

# Investment, Profitability and Stock of Foodgrains in India

( A Case Study of Interfirm Inequalities in Patiala Mandis ) \*

Veena Goel<sup>1</sup>

## Introduction

Agriculture industry is located mainly in rural areas and there millions of producers distributed widely over space. Number of consumers of agricultural goods is also large; they are spread all over the country and many of them happen to be located in urban regions. Besides, most of the agricultural output is sold immediately after the harvest while demand is, by and large, uniformly distributed between seasons. Both these factors necessitate a link between consumers and producers. It is intermediate traders who provide the link between consumers and producers. Their main function is to purchase agricultural goods from producers and then sell them to consumers as and when there is demand for them. However, their main business relates to foodgrains. They also perform several economic functions; but their main function is to maintain stock of foodgrains which exercises a great deal of influence upon prices that prevail in the market. In the post harvest season, when substantial proportion of output is brought to the market, excess of market arrivals over demand is absorbed in traders' stocks. This prevents prices from falling to an abnormally low level. On the other hand, during lean seasons when

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\* Mere words cannot express my indebtedness to my supervisor, Dr. Shri Prakash, for stimulating my interest in research and who is a source of continuous inspiration in my academic life also. Without his active interest and painstaking efforts this study would have not been completed.

1. Veena Goel is associated with Punjab University, Patiala, India.

market arrivals are scanty and fall extremely short of requirements, traders release their stocks. This prevents price from rising to a level to which it would have risen otherwise (3). Besides this, they also perform other useful roles in developing countries like India. At times, they act as bankers of the last resort of the farmers. After the de-nationalization of wholesale trade of foodgrains, they have started also acting as commission agents of the government and their agencies. However, to the best of our knowledge, no attempt has been made to study empirically the economic activities of these traders and their impact upon food economy of the country.\* This study is a modest attempt in this direction. In this study, our main concern is to examine level of investment by traders in foodgrains trade, its profitability, their purchases and sales with a view to assess if there are monopolistic tendencies in operation in this sector. Section I deals with investment and profitability of trading firms, Section II analyses purchases and sales of wheat of these firms. Last section contains conclusions.

## Section I

### 1.1 Investment

This section deals with questions of the following type: what is the average level of investment in foodgrains trade? Does investment undertaken by small/medium/large firms differ significantly from overall average? What are relative shares of firms of different size groups in total investment? Is the trade dominated by large firms? Do the differences in investment get reflected in differences of profits according to firms of different size groups?

If we take all 41 firms together, we find that average level of investment is Rs. 171341 per annum. The coefficient of variation is as high as 114.28. This high value of coefficient of variation points to the possibility of there being highly market differences in the levels of investment in this industry. For examining this, we divide firms into following categories: small, medium and large. Small firms are those whose level of investment is up to Rs. 1 lakh. Firms investing between rupees one and two lakhs are called medium firms, while firms whose investment is above two lakhs have been specified as large firms.

Mean level of investment of small firms is as low as Rs. 63750 which is nearly one third of the average investment in the industry as a whole. Medium firms invest, on an average,

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\* In a pilot study conducted by us, we have examined the determinants of traders' stocks of wheat in Patiala Mandis (1,4).

an amount of Rs. 143182, which does not seem to differ much from the overall average of the industry. But the large firms invest as much as Rs. 458333 which is more than two and a half times the overall average of the industry. Thus, investment seems to differ significantly between firms of different size groups. We have examined this hypothesis by testing the significance of differences between overall and group means. While mean level of investment of small and large firms differ significantly, the difference between the investment of medium firms and that of the industry as a whole is statistically zero. Values of the statistic being 2.52, 0.48 and 4.40. These mean differences highlight the possibility of industry being dominated by firms belonging to a particular size group. Fiftyone per cent of total firms are small in size but they account for only 22 per cent of total investment. On the other hand, 22 per cent of the total firms are large but they account for 55 per cent of total investment. However, medium firms are 27 per cent of the total, and they account for 23 per cent of the total investment. Thus, the share of medium firms in investment is commensurate with their numerical strength. But the total investment is highly concentrated in the large firms. The accompanying Lorenz Curve (Figure 1) which bends sharply towards the upper tail and becomes coincident with the vertical axis also highlights the dominance of large firms. This is also obvious from the value of the concentration ratio which is as high as .54.

