profit and loss are maintained. Towards the cost of processing a scheduled rate for a unit of paddy converted into rice is charged and credited to the milling account.
- 2 In Mannachanallure town in Tiruchirapalli district such partnerships were found to be very common. There are about 500 wholesalers in Tiruchi district and only 120 rice mills. Quite a few mills are operated in partnerships and those wholesalers who do not run a mill get their paddy milled by paying a fixed rate.

of the offers made by various traders in various primary markets. This is, however, not a one way process. Traders in the primary markets also send their agents to terminal markets for establishing contacts and finding customers for their produce.

In addition to these agents, there is also a large number of brokers in primary and terminal markets who specialize in collection and dissemination of market intelligence. Reliance on brokers for market intelligence appears to be much more extensive in paddy trade in Madras than in West Bengal or even as compared to jowar and wheat trade in Maharashtra and Punjab where brokers are almost nonexistent. Brokers do a careful survey of price and quality differences in various shops. Agents visiting market places usually contact these brokers for placing orders. Brokers earn a fixed commission per bag of paddy.

Millers and wholesalers in the primary and terminal markets also obtain information and receive orders through telegrams, telephones and letters.

Information on crop outlook is obtained from cultivators whom traders in primary markets meet frequently.

#### Number of Traders in Paddy Trade

Absence of regulation and dispersed nature of paddy trade in Madras State makes it difficult to give even approximate estimates of the number of traders operating in various markets. Where a large proportion of the marketed surplus is assembled in wholesale markets, area of trading operations can be delineated to a central market place and the number of traders operating in this market town provides a fairly good index of the size of the market. In Madras State, however, paddy trade being fairly dispersed, and village agents, fairly important in the collection of paddy it is difficult to estimate the total number of traders in a market. The very nature of trading calls for a large number of small traders who can assemble small surpluses of innumerable cultivators directly and quickly from villages. The manner in which the trade operates suggests that there is a fairly good network of agents that provides prompt and fairly accurate market information to various trading partners linking paddy fields with terminal markets.

The extent of competition between millers for acquiring paddy can be realized by comparing the number of rice mills and their milling capacity in West Bengal and Madras. There is sufficient evidence to indicate that the milling capacity was vastly underutilized in West Bengal.<sup>1</sup> In 1961 West

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1 See section on West Bengal.

Bengal had 497 rice mills. <sup>1</sup> During 1961-62 Madras had 2,411 rice mills. <sup>2</sup> The rice mills in West Bengal on an average have greater capacity than those in Madras. Since there is considerable variation in the capacity of mills even within a single primary market it is difficult to compare the average capacity of a rice mill in West Bengal with that in Madras. However, some approximate estimates can be ventured on the basis of the available information. Some data collected from the Bengal Rice Mills Association regarding the daily and the annual production of rice in mills and the number of working days in a year in the districts of 24 Parganas, Burdwan, Birbhum, Midnapore and Hoogaly, in which 318 mills are located, indicates that the average daily capacity of the rice mills varies between 85 quintals (225 mds) in Hoogly to about 115 quintals (310 mds) in Burdwan, Midnapore and Birbhum. This corroborates with the estimates supplied by the mills in Bolpur market in the course of this investigation that the daily capacity of rice mills in that market ranges between 110 quintals (300 mds) to 160 (400 mds) quintals of rice. During similar investigations conducted in Thanjavur and Tiruchirapalli district in Madras state there was a general agreement among the millers that a mill with a capacity of 25 quintals of rice a day (66 mds) was a small mill by local standards and that a mill with a daily capacity of 225 to 250 quintals (600 to 670 mds) is generally considered to be a large mill. A mill of the capacity of approximately 50 to 75 quintals of rice a day (130 mds to 196 mds) is considered to be of the modal size. <sup>3</sup> It can, therefore, be inferred that the average milling capacity of a rice mill in West Bengal is probably twice as large as in Madras. It should be noted that in 1961-62 the number of rice mills in Madras was five times as much as in West Bengal. The milling capacity in Madras should, therefore, be 2.5 times as much as in West Bengal. Production of rice in that year in West Bengal and Madras was 4.8 and 3.9 million tons respectively.

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1 Statistical Abstract, West Bengal 1962.

2 Both the figures exclude single hullers. See Footnote 1 page 222 earlier.

3 Another estimate puts average daily milling capacity of a rice mill in Thanjavur at 45 quintals of rice a day and of that in Tiruchirapalli district at about 110 quintals of rice. See: "Procurement Hits Rice Mills in Tiruchi District", Hindu, September 22, 1967.

If it is assumed that a third of the West Bengal rice production was handpounded, <sup>1</sup> it still leaves 22 percent more paddy in Madras to be milled by 2.5 times as much milling capacity as in West Bengal. Even if a much more conservative estimate is made of the milling capacity in Madras it is obvious that the underutilization in Madras is probably somewhat greater than that in West Bengal. This comparison, for lack of reliable estimates of their numbers, excludes the thousands of husking machines which operate in each state. <sup>2</sup> Since husking machines have been popular for a very long time in Madras and have spread only recently to the rural locales in West Bengal, the total number of such machines is, in all likelihood, much greater in Madras than in West Bengal. The extent of underutilization is still further emphasized by the fact that in Madras production of paddy is quite spread out over the year unlike in Bengal where only one crop of paddy is raised in a year. There is, therefore, at least some pressure on the mills to operate at full capacity in the postharvest period in West Bengal which does not exist to the same extent in Madras. <sup>3</sup> (Even in West Bengal there is no logical reason why mills should operate at full capacity for a few months in a year and then remain practically closed for a major part of the year. For even if production is concentrated at a point of time, consumption takes place throughout the year and, therefore, there is no need for all the paddy to be milled immediately after the harvest. Nor

- 1 See West Bengal section p. 151.
- 2 If the numbers of rice mills in West Bengal and Madras as shown here are deducted from the Ministry's figures for 1960 it would seem that there were approximately 4,500 single hullers in West Bengal and about 5,000 in Madras. The Ministry's reports, however, acknowledge the under estimation particularly of single hullers, due to their remote locations. Millers also suggested that the number of single hullers is much greater than reported. Particularly, because these hullers are not entitled to pay a levy, in years of controls there is a greater tendency for suppression of their numbers.
- 3 The pressure in the early harvest months arises from the fact that millers generally prefer to mill wet paddy immediately after it is acquired to avoid losses. In Madras millers indicated that they mill Kuruvai paddy quickly after the harvest due to the wetness of the grain.

is there any evidence that rice is much more economical to store than paddy, for although the volume is less, losses are higher in storing rice as compared to paddy.)<sup>1</sup>

All these statistics for the two states suggest that if underutilization in milling industry is enough to create concern in West Bengal it has been equally, if not more, widespread in Madras.<sup>2</sup> There has, nevertheless, been an enormous increase in the number of rice mills in Madras state over the last decade and a half despite such tremendous underutilization of capacity,<sup>3</sup> Some of this can be explained as being due to movement restrictions which necessitated establishment of mills in deficit areas, due to spread of paddy to new areas (with expansion in irrigations) and due to technological obsolescence (i.e. replacement of hullers with sheller mills). However, the increase in numbers is by no means restricted to these areas, nor is it restricted to only modern milling units.

Because of the great fractionalization and consequent underutilization of capacity the milling industry seems to have become a high cost structure which results in high margins. In case of labour use this may not have much significance as most of the employment is of a variable nature. However, in case of capital this constitutes a considerable drag on the resources.

- 1 ".....there is little doubt as to the superiority of the keeping quality of this cereal when stored as paddy, for while improvement in quality due to aging is similar in both unhusked and the husked grain loss by weevil is kept at a minimum in the case of paddy." - Report on the Marketing of Rice in India, p. 252. This is also supported by Efferson's observations in his study of the rice economy of West Pakistan, see: J. Norman Efferson, Prospects for Expanding Export Markets for West Pakistan Rice, July 10, 1968, distributed by Planning Cell, Agriculture Department, Government of West Pakistan, Lahore.
- 2 This was constantly emphasized by the millers in their interviews in Madras State. Many mills in Thiruchirapalli, which depend on paddy supplies from Thanjavur district for their livelihood have come to a complete standstill since the Madras government adopted a policy of milling paddy locally where it is produced under the monopoly procurement programme.
- 3 The total milling units (including single hullers) increased from 6,249 in 1948 to 7,411 in 1960 and to 8,903 in 1965. (See Report on Rice Marketing, and Bulletin on Food Statistics 1966).

## CHAPTER XII

### MARKET INTEGRATION

This chapter deals with the degree of regional integration in the prices of paddy and rice in Madras State. It examines the hypotheses that (1) in a perfectly competitive market, where there are large numbers of buyers and sellers perfect knowledge, homogeneity of product and free flow of commodities, prices of paddy and rice in a market will be dependent on price movements in other markets and (2) that by and large differences in prices of rice or paddy between two markets will be equal to or less than costs of transport and handling between those two markets.<sup>1</sup> Market integration is defined as the degree of correlation between wholesale prices of paddy or rice in any two markets. Higher the correlation coefficient, higher the degree of market integration between the two markets.

Before moving on to the analysis of regional price differences we will pause a moment to discuss the rice and paddy price data for Madras. The difficulties of price data collection in Madras State have been already discussed earlier. To sum up, the problem arises due to multiplicity of varieties which make it difficult to obtain price data for a single variety comparable over a wide geographical region and due to the practice of collecting prices for first, second and third grade of paddy and rice rather than for specific varieties; so that there are numerous varieties which fall under the category of single grades, and due to numerous crops of paddy grown in a region, because of which prices, rather than relating to a single crop, refer to numerous crops in a single year. There has been no uniformity either over time or over space in varieties for which price data are collected. In order to illustrate the problem of price comparisons in Madras, Appendix 1 lists the periods and varieties of paddy and rice for which price data are recorded. It is apparent from the table that prices between any two markets do not refer to the same varieties. Neither is the number of varieties fairly small as in the case of West Bengal markets. Paddy prices for five markets, Kancheepuram, Cuddalore, Trichy, Kumbakonam and Tirunelveli refer to 21 different varieties. This creates a very serious problem in the comparison of price movements over regions. For due to the presence of scores of varieties, price range within a single grade of paddy or rice is usually fairly large and even in a single market, difference between prices of a variety which is only marginally Sort I and of that which

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1 For discussion of methodology used in the analysis see pp. 10-15.

is superfine is fairly high. <sup>1</sup> Second, due to the production of such a wide number of varieties of rice, number of varieties are usually grouped and intermixed by traders to meet the various grade levels. The condition of homogeneity of product is thus not fully satisfied in case of Madras prices. With this precautionary note we will now proceed to the analysis of regional price integration.

### Price Formation at the Village Level

There is a general contention that prices received by cultivators for the sale of their produce in villages are often much lower than those prevailing in the wholesale markets. <sup>2</sup> Since village sales constitute a major portion of the marketed surplus of paddy and rice in Madras it is of considerable interest to examine the validity of this contention in Madras State.

In theory, one would expect a farm harvest price to be lower than a wholesale market price, the difference between the two being equal to the costs of transport and handling in moving the produce from the village site to the nearby wholesale market. In order to conduct systematic analysis of the price difference it would be necessary to collect prices prevailing in the villages surrounding a single wholesale market. However, except for a few farm level surveys conducted by various agencies, no such price data are available. Nor was it possible to collect such data during the period of this survey because of the monopoly procurement scheme under which prices are fixed by the state government. As elsewhere in India, farm harvest prices of rice and paddy are the only major secondary source of data for village level prices in Madras State. <sup>3</sup>

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- 1 e.g. maximum wholesale price fixed by Government of Madras in Madras city in August 1964 was Rs. 85.00 per quintal in case of Kamba Samba and Jeeraga samba and Rs. 72.00 per quintal in case of number of other fine quality rice. The former is 18% higher than the latter. See Appendix 1 to the chapter.
  - 2 Reasons why prices in villages are believed to be lower than those in market places are already discussed in other sections.
  - 3 Farm harvest prices are collected under a scheme drawn up by the Ministry of Food and Agriculture, Government of India. Under this scheme, prices at which the producers dispose off their produce at the village site during the specified harvest period are collected from selected villages in each district. The average Farm (Harvest) price for the state as a whole is worked out for each crop as a weighted average with the district production

Despite their limitations, these prices are the only indicator of the prices prevailing in the village level markets at large.

Tables 12.1 and 12.2 show district farm harvest prices and the average March wholesale market prices of paddy and rice respectively in the selected markets.

Farm harvest prices of paddy in Table 12.1 are frequently equal to or slightly less than the wholesale prices of Sort II paddy. In a few cases harvest prices are much lower than the wholesale prices of Sort II paddy. (Chingleput farm harvest price in 1957-58, South Arcot farm harvest price in 1959-60). There are number of years when farm harvest prices, as recorded by the Department of Statistics, were higher than wholesale market prices. (e.g. Chingleput, South Arcot, and Tirunelveli prices in 1956-57, South Arcot, Thanjavur and Tirunelveli prices in 1957-58 etc.) This is possible in view of the fact that in Madras State most of the paddy purchases by the local and terminal market millers and traders are made at the village site. It is, therefore, likely that when demand from millers and traders increased prices in villages rose in primary markets. <sup>1</sup>

Footnote continued from previous page

figures for the current year as weights.

"Data on farm harvest prices, as available at present are not comparable over time and space. This is because most of the State Governments have not yet specified varieties and qualities of the commodities for which Farm (Harvest) prices are collected. As such, the varieties and qualities of commodities for which farm harvest prices are collected in a district are likely to vary from year to year. Besides, prices are collected for a number of varieties and qualities of the same commodity for each of the selected centres in a district. Thus, the district and state Farm (Harvest) prices are averages of a number of varieties which render them incomparable with prices like wholesale prices which generally relate to one variety".

- 1 There have been similar cases when for example, prices in Thanjavur, which was a major supplier to Kerala during the period of free trade, were higher than those in Kerala markets. This was mainly due to speculative buying by Kerala traders in Thanjavur. See: A decade (1950-60) of Prices of Rice in Southern Region, Agricultural Economics Research Centre, University of Madras. The high farm prices of paddy may also have been due to a particular preference of Kerala consumers for 'wet paddy' from Madras. (I am indebted to Dr. Dorris Brown for this point).

TABLE 12.1: FARM HARVEST PRICE<sup>1</sup> AND WHOLESALE MARKET PRICE OF PADDY, MADRAS STATE

Rs per Quintal

YEAR	DISTRICT FARM HARVEST														
	SORT I	SORT II	PRICE												
	KANCHIPURAM			CUDDALORE			TIRUCHIRAPALLI			KUMBAKONAM			TIRUNELVELI		
1956-57	24 84	23 09	29 38	26 80	24 91	29 46	25 90	25 98	26 13	26 95	26 06	23 44	30 21	27 17	32 37
1957-58	36 42	31 13	27 70	30 22	29 57	34 70	33 75	30 60	31 35	30 01	29 34	31 02	N A	28 35	35 51
1958-59	33 80	30 36	24 52	32 56	29 35	30 70	31 91	30 53	27 73	31 51	30 94	27 46	30 15	27 80	N A
1959-60	35 07	30 47	27 65	35 62	31 57	27 38	36 36	32 47	31 24	N A	29 05	29 57	31 95	28 44	N A
1960-61	44 31	35 44	33 05	38 40	36 39	32 40	37 96	35 46	31 73	34 34	33 75	31 25	N A	34 88	N A
1961-62	37 38	34 12	34 67	39 88	38 43	38 58	42 04	39 07	36 73	39 16	37 73	35 26	35 93	34 76	N A
1962-63	47 34	37 06	36 63	37 99	33 97	38 96	40 35	37 46	37 92	35 94	35 76	36 46	35 98	35 41	35 19
1963-64	36 80	30 52	33 50	32 79	31 15	31 49	35 86	31 93	33 64	33 47	31 01	30 14	30 62	30 62	38 50
1964-65	43 50	38.50	N A	40 76	38 09	-	44 13	41 27	-	N A	41 67	N A	N A	35 98	N A

1. Farm harvest prices recorded by the Department of Statistics refer to the agricultural year of July-June. Thus a farm harvest price of 1955-56 refers to the harvests falling between July 1955 and June 1956. Since a major harvest of 1955-56 in these districts arrived in the market in March 1956 the farm harvest price of 1955-56 is compared with the marketing year 1956-57.

Source: Department of Statistics, Madras State Government

TABLE 12.2: FARM HARVEST PRICES <sup>1</sup> AND WHOLESALE MARKET PRICES OF RICE <sup>2</sup>, MADRAS STATE

(Rs. Per Quintal)

YEAR	CHINGLEPUT DISTRICT		S.ARCOT DISTRICT		TIRUCHIRAPALLI DISTRICT		TANJAVUR DIST.		TIRUNELVELI DIST.	
	Kanchi- puram Whole- sale Price	District Farm Harvest Price	Cudda- lore Whole- sale Price	Dist- rict Farm Harvest Price	Tir- uchi Whole- sale Price	Dist- rict Farm Harvest Price	Kumba- konam Whole- sale Price	Dist- rict Farm Harvest Price	Tirun- elveli Whole- sale Price	Dist- rict Farm Harvest Price
1956-57	44.55	50.79	45.00	45.63	43.03	45.23	44.95	N.A.	47.25	47.30
1957-58	59.49	49.73	48.33	51.87	50.76	53.63	48.79	46.55	N.A.	N.A.
1958-59	58.14	44.10	53.27	45.90	48.76	47.44	49.10	N.A.	50.13	N.A.
1959-60	59.29	53.60	55.96	48.22	58.24	49.68	N.A.	48.11	55.26	55.70
1960-61	69.32	N.A.	56.39	48.44	57.22	48.44	54.75	N.A.	N.A.	54.14
1961-62	72.54	52.00	59.65	53.71	66.95	50.86	61.93	52.89	55.92	59.15
1962-63	70.80	54.94	66.43	53.67	60.49	54.10	60.28	54.69	64.52	58.79
1963-64	60.40	N.A.	53.30	52.97	53.77	48.07	56.44	N.A.	60.22	59.29

1 Farm harvest prices recorded by the Dept. of Statistics refer to the agricultural year of July - June. Thus a farm harvest price of 1955-56 refers to the harvests falling between July 1955 and June 1956. Since a major harvest of 1955-56 in these districts arrived in the market in March 1956 the farm harvest price of 1955-56 is compared with the marketing year 1956.57.

2 Rice prices are of Sort I grade.

Source: Department of Statistics, Madras State Government.

A feature of major interest in Table 12.1 is, however, the fact that farm harvest prices are usually equal to Sort II wholesale prices but much lower than Sort I wholesale prices. As harvest prices are not available for different grades it is difficult to state which grade they refer to. They are, however, more likely to represent prices for the second rather than the first grade of paddy as fine rice constituted a very small proportion of the total rice production. <sup>1</sup> This is particularly true of Madras which produces more coarse varieties.

