RAPPORTEUR'S REPORT

ON

PRICE SPREADS OF AGRICULTURAL COMMODITIES
IN RECENT YEARS

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The subject "Price Spreads of Agricultural Commodities in Recent Years" was chosen to invite papers that could discuss, as the synopsis indicated, the following themes: (i) measurement of price spread or marketing margins; evaluation of factors that contribute to variation in price spreads of agricultural commodities, and to find whether marketing costs and margins have narrowed over time, (ii) test of market structure for agricultural commodities to ascertain whether markets are temporally and spatially integrated, (iii) comparative efficiency of alternative marketing agencies—private, co-operative and government, (iv) relationship between price spread, inventories and storage cost, (v) whether hoarding and speculative gains are common features of agricultural commodity markets, particularly in periods of shortage, (vi) the role of futures trading in stabilising commodity prices and (vii) whether the small farmers are in a disadvantageous position compared to the large farmers in receiving lower product prices and the reasons thereof. The forty-nine papers that have been accepted for discussion on the subject examine five of the above-mentioned seven themes. There were no papers on hoarding and speculative gains, and on the role of futures trading in stabilising commodity prices. The papers accepted for discussion cover most of the States and many of the agricultural commodities that are marketed in this country. The contributions included here are surveyed in the first five sections. The sixth and final section briefly dwells on the topics that were not discussed by the contributors and also lists the important issues emerging from the survey that might be taken up for discussion at the Conference.

I

MEASUREMENT OF PRICE SPREAD

The contributions on this topic are the largest in number. The papers have attempted to measure and explain the components of price spread in the marketing channel, the profits of intermediaries, the marketing cost and the share of producers in the consumers' rupee. They have also endeavoured to compare the variation in price spread that has taken place over time, specially after the advent of the green revolution, with the introduction of regulated markets and with improvements in facilities for storage and transport. Price spread can be narrowed, some authors have suggested, by providing remu-

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nerative prices to the farmers and through Government procurement and public distribution programmes. Other measures suggested for narrowing the price spread are effective participation by government and co-operative agencies.

P. K. Joshi and V. K. Sharma have made a comparative analysis of the retail-farm price spread of rice in six States, viz., Andhra Pradesh, Bihar, Karnataka, Orissa, Tamil Nadu and West Bengal, based on secondary data. The main objectives of their analytical study are to (a) measure and compare the price spread before and during the green revolution, (b) to study the relative effects of shifts in the demand and supply schedules of paddy on the price spread. They have computed quarterly average price spread for the two periods 1960-61 to 1965-66 and 1966-67 to 1973-74. Their results show that in all the States the profits of intermediaries and the marketing costs increased during the green revolution period but the seasonal pattern of variation in price spread was the same during both the periods. Using an economic model they explore the interrelationship between supply, demand and prices. They conclude that the wide seasonal and spatial variations in price spread can be reduced through governmental intervention by providing remunerative prices to farmers and through government control and distribution during periods of shortage.

V. V. Desai has studied the structural relationship subsisting between the various components of price spread and the effect of the variations in the components of price spread on the producers' share. In his study of six villages in Coimbatore district, where paddy and sugarcane are grown, three villages are well connected with roadways and have adequate transport facilities, the other three are poorly linked villages. His study provides some evidence in support of size of holding and locational advantage in influencing the price spread. He has shown through sensitivity analysis that consumers' prices are relatively more sensitive to margins of intermediaries in the case of paddy and to processing costs in the case of sugarcane. These two factors, he concludes, are relatively more important than transport cost and wastage allowance in explaining the spread.

S. P. Sinha et al. have discussed marketing costs and margins in rice, wheat and maize in Muzaffarpur and Chakulia markets in Bihar. They have used the method of 'concurrent margins' to examine the magnitude of marketing costs and margins in foodgrains. Their study shows that the producers' share in the consumers' price for rice, wheat and maize has varied from 76 to 82 per cent. They also point out that margins of intermediaries accounted for nearly two-thirds and the cost of marketing approximately one-third of the total price spread in the two markets. The high marketing costs and large price spread they have attributed to handling and storage losses, high transport charges and to high commission, weighing, loading and unloading charges. They have suggested more effective operation of government agencies and co-operatives as a means of narrowing the price spread. U.K. Pandey et al. have conducted a micro study, based on regression analysis, on the factors responsible for lower/higher product prices received by farmers
in four selected villages in Kurukshtetra district of Haryana in selling paddy, potato and wheat. The net price received by the producers, their results show, is lower, the larger the distance to the market and marketing cost, and the net price received is larger, the larger the marketed surplus.