These inequalities seem to be embedded in the differences of family background of these traders. By tradition, the business is inherited by one generation from the other of same family. Though 97.56 per cent of total firms are partnership firms, but the partners happen to be the members of the same family. Besides, the source of business investment is personal savings or loans from near relatives.

## 1.2 Profits

Among other things, investment determines output and profitability of industry. Level of investment and scale of operation are intimately related with one another. Higher the investment larger is the scale; and lower the investment smaller is the scale of operation. On the one hand, high level of investment enables a firm to reap the benefits of external and internal economies of scale and on the other hand, its large size makes it dominate the market which enables it to acquire a certain degree of monopoly power vis-à-vis its rivals. Hence, large profits are a logical corollary of high investment. In view of the skewed distribution of investment, distribution of profits is also expected to be skewed,\*

\* Coefficient of skewness which theoretically lies between zero and one, have got the maximum value both in case of investment and profits. Their numerical values are 1.12 and 0.98 respectively.

FIGURE : 1

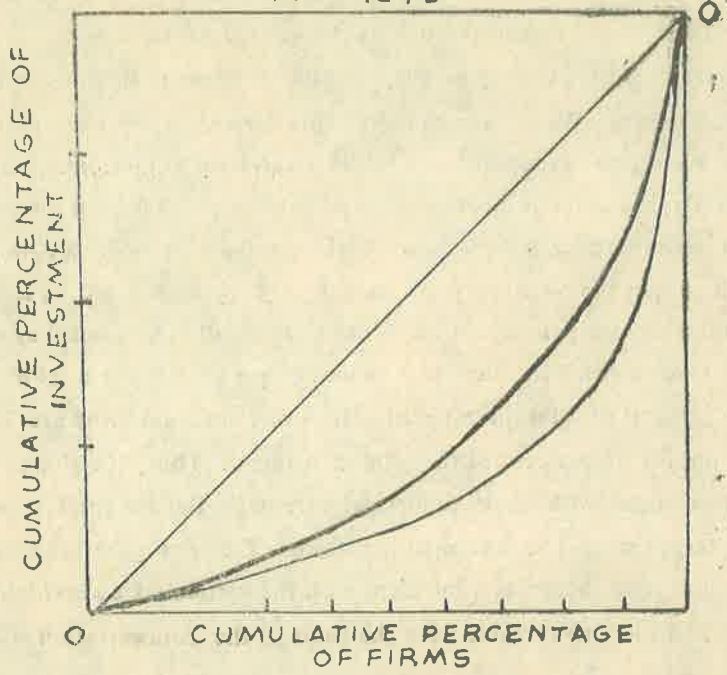
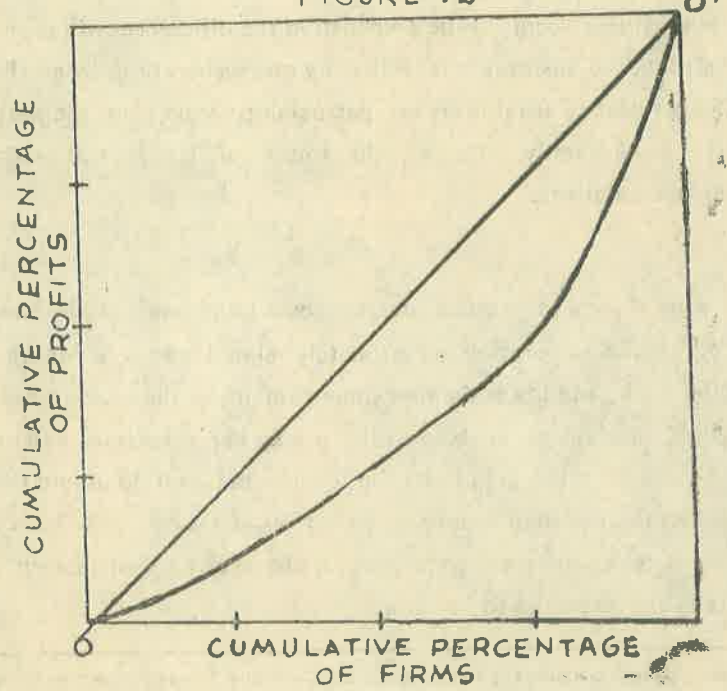