Despite the various drawbacks in the harvest price data which are already familiar to the reader, the overall conclusion reached by the comparison of harvest prices and wholesale prices of paddy is that the former seem to be usually in line with the latter. <sup>2</sup>

Table 12.2 shows harvest and wholesale prices of rice in the same markets as in Table 12.1. The harvest prices of rice also do not refer to a specific grade. The wholesale prices of rice are quite frequently much higher than farm harvest prices of rice. This may, partly, be due to the fact that the wholesale prices are of first grade whereas the harvest prices are more likely to be of the second grade of rice. We do not have wholesale prices of second grade of rice. The second factor, of course, is that very little rice is marketed in the villages except that purchased by noncultivating rural consumers. Most of the marketed surplus is sold in the form of paddy and is then converted into rice by millers in primary, secondary and terminal markets. In view of the fact that rice market is fairly small in the villages and that the demand is constituted of low income, noncultivating families who mostly consume coarse varieties of rice, the generally lower level of farm prices can not be taken as a reflection of the imperfect market.

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- 1 According to the estimate of the Ministry, fine rice constitutes 10 percent of the total rice production, medium rice, 30 percent and coarse rice, 60 percent of the total production. See: Rice Marketing Report,
  - 2 The Agricultural Economic Research Centre in Madras came to a similar conclusion after examining wholesale market prices and harvest prices through a farm survey. See: A Decade of Prices of Rice in Southern Region, op. cit.

Price Formation in the Wholesale Markets

A Case of Rice Prices

Degree of integration between wholesale markets of rice is examined by estimating correlation coefficients between weekly wholesale prices of Sort I rice in these markets. Unlike other states where multiple regressions could be calculated between markets, in Madras simple regressions had to be calculated between markets. The correlation coefficients between prices in Table 12.2 do not always refer to the same time period. In Madras State continuous price series were not available for all the markets selected for study. Often price records were missing for weeks, months and in some cases even for years. This made it impossible to calculate regressions for a comparable time period for a large number of markets.

It should be recalled that among the markets in Table 12.3, Mannargudi and Tiruvarur are located in Thanjavur district. These two markets send rice to Coimbatore and Kerala. However, they also supply substantial amount of paddy to Tiruchirapalli which is shipped to Kerala either as paddy or rice. Kanchipuram sends rice to Madras city but is

TABLE 12.3: CORRELATION COEFFICIENTS BETWEEN WEEKLY WHOLESALE PRICES OF SORT I RICE, MADRAS

(r)

	CUDDA- LORE	KANCHI- PURAM	TIRUCH- IRAPALLI	MANNAR- GUDI	TIRU- VARUR	MADRAS
Cuddalore	1.00	0.83 <sup>1</sup>	0.90 <sup>1</sup>	0.85 <sup>2</sup>	0.85 <sup>2</sup>	0.90 <sup>3</sup>
Kanchipuram		1.00	0.82 <sup>1</sup>	0.83 <sup>2</sup>	0.83 <sup>2</sup>	0.89 <sup>3</sup>
Tiruchirapalli			1.00	0.85 <sup>2</sup>	0.83 <sup>2</sup>	0.86 <sup>3</sup>
Mannargudi				1.00	0.92 <sup>2</sup>	0.88 <sup>3</sup>
Tiruvarur					1.00	0.88 <sup>3</sup>
Madras						1.00

1. n= 481 (no. of weeks)

2. n= 183 (no. of weeks)

3. n= 180 (no. of weeks)

relatively unimportant in terms of total rice supply to the city. Cuddalore is located in South Arcot district, midway between Chingleput (Kanchipuram) and Thanjavur and is not an exporter of either rice or paddy but is important as a local supplier to south Arcot district. Despite such diversified pattern of trade all the markets show a rather

high degree of interdependence between rice prices. Similar correlations calculated for rice prices in Kumbakonam (Thanjavur) and Tiruchirapalli (n = 100 from week January 1959 to December 1960) shows a correlation of 0.84, a correlation between Tirunelveli and Tiruchirapalli (n = 86 from week May 1956 to January 1958) shows a correlation of 0.81. It should be noted that the correlations between wholesale prices in Madras are somewhat lower than similar correlations for West Bengal and Punjab. This is because unlike in West Bengal and Punjab prices in the markets in Madras refer to such a wide number of varieties as sirumani, Kichili samba, Vellakar, Vayakondan, Vadan samba, Garudan samba, Chingleput samba, Kudiraival, Nellore samba, White sirumani and many more. <sup>1</sup> Nevertheless, correlations between Madras City and the primary markets are high despite the fact that there was little flow of rice to Madras City from anywhere else other than Chingleput district. One Madras price series of boiled rice refers to Andhra variety and another to superfine variety.

#### A Case of Paddy Prices

Similar analysis is conducted by examining the relationship of paddy prices in various primary and secondary markets. Paddy prices were collected for two grades: Sort I and Sort II. Just as in the case of rice prices, paddy prices of the same variety were not available for a number of markets and were not always continuous. An attempt was made to collect records for as many numbers of weeks for as many markets as possible. Tables 12.3 and 12.4 show correlations for Sort I and Sort II paddy in some primary markets, for which continuous data were available. Table 12.4 shows fairly high correlations between markets although these correlations are slightly lower than correlations for rice prices.

TABLE 12.4: CORRELATIONS BETWEEN WEEKLY WHOLESALE PRICES OF SORT I PADDY, MADRAS STATE, 1956 to 1964.

	(r)				n= 364
	CUDDALORE	KANCHI- PURAM	TIRUCHIR- APALLI	MANNAR- GUDI	TIRU- VARUR
Cuddalore	1.00	0.78	0.90	0.85	0.85
Kanchipuram		1.00	0.76	0.73	0.80
Tiruchirapalli			1.00	0.81	0.80
Mannargudi				1.00	0.85
Tiruvarur					1.00

A correlation coefficient was calculated between

<sup>1</sup> See Appendix 1, once again, for varieties to which prices refer in these markets.

Sort I paddy prices in Thiruchirapalli and Mannachanallure which is an important market centre in Tiruchirapalli district only about 10 miles away from Tiruchirapalli town. Weekly prices for a one year period showed a correlation of 0.95 between the two markets. The case of Tiruchirapalli and Manachanallure is almost a textbook case of perfect competition. There is perfect flow between the two markets and perfect knowledge in each about conditions in the other market, mainly due to the short distance between the two, but also because of the fact that these two markets are influenced by almost identical factors due to their pattern of purchasing local and Thanjavur paddy and exporting it to Kerala and Coimbatore. The two markets enjoy exactly identical transport facilities due to the use of Tiruchirapalli railway junction and due to reliance on Kerala trucks for exports. But most important of all, they satisfy the condition of homogeneity of product due to their proximity to each other and their pattern of paddy supplies.

TABLE 12.5: CORRELATION COEFFICIENTS BETWEEN WEEKLY WHOLESALE PRICES OF SORT II PADDY, MADRAS

(r)

	KANCHI-PURAM	CUDDALORE	KUMBA-KONAM	TIRUNELVELI	TIRUCHIRAPALLI
Kanchipuram	1.00	0.86 <sup>1</sup> (0.88) <sup>2,3</sup>	0.83 <sup>1</sup> (0.84) <sup>2</sup>	0.69 <sup>1</sup>	0.87 <sup>1</sup> (0.90) <sup>2</sup>
Cuddalore		1.00	0.91 <sup>1</sup> (0.85) <sup>2</sup>	0.80 <sup>1</sup>	0.86 <sup>1</sup> (0.89) <sup>2</sup>
Kumbakonam			1.00	0.77 <sup>1</sup>	0.86 <sup>1</sup> (0.87) <sup>2</sup>
Tirunelveli				1.00	0.76 <sup>1</sup>
Tiruchirapalli					1.00

1 n = 1 to 188

2 n = 1 to 480

3 n = 1 to 504

It should be noted that Sort II paddy prices also show a fairly high correlation between markets. Tirunelveli shows somewhat lower correlation with the rest of the markets. This seems to be for many reasons. First, the varieties common in Tirunelveli such as Ponnuruvi, Annaikomban are not very common in the rest of Madras. Second, the crop seasons in Tirunelveli are somewhat different. Samba crop which is harvested in Chingleput, South Arcot and Thanjavur districts in January - February is harvested in Tirunelveli in March - April. Third, there is no flow either of rice or

of paddy between any of the regions in Madras State and Tirunelveli. Because it is adjacent to Kerala which is a highly deficit state in rice, a great deal of paddy and rice flows to Kerala from Tirunelveli.

### Relation Between Paddy and Rice Prices

Despite such a diverse nature of trade in Madras, rice and paddy prices in markets studied show a high degree of dependence on prices in other markets. We will now examine the relationship between prices of rice and paddy in a single market. Under perfectly competitive conditions, price of rice in a market should hold a parity with paddy price in the same market. This will be determined by the conversion ratio of paddy into rice, the cost of converting paddy into rice and the price and yield of by-products in the process of conversion. <sup>1</sup>

### Conversion Ratio

A conversion ratio of 3 units of paddy to 2 units of rice (in weight) is accepted as normal in Madras State. Under the monopoly procurement scheme the State Government has fixed rates ranging between 64 to 68 percent of rice depending on the type of paddy hulled. An out-turn of 66 percent rice, therefore, appears to be a fair approximation.

### Value and Utilization of By-Products

The yield of pure bran has always been a matter of disagreement between various parties. It usually varies from 0 to 9 percent according to the type of mill and degree of polishing. However, recovery of pure bran is usually not more than five percent of the weight of paddy. In Madras, husk is used as fuel and the ash is utilized as manure. Bran is always in good demand as poultry and cattlefeed and a good portion is sent to Andhra Pradesh to the bran oil industry. The total value of bran and husk usually amounted, during the period studied, to Rs.1.00 to Rs. 1.50 per quintal of rice, milled, depending on the market prices of the two items. <sup>2</sup>

### Cost of Milling

A wide range of estimates are available on milling

1 For detailed discussion of conversion rates see section on West Bengal.

2 There is no systematic information available on the market prices of the by-products and the extent to which they are marketed. The by-products, although not sold, have an opportunity cost because of their use as fuel and cattlefeed.

costs in Madras. Table 12.6 shows costs of milling collected from various traders in the markets under study.

TABLE 12.6: COSTS OF MILLING A QUINTAL OF RICE AS REPORTED BY MILLERS IN 1967

(Rs. per quintal)					
Tirunelveli	1	3.00	Tiruchirapalli	1	2.00
	2	N.R. <sup>1</sup>		2	2.00
	3	1.25 <sup>1</sup>		3	1.50
	4	1.00 <sup>1</sup>		4	3.00
	5	1.00 <sup>1</sup>		5	1.74
Cuddalore	1	3.00	Kanchipuram	1	1.50
	2	3.20		2	2.00
	3	4.00		3	2.50
	4	4.00		4	2.00
	5	4.00		5	2.00

1 Hulling charges only

N. R. Not reported.

Source: Interviews of Millers.

The costs include labour, power and material charges in milling paddy but do not make allowance for depreciation and returns to the management. They show a great deal of variation from one miller to another. A miller in Tiruchirapalli who provided breakdown of costs for 1967 indicated that the milling costs (excluding overheads and returns to the management) amount to approximately Rs. 1.80 per quintal of rice. This, however, appears to be somewhat of an understatement in view of the similar data collected by the Madras State department of agriculture in its surveys in 1963. The department surveys state the cost of milling to be Rs. 3.15 in Alandur market in 1963 per quintal of rice, when rice was boiled once. In case of double boiling, costs were slightly higher and amounted to Rs. 3.90 per quintal of rice at Erode, Rs. 3.60 at Tirrupur, and Rs. 3.45 at Karaikudi. <sup>1</sup> At Manachanallur, one of the greatest milling centres in the South, the cost was Rs. 3.15 per quintal of rice in 1963. <sup>2</sup> The considerable variation in the costs noted

1 Higher costs in these markets may also be due to the fact that being in deficit regions, the mills may be of smaller sizes.

2 Report on the Marketing of Rice in Madras State, 1963  
The costs are quoted per quintal of paddy and here are converted into a quintal of rice for the sake of comparability.

above seems to be mainly due to the variation in the number of cost items included by different millers. Some millers included labour charges only for actual hulling whereas others included the salaries of watchmen and accountants. In no case did they include depreciation, and returns to the management. The Madras Government, under its procurement scheme allowed Rs. 2.25 as milling charge per quintal of rice in 1967. This is not expected to pay for depreciation and returns to management of the mill. The millers have been demanding an increase in the milling charge to Rs. 3.75 per quintal of rice.

It should be noted that all the estimates given above (except a few which have been so labelled) include cost of hulling and parboiling. Parboiled rice has been on the increase in the state and was estimated to constitute as much as 95 percent of the total rice production in the state in 1963. <sup>1</sup>

In view of the various estimates of costs from private mills and of the rates fixed by the government under its procurement program, milling costs are, here, assumed to be between Rs. 2.00 and Rs. 3.00 per quintal of paddy.

The price of 1 quintal of rice should, therefore, be equal to:  $1.5$  (price of paddy) + milling costs (fixed and variable) - value of by-products

Very little is known about recovery of pure bran which is the more valuable of the two by-products. Since little of the by-products is sold in the market one may make a liberal assumption that their value is nil.

In that case rice price should be equal to or less than  $1.5 \times$  price of paddy + milling costs. Table 12.7 shows percentage distribution of rice and paddy price difference. A price difference of up to Rs. 5.00 per quintal of rice should be adequate to allow for milling costs, depreciation, returns to management, and handling charges in the transactions. <sup>2</sup> Table 12.7 indicates that in Kanchipuram as much as half the times out of 484 weeks the price difference was above Rs. 5.00.

1. Ibid.

2 Using the Madras Government's figures Rs. 2.25 per quintal of rice as the milling cost + Rs. 1.50 per quintal = the commission on procurement (which can be treated as the return to the miller per quintal of rice milled and sold). The remaining Rs. 1.25 should allow for depreciation of the machinery and other incidental costs in purchasing paddy and selling rice).

TABLE 12.7: AVERAGE DIFFERENCE AND PERCENTAGE DISTRIBUTION OF DIFFERENCE BETWEEN THE PRICE OF 1 QUINTAL OF RICE AND 1½ QUINTAL OF PADDY IN SELECTED MARKETS, MADRAS STATE. 1

	KANCHI PURAM	CUDDALORE	TIRUCHI- RAPALLI	TIRUV- ARUR	MANNAR- GUDI	TIRUNEL- VELI
Less than						
Rs. 3	31	54	63	60	70	50
3 - 5	23	25	20	29	22	19
5 - 8	28	14	11	6	8	24
8 - 10	8	1	3	2.5	0	2
10+	10	6	3	2.5	0	5
Total no. of weeks	100 484	100 484	100 433	100 183	100 252	100 155
Average diff- erence for the period	Rs.4.92	3.40	3.03	2.92	2.45	3.75

1 Both rice and paddy prices are of first sort.

per quintal of rice. In Tirunelveli price difference was above Rs. 5.00 31 percent of the times, in Cuddalore 21 percent of the times, in Tiruchirapalli 17 percent of the times, in Tiruvarur 11 percent of the times, and in Mannargudi 8 percent of the times. It is not known why the margin between rice and its paddy equivalent remained somewhat higher in Kanchipuram and Tirunelveli as compared to the rest of the markets. However, in no case was the average margin between rice and paddy more than Rs. 5.00 per quintal. Since the periods for which margins are calculated vary from one market to another it is difficult to say to what extent the average difference and the distribution of the difference varies due to the period covered or due to the varieties of the grain and to what extent the variation is due to structural causes. However, on an average the margin between rice and its paddy equivalent (after allowing for milling costs) is not of an alarming proportion to call for further analysis. Besides even when the margin increased beyond Rs. 5.00 it did not consistently remain at that level for any continuous period of time. From the assumptions made about recovery of rice and of by-products in the preceding analysis it is obvious that there must have been great deal of scope for rice millers to make high profits a) through higher recovery of rice and /or 2) through higher recovery of marketable byproducts.

Regional Price Spread

Having studied the interdependence between terminal-primary prices and between rice-paddy prices we will now deal with the price difference between terminal and primary markets. In a perfectly competitive market difference between terminal and primary markets will be equal to or less than the cost of shipment between the two points. A price rise which is more than the cost of shipment will result in an increased flow from the primary market to the terminal market and thus would cause a decline in the price difference. In case of Madras State, only Kanchipuram and Madras City provide such a pair of primary and terminal markets between which there is a constant flow of paddy and rice. No other markets in Madras sent any significant amount of paddy or rice to Madras City since the latter received rice from the neighbouring Andhra districts. Tiruchirapalli which is a secondary market received paddy directly from paddy fields in Tanjavur. There is no continuous data on village prices to make a comparison between Tanjavur prices and Tiruchirapalli prices. All the surplus of Madras, when not consumed locally, was sent to Coimbatore and Kerala for which no prices are collected.

Table 12.8 shows the cost of shipment from Kanchipuram to Madras City.

TABLE 12.8: COST OF SHIPPING A QUINTAL OF RICE FROM KANCHIPURAM TO MADRAS CITY

1. Weighing, Stitching, Loading, etc.	Rs. 0.23
2. Lorry Fare	Rs. 1.72
3. Depreciation of the bag	Rs. 0.30
4. Unloading, handling, etc. in Madras City.	Rs. 0.50
5. Total of 1 to 4	Rs. 2.75
6. Plus Sales Tax	1%
7. Plus Commission of the seller	1.5%
8. Total of 6 and 7	2.5% of the value of sale *

\* If the price of rice is assumed to be about Rs.50/ per quintal the cost of transport and handling will be Rs. 4.00 per quintal of rice shipped.

Most of the shipments are made by trucks and therefore truck fare is shown. Table 12.9 shows frequency distribution of price difference between Madras and Kanchipuram.

TABLE 12.9: FREQUENCY DISTRIBUTION OF DIFFERENCE BETWEEN  
MADRAS CITY AND KANCHIPURAM RICE PRICES 1

(No. of weeks)

DIFFERENCE PER QUINTAL	LESS THAN 0	(No. of weeks)				TOTAL
		RS. 0-3	RS. 3-5	RS. 5-7	RS. 7+	
1. Madras boiled-Kanchi- puram Sort I	127	31	21	6	0	185
2. Madras Gurdan samba- Kanchipuram Sort I	174	23	13	12	18	240

The first row shows the price difference between boiled rice in Madras City and Sort I rice in Kanchipuram. The second row shows difference between Gurdan samba prices in Madras and Sort I prices in Kanchipuram. Two price series had to be used as one continuous series was not available for Madras City. In both cases, prices are of first sort rice. It will be noted that in either case, prices in Kanchipuram were frequently higher than or equal to Madras prices. It was less than 25 percent of the times that the price difference was positive. Only in 36 out of 425 weeks that the price difference increased above Rs. 5.00 per quintal. Even then the difference did not remain consistently more than shipment costs. The fact that Kanchipuram prices were frequently higher than Madras prices may be due to the local demand conditions in Chingleput district. However, comparison of rice prices between the two markets gives a slightly deceptive picture about the working of the two markets. For as was noted earlier, margin between rice price and its paddy equivalent has been higher than milling costs in Kanchipuram. This suggests that although it was only rarely profitable to purchase rice in Kanchipuram for shipment to Madras City, it was profitable to purchase paddy locally for sale of rice in Madras City. Since shipments to Madras city from Kanchipuram are mostly in the form of rice they constitute an integrated operation of milling and shipping. It is, therefore, necessary to view the costs and returns on the combined operation rather than separating the two. Following table shows the frequency distribution of Madras rice prices and prices of paddy equivalent in Kanchipuram. It should be borne in mind that this price comparison overlooks differences in varieties, moisture content, admixtures, milling rate, season and a host of other factors.