K. Sain has examined the price spread between primary markets at villages and neighbouring market mandis for three crops of West Bengal, viz., paddy, wheat and jute. The analysis is based on both primary and secondary data for the crop years 1977-78 and 1978-79. He has compared the extent of marketing efficiency in these crops by estimating transport costs as percentages of price spreads. He concludes that the price spreads between primary markets and mandis are low both for food and cash crops, farmers receive a higher proportion of mandi prices but not of terminal market prices. The author states that improvements in the marketing system including grading, standardisation and in other marketing services are needed in West Bengal.

A. K. Neog and M. Barkataky have studied the price spread for rice in Assam over the period 1967 to 1978. Wholesalers, the authors state, wield monopoly power both on price and quantity since they are relatively small in number, have strong financial power, storage capacity and wide market area. Computing the wholesale-farm harvest price ratio for the period 1967-68, they show that the price spread is relatively high between farmers and wholesalers compared to the spread between wholesalers and retailers. According to the authors, the extent of price spread lessened after 1974 due to State trading.

C. D. Deole et al. have tried to identify a stable market among three regulated markets in Parbhani district of Maharashtra State by studying the inter-market differences in the prices of wheat. They have examined the possibility of increasing the producers' share in the marketing of wheat. Their study shows wide fluctuations in the prices of wheat in different months as well as amongst different markets. They have attempted to identify a relatively stable market among those studied by computing the intra-market coefficient of variation in the average prices for each of the three markets. P. V. Sarma and T. K. Rao have analysed the price spread of two varieties of pulses, namely, red gram and Bengal gram for the period 1958 to 1975 in Andhra Pradesh. They test the hypothesis that the price spread will be higher, the higher the rise in prices and variations in prices. Their analysis supports the hypothesis that as prices rise, the price spread also increases. The higher prices benefit the trading community at the cost of consumers and producers. As high prices of pulses have led to no response in the area under pulses, the authors advocate as policy measures efforts by Government that would induce the farmers to adopt a new high-yielding production technology and an effective procurement and public distribution programme of Government.

S. Suryaprakash et al. have estimated the margins realised by various intermediaries in the marketing of five commercial crops, viz., arecanut, coconut, copra, cotton and groundnut in Karnataka. The authors state that the overall profit of intermediaries, which did not exceed 13 per cent in the markets studied, could be considered reasonable considering the
various services provided by them such as transportation, assembling, storage, grading and processing. In their view the realisation of about 75 per cent of the consumer rupee by the producers is reasonable in the absence of a well-organized market structure.

D. C. Sah and K. Hanumantha Rao have estimated in their paper the value of output and value added received by the farmers as a percentage of total value and total value added respectively in the groundnut system during the period 1963-64 to 1971-72. Their approach differs from the traditional methods of estimating the price spread, like the method of concurrent or lagged margins. To measure the price spread, they estimate the changes in the ratio of value of output at the farm level to the value of output in different terminal markets over time, and also the variation in the farmers’ share in the total value added in the groundnut system. They compute the value added by deducting the costs of inputs and other processing costs from the value of output. The authors have shown that the ratio of farm output to trade output is higher and the farmer’s share is higher, the higher the ratio of farm harvest prices to oil prices. The authors have suggested that there is some scope for the farmers to obtain higher return and in their being induced to increase the area under groundnut through the formation of co-operatives. Anant Ram Verma and H. K. Nigam have studied the price spread in groundnut marketing in Kanpur district during the year 1977-78. The market arrivals of groundnut in the mandi in Kanpur city were higher in peak months, December to February, constituting together about 56.48 per cent of the total arrivals. The prices during this period were consequently low. The producer’s share in the consumer’s price of roasted groundnut and groundnut oil was 63.85 per cent and 73.8 per cent respectively. The storage cost per quintal per month at the farmer’s level came to Rs. 1.40 as against Re. 0.70 in the warehouses. The authors recommend enlarging of market yards, improvement in transport facilities and provision of cheaper credit and storage facilities.

Jagdish Lal in his paper has estimated and compared the costs, margins and price spread in the marketing of gur and khandari in 1977-78 with reference to three important sugarcane growing districts of Sitapur, Kheri and Lucknow in Uttar Pradesh. His study indicates that in the marketing of gur, the gur producer, wholesalers and retailers together appropriated around 22 per cent, sugarcane producers received about 60 per cent and the marketing cost covered the remaining 18 per cent of the consumer’s rupee. The share of the producer was larger and the margin of intermediaries lower in the village market, the reverse was the case with the increase in the number of intermediaries and market distance. The returns and marketing costs for khandari were similar to gur.