FIGURE : 2



Firms, on an average earn a profit of Rs. 37000 per annum on an investment of Rs. 171341. The return on investment works out to 21.52 percent per annum which is really very high. However, the value of coefficient of variation is 64.47 which is slightly more than half of the corresponding value of the statistic for investment. Hence, the variability of profits is much less than that of investment. Profits earned by small firms are Rs. 27657 the rate of return being 43.7 per cent. The average profits of medium firms are Rs. 42500 which gives them a return of 29.68 per cent, the corresponding average profits of large firms are Rs. 47500 and the average rate of return is only 10.36 per cent. But average profits of firms belonging to different size groups do not differ significantly from the average profits of the industry as a whole, values of being as low as 1.01, 0.46 and 0.88. But these data relate to only 15 out of 41 firms. Forty seven per cent of the total firms are small and they account for 33 per cent of total profits. Large firms, which are 26 per cent of total firms, account for 36 per cent of profits; while medium firms are 27 per cent of the total firms and they get 31 per cent of the total profits. These shares do not indicate highly marked degree of inequality in the distribution of profits. This inference is supported by the value of coefficient of concentration ratio which is equal to 0.32. Most of the points of Lorenz Curve ( Figure 2 ) are near the line of equal distribution.

Whereas a good deal of inequality prevails between levels of investment by the firms of different size groups, profits earned by firms of different size groups are almost evenly distributed. As against this, rate of return on investment happens to be the highest in case of small firms, while it is the lowest in case of large firms. This finding has to be explored further, as it does not seem to be in consonance with results relating to investment.

It seems that the higher rate at which returns accrue to the small firms make their average profits similar to average profits earned by medium and large firms. Then the question arises what enable the small firms to earn returns at a rate higher than those at which returns accrue to medium and large firms.

The matter of the fact is that the transactions of these firms are of two types : first, transactions performed on behalf of the government and their agencies. All firms get a fixed commission at a rate of 1.50 per cent. As far as these transactions are concerned, they tend to equalise profits earned by firms of all size groups. Secondly, main business of these firms is to effect own account transactions. Profitability of these transactions depends upon the difference between the prices at which sales and purchases are made. Greater this difference, higher will the profits, and lower the difference, smaller will be the profits.

This price difference depends upon seasons in which purchases and sales are made. If most of the purchases are made in the post harvest period when prices are low; and if most of the sales are made in the second and fourth quarters when prices are high, this price difference would be large. Therefore, if the proportion of total purchases made by small firms in the first and third quarters is greater than the proportion of purchases made by medium and large firms in these quarters; and if the proportion of total sales in second and fourth quarters effected by small firms is larger than that of medium and big firms, returns on their investment will differ.

We find that 81 per cent of the total purchases of small firms are made in the first quarter whereas only 74 per cent of their sales are made in this quarter. On the other hand, only 5.8 per cent of their total purchases are effected in the last quarter but 7 per cent of total sales take place in this quarter. But in case of large firms first quarter accounts for 78.9 per cent of their total purchases and 75.5 per cent of their total sales. It is obvious that speculative component of sales and purchases is greater in case of small firms than that of large firms. Besides, share of small firms in total sales of the market in the first quarter is 33 per cent whereas that of the large firms is 41 per cent. But their respective shares in the last quarter are 27 per cent and 22 per cent of the total sales. These data lend support to the view that we have put forward.

## Section II

In this section we will examine sales and purchases of different firms in different quarters in details.

### 2.1 Sales

The annual average sales of all firms are 226.70 quintals. But the average sales in four quarters are 621.27, 71.67, 118.33 and 85.71 quintals respectively. However, only the sales in the first quarter are different statistically from annual average sales, values of 't' corresponding to mean differences are 4.63, 1.82, 1.27 and 1.60 respectively. Sales by firms of different size groups are also not different from annual average sales corresponding values of 't' being only 0.93, 0.25 and 1.85. Another feature of these results is that sales happen to be concentrated heavily in the first quarter. Sales in the third quarter are higher than those in the second and fourth quarters, but they are much less than those in the first quarter. This is because first quarter is the post rabi harvest quarter while the third quarter is the post kharif harvest quarter. Difference between sales of the first and third quarters is accounted by the fact that wheat and

paddy are the main crops of Rabi and Kharif respectively. The area is mainly the wheat producing area. Paddy has become popular only in post green revolution period.