TABLE 12.10: FREQUENCY DISTRIBUTION OF DIFFERENCE  
BETWEEN MADRAS RICE PRICES AND PRICES  
OF PADDY EQUIVALENT IN KANCHIPURAM.<sup>1</sup>  
(No. of weeks)

LESS THAN RS.0.00	RS. 0-5	RS.5-RS.6	RS.6-RS.8	RS.8+	TOTAL WEEKS
77	54	15	17	22	185

1 Difference between price of 1 quintal of 1st sort rice in Madras and of 1½ quintal of 1st sort paddy in Kanchipuram.

It will be noted that the price difference between rice in Madras and its paddy equivalent in Kanchipuram was positive much more frequently than the difference between rice prices in Madras and Kanchipuram. Considering milling costs of up to Rs. 3.00 per quintal of rice, and of shipment cost of about Rs. 2.75 plus commission, plus sales tax, the difference of about Rs. 6.00 to Rs. 8.00 per quintal must have been just adequate to purchase paddy in Kanchipuram and sell rice in Madras City. It will be noted that for 17 weeks out of 185 weeks for which prices are studied, price difference remained within such a range. In 22 weeks the difference even increased beyond this margin and provided an opportunity for windfall profits. However, even when the margin was above Rs. 8.00 it was not completely out of line. It remained less than Rs. 15.00 per quintal. Nor was the margin consistently very high for a long stretch of time. This suggests that when the margin increased there was an increased flow of shipments and a subsequent decline in the price difference.

#### Seasonality of Price Difference

When the price difference was excessive, i.e. more than the total of milling and shipping costs, in all the three years it occurred between the end of December and middle of February. i.e. at the time of the samba crop. This appears to be the pattern elsewhere in India in regional price differences.<sup>1</sup> It seems to be caused by a sudden

1 See for example, my study of jowar markets in Maharashtra, Uma Lele, *op. cit.* This was also noted in case of rice prices in West Bengal. See section on West Bengal. It was also observed as early as 1930's in the case of wheat prices in Punjab centres and Calcutta. See *Report on Wheat Marketing*, 1937 edition, *op. cit.*, and in case of Punjab-Bombay price differences later in the late fifties and early sixties See Section on Punjab.

downward trend in prices in the primary markets with the coming of the new harvest. The drop in prices is followed in the terminal market only with a time lag. The sudden depression in primary market prices is usually also a result of transport bottlenecks, lack of trucks and wagons, resulting from a rush in the shipments from the primary markets. <sup>1</sup>

#### Trend in Regional Price Differences

Due to lack of continuous longrun price series of comparable varieties, it is difficult to present any systematic analysis of trend in intermarket price differences in Madras State. However, a rudimentary survey of price series for Tiruchirapalli and markets in Thanjavur district suggests that prices of similar grades of rice and paddy between markets most of the times did not differ by more than Rs. 4.00 or 5.00 per quintal. Nor is there any evidence of an increasing trend in the price difference.

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<sup>1</sup> See: Uma Lele op. cit. for some evidence on this. No such documentation is usually possible for lack of records.

## CHAPTER XII

## APPENDIX I

Maximum wholesale Rice Prices Fixed by Government of Madras for Different Varieties of Madras and Andhra Pradesh Origin in Selected Districts, Madras State, August 1964.

## SCHEDULE 1

NAME OF THE DISTRICT	NAME OF THE VARIETY	MAXIMUM WHOLESALE PRICE PER QUINTAL
(1)	(2)	(3)
MADRAS	Madras Varieties - Sort I (Fine)	
	<u>Group I</u>	
	Garudan, Samba, Kuruvai, Sirumani	
	Thuyamalli (Fine)	72.00
	<u>Group II</u>	
	Vellai samba, Nellore samba (Fine)	
	Red and white Sirumani, Bayyakonda	
	Chingleput, Sirumani (Co. 19)	
	Sadai samba, Pattarai samba,	
	Kothamalli samba.	73.45
	<u>Group III</u>	
	Co. 2 or Foombalai (Periakicheli)	
	PTB 15, PTB 16, CO 5 or Chinna	
	samba	77.20
	<u>Group IV</u>	
	GEB 24, Doppix, Anaikomban, Ayan	
	samba, Konakuruvai	79.35
	<u>Group V</u>	
	Kamba samba and Jeeraga samba	85.00
	<u>Group VI</u>	
	Other local varieties	72.00
	<u>Sort II (Medium) Group I</u>	
	Vellaikar, Vadan samba, Muthu samba,	
	Thuyamalli (Coarse) and Rangoon	
	samba	70.09
	<u>Group II</u>	
	Nellore samba	70.34
	<u>Group III</u>	
	Katta samba, Arau samba, Co. 25,	
	Kodivellai Rubber samba, Cross	
	Sirumani	70.59

(1)	(2)	(3)
MADRÁS (Cont'd)	Group IV Other local varieties	Rs. 70.09
	<u>Andhra varieties Fine</u> S.K.K.	72.08
	Sannalu, Nambarludelhi Bogum	73.14
	Kichdi III	74.73
	Kichdi II	76.85
	Kichdi I	78.97
	Molagolukulu	81.62
	Other fine varieties	69.66
	<u>Medium</u>	
	Akkulu	67.84
	Karuburu Sanralu	67.84
CHINGLEPUT	Madras Varieties - Sort I (Fine)	
	<u>Group I</u>	
	Garudan samba, Kuruvai Sirumani	70.67
	<u>Group II -</u>	
	Thuyamalli (Fine)	71.40
	<u>Group III</u>	
	Vellai samba	72.00
	<u>Group IV</u>	
	Red and White Sirumani, Bayyakonda, Chingleput Sirumani, (Co.19)	
	Pattarai samba, Kothamalli samba	72.01
	<u>Group V</u>	
	Nellore samba (Fine)	
	Sadai samba	72.50
	<u>Group VI</u>	
	Co.2 or Poombalai (Peria kichili)	
	Ptb.15, Ptb.16, Co.5, or Chinna samba	75.76
	<u>Group VII</u>	
	GEB-24	77.80
	<u>Group VIII</u>	
	Doppix, Anaikomban, Ayan samba, Kona kuruvai	78.80
	<u>Group IX</u>	
	Kamba samba and Jeeraga samba	83.33
	<u>Group X</u>	
	Other local varieties	70.67
	Sort II (Medium) Group II	
	Vellaikar	67.59
	<u>Group II</u>	
	Nellore samba	68.04

(1)	(2)	(3)
		Rs.
CHINGLEPUT (Cont'd)	<u>Group III</u> Vadan samba, Muthu samba, Thuyamalli (Coarse) and Rangoon samba	68.59
	<u>Group IV</u> Arai samba, Co.25, Kodivellai, Rubber samba, Cross cirumani	68.79
	<u>Group V - Katta samba</u>	69.79
	<u>Group VI - Other local varieties</u>	67.59
	<u>Andhra Varieties (Fine)</u> S.K.K.	72.08
	Sannalu, Nambarlu, Delhi, Bogum	73.24
	Kichadi III	74.73
	Kichadi II	76.85
	-di- I	78.97
	Molagolukulu	81.62
	Other fine varieties	69.66
	<u>Medium</u>	
	Akkalu, Karuburu, Sannalu	67.84
SOUTH ARCOT:	Madras Varieties Sort I (Fine)	
	<u>Group I</u> Garudan samba, Kuruvai, Sirumani, Thuyamalli (Fine)	70.67
	<u>Group II</u> Vellai samba, Nellore samba, (fine) Red and White Sirumani Mayyakonda, Chingleput, Sirumani (Co.19) Sadai samba; Pattarai samba, Kothamalli samba, Kudirival	72.01
	<u>Group III</u> Co.2 or Poombalai (Periakichili) Ptb-15, Ptb. 16, Co.5 or Chinna samba	75.76
	<u>Group IV - GEB 24</u>	77.80
	<u>Group V</u> Doppix, Anaikomban, Ayan samba, Konakuruvai	78.30
	<u>Group VI</u> Kamban samba and Jeeraga samba	82.83
	<u>Group VII - Other local varieties</u>	70.67
	<u>Sort II (Medium) Group I</u> Vellaikar, Vadan samba, Muthu Samba, and Thuyamalli (Coarse)	67.59
	<u>Group II - Rangoon Samba</u>	67.98
	<u>Group III - Nellore Samba</u>	68.04
	<u>Group IV</u> Kattai samba, Anau samba, Co.25, Kodivellai Rubber samba, Cross Sirumani	68.79
	<u>Group V - Other local varieties</u>	67.59

(1)	(2)	(3)
SOUTH ARCOT (Cont'd)	<u>Andhra Varieties</u>	Rs.
	S.K.K.	72.08
	Sannalu, Nambarlu, Delhi	
	Bogum	73.14
	Kichdi III	74.73
	Kichdi II	76.85
	Kichdi I	78.97
	Molagolukulu	81.62
	Other Varieties	69.66
	Medium - Akkulu, Karuburusannalu	67.84
THANJAVUR	Sort I (Fine)	
	<u>Group I</u>	
	Garudan samba, Kuruvai Sirumani, Thuyamalli (Fine)	70.67
	<u>Group II</u>	
	Wellai samba, Nellore samba, (Fine) Red and White Sirumani, Bayya konda, Chingleput Sirumani (Co.19) Sadai samba, Pattarai samba, Kothamalli samba	72.01
	<u>Group III</u>	
	Co.2 or Poombalai (Periakichili) PTB 15 PTB 16, CO.5 or chinna samba	75.76
	<u>Group IV</u>	
	G.E.B. 24, Doppix, Anaikoman, Ayan samba, Konakuruvai	77.80
	<u>Group V</u>	
	Kamban samba, Jeeraga samba	82.33
	<u>Group VI</u>	
	Other local varieties	70.67
	<u>Sort II (Medium) Group I</u>	
	Vellaikar, Vadan samba, Muthu samba, Thuyamalli (coarse) and Rangoon samba	67.59
	<u>Group II</u>	
	Kattai samba, Arai samba Co.25 Kodivelli, Rubber samba, Cross- Sirumani	68.79
	<u>Group IV - Other local varieties</u>	67.59
	<u>Andhra Varieties - Fine</u>	
	S.K.K.	72.08
	Sannalu, Nambarlu, Delhi	
	Bogum	73.14
	Kichdi III	74.73
	Kichdi II	76.85
	Kichdi I	78.97
	Molagulukulo	81.62
	Other fine varieties	69.66
	Medium - Akkulu, Karuburu samba	67.84

(1)	(2)	(3)
		Rs.
<b>TIRUCHIRAPALLI</b>		
	Sort I (Fine)	
	<u>Group I</u>	
	Garudan samba, Kuruvai Sirumani	
	Thuyamalli (Fine)	70.67
	<u>Group II</u>	
	Vellai samba, Nellore samba (Fine)	
	Red and white sirumani, Bayyakondi,	72.01
	Chingleput Sirumani (Co.19, Sadai	
	Samba, Kothamalli samba, Kudiraival	
	<u>Group III</u>	
	Pattarai samba	72.45
	<u>Group IV</u>	
	Co.2 or Poombalai (Periakichli)	
	PTB.15, PTB 16, CO.5, Chinna samba	75.76
	<u>Group V</u>	
	G.E.B. 24	
	Konakuruvai	77.80
	<u>Group VI</u>	
	Doppix, Anaikomban, Ayan samba	78.80
	<u>Group VII</u>	
	Kamban samba and Jeeraga samba	82.83
	<u>Group VIII - Other local varieties</u>	70.67
	<u>Sort II (Medium) Group I</u>	
	Vellaikar, Vedon samba, Muthu	
	samba, Thuyamalli (Coarse) Rangoon	67.59
	samba	
	<u>Group II</u>	
	Nellore samba (coarse)	68.04
	<u>Group III</u>	
	Kattai samba, Anai samba Co.25,	
	Kodivellai, Rubber samba, Cross sir-	68.79
	umani	
	<u>Group IV - Other local varieties</u>	67.59
	<u>Andhra varieties (Fine)</u>	
	S.K.K.	72.08
	Sannalu, Nambarlu, Delhi	
	Bogum	73.14
	Kichdi III	74.73
	Kichdi II	76.85
	Kichdi I	78.97
	Molagolukulu	81.62
	Other fine varieties	69.66
	Medium	
	Akkulu, Karuburu Sannalu	67.84
<b>TIRUNELVELI</b>		
	Madras varieties Sort I (Fine)	
	<u>Group I</u>	
	Garudan samba, Kuruvai, Sirumani	
	Thuyamalli (Fine)	70.95

(1)	(2)	(3)
TIRUNELVELI (Cont'd)	Group II Bayyakonda, Chingleput, Sirumani (Co.19) Sadai samba, Milagi	Rs. 72.01
	Group III Vellai samba, Nellore samba (Fine) Red and White sirumani, Pattarai samba, Kothamalli samba	73.45
	Group IV Co.2 or Poombalai (Periakichili) ptb. 15. ptb.16, Co.5 or Chinna samba, Karigul samba	75.76
	Group V - Anaikomban	77.80
	Group VI - G&B 24, Doppix	79.80
	Group VII - Ayan samba, Konakuruvai	80.95
	Group VIII - Jeeraga samba	82.83
	Group IX - Kamban samba	83.83
	Group X - Other local varieties	70.95
	Sort II (Medium) Group I	
	Vasaramundan	68.04
	Group II Velaikar, Vadan samba, Muthu samba, Thuyamalli, (Coarse) and Rangoon samba	68.59
	Group II Nellore samba	68.75
	Group IV - Arai samba Co.25	
	Kodivellai, Rubber samba, Cross Siru- mani, Korangu samba, sirumani, Moongil samba	68.79
	Group V - Kattai samba	69.79
	Group VI - Other local varieties	68.04
	Andhra Varieties Fine	
	S.K.K.	72.76
	Sannalu, Nambarlu, Delhi	
	Bogun	73.83
	Kichidi III	75.44
	Kichidi II	77.58
	Kichidi I	79.72
	Molagolukulu	82.39
	Other Fine varieties	70.62

Source: G.O. 2334, Food and Agriculture Department, Government of Madras, 6th August 1964.

## CHAPTER XII

## APPENDIX 2

VARIETIES OF RICE TO WHICH PRICE DATA REFER

## WHOLESALE PRICE SORT I PADDY, 1.1

KANCHEEPURAM

Variety	Period
Sirumani	18.4.58 to 6.6.58
Kichili samba (Kitchali)	13.6.58 to 19.9.58
Sirumani	26.9.58 to 10.10.58
Vellakar	17.10.58 to 23.1.59
Kichili	30.1.59 to 27.1.62
Sirumani	4.5.62 to 28.12.62
Kitchili samba	4.1.63 to 2.8.63
Vayakondan	9.8.63 to 13.9.63
Kichili	20.9.63
Vayakondan	27.9.63 to 4.10.63
Kichili	11.10.63 to 25.10.63
Vayakondan	1.11.63 to 27.12.63
Kichili	3.1.64 to 25.12.64

TRICHY

Nellore samba (fine) (i.e. N.S. Fine)	1.1.55 to 8.2.57
Kichili	15.2.57 to 15.3.57
N. Samba	22.3.57 to 1.8.58
Kuthiraval	8.8.58
N.S. Fine	15.8.58 to 20.2.59
Kuthiraval	27.2.59 to 6.3.59
Sirumani	13.3.59 to 7.3.59
Kuthiraval	3.4.59 to 3.60
Sirumani	11.3.60 to 4.60
Kuthiraval	8.4.60 to 23.12.60
N.S. Fine	6.1.61 to 14.7.61
Kuthiraval	21.7.61 to 20.7.62
Sirumani	3.8.62 to 28.9.62
Kuthiraval	5.10.62 to 25.12.64

CUDDALORE

Variety	Period
Garudan samba	1.1.55 to 30.1.59
Vadan samba	6.2.59
Vayakondan	13.2.59
Garudan samba	20.3.59 to 10.4.59
Chingleput samba	17.4.59 to 24.4.59
Vayakondan	4.4.59 to 6.11.59
Chingleput samba	13.11.59 to 11.12.59
Garudan samba	8.1.60 to 29.1.60
Vayakondan	5.2.60 to 19.2.60
Chingleput samba	26.2.60 to 9.12.60
Garudan samba	16.12.60 to 26.1.62
Chingleput samba	2.2.62 to 11.5.62
Garudan samba	18.5.62 to 7.9.62
Chingleput samba	14.9.62 to 25.1.63
Kudiraival	1.2.63 to 30.8.63
Chingleput samba	6.9.63 to 13.9.63
Kudiraival	20.9.63 to 25.10.63
Chingleput samba	1.11.63 to 25.12.64

KUMBAKONAM

White (w)	
Sirumani	1.1.55 to 21.6.57
Sirumani	28.6.57
W. Sirumani	5.7.57 to 27.9.57
Samba	27.9.57
W. Sirumani	4.10.57 to 16.3.62
W. Samba	23.3.62 to 6.4.62
Sirumani	13.4.62 to 25.5.62
W. Samba	1.6.62 to 9.11.62
W. Sirumani	16.11.62 to 18.1.63
Kitchili	25.1.63 to 25.12.64

TIRUNELVELI

Variety	Period
Anaikomban	1.1.55 to 29.3.57
Senti	5.4.57
Anai Konaban	12.4.57 to 25.7.58
Vayakondan	1.8.58 to 15.8.58
Anaikomban	22.8.58 to 9.1.59
Vayakondan	16.1.59 to 31.8.62
Poombalai	7.9.62 to 3.53
Anaikondan	29.3.63 to 12.64

MANACHANALLUR

Variety	Period
Kudiraival	3.3.61 to 27.4.62
	1.6.62 to 29.6.62
	3.8.62 to 25.1.63
	1.3.63 to 29.3.63
	3.5.63 to 27.9.63
	3.4.64 to 26.6.64
	4.9.64 to 25.12.64

WHOLESALE PRICES, RICE SORT I, 1.2KANCHEEPURAM

Sirumani	18.4.58 to 6.6.58
Kichili samba	
(Kitchali)	13.6.58 to 19.9.58
Sirumani	26.9.58 to 10.10.58
Vellaker	17.10.58 to 23.1.59
Kichili	30.1.59 to 27.4.62
Sirumani	4.5.62 to 28.12.62
Kitchili	4.1.63 to 2.8.63
Vayakondan	9.8.63 to 13.9.63
Kichili	20.9.63
Vayakondan	27.9.63 to 4.10.63
Kichili	11.10.63 to 25.10.63
Vayakondan	1.11.63 to 27.12.63
Kichili	3.1.64 to 25.12.64