I. S. Chatha and J. L. Kaul have examined the consequences of rapid increase in the production of potatoes in Punjab in the last decade on the farmers’ income. The seasonal and perishable nature of the crop and limited storage facilities have contributed to great fluctuations in the price of this crop. The authors have measured the price spread and its variation over
time, and examined the possibilities of narrowing the price spread. They estimate the price spread in the marketing of potatoes in the Jullundur market, which handles more than 45 per cent of the produce in Punjab. The authors estimate the share of potato producers as about 55 per cent of the price paid by the consumers. According to the authors, the wide price spread could be reduced by reducing the market fee and cutting down the commission of agents. Harjeet Singh and Joginder Singh have examined the comparative economics of selling potato over different periods and in different markets by comparing the price spreads and net returns accruing to the potato growers in Jullunder district from different methods of sale. They have studied the comparative economics of cold storing potato for alternative periods. The optimum time of sale of potato was November. Storage of potato was economical in case the farmer could wait at least till May. The authors also infer through analysis that the sale of potato in distant terminal markets is advantageous to the producers because of higher prices in these consuming markets, which more than compensates the higher marketing costs.

A. K. Gupta and G. S. Ram have estimated the price spread in vegetables in Delhi. They have studied the role of location on the retail margin and have measured the effect of variations in consumer prices on costs and margins. The price spread was measured by tracing specific lots, following each auction, through the marketing channel till they reached the hands of ultimate consumers. They conclude from their analysis that the producers received merely 38 per cent of the share in the consumers’ price whereas the retail margin and marketing costs were quite substantial each appropriating one-fourth of the consumer rupee. They recommend co-operative endeavour at both the producer and consumer level and facilities of cold storage and processing for improving marketing performance.

B. G. R. Prasad has estimated the price spread in vegetable marketing in Bangalore city and the producers’ net share in the consumers’ rupee. The author has derived two sets of net prices received by the producer: net price at the market and net price at the farm level, the first is derived by deducting from the average wholesale price, the commission paid and the second, by deducting from the retail price the cost incurred by farmers in bringing the produce to the market from their villages. The producers’ net share in the consumer rupee was worked out by expressing the average net price received by the producers at the farm level as a percentage of the average retail price. Though the margins retained by the retailers were relatively higher as compared to the commission agents, the net return obtained by the retailers was much lower compared to the commission agents since the quantity handled by the commission agent was nearly 30 times greater than the quantity handled by the retailers. He advocates reducing the current 8 per cent ad valorem commission on wholesale price received by the commission agents, in view of the large quantity of vegetables handled. D. S. Nandal and J. C. Karwasa have studied the onion price spread in the vegetable markets in Kurukshetra and Karnal districts, which are the major onion growing districts of Haryana. The net price per quintal of onion received by the farmers in the peak season
was around Rs. 20 to Rs. 23, which covered their average cost of production. The price received by them was around 50-52 per cent of the consumers' price during the peak period in the selected markets in Haryana. If the farmer stored the produce and sold in September, his share in the consumers' price could increase to around 59-60 per cent. The relative share of market functionaries in the consumers' rupee tended to decline and the marketing cost tended to increase with the increase in the period of sale. The onion markets are spatially integrated. The authors recommend that the farmers should be provided with adequate storage and credit facilities, minimum support price and institutional procurement of produce for efficient marketing of onions.

R. P. S. Malik has studied the marketing channels and price spread in a perishable commodity like apple in Himachal Pradesh. His study of marketing practices of producers shows that 18 per cent of the orchards were leased out to pre-harvest contractors, and that the producers marketed the fruits from the major portion of the total orchards themselves through well established marketing channels like producer—forwarding agent—commission agent—retailer—consumer. The producer received about 66 per cent of the consumer's rupee. The study shows that the important consuming markets like Delhi, Bombay, Calcutta and Madras, are not well integrated with each other. Y. S. Negi and R. Swarup have examined marketing costs and margins in the marketing of stone fruits like plums and peaches of Himachal Pradesh. Their analysis shows that the marketing costs incurred by the producers/sellers account for a fairly high proportion of consumers' price. The net share received by the producer varied from 36 per cent for peach to 40 per cent of the consumers' price for plum. They recommend policy measures like search for suitable substitute packing materials, providing cheaper transportation facilities and implementation of market regulation laws to economise and help in rendering better marketing services to producers and consumers. D. K. Das has analysed the price spread in marketing vegetables and fruits in Papua New Guinea. The wide price spread he attributes to high transport costs, spoilage and large profit margins at the retail level.