The average quantum of sales by firms of small and large size groups and by all firms taken together in the first quarter significantly different from the average quantum of sales in every other quarter; whereas in case of medium firms, only the sales in the first quarter are different from sales in the second quarter. But the average sales in the second, third and fourth quarters do not differ among themselves significantly except in case of medium firms. Only the average sales in the second and third quarters are different statistically in this case. Values 't' are reported in the following tables:

't' values of means differences in different quarters for all firms

	I	II	III
II	4.55*		
III	4.18*	1.23	
IV	4.34*	0.41	0.90

't' values of mean differences in different quarters for small firms

	I	II	III
II	4.26*		
III	4.40*	0.29	
IV	4.24*	0.36	0.11

't' values of mean differences in different quarters for medium firms

	I	II	III
II	2.37**		
III	1.69	2.78*	
IV	1.90	1.85	0.68

\* significant at 5 per cent probability level.

\*\* significant at 10 per cent probability level.

't' values of mean differences in different quarters for large firms

	I	II	III
II	2.44*		
III	2.41*	0.21	
IV	2.69*	0.99	1.07

However, the sales behaviour of small firms differs from that of medium firms only in the third quarter whereas sales behaviour of firms of all size groups is similar in all other quarters. Values of 't' are reported in the following table:

't' values of mean differences of firms of different size groups in different quarters

	I	II	III	IV
Small and medium	0.75	0.61	3.29*	1.99**
Small and large	1.90**	0.59	1.50	0.15
Medium and large	0.87	0.63	0.75	1.50

Coefficient of variation is also high in all the four quarters, values being 70.82 per cent, 142.91 per cent, 82.90 per cent and 83.96 per cent respectively. Coefficient of variation increases from first to second quarter and then from third to fourth quarter, but its value is the highest in the second quarter. This is due to an increase in small firms's share in total sales of the market which rises from 33.2 per cent to 36.3 per cent and 21.18 per cent to 26.54 per cent in these two quarters, but the share of small firms is maximum in the second quarter.

These results point to the possibility of there being even distribution of sales among firms of different size groups and among quarters. This inference is supported by the accompanying Lorenz Curve. ( Figure : 3 )

Values of concentration ratio in different quarters are 0.37, 0.53, 0.38 and 0.36 respectively. These values show that except in the second quarter, sales are evenly distributed among firms of different size groups.

\* Significant at 5 per cent Probability Level.

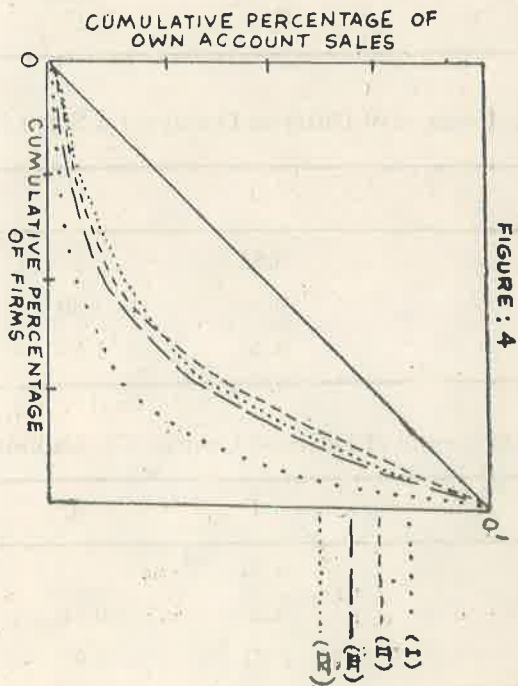
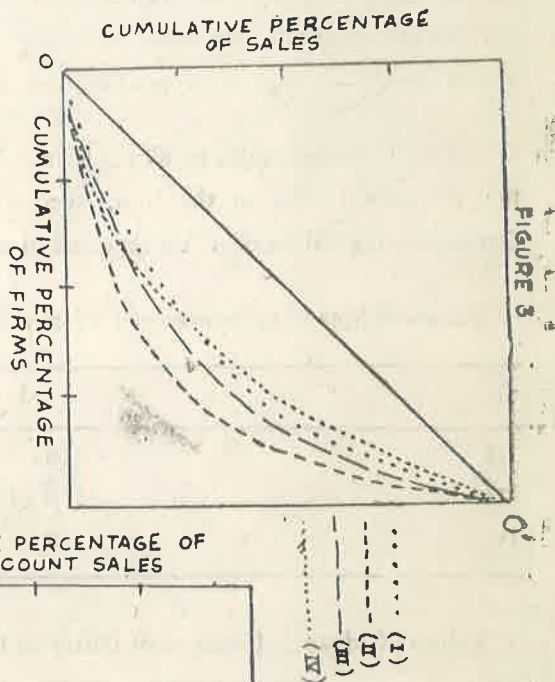
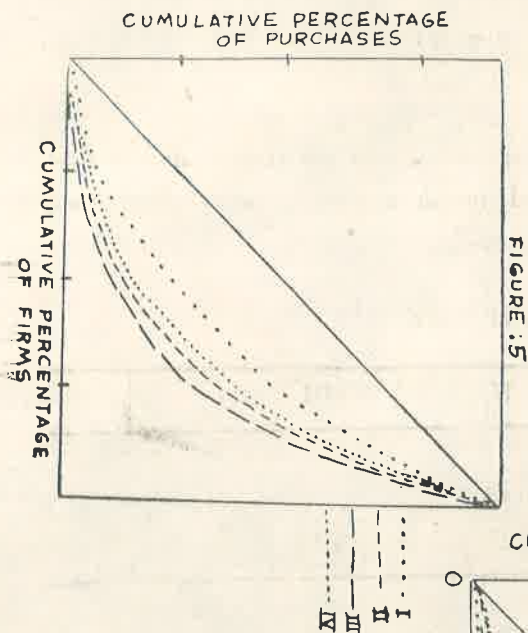
\*\* Significant at 10 per cent Probability Level.