CUDDALORE

Same as 1.1 up to 9.12.60	
Garudan samba	16.12.60 to 29.12.61
Chingleput samba	5.1.62 to 1.6.62
Garudan samba	8.6.62 to 22.6.62
Chingleput samba	29.6.62 to 13.7.62
Garudan samba	20.7.62 to 10.9.62
Chingleput samba	17.8.62 to 25.1.63
Kudiraival	1.2.63 to 25.10.63
Chingleput samba	1.11.63 to 25.12.64

TRICHY

Same as 1.1 up to 23.12.60	
Nellore samba	
fine	1.1.61 to 4.8.61
Kudiraival	11.8.61 to 2.2.62
Sirumani	9.2.62 to 13.4.62
Kudiraival	20.4.62 to 20.7.62
Sirumani	3.8.62 to 14.9.62
N.S. Finr	21.9.62 to 28.9.62
Kudiraival	5.9.62 to 25.12.64

KUMBAKONAM

Same as 1.1 up to 27.9.57	
W. Sirumani	4.10.57 to 6.4.62
Sirumani	13.4.62 to 25.5.62
W. Sirumani	1.6.62 to 15.6.62
W. Samba	22.6.62 to 6.7.62
W. Sirumani	13.7.62
W. Samba	20.7.62
W. Sirumani	3.8.62 to 9.11.62
Kitchili	16.11.62 to 30.11.62
W. Sirumani	7.12.62 to 21.12.62
Kitchili	28.12.62
W. Sirumani	4.1.63 to 11.1.63
Kitchili	18.1.63 to 1.2.63
W. Sirumani	6.2.63
Kitchili	15.2.63 to 30.8.63
Sirumani	6.9.63 to 27.9.63
Kitchili	4.10.63 to 18.10.63
Sirumani	25.10.63 to 1.11.63
Kitchili	8.11.63 to 25.12.64

TIRUNELVELI

Same as 1.1 up to 5.4.67	
Anai Komaban	12.4.57 to 9.1.59
Vijayakondan	16.1.59 to 31.8.62
Poombali	7.9.62 to 9.11.62
W. Samba	18.11.62 to 23.11.62
Anai Komaban	30.11.62 to 15.2.63
Attur Samba	22.2.63 to 25.2.64

WHOLESALE PRICES, PADDY SORT II 1.3KANCHEEPURAM

<u>Variety</u>	<u>Period</u>
	15.1.55 to 21.2.58
Kar	28.2.58 to 13.6.58
Rosekar	20.6.58 to 1.8.58
Kar	8.8.58 to 3.10.58
W. Kar	
(white)	10.10.58 to 23.1.59
Sirumani	30.1.59 to 6.2.59
Baikonda	13.2.59
Sirumani	20.2.59 to 3.4.59
W. Kar	10.4.59 to 5.4.63
Kappaikar	12.4.63 to 12.7.63
W. Kar	19.7.63 to 28.2.64
Kattai	
Samba	6.3.64 to 27.3.64
W. Kar	3.4.64 to 25.12.64

TIRUCHIRAPPALI

<u>Variety</u>	<u>Period</u>
Nellore Samba	15.1.55 to 14.2.57
(Coarse)	
Kuruvai	8.2.57
N. S. Coarse	15.2.57 to 28.8.59
Kattai samba	4.9.59 to 25.12.59
N.S. Coarse	8.1.69 to 15.1.60
Kattai samba	22.1.60 to 2.12.60
Kuruvai	9.12.60 to 23.12.60
N.S. Coarse	6.1.61 to 1.9.61
Samba	8.9.61 to 29.12.61
Kattai samba	5.1.62 to 11.1.63
ADT-8	18.1.63 to 25.1.63
Kattai samba	1.2.63 to 13.12.63
Sarapalli	20.12.63 to 10.1.64
Kattai samba	17.1.64 to 25.12.64

CUDDALORE

Vadan Samba	15.1.55 to 29.3.58
Pon samba	5.9.58 to 19.9.58
Vadan samba	26.9.58 to 5.6.59
White Kar	12.6.59 to 19.6.59
Vadan samba	26.6.59 to 10.7.59
White Kar	17.7.59
Vadan samba	24.7.59 to 4.3.60
Co. 25	11.3.60 to 9.12.60
Vadan samba	16.12.60 to 29.12.61
Co. 25	5.1.62 to 29.6.62
Vadan samba	6.7.62 to 28.12.62
Co. 25	4.1.63 to 19.4.63
Poombali	26.4.64 to 7.6.63
Co. 25	14.6.63 to 17.1.64
Vayakondan	24.1.64 to 7.2.64
Co. 25	14.2.64 to 25.12.64

TIRUNELVELI

Kar	15.1.55 to 15.3.55
Ponnuruvi	31.3.55 to 12.11.55
Samba	19.11.55 to 17.2.56
Ponnuruvi	24.2.56 to 9.8.57
Sirumani	16.8.57 to 20.9.57
Samba	27.9.57 to 4.10.57
Ponnuruvi	11.10.57
Sirumani	18.10.57 to 13.12.57
Samba	20.12.57 to 23.5.58
Anai Kombar	30.5.58 to 6.6.58
Vaiyakondan	13.6.58 to 29.8.58
Anai Kombar	5.9.58 to 26.9.58
Sirumani	3.10.58 to 14.1.58
Samba	21.11.58 to 6.3.59
Ponnuruvi	13.3.59 to 19.2.59
Poombali	26.2.59 to 27.4.62
Ponnuruvi	4.5.62 to 8.6.62
Poombali	15.6.62 to 7.12.62
W. Kar	14.12.62 to 22.2.63
Poombali	1.3.63 to 25.12.64

KUMBAKONAM

Samba	16.1.55 to 10.10.58
Kuruvai	17.10.58
Samba	24.10.58 to 8.11.63
T.K.M. 6	15.11.63 to 17.1.64
Samba	24.1.64 to 25.12.64

WHOLESALE PRICES, RICE SORT I, MADRAS CITY, 1.4

<u>Raw</u>		<u>Raw (Additional Variety)</u>	
<u>Variety</u>	<u>Period</u>	<u>Variety</u>	<u>Period</u>
Nellore	4.1.57 to 25.12.64	Bangaru Thegalu	5.2.60 to 25.12.64

<u>Boiled</u>		<u>Boiled (Additional Variety)</u>	
Gundusamba	4.1.57 to 25.12.64	Arcot Kitchili	2.6.61 to 25.12.64

## CHAPTER XII

## APPENDIX 3

TABLE A-1: DIFFERENCE BETWEEN PRICE OF 1 QUINTAL OF RICE AND ITS PADDY EQUIVALENT, KANCHIPURAM.

YEAR	Rs. per quintal of rice						TOTAL NO. OF WEEKS
	Less than zero	0-3	3-5	5-8	8-10	10+	
1955	0	10	15	7	3	0	35
1956	0	17	9	13	12	1	52
1957	4	4	10	32	2	0	52
1958	4	18	6	11	4	9	52
1959	5	11	28	5	0	3	52
1960	2	26	10	10	1	4	53
1961	4	13	6	6	4	19	52
1962	3	8	16	17	5	3	52
1963	1	11	10	21	5	4	52
1964	0	9	5	11	3	4	32
TOTAL	23	127	115	133	39	47	484

TABLE A-2: DIFFERENCE BETWEEN PRICE OF 1 QUINTAL OF RICE AND ITS PADDY EQUIVALENT, CUDDALORE.

YEAR	Rs. per quintal of rice						TOTAL NO. OF WEEKS
	Less than zero	0-3	3-5	5-8	8-10	10+	
195							
1955	0	5	17	13	0	0	35
1956	6	14	17	13	1	1	52
1957	12	26	6	6	1	1	52
1958	1	9	7	21	1	13	52
1959	5	30	8	3	1	5	52
1960	20	26	3	4	0	0	53
1961	12	26	10	4	0	0	52
1962	4	20	20	3	1	4	52
1963	1	33	14	2	0	2	52
1964	2	10	19	1	0	0	32
TOTAL	63	199	121	70	5	26	484

TABLE A-3: DIFFERENCE BETWEEN PRICE OF 1 QUINTAL OF RICE AND ITS PADDY EQUIVALENT, TIRUCHIRAPALLI

YEAR	Rs. per quintal of rice						TOTAL NO. OF WEEKS
	Less than zero	0-3	3-5	5-8	8-10	10+	
1955	-	-	-	-	-	-	-
1956	2	12	17	7	4	4	46
1957	14	24	5	7	1	1	52
1958	7	18	6	14	2	2	52
1959	0	32	12	4	2	2	52
1960	11	30	7	2	1	2	53
1961	4	22	21	3	1	1	52
1962	23	15	6	7	0	1	52
1963	17	29	6	0	0	0	52
1964	1	18	7	2	3	1	32
TOTAL	79	190	87	49	14	14	433

TABLE A-4: DIFFERENCE BETWEEN PRICE OF 1 QUINTAL OF RICE AND ITS PADDY EQUIVALENT, TIRUVARUR.

YEAR	Rs. per quintal of rice						TOTAL NO. OF WEEKS
	Less than zero	0-3	3-5	5-8	8-10	10+	
1955	0	16	19	0	0	0	33
1956	22	19	5	1	1	4	52
1957	2	22	16	9	3	0	52
1958	9	20	14	1	0	0	44
TOTAL	33	77	54	11	4	4	183

TABLE A-5: DIFFERENCE BETWEEN PRICE OF 1 QUINTAL OF RICE AND ITS PADDY EQUIVALENT, MANNARGUDI.

YEAR	Rs. per quintal of rice						TOTAL NO. OF WEEKS
	Less than zero	0-3	3-5	5-8	8-10	10+	
1955	0	32	3	0	0	0	35
1956	14	19	14	4	1	0	52
1957	0	27	19	6	0	0	52
1958	2	42	6	2	0	0	52
1959	0	39	9	4	0	0	52
1960	0	3	4	2	0	0	9
TOTAL	16	162	55	18	1	0	252

TABLE A-6: DIFFERENCE BETWEEN PRICE OF 1 QUINTAL OF RICE AND ITS PADDY EQUIVALENT, TIRUNELVELI.

YEAR	Rs. per quintal of rice						TOTAL NO. OF WEEKS
	Less than zero	0-3	3-5	5-8	8-10	10+	
1955	5	27	3	0	0	0	35
1956	1	30	7	1	0	0	39
1957	6	3	7	13	0	0	29
1958	0	5	12	24	3	8	52
TOTAL	12	65	29	38	3	8	155

## CHAPTER XIII

### SEASONALITY OF RICE AND PADDY PRICES

This chapter examines the extent and pattern of seasonal movements in prices of rice and paddy in Madras State. It analyses the degree of seasonality in prices in relation to costs of storing rice and paddy to examine if off-seasonal price rise was in excess of cost of storage. The chapter then presents profit loss statements collected from records of traders to study the relationship, if any, between estimated and actual profits of traders. Ultimately it attempts to explain degree and pattern of seasonality in terms of different variables.

The stereotypes about why off-seasonal prices tend to be high are already familiar to the reader through previous sections. In a competitive market price rise will be just enough to cover storage costs and "normal" profits of the trader. In the present analysis both rice and paddy price movements are examined in relation to their corresponding storage costs. It is assumed that a trader purchases produce in the post harvest season and then after storing it for a few months sells it before the new harvest comes to the market. Storage costs are estimated by using an average price for a post harvest period and then by adding to it costs of (1) borrowing, (2) loss in weight, and, (3) rent, (4) depreciation of the bag during the period of storage. The total storage cost i.e. price and other items is, then, compared with actual off-seasonal prices to estimate absolute margin and rate of margin obtainable per quintal of rice and paddy by such a storage policy. Margin is also estimated in purchasing paddy and selling rice. Arrivals of paddy are usually heavy between January and April. Stocks are built during these months. Length of storage seems to vary considerably for various grades. Coarse grades of paddy, which constitute the major part of production, are not stocked for more than three or four months because of the numerous short crops that are harvested almost all year around in Madras state. There is not much off-seasonal price rise in case of coarse paddy and rice.<sup>1</sup> Unfortunately, there is not much systematic data available on prices of coarse varieties. The early Kuruwai crop comes in the market sometime in September-October. This short crop has more impact

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1 Short duration crops generally produce only coarse grades of paddy. See p. Chapter for discussion of harvest seasons in Madras. See p. 213 Chapter XI.

prices of coarse varieties. Coarse grain is, therefore, stored between March-April and August. The late varieties of Kuruwai crop come to the market between October and November. Prices of Sort II and Sort I rice and paddy, therefore, show an off-seasonal peak in November and decline with the coming of the new harvest. Kuruwai, being a short duration crop, is more perishable than Samba crop and is, therefore, not stocked. Besides this rice being of inferior variety, is more in demand in Kerala and is quickly shipped to the terminal markets there. Also, Kuruwai has a much shorter marketing season as it is rushed to the market before the sowing of the Samba crop commences. Most of it, therefore, arrives in a rather wet condition and quickly develops a musty odour. For all these reasons, it is only the Samba crop which is stored for any length of time.

In order to compare off-seasonal price rise with storage costs it is assumed that rice and paddy is purchased in March and stored until November. March price is, therefore, assumed to be the purchase price. To this, interest of 9 percent per year is added as the cost of borrowing funds. Rent for the storage space is assumed to be nil as stocks are usually stored in the premises of the rice mill.<sup>1</sup>

Depreciation in weight is the most difficult item to estimate. Traders' figures of losses in weight due to drainage ranged from 2 percent to 10 percent. The condition in which paddy is brought to the market obviously appears to vary from one lot to another and consequently poses a serious difficulty for traders in quoting a uniform estimate of drainage. Loss in weight due to pests, rodents and insects was, however, quite low and ranged between 0.6 percent and 2 percent in four months. It is interesting that this estimate of loss is in close conformity with the estimates made by the West Bengal millers. The interviews of the traders in the two states indicate that contrary to the general impression about heavy storage losses, they seem fairly low at least in the trading sector.<sup>2</sup> The average loss due to driage was assumed to be four percent and that due to pests and insects 1.25 percent in eight months. Table 13.1 shows the estimated gross rate of margin in storage of rice and paddy. As elsewhere the rate is calculated by deducting

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- <sup>1</sup> This seems plausible in view of the economies of large scale storage enjoyed by millers. Moreover, this is precisely why overhead costs are significant in storage operations and need to be considered in making a judgement about the net profit that can be earned in storage.
- <sup>2</sup> Contrary to this, Dorris Brown contends that losses due to pests etc. range between two percent and ten percent in a period of five to six months.

March price and the storage costs until November from the November price and then by taking the difference between the two as the percent of the investment in storage (i.e. of the March price and storage costs).

TABLE 13.1 ESTIMATED GROSS RATE OF RETURN IN STORAGE OF RICE AND PADDY FROM MARCH TO NOVEMBER, IRUCHIRAPALLI, 1956-63

YEAR	( Percent )		
	SORT I RICE	SORT I PADDY	SORT II PADDY
1956	35	30.00	17.00
1957	7	1.00	4.0
1958	39	30.00	23.0
1959	7	8.00	2.0
1960	35	18.00	2.0
1961	10	9.00	1.0
1962	17	3.00	10.0
1963	30	31.00	18.00
AVERAGE FOR 8 YEARS	20.25	16.00	6.00

It will be noted from Table 13.1 that the average profit (unweighted average) for eight years appears to be very high in stocking Sort I rice and somewhat less in paddy whereas it appears to be fairly low in case of Sort II paddy.<sup>1</sup> It should be recalled that Sort II grade commercially is the most important as majority of the urban and semi-urban consumers consume medium grade rice. It is only the high income consumers that consume fine rice. The share of fine paddy in total trade is therefore, not very significant.<sup>2</sup>

1 No price data were collected for Sort II rice. However, monthly price series of Sort II rice collected by the Agro-economic Research Centre of Madras show that Sort II rice prices did not show greater seasonality than Sort II paddy prices. See: A Decade of Prices of Rice in Southern Region, op. cit.

2 It should be recalled that percent of fine, medium and coarse rice in all-India rice production is 10, 30 and 60 respectively. Such breakdown is not available for Madras state, but officials in the Department of Statistics believed that the share of fine rice may be even smaller in Mad as state.

The high seasonality in the prices of first grade rice and paddy seems to be due to the fact that most of it is produced only once a year during the Samba crop. The relatively low seasonality in the Sort II grade seems to be because of the numerous harvests of medium grade rice. It is expected, that prices of coarse grades of rice will show even lesser seasonality than those of the medium grade rice.

Table 13.8 below shows percentage rise in price of rice and paddy from March to November in Thiruchirapalli market. The considerable year to year variation in the extent of price rise is evident from Tables 13.1 and 13.8. The variability in the seasonality of Sort II paddy prices has been less than that of Sort I paddy and rice.<sup>1</sup> This may also have been due to the more number of medium grade crops as compared to fine grade crops.

The hypothetical estimates of storage profitability, show that returns are generally low in paddy operations when allowance is made for fixed costs and high turnover of stocks. We will now compare the actual profit loss statements of millers with the hypothetical estimates of profits calculated earlier. Tables 13.2 to 13.6 show the margin between the purchase price and the sale price per quintal of paddy purchased.

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1 The standard deviation of percent price rise in November during 1956-63 is 14.6 in case of Sort I rice, 12.7 percent in case of Sort I paddy and 11.5 in case of Sort II paddy.

TABLE 13.2 ACTUAL GROSS MARGIN OF SELECTED TRADERS IN PURCHASE OF PADDY AND SALE OF RICE, CUDDALORE <sup>1</sup>

TRADER NO.	YEAR	GROSS MARGIN PER QUINTAL OF PADDY PURCHASED <sup>2</sup> (Rs.)	RATE OF MARGIN <sup>3</sup> (percent)
1	1961	4.80	17.40
	1962	6.45	17.96
	1963	5.60	15.55
2	1961	4.05	14.53
	1962	4.15	14.91
	1963	4.52	17.00
3	1961	4.93	11.56
	1962	3.60	7.78
	1963	4.66	9.30
4	1961	N.A.	N.A.
	1962	15.50	25.01
	1963	10.60	20.00
5	1961	4.90	14.76
	1962	2.77	7.42
	1963	5.00	15.00

1. Figures refer to purchase of paddy and sale of rice.  
 2.  $\frac{\text{Value of Sale} - \text{Value of Purchase}}{\text{No. of bags purchased}}$ . Gross profit per bag converted into per quintal.  
 3. Gross profit/purchase price.  
 Source: Records of Traders

TABLE 13.3 ACTUAL GROSS MARGIN OF SELECTED TRADERS IN PURCHASE OF PADDY AND SALE OF RICE, KANCHIPURAM <sup>1</sup>

TRADER NO.	YEAR	GROSS MARGIN PER QUINTAL OF PADDY PURCHASED <sup>2</sup> (Rs.)	RATE OF MARGIN <sup>3</sup> (Percent)
1	1961	4.65	12.06
	1962	2.86	6.93
	1963	3.33	8.33
2	1961	5.60	15.15
	1962	4.66	12.06
	1963	4.20	10.50
3	1961	5.25	13.20
	1962	4.65	12.06
	1963	4.04	9.01
4	1961	2.24	5.60
	1962	2.95	7.14
	1963	2.22	5.12
5	1961	3.80	9.39
	1962	2.74	7.14
	1963	5.40	13.84

1. Figures refer to purchase of paddy and sale of rice.  
 2.  $\frac{\text{Value of Sale} - \text{Value of Purchase}}{\text{No. of bags purchased}}$ . Gross profit per bag converted into per quintal.  
 3. Gross profit/purchase price.  
 Source: Records of Traders

TABLE 13.4 ACTUAL GROSS MARGIN OF SELECTED TRADERS IN PURCHASE OF PADDY AND SALE OF RICE, TIRUCHIRAPALLI<sup>1</sup>

TRADER NO.	YEAR	GROSS MARGIN PER QUINTAL OF PADDY PURCHASED <sup>2</sup> (Rs.)	RATE OF MARGIN <sup>3</sup> (Percent)
1	1961	1.72	4.54
	1962	2.58	7.50
	1963	3.45	10.00
2	1961	4.50	11.86
	1962	-0.28	-0.73
	1963	7.60	19.26
3	1961	7.30	18.48
	1962	5.90	16.71
	1963	5.35	14.80
4	1961	3.70	9.33
	1962	4.20	11.47
	1963	8.65	19.40

1. Figures refer to purchase of paddy and sale of rice.
  2.  $\frac{\text{Value of Sale} - \text{Value of Purchase}}{\text{No. of bags purchased}}$ . Gross profit per bag converted into per quintal.
  3.  $\frac{\text{Gross profit}}{\text{purchase price}}$ .
- Source: Records of Traders.