C. Arputharaj and R. Rajagopalan have examined the market structure of milk in Madras city and its price spread. Their study shows that in the case of direct sales and sales through middlemen, the producer gets a good price, but the consumer pays a high price without any guarantee about the quality of milk. In the case of milk channelled through Tamil Nadu Dairy Development Corporation, the price received by the producer is linked to the quality of the milk he supplies. The consumer is assured of quality milk at a fair price but has to purchase in multiples of half litre only which is not convenient to poor consumers. They conclude that the Dairy Development Corporation can break even only through larger volumes of milk sale. Balwant Singh et al. have examined the seasonal variations in production, marketed surplus and price of milk in the urban and rural areas of Ludhiana district in Punjab during the year 1977. Though the consumption of milk is uniform throughout the year, yet the production of milk is subjected to
wide seasonal variations. As the supply and price are adversely affected during summer, the authors suggest there is need for research and policy measures to stabilise the supply and price of milk through the year.

In egg marketing, it is alleged that the intermediaries receive a large portion of the consumer's rupee and that the development of the egg industry can take place only after the price spread in eggs is reduced. D. S. Sidhu and P. S. Rangi have studied the price spread in egg marketing. Their analysis is based on data on costs and margins for eggs for the various intermediaries collected for the peak (modal) period in January 1979 in Ludhiana and at the consuming market in Delhi. Their study shows that the net share of the producer in the consumer's rupee is higher (94 per cent) when they sell directly to the consumer and lower (78 per cent) when they sell through the intermediaries. Their comparison of the price spread in 1966 and in 1979 shows that the net share of the producer in the consumer's rupee increased from 54 per cent in 1966 to 78 per cent in 1979. The increase in the share of the producer appears to be due to increased operational efficiency—lowering of transport, packing and breakage charges, and increased economic efficiency through reduction of intermediaries. Kanwar Prakash Chand and B. K. Sikka have examined the price structure of eggs and the marketing margins at different stages of marketing basing their analysis on data for the Simla market. Their analysis shows that the producers receive a fair share, about 71 to 80 per cent, of the consumers' rupee. The authors estimate the relation between market arrivals of eggs and wholesale prices, and find the arrivals-wholesale price elasticity to be around 0.2. The authors conclude on the basis of this low elasticity that it is possible for the producers to increase the prices and to increase their share of the consumers' rupee.

N. A. Gadre et al. have studied the price spread in betel leaf between primary and terminal markets and compare the spread with the marketing costs. The marketing system of betel leaf consists of producers, traders/agents of the traders, wholesalers and retailers. Their study revealed that transport charges form the major portion of marketing cost, followed by cost of sorting and packing. They estimate the producer's share in the consumer's rupee in primary and terminal markets as 45 per cent and 58 per cent respectively. Their view is that betel leaf marketing, if it is organized on co-operative lines, would increase the producers' share.

S. D. Suryawanshi and P. M. Kapase have analysed the marketing margins from selling roses grown in Pune and Nasik districts in the Bombay market. They indicate that the producers have received only 12 per cent net share in the consumers' rupee. The chain of intermediaries have received exorbitant profits in the marketing of roses. They recommend the formation of growers' co-operative societies, improvement in transport and storage facilities and development of industries for extraction of flower essence to enable the producer to receive a larger share of the consumers' rupee.

S. J. Patil et al. have studied the price spread in livestock marketing in Dhule market of Western Maharashtra. The owners' share in the case of cows was around 67 per cent, and for buffaloes about 73 per cent of the con-
sumer's rupee. The transport cost constituted approximately three-fourths of the total marketing cost, expenditure on feeds and fodder, etc., constituted the remaining portion of marketing cost. The authors state that cattle marketing is less efficient compared to marketing of agricultural commodities. To improve the conditions of marketing of livestock, they recommend free inter-State movement of the animals and their sale through open auction.

II

TEST OF HYPOTHESES RELATING TO COMPETITIVE MARKETING AND MARKET INTEGRATION

The papers on this theme have tested the hypotheses relating to competitive marketing and market integration. The hypotheses tested in this connection are: (a) wholesale and terminal markets for agricultural commodities are closely interrelated, (b) the village and wholesale market prices are closely interrelated and the price spread increases with the increase in the transport cost and number of intermediaries, and (c) seasonal variation in prices are closely related to storage cost.