These sales also include those quantities which they sell as commission agents and these conceal the individual characteristics of sales made from traders' own stocks. Therefore, we have also examined the behavior pattern of sales from their own stocks separately.

**Sales from Own Accounts ( 2.2 )**

Average quantities of their own sales in four different quarters are 67.86, 66.67,



78.57 and 41.67 quintals respectively. Thus, the third quarters records the highest average sales, while the fourth quarter shows the lowest average sales of wheat. However, the share of small firms in total sales is the lowest which is only 19.51 per cent in the third quarter. But, average sales in the first two quarters are approximately equal. These sales do not differ from overall average which is 62.04 quintals corresponding values of 't' are only 0.29, 0.22, 0.06 and 0.93. Annual average sales from own account by small, medium and large firms are 39.29, 67.31 and 154.55 quintals. Only the sales by firms of large size groups are different statistically from overall annual average, corresponding values of 't' are 1.51, 0.23 and 2.92.

Average sales by all the firms when taken together or different groups taken separately also do not differ in the first, second, third and fourth quarters among themselves; Corresponding values of 't' are reported in the following tables:

't' Values of Mean Differences of Different Quarters for all firms

	I	II	III
II	0.03		
III	0.24	0.43	
IV	0.80	1.27	1.50

't' Values of Mean Differences of Different Quarters for Small Firms

	I	II	III
II	0.83		
III	0.36	1.30	
IV	0.26	1.13	0.11

't' Values of Mean Differences of Different Quarters for Medium Firms

	I	II	III
II	0.20		
III	0.68	0.68	
IV	0.22	0.93	0.93

## 't' Values of Means Differences of Different Quarters for Large Firms

	I	II	III
II	1.31		
III	1.14	0.17	
IV	1.44	0.73	0.75

Average sales by small firms are different from the corresponding sales of large firms only in the first quarter but they are similar for all firms of all size groups in all other quarters, 't' value of mean differences of different size groups in different quarters are reported below.

	I	II	III	IV
Small and medium	0.79	0.11	1.89	0.75
Small and large	3.42*	1.28	1.97	0.87
Medium and large	1.77	0.73	0.29	0

Coefficient of variation has got values of 154.70, 85.70 97.60 and 74.84 per cent in different quarters. It declines from first to second and then from third to fourth quarters due to an increase in the relative share of small firms in total sales from 24.10 per cent to 40.83 per cent and 19.51 to 34.21 per cent in the these two quarters.

This shows that inequalities of sales are maximum in the first quarter and minimum in the fourth quarter, even though the inequalities in the fourth quarter are quite high. This inference is also supported by the Lorenz Curve. ( Figure : 4 )

Coefficient of concentration ratio has got values of 0.83, 0.42, 0.45 and 0.41 respectively for these four quarters.

These results reveal that there are not much inequalities of own account average sales by firms of different size groups in the second, third and fourth quarters whereas degree of inequality of sales is very high in the first quarter.