TABLE 13.5: ACTUAL GROSS MARGIN OF SELECTED TRADERS IN PURCHASE OF PADDY AND SALE OF RICE, TIRUNELVELI<sup>1</sup>

TRADER NO.	YEAR	GROSS MARGIN PER QUINTAL OF PADDY PURCHASED <sup>2</sup> (Rs.)	RATE OF MARGIN <sup>3</sup> (Percent)
1	1961	3.00	9.52
	1962	3.00	9.09
	1963	7.50	22.72
2	1961	3.75	10.00
	1962	3.75	9.80
	1963	3.75	9.61
3	1961	5.10	13.67
	1962	6.54	18.98
	1963	3.42	9.60
4	1961	N.A.	N.A.
	1962	N.A.	N.A.
	1963	N.A.	N.A.
5	1961	6.30	20.43
	1962	11.07	32.75
	1963	9.96	30.68

1. Figures refer to purchase of paddy and sale of rice.
  2.  $\frac{\text{Value of Sale} - \text{Value of Purchase}}{\text{No. of bags purchased}}$ . Gross profit per bag converted into per quintal.
  3.  $\frac{\text{Gross profit}}{\text{purchase price}}$ .
- Source: Records of Traders.

TABLE 13.6: ACTUAL GROSS MARGIN OF SELECTED TRADERS IN PURCHASE OF PADDY AND SALE OF RICE, KUMBakonam <sup>1</sup>

TRADER NO.	YEAR	GROSS MARGIN PER QUINTAL OF PADDY PURCHASED <sup>2</sup> (Rs.)	RATE OF MARGIN <sup>3</sup> (Percent)
1	1961	N.A.	N.A.
	1962	0.38	1.22
	1963	0.35	1.00
2	1961	5.10	13.91
	1962	1.40	3.83
	1963	3.50	11.58
3	1961	N.A.	N.A.
	1962	0.72	1.94
	1963	1.10	3.42
4	1961	N.A.	N.A.
	1962	0.86	2.70
	1963	0.80	2.70
5	1961	1.55	4.19
	1962	1.727	5.00
	1963	1.30	3.41

1. Figures refer to purchase and sale of paddy.
  2.  $\frac{\text{Value of Sale} - \text{Value of Purchase}}{\text{No. of bags purchased}}$  Gross profit per bag converted into per quintal.
  3. Gross profit/purchase price.
- Source: Records of Traders.

Except for Kumbakonam market margins for all the other markets refer to purchase of paddy and sale of rice. Figures for Kumbakonam refer to purchase and sale of paddy. Figures in Tables 13.2 to 13.6 are more gross than the estimates made in Table 13.1 for they neither allow for variable costs of storage (such as loss in weight, interest, etc.) nor for costs of milling paddy. In order to compare them with the margins in Table 13.1, it is necessary to deduct from the figures in Tables 13.2 to 13.5, (1) variable costs of storage and (2) milling charges per bag of paddy. In view of the various estimates of milling charges given in the earlier chapter, milling cost per quintal of paddy appears to be approximately Rs. 1.50 or Rs. 2.00 in Madras State.

It is difficult to make even a rough estimate of the storage costs in stocking operations. Variable costs per bag depend upon the length of storage of each bag. This varies from bag to bag. The continuous turnover of stocks makes it difficult to trace the length of time each bag was stored.

If allowance is made for milling costs, returns in milling paddy would seem to be somewhat higher than simply purchasing and selling paddy. (Compare profit per quintal of paddy purchased in Kumbakonam with profits in other markets where paddy was converted into rice before it was sold.)

The margins shown in Tables 13.1 to 13.6 for various traders in various markets are fairly uniform, except for a few exceptions such as traders No. 4 in Cuddalore and No. 5 in Tirunelveli who consistently show higher absolute and percent rate of return as compared to the rest of the traders. There is some variation in the profit rate of a single trader from one year to another. However, since the variability between years is not much more significant than variability between traders, it is difficult to establish any relationship between patterns of seasonal prices and profit rate earned by traders. The profit loss statements thus suggest that there is no consistency in the profit rate earned by traders from year to year. That is, all the traders do not earn a high rate of profit in one year and low rate in another.

Table 13.7 shows the quantities of paddy purchased by traders in different markets. There is no consistency in the volume handled by various traders in a single market from year to year. In Cuddalore, paddy handled by the first three traders increased in 1962 over the previous year whereas that handled by the fifth trader declined. In 1963, paddy purchases of the second trader declined whereas those of the remaining four traders increased when compared to the previous year. This is true of all the remaining four markets.

The analysis of seasonal price movements, storage operations, and profit loss statements of traders thus indicates the following:

1. The extent of off-seasonal price rise varies from one grade to another and seems clearly related to the number of crops grown in a year. Second sort paddy shows less price rise than first sort paddy.
2. Even within a single grade, paddy prices show somewhat less seasonality than rice prices.
3. There is considerable year to year variability in the extent of price rise. Prices rise much more in some years than in others.
4. The degree of year to year variability varies considerably from one grade to another. Second sort paddy shows less variability in seasonal price rise than do first sort paddy and rice. This also seems to depend on the number of crops grown in a year.

5. The profit rate does not appear to be very high when allowance is made for costs of storage. This conclusion is corroborated by the profit loss statements of traders.
6. Data on quantities handled by traders do not support the contention about collusive activities of traders. There is no similarity either in the variation in the volumes handled or in the profit rates of different traders.

TABLE 13.7: VOLUME OF PADDY PURCHASES ON OWN ACCOUNT  
BY SELECTED TRADERS, MADRAS STATE, 1961-1963.

MARKET	TRADER NO.	1961	1962	1963
Cuddalore	1	2,500	2,700	3,000
	2	4,800	6,700	3,000
	3	5,000	6,000	8,000
	4	N.A.	6,000	10,000
	5	725	395	409
Kanchipuram	1	8,500	6,300	7,500
	2	2,500	6,200	6,000
	3	1,701	2,000	1,636
	4	10,000	9,000	11,000
	5	6,000	6,100	6,200
Tiruchirapalli	1	1,490	1,490	2,990
	2	154,150	20,650	5,970
	3	24,260	24,260	26,170
	4	29,140	36,200	31,630
	5	23,900	28,000	19,410
Tirunelveli	1	19,605	20,612	18,250
	2	40,000	38,000	42,000
	3	1,630	1,720	3,000
	4	N.A.	N.A.	N.A.
	5	3,500	3,000	3,500
Kumbakonam	1	N.A.	9,000	15,000
	2	25,518	27,599	8,082
	3	N.A.	3,353	10,143
	4	N.A.	16,243	17,177
	5	10,000	8,000	10,000

Seasonality of Rice Prices

Table 13.8 below shows the price rise from March to November in case of Sort I rice, Sort I paddy and Sort II rice.

TABLE 13.8: PERCENTAGE RISE IN PRICE OF RICE AND PADDY FROM MARCH TO NOVEMBER,<sup>1</sup> THIRUCHIRAPALLI MARKET.

YEAR	SORT I RICE	SORT I PADDY	SORT II PADDY
1956	50	42	29
1957	17	11	14
1958	53	43	36
1959	18	19	13
1960	48	30	13
1961	20	23	11
1962	23	12	-1
1963	42	43	30
AVERAGE FOR 8 YEARS	34	28	18

1. November Price  
March Price

In order to study the year to year variation in the seasonal pattern March price, November price and percent rise in price from March to November was each related to each of the following variables: 1. Madras State rice production. 2. Rice production in the southern region (in Madras, Andhra Pradesh, Mysore and Kerala). 3. All-India rice production. 1 It was expected that all the three price variables will show negative correlations with the size of the rice crop at all the three levels of aggregation. However, March price showed a high positive correlation with rice production at all levels. This appears to have been a result of the trend factor. 2

1 e.g.  $Y =$  March price  
 $X =$  production of rice in the preceding crop year.  
(i.e.- March price of 1956 regressed with rice production between July 1955 and June 1956.)  
Similarly November price of 1956 is regressed with the rice production between July 1955 and June 1956.

2 Trend lines fitted to all the variables showed good fits and highly significant 'b' coefficients. March price increased at 9.1% per year, November price at 6.0%, Madras State production, production in the southern region and in all-India increased at 9% per year between 1955-56 and 1963-64.

November price did not show a significant relationship with preceding rice production. However, percent rise in price from March to November showed a rather significant correlation with rice production. The fit improved with the level of aggregation as can be noted from the equations given below.

$$1. \quad y = 59 - 0.126x$$

$$(\quad .13)$$

$$r = 0.36, \quad n = 8$$

where Y = percent rise in price from March to November

X = rice production in Madras State in the preceding crop year.

$$2. \quad y = 89 - 0.0766x$$

$$(\quad 0.43)$$

$$r = 0.58, \quad n = 8$$

where Y = percent rise in price from March to November

X = rice production in the Southern region in the preceding crop year.

$$3. \quad y = 101 - 0.0276x$$

$$(\quad 0.009)$$

$$r = 0.78, \quad n = 8$$

where Y = percent rise in price from March to November

X = All-India rice production in the preceding year.

Off-seasonal price rise shows a rather good relation with the preceding all-India rice crop. It should be noted that it is only in Madras that seasonality of prices seems closely related with the size of the crop. Neither the wheat prices in Punjab, nor jowar prices in Maharashtra nor rice prices in West Bengal showed a seasonal pattern that could be explained by the size of the previous crop. Although the last two equations given above show statistically significant correlation coefficient, it is not known to what extent the relationship has any predictive value.

However, the rather close relationship between the two variables may have been obtained due to factors which did not prevail in case of the other three states and crops. Unlike rice prices in West Bengal which constantly depended on central supplies and imports from Orissa, Madras prices were influenced mostly by the production in the southern region, an area within which there was a free flow of supplies. This flow was

determined mostly by price signalling. <sup>1</sup> Madras prices were also not affected as much by imports and by frequent imposition and withdrawal of zones as were the Punjab wheat prices. Only small quantities of rice were imported into India during the period studied. They did not have any material effect on prices in surplus states. Rice prices in Madras were also not influenced to any considerable extent by production and prices of other cereals as in the case of jowar which is basically only an inferior grain, and hence consumption of which is highly susceptible to substitution of other superior cereals such as wheat and rice. In Madras state which is a predominantly rice consuming state, demand for rice was not affected to the same extent by changes in the prices and availability of other cereals. The Madras rice prices suggest that if grain market is left purely to market forces, that the seasonal variation in prices may be determined to a great extent by the size of the preceding crop. <sup>2</sup> Quantities stocked by traders for consumption during a market year depend upon their knowledge of the crop size. Whether the seasonal pattern is generally determined by the level of preceding crop size will, therefore, depend to a considerable extent on the extent to which the crop size is predicted accurately. It is likely that the wheat traders may not be able to judge the overall crop size as accurately as do the paddy traders in Madras since demand for wheat extends to a much wider geographical area. This will depend to a considerable extent on the market intelligence available to traders. The stocks built by traders will also depend upon the pace, pattern and volume of market arrivals. If the cultivators respond to prices in a manner which is unpredictable, it will affect the quantities stored by traders for sale in the off-season. There are numerous complex factors which influence the seasonality of prices. Off-seasonal price rise will be predictable only to the extent to which these factors are predictable.

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1. A southern zone was formed in July 1957 and remained effective until October 1964.

2. It is, however, a matter of conjecture whether Madras prices would have shown such a relationship with either all-India or southern rice production had there not been a southern zone during the period studied.

PART V

SUMMARY AND CONCLUSIONS



## CHAPTER XIV

### SUMMARY AND CONCLUSIONS

#### Basic Theme of the Study

The study examines the stereotype about the marketing system in India in particular and in underdeveloped countries in general that there exist regional and temporal disparities in agricultural prices which are largely a result of monopolistic and speculative elements in the trade. <sup>1</sup> The study was prompted by the apprehension regarding the general neglect of the problems of distribution and of the tendency among responsible persons to accept these stereotypes as established facts. These stereotypes have important implications in terms of the policy measures suggested and adopted in underdeveloped countries. A proper understanding of the distribution process is important, for any change in the distribution process, either for better or worse, will have considerable effect on the development of the agricultural sector through its effect on allocation of resources within agricultural sector and between agriculture and the rest of the economy.

#### Study of Market Structure Through Direct Observation

The statistical analysis of price variations over time and space was preceded by first hand observation of market structure and collection of information through informal interviews of traders, market officials and cultivators. The statistical information by itself is not adequate to arrive at specific conclusions unless coupled with the method of direct observation, and may even tend to be misleading. Traders and market officials, were, therefore, interviewed extensively through informal discussions regarding trading practices, availability of transport, factors influencing storage decisions, market intelligence available to traders, degree to which entree is free in the trade of agricultural

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1 That this belief exists in India is widely documented in the previous chapters. Bauer makes a similar observation in the case of West Africa. "Wide fluctuations in prices are erroneously attributed to the activities of speculators; ...The data bearing on the prices of foodstuffs...suggest empirically what is obvious on general grounds, that these fluctuations are not caused by the activities of traders and speculators,....prices for the same product may differ considerably between near-by areas. The discrepancies may persist, because of high cost of transport or imperfect market intelligence...." P.T. Bauer, op. cit. 388-389.

commodities, capital as a factor leading to monopoly, problems of co-operatives, transport facilities, role of caste in entry, extent of partnerships, and a number of other matters. These discussions proved useful for a number of reasons. It was possible to make judgements about trade that were independent of textbooks or official reports on marketing in India. Second, the informal discussions helped in generating hypotheses for statistical testing and interpreting results obtained from the statistical study where data proved inadequate. Prices available with the official agencies often did not relate to uniform varieties. Interviewing primary reporting agencies was, therefore, essential in order to be able to use the existing data effectively.

The information collected through such informal interviews provides a number of hypotheses quite contrary to the prevailing views on the subject. First, the number of intermediaries seems much too large to permit monopolistic practices in trade. Due to intra-market and intermarket competition among a large number of intermediaries profits tend to be small, despite powerful bargaining position enjoyed by a few traders vis-a-vis the producer and the fellow trader. There is a reason to believe that by and large collusion, either tacit or overt, is unlikely to be successful in agricultural trade. High profits earned by a few traders are not monopolistic returns but can be attributed to their large volume of operations resulting from their command of capital, a scarce resource in Indian trade. The high profits of the few large traders can also be explained in terms of the skill of these traders in rightly judging market trends and in their speculation in short-term inventories. The unstable market conditions in India provide a number of opportunities for a skillful trader to make profits. Traders on the whole appear to be relatively well informed with respect to prices and demand conditions. The market intelligence available to them is mostly through private agencies and through their contacts in the various market centers. Due to lack of a well organized agency for disseminating market information, the traders' view of stocks and overall supply position is, of necessity, poor.

#### Regional Price Variations

For the purpose of studying regional price variations, prices of comparable varieties of jowar, wheat and rice were each compared in a number of producing and consuming market centers. The degree of relationship between prices in various market centers was taken as an indicator of market integration. Price differences were considered in relation to the costs of transportation. Where differences were found to be greater than transport costs, an attempt was made to examine factors underlying such excessive price differences.

The study of regional price disparities suggested that the markets under study are closely related with each other, that the prices in the major consuming centers have considerable influence on the prices in the producing centers and on the prices in other consuming centers. The price differences for comparable varieties are most of the times not greater than costs of shipments. Whenever the difference is positive it does not remain so for a considerable period of time. Prices of different varieties seem to differ considerably and are likely to give a misleading view of high regional price differences as the price data, in many cases, do not specify the variety to which they relate. The positive margins (i.e. difference above the cost of shipping) for comparable varieties did not show either an increasing or a decreasing trend during the period under study. The margin between the price in the primary market and the parity price in the wholesale market, in some cases, indicated marked seasonality. The margin tends to be high in the immediate post-harvest period and declines substantially in the off-season. This seasonality can be explained, first, in terms of the time lag in the consuming centers to adjust to the new seasonal prices in the producing centers. The rather high margins in the post-harvest period can also be explained by the difficulties of transport encountered in that period due to pressure on the limited transport facilities. The periods of high margins thus generally seem to be closely related to the shortages of transport facilities in those periods. They also appear to be a result of lack of shipments between markets resulting from official movement restrictions imposed frequently during the period under study. They caused accumulation of grain in the producing markets which was not completely absorbed by the rest of the markets. The failure of grain flows to shift from out of state to internal markets appears to be partly a result of shortage of facilities for shipment of grain and partly due to the failure of demand from the consuming centers to shift to the new supply in the producing center. This results from preferences of consumers for particular varieties of grain.

The study of market integration suggests that a reasonably well organized and competitive system of private trade exists in India. The existing price differences over regions at present are mainly due to lack of adequate transportation facilities and due to the hindrances to perfect mobility imposed from outside the trading sector (such as transport bottlenecks or official restrictions), and should best be regarded as resulting from imperfections in mobility rather than as a consequence of monopolistic elements.

#### Seasonal Price Variations

• Study of the extent of seasonal price fluctuations of rice, wheat and jowar during the period 1955-56 and 1964-65 and storage costs was made, so as to examine profitability of

storage. The analysis indicated substantial year to year variation in the seasonal price patterns. These price movements when considered in relation to the costs of storing grain from the harvest until the off-seasonal peak suggested that storage is not always profitable because the off-seasonal price rise does not always cover storage costs. Heavy losses in some years are balanced by gains in others. The hypothetical returns, on the average seem low. Thus the assumption that traders make excessive profits does not seem justified. The analysis of stock books and profit loss statements of traders suggested a rapid turnover of stocks. Traders, in actual practice, did not store as long as was presumed in the analysis of hypothetical margins. Their actual margin showed on an average lower magnitude as well as lower year to year variability compared to the hypothetical estimates. Profit rates earned by various traders in a single market and quantities handled by them show considerable variation from year to year and from trader to trader.