A. Kumar and B. B. Singh have evaluated the extent of market integration and efficiency in paddy marketing in Varanasi district and tested the above-mentioned hypotheses. Their investigation leads them to support the first hypothesis and to reject the remaining two hypotheses. H. S. Aulakh and Bakshish Singh have examined the price spread in wheat for selected markets of Punjab. Their analysis is based on market structure approach. They have studied the spatial market integration in two ways: firstly, the absolute price differential between two markets has been compared to the cost of shipment from one market to another. The price spread effect between the two markets, under assumptions of competition, is expected to be equal to zero, when the price spread between the two markets is no greater than the cost of shipment. The second approach, also based on competitive market structure model, consists in determining the correlation coefficient of prices in the two markets as a measure of spatial integration. Their study shows that the price spread effect was close to zero and also that the correlation coefficients between market prices were high, which lead them to conclude that the wheat markets in the Punjab were reasonably well integrated.

V. T. Raju and M. von Oppen have estimated marketing margins and price correlations to evaluate the degree of marketing efficiency for jowar, bajra, groundnut, red gram and Bengal gram in selected markets in Andhra Pradesh in 1975-76. The marketing margins were significantly different in the selected markets. The marketing margins as well as price correlation coefficients indicate that marketing efficiency is greater in the case of red gram and Bengal gram relative to jowar and bajra.

G. D. Diwakar and M. A. Muralidharan have examined the extent of spatial and temporal integration in potato markets of Farrukhabad district of Uttar Pradesh. They have also examined profits or losses from storage of
potato for varying periods in the year, taking account of storage cost and seasonal price variation. Potatoes were kept in cold storage, charges for which were fixed for the entire season, irrespective of the time for which potatoes were kept in storage. The storage period was generally from February to November. If the stored potato was sold before August, the seasonal price rise was not adequate to pay for the storage cost. Since storage cost was fixed, the returns to inventory holders of potato depended on the nature of upward seasonal variation in prices. The authors also found that the inter-market price differences were greater than transportation cost. They conclude on the basis of their analysis and results that marketing efficiency was not high.

A. L. Nadda and R. Swarup have examined the extent of market integration in apple markets. They state that while it is reasonably well established that agricultural commodity markets are fairly well integrated, there is lack of evidence in this respect relating to fruit crops, which are perishable, bulky and localised in production. They have tested the hypothesis that apple markets are spatially integrated. The value of correlation coefficient was considered as a measure to judge spatial integration, and two markets were considered as perfectly integrated when the correlation coefficient of prices ruling in the two markets is one. The reasons for less than perfect integration between markets could be transport bottlenecks, risk and uncertainty about prices between markets. They have examined the nature of spatial integration between the primary and terminal markets to determine whether the price differences were more than the cost of shipment. The conclusion they reach is that the primary and terminal markets for apple varieties like Royal Delicious are reasonably well integrated but the apple traders could make substantial profits by shipping and distributing apples in the terminal markets since the price differentials exceed the transporting cost.

III

COMPARATIVE EFFICIENCY OF ALTERNATIVE MARKETING AGENCIES

There are only four contributions on this topic. Bhupinder Singh et al. have evaluated the changes in the structure of wheat and paddy marketing that have taken place in the Punjab State since the mid-sixties. They have compared the market channels and price spreads at present with those fifteen years ago. The major change that has occurred is the relatively larger percentage of production of foodgrains that is procured by government, 11.4 per cent in 1976-77 compared to 1.6 per cent in 1964-65. The marketing channels from wheat producers to consumers through fair price shops now include Food Corporation of India and the Marketing Federation, and similarly the paddy marketing channel through fair price shops includes the Food Corporation. The producers' share of the consumers' rupee which was around 80 to 83 per cent in the case of wheat in 1966-67 rose to about 87 per cent
in 1978-79. The producers' share in the case of paddy sold through fair price shops was around 88 per cent in 1966-67, it was around 79 per cent when channelled through government agencies in 1978-79. The authors conclude that though the operating costs of government agencies are higher as compared to the private trade, State intervention has contributed to increased marketing efficiency of foodgrains, since it has curbed the speculative propensities of the trader.

V. P. S. Arora and S. P. Jayaprakash have examined in their paper the justification of the allegation, made often, that the farmers are exploited by the middlemen in the marketing of crops. The specific form of the allegation is that, the farmers are forced to dispose of their produce at unremunerative prices and are compelled to pay higher marketing charges. The authors have studied groundnut marketing in Tamil Nadu and their analysis indicates that the marketing charges that the private mandis collect from the farmers are exorbitant. The marginal and small farmers are pressed to sell to the private mandis at low prices in return for the loan received earlier or in the absence of cash resources. The benefit of obtaining remunerative prices from regulated markets is lost by the marginal and small farmers under these circumstances.