\* Significant at 5 per cent Probability Level.

**Purchases (.2.3)**

Average amount of purchases are 66.50, 78.33, 88.33 and 64.29 quintals respectively in the four quarters respectively. These quantities are different from the overall average purchases which is 226.69 quintals corresponding values of 't' are 4.72, 1.60, 1.49 and 1.69. However, mean level of purchases in the second and fourth quarters are less than those in the first and third quarters. But the purchases in the third quarter are higher than those in the second and fourth quarters. This feature is similar to that of total sales and own account sales. Overall average level of purchases by small, medium and large firms are 158.33, 250.00 and 318.75 quintals respectively. Only the average level of purchases by firms of large size groups are different from overall average, corresponding values of 't' are 0.10, 1.33 and 2.33.

Mean level of purchases by all the firms and firms of different size groups in the first quarter are different from the other three quarters whereas there are no significant differences in the second, third and fourth quarters. In case of medium firms, 't' values are reported in the following tables:

't' values of differences of means in different quarters for all firms

	I	II	III
II	4.67*		
III	4.47*	0.20	
IV	4.65*	0.38	0.50

't' values of differences of means in different quarters for small firms

	I	II	III
II	5.95*		
III	6.24*	0.87	
IV	5.32*	0.13	0.74

't' values of differences of means in different quarters for medium firms

	I	II	III
II	2.42*		
III	2.03*	1.00	
IV	2.25*	0.90	0.96

**'t' values of differences of means in different quarters for large firms**

	I	II	III
II	2.48*		
III	2.49*	0.11	
IV	2.84*	1.37	1.03

Purchases of small firms are different from average purchases of large firms only in the third quarter. But average purchases by firms of all other size groups are similar in all the quarters. 't' values are reported below:

**'t' values of the difference of means of firms of different size groups in different quarters:**

	I	II	III	IV
Small and medium	0.86	1.14	2.22*	1.42
Small and large	1.88**	1.63	1.51	0.38
Medium and large	0.76	0.89	0.23	1.96**

Coefficient of variation increases very sharply from first to the third quarter and then declines in the fourth quarter and its value comes nearer to its value in the second quarter, values being 68.93 per cent, 133.48 per cent, 170.40 per cent and 136.63 per cent respectively. This is again due to the decline in the relative shares of small firms from first to third quarter which rises sharply in the fourth quarter.

These results show that inequalities in purchases are moderately high. This we have examined with the help of Lorenz Curve. ( Figure : 5 )

Coefficient of concentration has got values of 0.34, 0.49, 0.57 and 0.47 respectively. Concentration is not high only in the first quarter.

**Conclusions**

Main findings of the study are as follows:

1. There is considerable concentration of investment. In terms of investment, the industry is dominated by the large firms. However, profits are fairly evenly distributed. This

is accounted for by the rate of return on investment by small firms being four times larger than the rate of return of investment by large firms.

2. Average annual sales of firms of different size groups do not differ significantly from the overall average of all firms taken together. Average sales only in the first quarter differ significantly from sales in other quarters in case of all firms taken together as well as in case of small and large firms. But average sales of medium firms differ significantly between first and second quarters, on the hand, and second and third quarters on the other. Total sales behaviour of small and medium firms differs only in the third quarter.
3. Own account annual sales behaviour of only the large firms is different from overall annual average. Own account sales behaviour of small and large firms differs only in the first quarter. But there is very high degree of concentration of own account sales in the first quarter whereas concentration in other three quarters is moderate. On the other hand, total sales show high degree of concentration only in the second quarter.
4. Like own account sales, purchases of firms of large size group differ from overall annual average. Purchases behaviour of all firms taken together, small, medium and large firms is different only in the first quarter. Purchases show substantial degree of concentration in second, third and fourth quarters.

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**Data Source**

Data have been collected through a questionnaire from 41 traders located in two mandis of Patiala City of Punjab. The data relate to the year 1980-81. Besides, account books of all transactions of 16 firms were made available to us.

Coefficient of concentration ratio has been calculated from the following formula (2):

$$CR = \frac{\sum_{i=2}^n P_i Q_i - 1}{\sum_{i=2}^n Q_i P_i - 1}$$

Where  $P_i$  is the cumulative proportion of the variable in the  $i$ th class and  $Q_i$  is the cumulative proportion of the frequency.