An attempt was made to analyse variation in the seasonal pattern in terms of changes in arrivals (where arrival data were available) and in production at various levels. Relationship between arrivals and production was also examined. Wheat marketings in Punjab showed a highly significant relationship with changes in wheat production in the surrounding areas. This result seems of interest in view of the fact that in Punjab almost all the marketed surplus passes through primary wholesale markets. No such systematic relation could be established between jowar arrivals and jowar production in the primary markets of Maharashtra. It was not known whether this was due to the greater prevalence of village sales in Maharashtra as compared to Punjab or due to imperfect recording of market arrivals. Harvest prices, off-seasonal prices, arrivals and production all showed a statistically significant increasing trend during 1955-56 and 1964-65. Except in Madras, year to year variation in seasonal price pattern, could not be explained by changes in production and/or in arrivals. In other words, increase in production in a year over the previous year did not necessarily result in less off-seasonal price increase and vice a versa. This seems to be due to the influence of various other factors on cereal prices. Overall demand for each of the cereals was to a considerable extent determined by changes in the production of the other two cereals. Demand for these cereals was also influenced during the period under study by various official policies such as imports and distribution of cereals, interdistrict, interstate and interzonal movement restrictions, occasional procurement and also by changes in money supply. All these factors had varying influences on prices depending on the timing of their adoption and on the length and effectiveness of their implementation. Prices were also influenced by fixation of ceiling and floor prices in some cases.

It cannot be said what seasonal pattern prices would show if the grain market is left to a free interplay of market forces. It is likely that prices would still show an erratic seasonal behaviour due to erratic changes in production and due to misestimates of production and of storage stocks by the trader. Given the nature of the market intelligence available to the traders it seems unlikely that they would be able to predict the crop size accurately and plan storage operations accordingly. Seasonal price pattern may also depend on the carryover stocks of grain on farms and the pace and pattern of market arrivals.

### Implications for Price Policy

Findings of this study are of considerable interest in view of the current food situation and the price policy debate in India. The study illustrates that the grain market is highly competitive and that regional price disparities are small wherever there is free mobility and free flow of grain. It further shows that during the period under study movement restrictions and transport bottlenecks led to increased regional price differences. The study also shows the generally low returns in storage operations and the unpredictability of the seasonal pattern due to the influence of a complex set of factors.

In view of these findings, it would seem that an open market in grain would reduce regional price disparities provided the basic competitive conditions of entry, knowledge and mobility are met. Various steps could be taken to foster intramarket and intermarket competitiveness. Those which flow rather directly out of this study are discussed below:

#### Transport:

Availability of transport can be increased in major exporting markets that have a tendency to glut during the harvest season. In the short run, this can be done by assigning more railway wagons to the major assembly centers. In the long run, an improved network of transport will be reflected in increased market efficiency. A continuous flow of grain between primary and terminal markets will reduce intermarket and intramarket price disparities, both of which occur due to depressed prices in producing centers in the peak marketing season.

#### Intelligence:

Market information available to the trading sector regarding crop outlook and stock position needs to be improved. Intelligence currently available to traders is inadequate and is not likely to improve unless the nature of the intelligence agency is changed. There has been a general recognition in the official circle of the value of improved forecast estimates

and much has been done in the past few years to increase accuracy and promptness of crop forecasts. However, there is no awareness of the need to make such information available to the trading sector. Also, the size of stocks in various important surplus and deficit regions both at the farm and the market level could be estimated by a central market intelligence agency through frequent surveys.

#### Buffer Stocks:

Making market information available to traders without proper arrangements for combating production fluctuations may even increase instability in prices. Improved market intelligence will have to be coupled with a policy of open market operations and buffer stocks. The advantages of such a policy need hardly be emphasized. Purchase operations undertaken in years of bumper crops, would keep prices from falling excessively in those years and would provide stocks in years of scarcity for distribution to industrial labour and to vulnerable sections of the population. Such a policy will also create a degree of certainty regarding governmental role in grain trade. The current dependence on imports (mostly under PL 480) has created a great deal of unpredictability as to the size and timing of the distribution since the governmental agencies themselves have no control on the stocks available to them. However, as there has been little systematic planning of the distribution programme in India one does not know to what extent the blame could be passed on to the aiding nations. In the future, advanced knowledge of the size of stocks will be an absolute prerequisite for any perspective planning on distribution. Aiding nations will go a long way in stabilizing domestic food prices by providing some certainty to their aid programmes.

#### General Price Policy:

The unpredictability of the governmental action has, unfortunately, not been restricted to its distribution programme but has extended to the whole realm of the food policy. The movement restrictions, zones, levy, ceiling prices, stocking restrictions etc. were not part of a planned policy to prevent instability but more a reaction to an unexpected series of crises. Such a nature of interference accentuated the instability by leading to a great deal of uncertainty in private trading operations.

The requirements of stocks built by traders changed from time to time with changes in the area of their trading operations thus causing sudden excesses and shortages in markets and leading to panicky actions on part of the traders. The fixation of ceiling and floor prices which disregarded market forces resulted in withholding of stocks by cultivators on a scale unprecedented in the past. The impending nature of

the controls also legitimized normally unjustified costs such as bribes etc. thus increasing market margins.

#### Market Regulation:

Another positive step that needs to be taken to increase competition is to extend the system of market regulation where it has not made any major strides. The purpose of market regulation should be to create favourable marketing conditions through such measures as standardization of weights, measures and market charges, grading of the produce, dissemination of market information, open bidding of prices, better storage facilities in the market centres, etc. This will increase efficiency without radically altering the traditional market flows. Such a policy has been already considerably effective in areas where market regulation has been in operation and in the long run has shifted marketings from small village markets to primary markets where competition is more active.

#### Free Entry:

The overcrowded nature of the grain markets adequately illustrates the ease of entry into trade. Certain government regulations may, however, discourage such a phenomenon. The restrictions on milling licenses is a case in point. This policy has prevented installation of technologically and economically more efficient plants thus resulting in high market margins. Much could be done to foster rather than prevent new entry into trade.

Price and marketing policies with regard to food crops have to meet several complex and often conflicting goals in low income countries. To maintain wage costs in the industrial sector governments frequently adopt short term measures which reduce rather than increase market efficiency, distort price signals and mar the efforts undertaken simultaneously to solve the more fundamental problem of reaching self sufficiency in food. The policies suggested above are essential for increasing efficiency of the existing market structure in India which already shows evidence of competitiveness. Positive governmental intervention is needed for bringing about such improvements and for providing a degree of stability to the food market so as to increase the domestic food production. The policies recommended here have the merit of meeting this goal without undermining the welfare and the industrialization goals of the country.



GLOSSARY

GLOSSARY

- Adatdar (or Adatya or arhitya):**  
A commission agent in a grain market. (Also see Kachha Arhitya).
- Aman:** Rice crop in Bengal sown in May-June and harvested in November-December.
- Aus:** Rice crop in Bengal sown in April and harvested in August-September.
- Bag:** Used as a measure in agricultural trade. In Punjab and Maharashtra a bag is equivalent to 0.95 quintals and is interchangeably used as being equivalent to a quintal. In Madras a bag is usually of 57 kilograms. In some parts a bag consists of 75 kilograms.
- Bajra:** Pennisetum typhoideum. A millet mostly grown in Maharashtra, Gujarat, Rajasthan, Uttar Pradesh, Madras and Punjab.
- Bania:** A caste group in Hindu society mostly practising money lending and trading of agricultural commodities in rural areas.
- Boro:** Rice crop in Bengal sown in November and harvested in February and March.
- Cereals:** In India the term is used to include rice, wheat, jowar, bajra, maize, barley, ragi and small millets.
- Chettiyars:** A community in Madras traditionally involved in trade and commerce.
- Dara:** Mixture, used in central and north India to describe a fair average quality wheat.
- Foodgrains:** Cereals + Gram, Tur and other pulses.
- Gram:** Cicer Arietinum.
- Gur:** Sugarcane juice, boiled, clarified and reduced to semisolid consistency in open pans where on cooling off it produces a dry crystalline mass, of yellow or dark brown colour.
- Hundi:** Bill of Exchange or promissory notes.

- Jat:** A community in Punjab, traditionally a cultivating community also well known for its valour in the army.
- Jowar:** Sorghum vulgare. A millet popularly known as sorghum in English, mostly produced in Maharashtra, Gujarat, Andhra Pradesh, Madhya Pradesh, Madras and Mysore.
- Kachha Arhitya:** Commission agent
- Kar-samba:** A rice crop raised in Madras, harvested in August - September in parts of Kaniyakumari and Tanjavur.
- Kharif:** Autumn harvest. Crops are sown at the beginning of rainy season (i.e. between June and August) and harvested between October-December. The main kharif crops are rice, jowar, bajra, maize, ragi and small millets.
- Kuruwai:** A rice crop season in Madras State, sowing in July - September, harvest between September and January. (also known as early kar).
- Levy:** Compulsory submission of grain by cultivators and/or traders to the government at statutorily fixed prices.
- Mandi:** A wholesale market.
- Maund:** A measure of weight, varies from one area to another. A standard maund is of 82.28 lbs. 2.68 mds. = 1 quintal.
- Marathas:** A caste in Maharashtra, traditionally a cultivating caste, also known for its gallantry in the Indian army.
- Marwari:** A community originally migrated from Marwad to various parts of India to practice money lending, trade and commerce.
- Nadar:** A community in Madras.
- Naidu:** A community in Madras.
- Octroi:** A municipal tax levied on goods entering town and city limits.

**Pucca Arhitya:** A wholesale trader.

**Paddy:** Unhusked rice grain (ozyza sativa). In India the ratio of paddy to rice is taken to be 3:2.

**Paisa:** An Indian currency unit. 100 paisas = Rs.1.00.

**Procurement:** Government purchase of supplies, usually undertaken for public distribution, with a view to influencing prices.

**Quintal:** A metric measure of weight of 100 Kilograms.

**Rabi:** A spring harvest. The crop is sown in September - October and harvested in March - April. The main rabi crops are wheat, gram, linseed, rape, mustard, barley and (mainly in Maharashtra) jowar.

**Roller flour mills:** Large scale mills used by commercial manufacturers of wheat products for conversion of wheat into flour.

**Samba:** A rice crop season in Madras, sowing between September - November and harvesting between January - March.

**Vani:** A caste in Maharashtra, traditionally practicing trade.

D I A G R A M S

Diagrams 1 to 4, on the following pages, show a set of primary-terminal weekly wholesale market prices in each one of the four states. The diagrams were plotted by a computer from the data used for earlier regression analysis. They do not always cover the complete period studied but relate only to the periods for which continuous price series were available. In the case of West Bengal, two graphs are presented for two continuous time series. Data on Kalma prices, Calcutta, were missing for December 1958 - November 1959 period. In the case of Madras City prices, there were too many missing observations and, therefore, no chart could be plotted for these particular price series beyond November 1958. Similar charts were plotted for numerous primary-terminal relationships. However, only one primary-terminal chart for each state is presented here as there is a great deal of similarity between various primary-terminal price movements within each state. The scale of the graphs was determined by the computer from the range of the price variation and the length of the time series and, therefore, varies from one graph to another. The x axis shows the serial number of weeks and the y axis the wholesale prices in rupees per quintal.

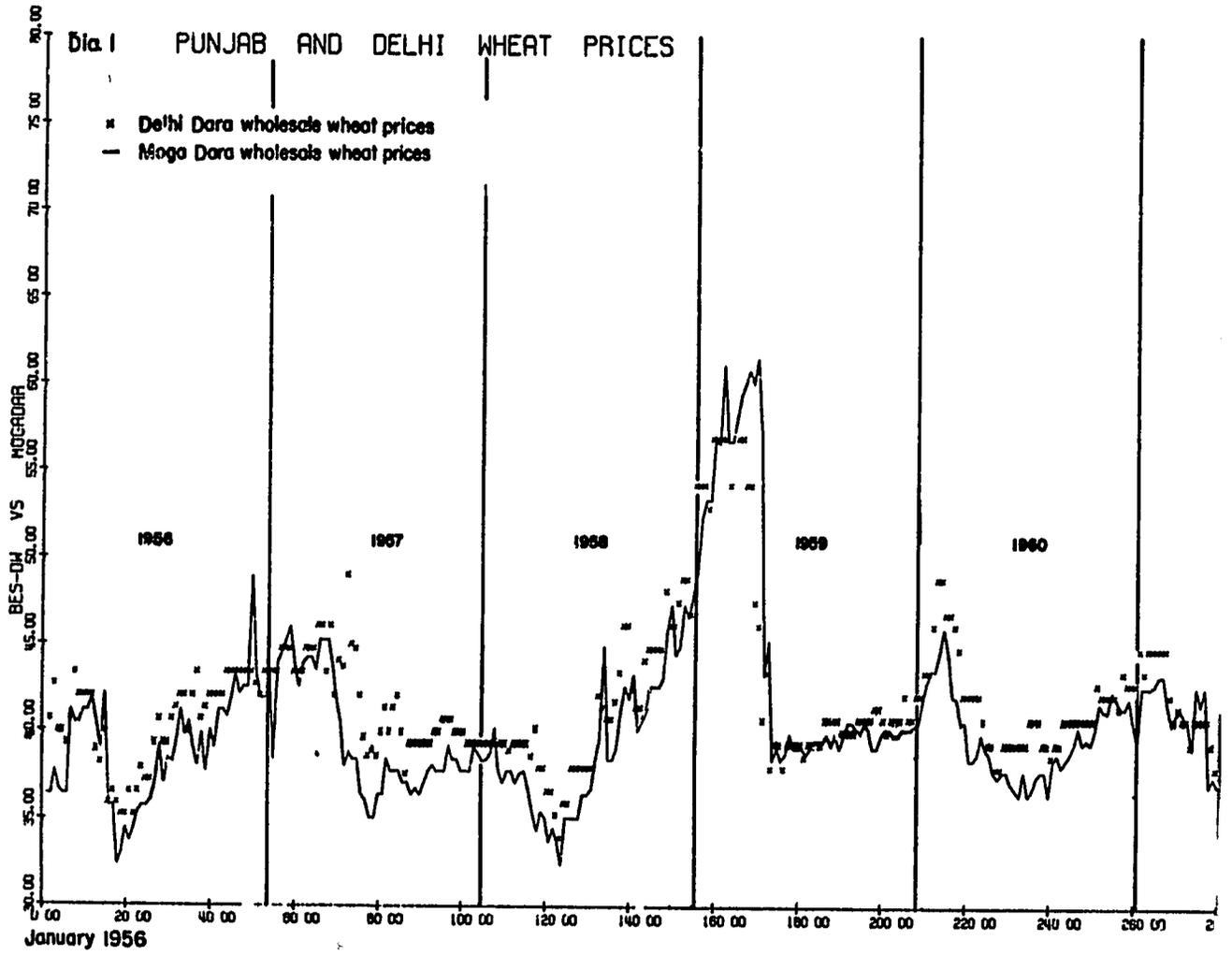


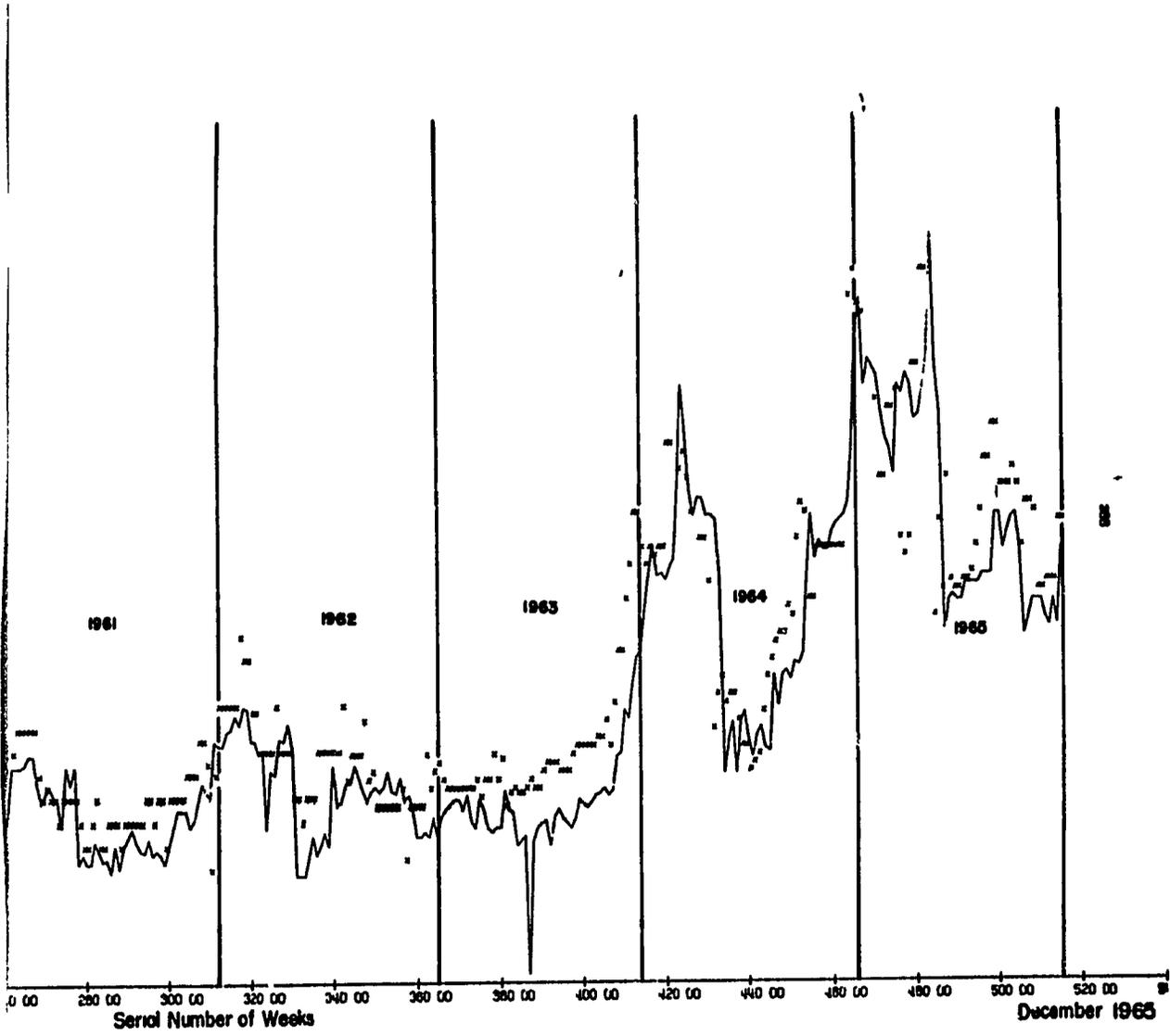
EXPLANATORY NOTE REGARDING DIAGRAMS 1 - 4