V. Mohandoss et al. have analysed the relative performance of government, co-operative and private agencies in providing the cold storage facilities for the preservation of fruits. The authors compare the three agencies in respect of utilization of storage capacity, profitability, planning and administration. They rate the private sector performance as better than the other two sectors. Co-operative units have been inefficient mainly due to mismanagement and the government unit because of poor planning and administration. As there is enough storage capacity with private agencies, they recommend future expansion of cold storage capacity should be in the co-operative and public sectors.

Jagannathrao R. Pawar and Sitaram K. Sawant present a case study of comparative efficiency of alternative milk marketing agencies in Western Maharashtra. With the increase in the demand for milk in the urban areas and concentration of milk production activity in the rural areas, a large number of government, co-operative and private milk marketing agencies have entered into the business of procurement, processing and distribution of milk. These agencies function under competitive marketing conditions for milk even though the share in the total quantity of milk procured by government is 78 per cent, by co-operatives 10 per cent and by the private agencies 12 per cent. They have realised that they can be in business only by keeping the costs of procurement, processing, transportation and distribution low. The government and private agencies used nearly two-thirds of the total quantity of milk procured for distribution among the consumers and the remaining one-third for preparation of milk products, the co-operatives used the entire amount procured for distribution among the consumers. Through analysis of costs and returns, the authors show that the private agencies were relatively more efficient, their rate of return on investment was
higher and there was near complete utilization of installed capacity in their case. The share of milk producers in the consumers' rupee was around 80 per cent.

IV

SEASONAL PRICE SPREADS AND INVENTORIES OF AGRICULTURAL COMMODITIES IN RECENT YEARS

There are two sets of papers that are included for discussion under this theme. The first set of two papers test the hypothesis whether the emergence of foodgrain surplus following the green revolution contributed to a dampening in the seasonal variation in foodgrain prices. The second set of papers deal with price spread, inventory demand and profitability from storage. These papers evaluate the nature of relation between inventory demand and price of the commodity, and the optimal period of storage for maximum net returns, given the costs of storage.

S. S. Acharya and K. L. Antani test the hypothesis that the emergence of foodgrain surplus, specially in wheat, following the green revolution contributed to a dampening in seasonal variation in foodgrain prices. They have studied the seasonal price variations of three major crops of Rajasthan, viz., bajra, wheat and gram during the period 1961 to 1975. They estimate intra-year seasonal regressions of monthly wholesale prices for the period before and after the green revolution. Their results show that the seasonal fluctuation in prices increased for all the three foodgrains in the period after green revolution. Their results thus contradict the hypothesis that the emergence of foodgrain surplus dampened the seasonal variation in prices. K. M. Mandavavalla analyses the seasonal variation in prices of foodgrains, specially wheat and rice in the period 1970-71 to 1977-78. The author confirms the results of earlier studies by Herrmann and Lele that the off-seasonal price was not far in excess of storage cost, indicating that the traders did not receive excessive profits. The difference between the lowest and the highest seasonal price index for both rice and wheat was about 9.6 per cent and the average storage cost was roughly Rs. 7.7 per quintal for the season. The author further states that the increasing proportion of rabi crop in total foodgrain production, following technological change, has helped in narrowing the fluctuation in foodgrain output, in increasing the flow of foodgrains during the year and in reducing the seasonal fluctuation in foodgrain prices.

P. K. Chatterjee and D. R. Mukherjee have studied the behaviour of inventory demand for jute and the extent of price spread. Inventory demand for jute influences the price of jute and also the supply of jute manufactures by the mills. The hypothesis they set up for the study of inventory demand and price of raw jute is as follows: If current price in relation to expected price is low, inventory demand will be high; on the other hand, if current price relative to expected price is high, inventory demand will be low. They postulate a linear demand relation between the demand for raw
jute stock and the price of raw jute, hypothesizing that the demand for inventories will be inversely related to the price of raw jute. They study this relation for the period July 1975 to July 1977. The estimated relation validates their hypothesis. They further adduce evidence to show that not only is the inventory-price relation inverse seasonally but also through a period of years. They suggest a measure of price spread, which is non-conventional and debatable. According to this measure, the price spread is the difference of the price paid by the mills and the Jute Corporation of India to the growers. The implication is that the price paid by the mills includes the marketing costs and margins and is in excess by this amount to the price paid by Jute Corporation to the growers. Their thesis is that the demand for jute stock and the consumption of raw jute by the mills for processing it as jute manufactures will increase and correspondingly their exports, the lower and the steadier the price of raw jute.