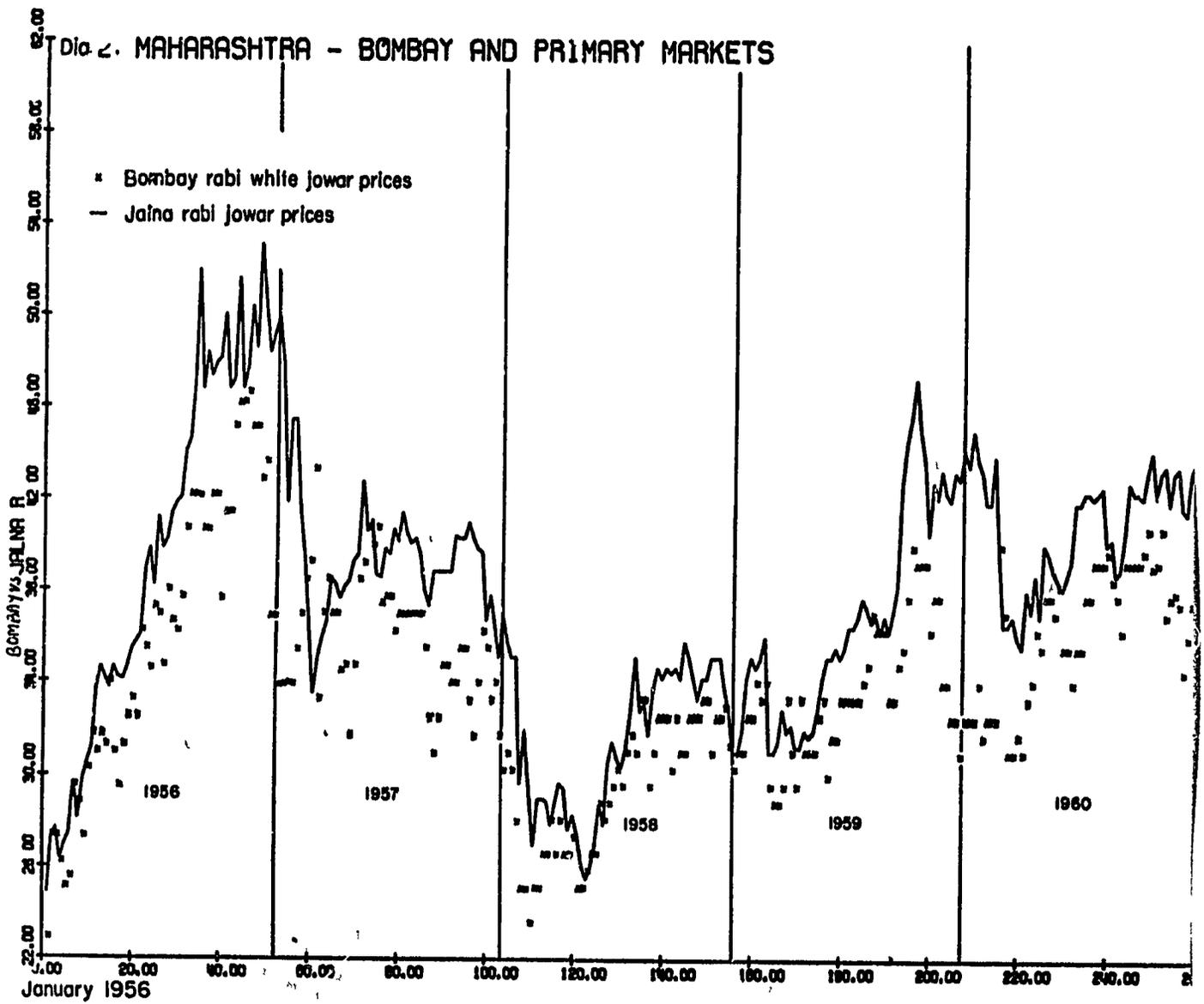
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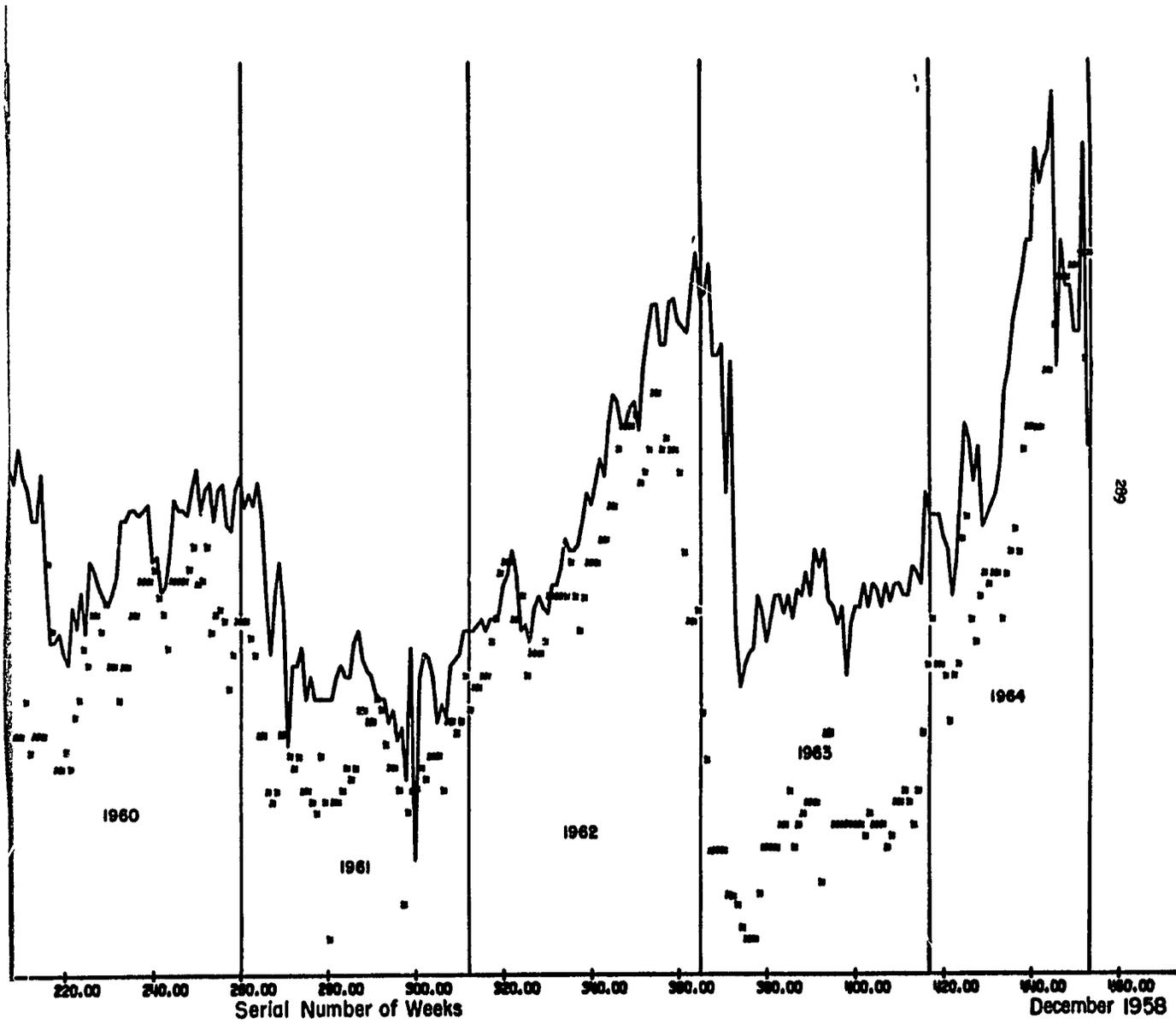
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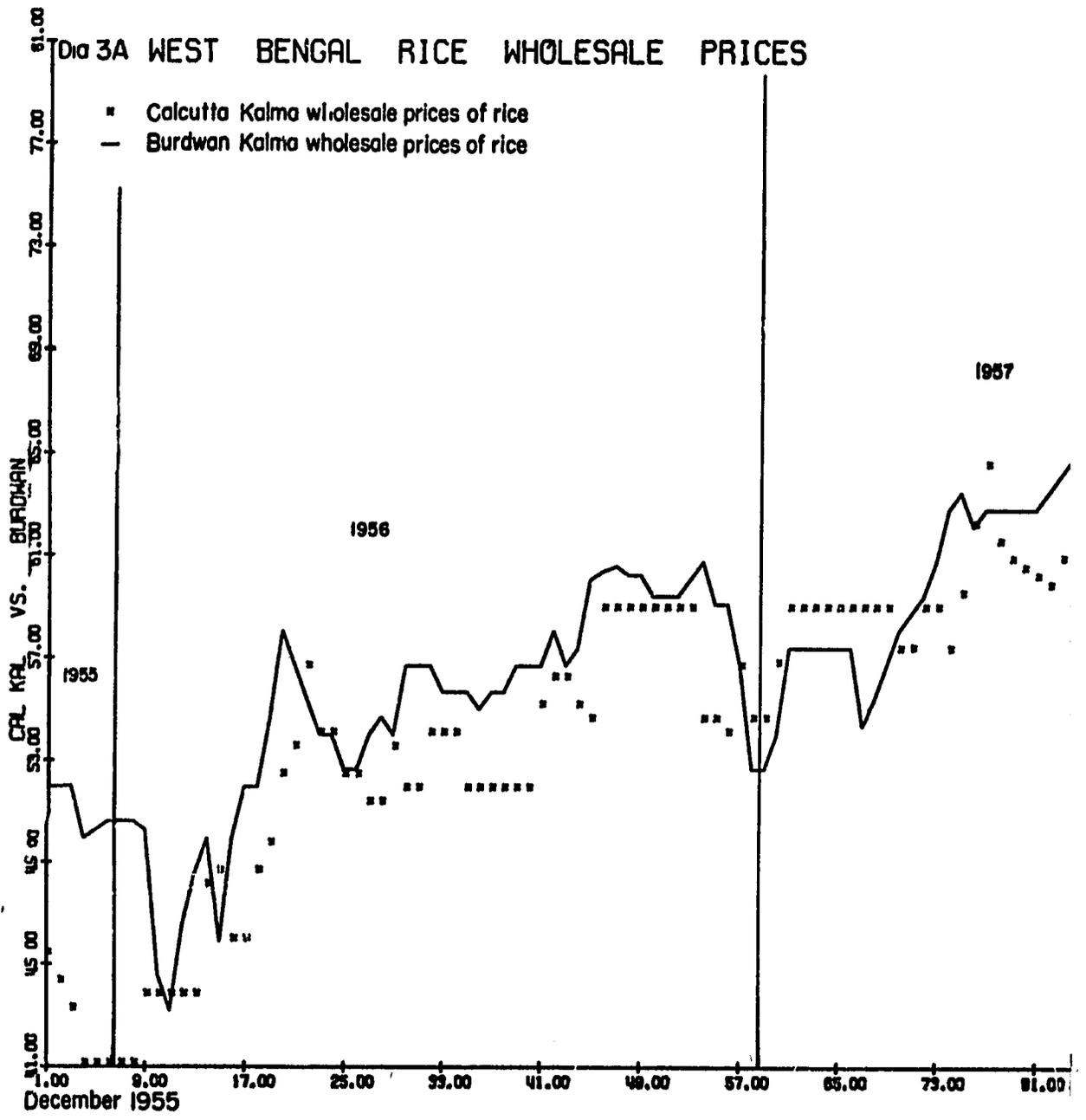
Similar charts were plotted for numerous primary-terminal relationships. However, only one primary-terminal chart for each state is presented here as there is a great deal of similarity between various primary-terminal price movements within each state. The scale of the graphs was determined by the computer from the range of the price variation and the length of the time series and, therefore, varies from one graph to another. The "x" axis shows the serial number of weeks and the "y" axis the wholesale prices in rupees per quintal.

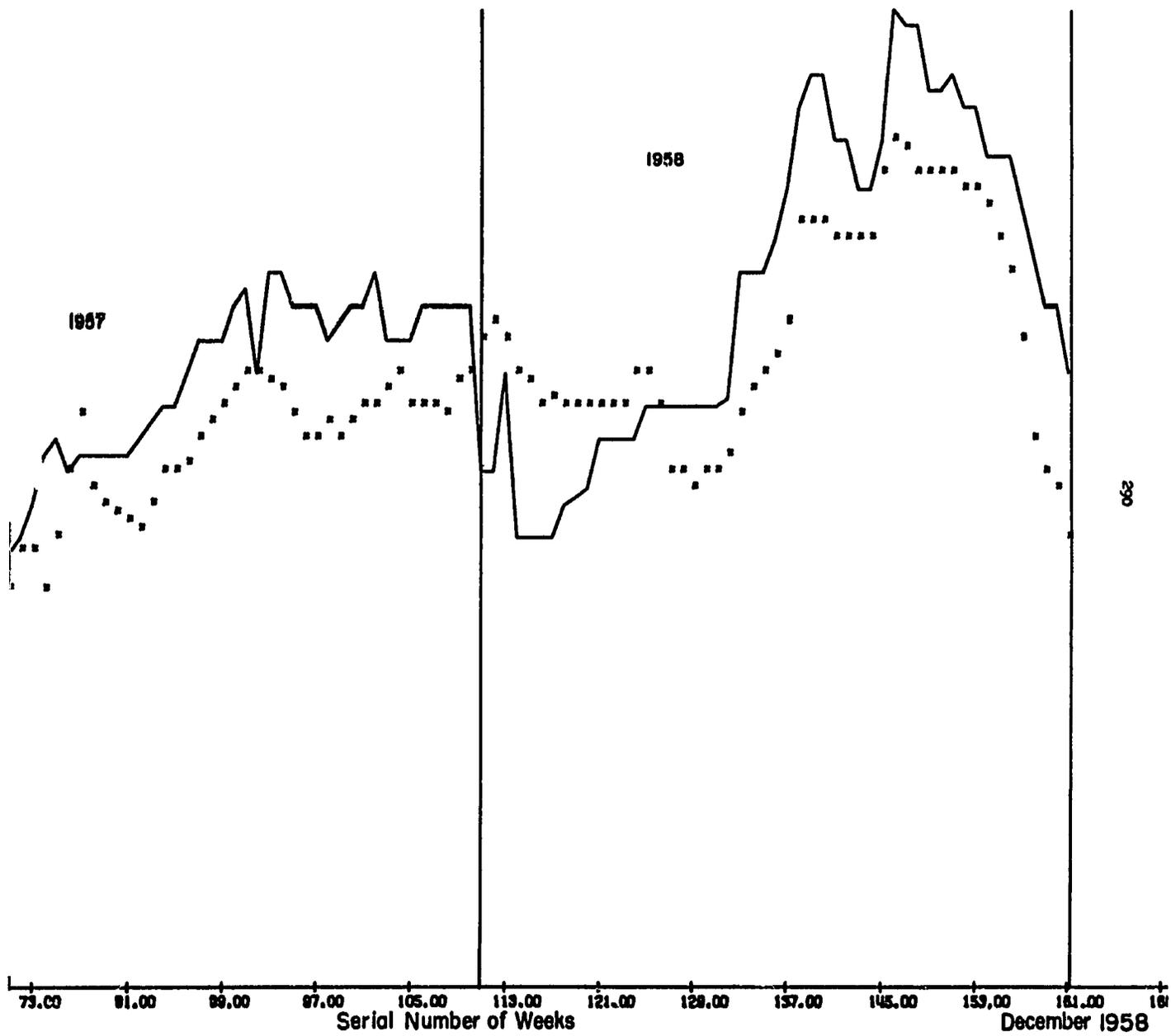


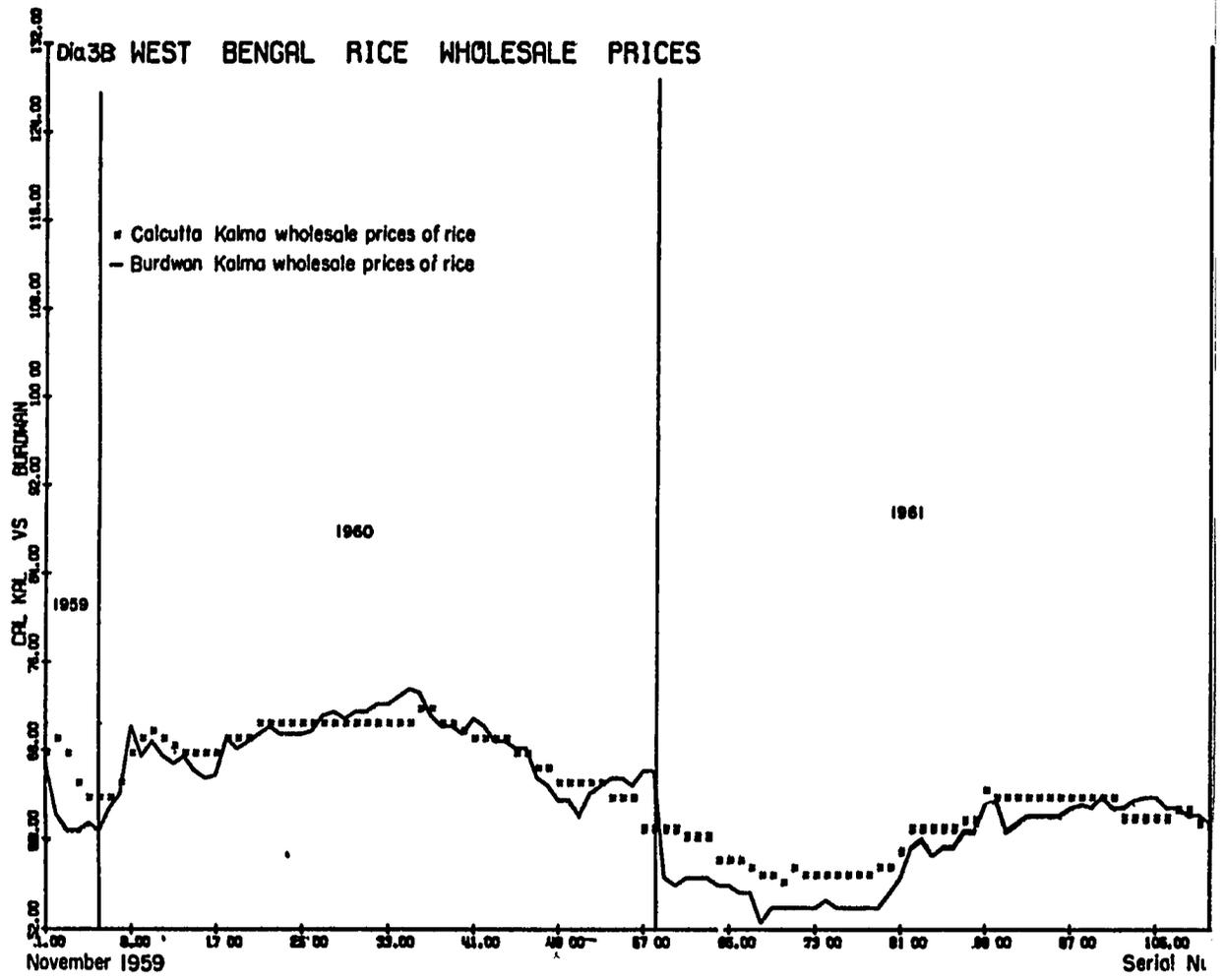


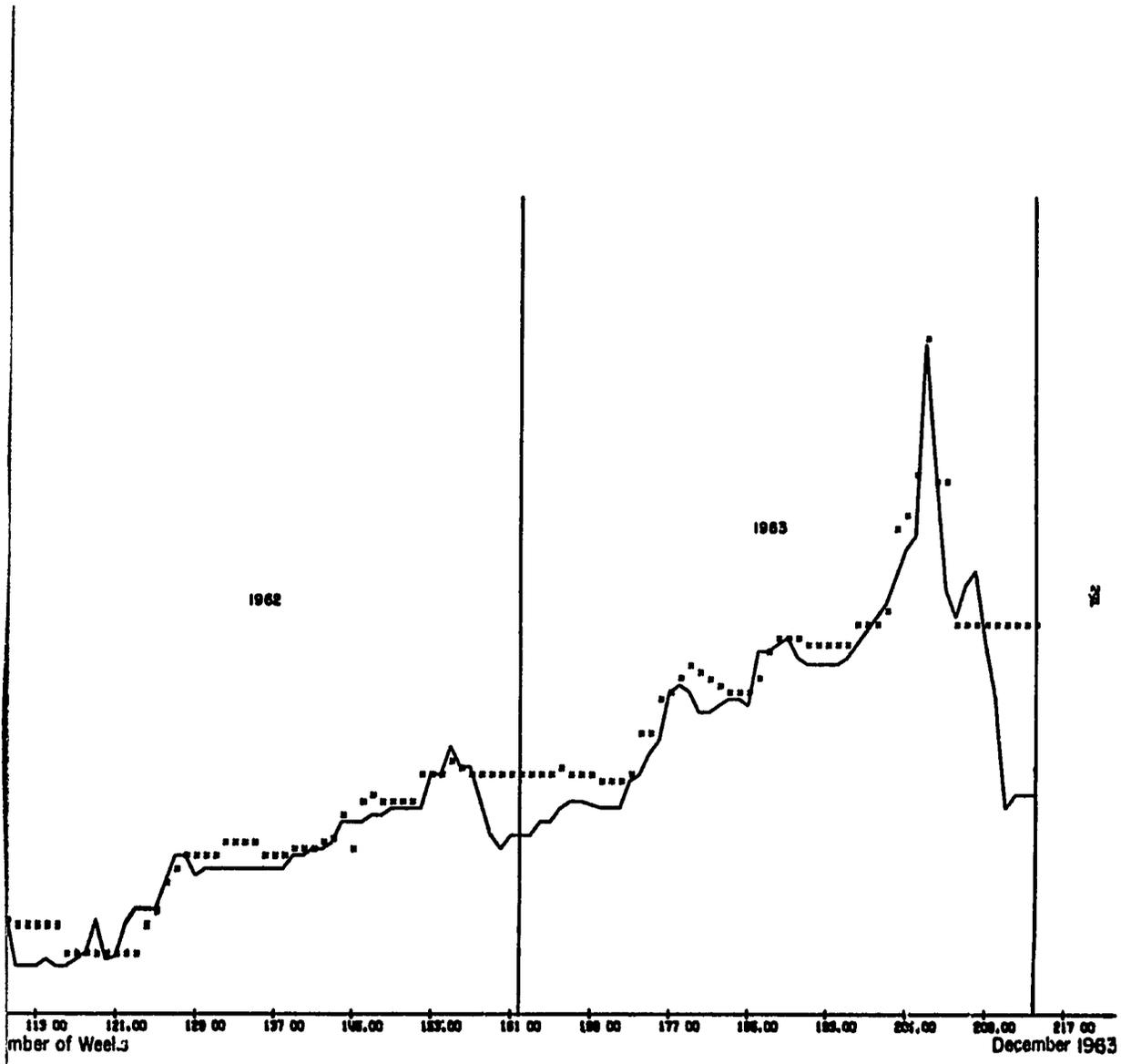


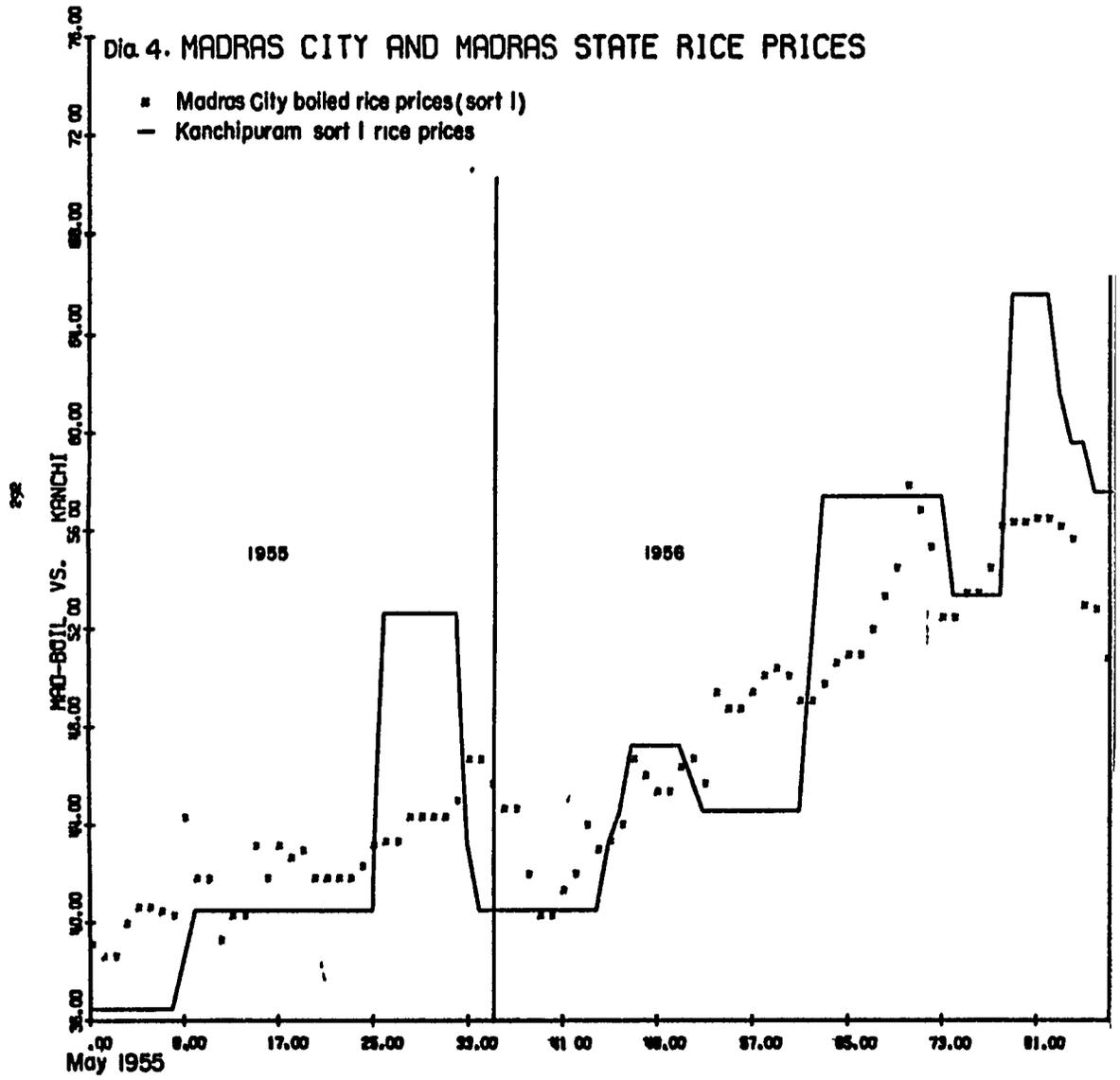












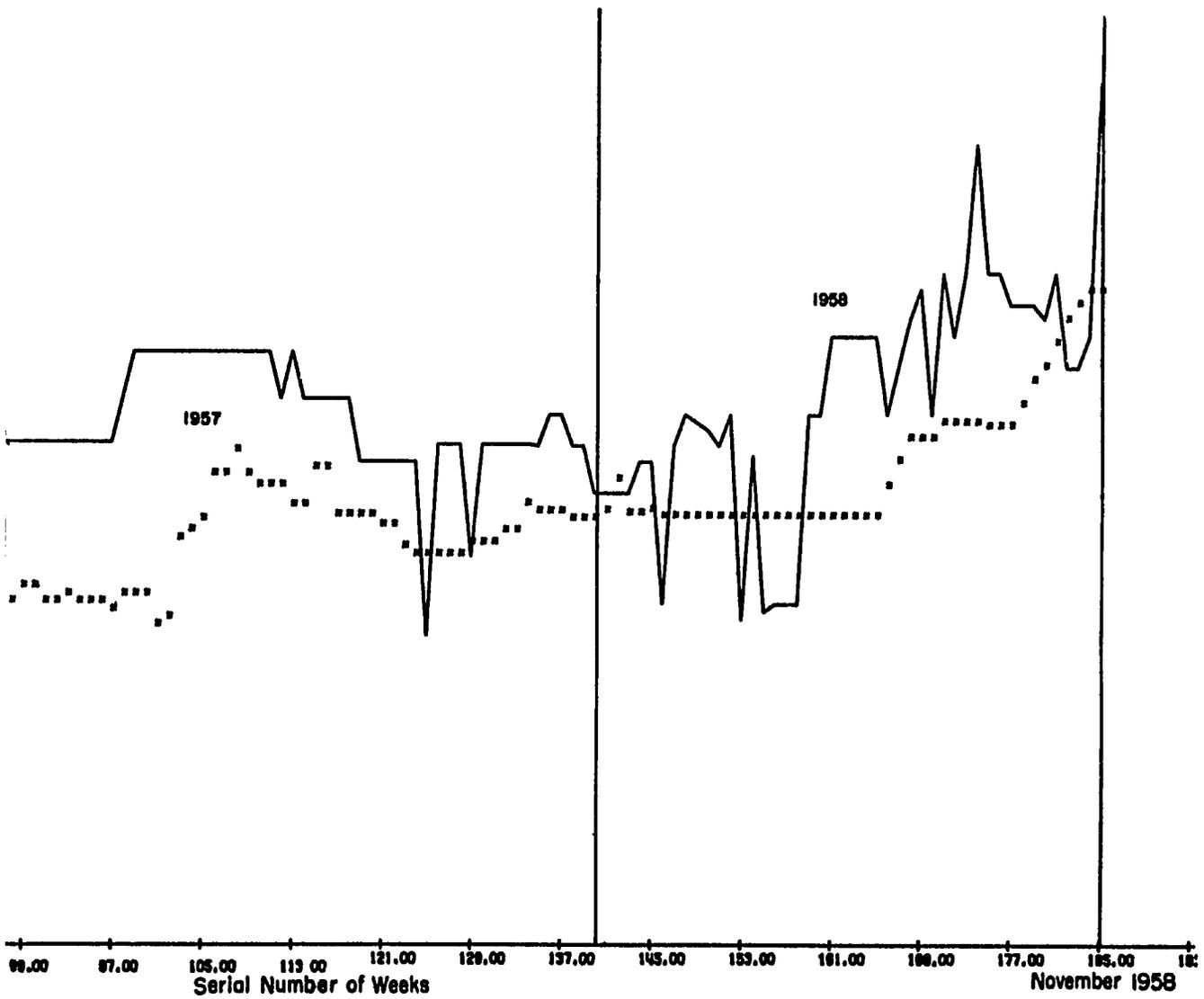


Diagram 5: Purchase and Sale of Wheat by a Moga Trader  
April 1964 - March 1967

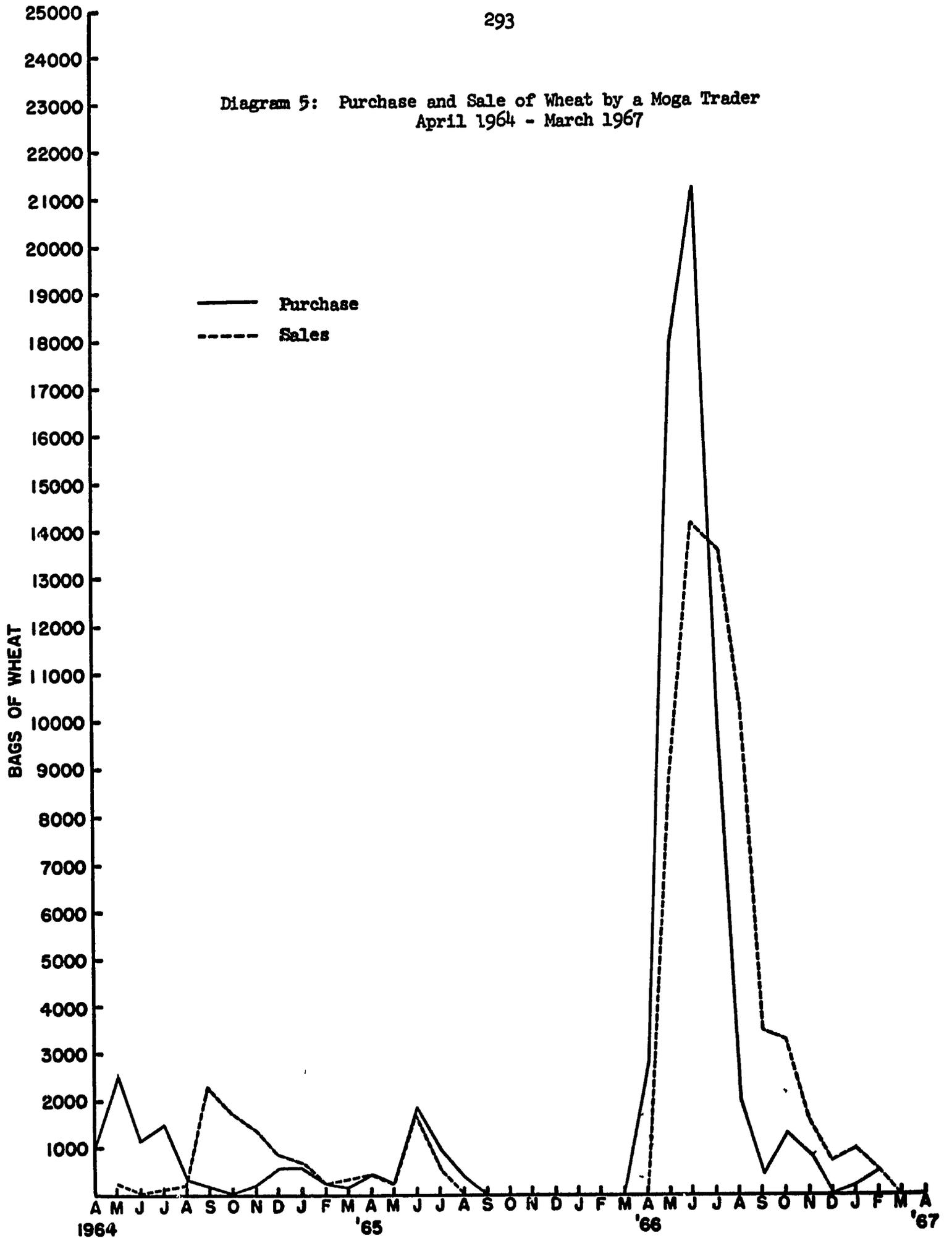


Diagram 6 · Purchase and Sale of Wheat by a Moga Trader, April 1964 - March 1967

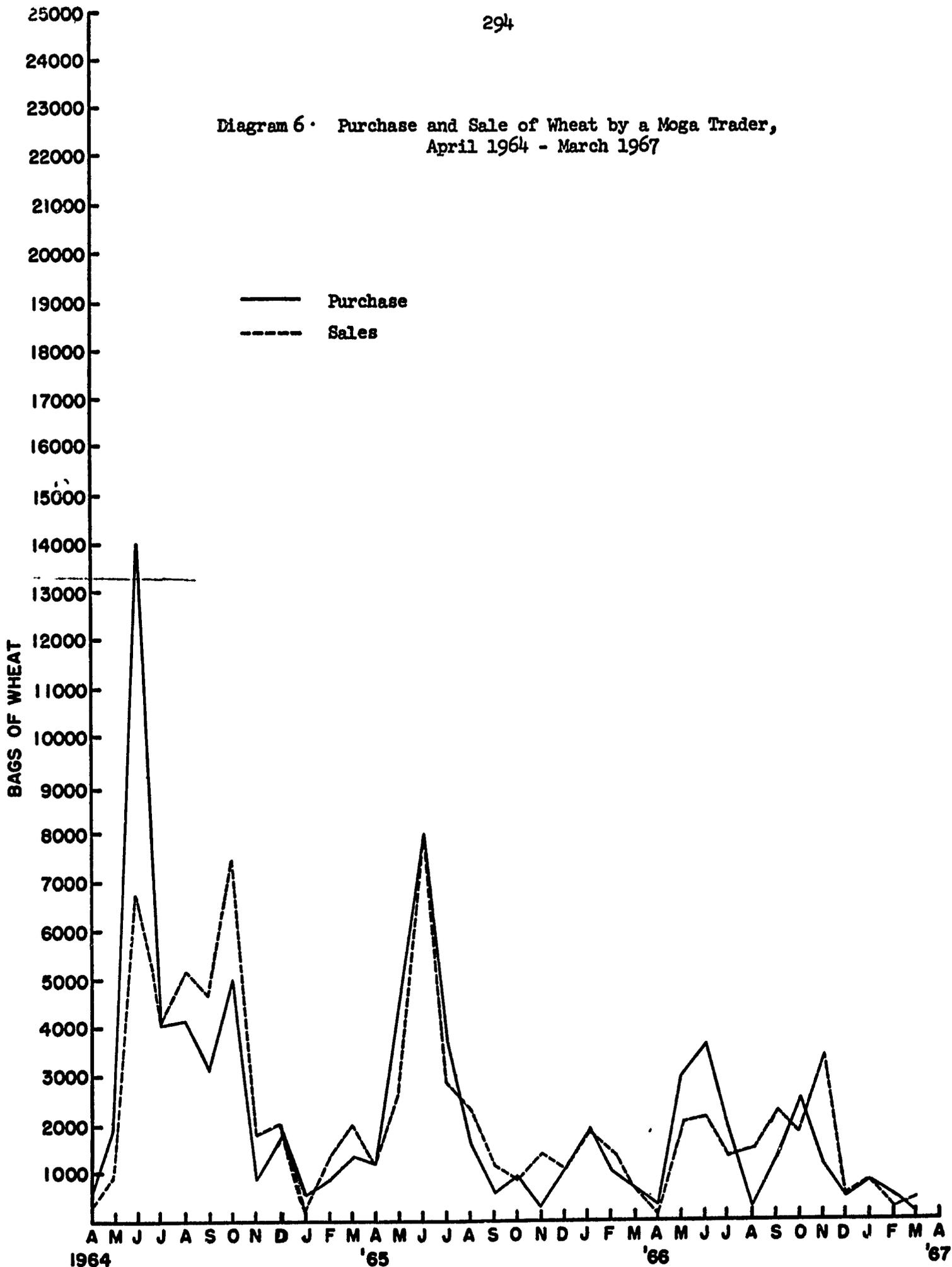


Diagram 7: Purchase and Sale of Wheat by a Moga Trader, January 1965 - March 1967