B. S. Nagarajan and P. S. Lalitha have estimated the share of the small onion growers of Dindigul, Tamil Nadu in the consumers' rupee. They examine the extent to which the price spread and the producers' share are determined by the storage operation of the producers, and the factors that influence their storage decisions. The price spread of onion is measured as the difference between the retail price and the wholesale mandi price. They have compared the returns for two sets of farmers, those who store after harvest and sell at a later date and others, who sell immediately after harvest. Their study shows that the farmers who stored for a period from three to fourteen weeks after harvest received a gross price of Rs. 110 per quintal and a net profit of Rs. 56 per quintal and those who did not store received a gross price of Rs. 43 per quintal and a net profit of Rs. 14 per quintal. While the marketing costs were identical to both sets of farmers, those who stored incurred on an average a storage cost of Rs. 25 per quintal. They conclude that the price spread in relation to the price received by the producer decreased, and the producers' share in the consumers' rupee increased with the increased duration of storage.

H. K. Saxena and S. C. Mathur examine the relationship between the seasonal price variation and profitability of storing wheat in Bichpuri block of Agra district. They also evaluate the relative efficiency of alternative methods such as bulk method and storage in bags. Their analysis shows that there was an upward seasonal variation in prices and the cost of storage per quintal also increased with the period of storage. For the bag method of storage, which was the most common form, the average cost of storage for six months and above was around Rs. 29 per quintal, the sale price corresponding to six months holding was Rs. 225 per quintal, and given that the price at the time of storage was Rs. 150 per quintal, the profitability from six months storage was around Rs. 46 per quintal. The bulk method of storage was the most efficient form of storage. R. I. Singh et al. have examined the relation between market arrivals and prices of wheat and paddy in Uttar Pradesh. They have also studied the economics of storage of wheat and paddy by considering the return from storage in relation to cost. They
have shown that both wheat and paddy market arrivals are inversely related to price, that is when arrivals are large, price is low and contrariwise but their examination indicates that paddy arrivals are more significantly related to prices than in the case of wheat. Considering the components of storage cost to include the cost of storage material, warehouse rent, labour charges, loss in weight, etc., they find the average storage cost for 8 months storage was Rs. 17 per quintal for wheat and Rs. 14.50 per quintal for paddy. Considering price data for the period 1970-71 to 1975-76, the authors find the price rise was adequate to cover the cost of storing wheat for eight months in four out of six years. However, in the case of paddy the storage cost generally exceed the price rise, this probably was the reason why the traders preferred to hold stocks in the form of rice rather than as paddy.

V

PRICE SPREAD AND PRICE RECEIVED BY SMALL AND MARGINAL FARMERS

The papers discussing this theme report on the basis of the case studies conducted by them that the small farmers were in a relatively unfavourable position compared to the medium and large farmers because of indebtedness, relatively small volume offered for sale, distress sale made at lower prices ruling immediately after harvest and inaccessibility to market centres where better prices were offered.

R. Elango and K. Baskaradoss conducted a survey in a village of Mannargudi taluk of Thanjavur district to ascertain the disadvantages faced by the small farmers. The authors found that the small farmers marketed foodgrains in excess of and disproportionate to their consumption needs. Such being the case, they were compelled to buy a substantial quantity of grains from the retailers for their consumption needs at a later date. The small farmer received around 51 to 56 per cent of the consumer rupee in the period 1976-79 in comparison to other farmers who received from 65 to 73 per cent during the same period. The small farmers, they conclude, was a loser both as a producer and as a consumer. The authors have recommended that the wholesale trade in paddy must be taken over by the Civil Supplies Department of Government, which should procure directly from the farmers and then distribute through fair price shops.

B. S. Murdia examines, through a survey of farmers in Jhadol village in Udaipur district of Rajasthan, whether the marginal and small farmers received a lower price. His investigation reveals that the marginal and small farmers received a lower price, relative to other farmers, for wheat and maize. The reasons for their obtaining a lower price were indebtedness and the relatively small volume offered by them for sale. Murdia believes that a policy programme directed to raising small farm yields through new technology, better input supply and credit facilities will help the small farmers in overcoming the handicap.
The main findings of R. Nageswara Rao's study are that the small and marginal farmers growing paddy in Krishna district of Andhra Pradesh did not receive a lower price for the paddy they sold and did not lack bargaining power or suffer from early sales. They could not, however, take advantage of the Government support price because of inaccessibility to marketing centres where paddy was procured by Government. S. Banerjee has tested the hypothesis that the small farmers receive lower price than the large farmers with reference to 158 farmers growing paddy in nine villages of Nadia district of West Bengal for the year 1975-76. Banerjee finds that prices have a distinct positive relation with the size-groups of farms from which we can draw the inference that the small farmers received lower prices. According to Banerjee, Government and co-operative societies should purchase directly from the small and marginal farmers, and also offer facilities for storage and movement of grains to ensure that these farmers receive better prices.

Prakash Naidu's study is also related to the theme whether the small and marginal farmers face any price disadvantage compared to the large farmers. He has studied the relationship between production, marketed surplus and prices received by the farmers growing paddy in Tekari village of Bilaspur district of Madhya Pradesh. The marginal and small farmers, his study shows, sold more paddy than even their marketable surplus in the form of distress sales because of urgent cash needs. The study shows that the marginal and small farmers who sold in the Tekari village market received only Rs. 70 for a quintal of paddy whereas the big farmers who sold their marketable surplus at the Bilaspur regulated market received Rs. 91 per quintal. The author concludes by saying that unless the marginal and small farmers increase their marketable surplus, there appears to be little chance for them to receive better prices. S. L. Deshpande et al. also test the hypothesis that the small farmers always get comparatively lower prices than the large and medium farmers. Their empirical study is based on a sample of 50 farmers from nine tribal villages of Bhandara district of Maharashtra. Their main findings are that the small farmers were disadvantaged due to lack of (a) capital, (b) technical know-how and (c) contact with extension agencies. They received lower prices because they sold to the village traders and also because they sold a very high proportion of what they marketed within two months of harvesting.

R. M. Mohana Rao has conducted a case study of 45 farmers including small, marginal and big farmers growing cotton in a village in Ongole district of Andhra Pradesh to examine whether the small and marginal farmers were at a disadvantage compared to the medium and big farmers in receiving lower product prices. Mohana Rao reaches the conclusion that there were no differences in the prices received by various categories of farmers. However, a small proportion of small and marginal farmers were at some disadvantage compared to the big farmers because there were deductions made in the price received by them on the ground of poor quality marketed by them.
VI

SPECULATION, FORWARD TRADING AND PRICE STABILITY, AND ISSUES FOR DISCUSSION

'Hoarding' and 'Speculative gains', as used in popular parlance, mistakenly refer to all holding of stocks by the traders, particularly in times of shortage, and the returns they receive for performing the stock holding function are dubbed as 'speculative gains'. When production of commodities, as in agriculture, is periodic, and the production periods are many months or a year apart, stocks of the commodity have to be carried over for making the distribution of the supply even to meet the continuous consumption demand. The carrying over of stocks over time implies cost, including warehousing cost, interest and insurance cost, and handling cost apart from risk bearing. Traders and processors will have the incentive to carry over stocks only when they are assured of a return which will help them at least to recover the cost incurred in stock holding. This function has to be performed by stockists during periods of relatively stable as well as rising prices. The public can label the stock holding activity of the traders as anti-social and name them as hoarders engaged in speculative gains, only if it can be demonstrated that they are holding stocks in excess of what should be carried over to equilibrate supply and demand over the season. We have very little scholarly work on the subject, mainly because of lack of data on inventories and the practical difficulties of classifying the total inventories held as partly legitimate and partly 'hoarded' stocks.

We have some theoretical and empirical contributions on the subject of seasonal price variation and forward trading. These contributions have shown that forward trading has helped the traders to make optimal inventory decisions. Traders through their inventory demand and hedging decisions on forward markets, empirical research shows, have contributed in narrowing and stabilising seasonal price variations.

Some of the major issues that emerge from the survey of the contributed papers for discussion are the following:

1. Alternative methodologies for measuring price spread, middlemen's margin, marketing cost and for comparing price spread variations, over time—their relevance for policy aimed at ensuring a remunerative return to the producers and a fair price to the consumers.

2. Relevance and limitations of tests relating to competitive marketing, market integration and pricing efficiency. The usefulness of these tests as guides in helping the improvement of the market structure.

3. Problems in comparing and measuring relative efficiency of alternative marketing agencies.

4. Resolving of controversies relating to the impact of foodgrain surplus on seasonal variation in foodgrain prices. Optimum stocks, period of storage, profitability and their impact on price stability.

5. Policy measures required to help the small and marginal farmers in realising higher prices and income from the sale of their marketed surplus.