The crux of the problem of agriculture in India is to place the utilisation of land on a more sound footing than it is at present. Among others, prices can be one of the gadgets in furthering this aim. Some aspects of agricultural policies particularly which have a bearing on price, income and investment policies have been studied in this chapter. First, to start with, price-production relationship is examined with reference to groundnut and Indian agriculture in general to evaluate the effectiveness of prices in terms of their function of regulating production. Secondly, the peculiarities of agricultural price variations in India in their manifold aspects — short term, spatial, seasonal, cyclical and speculative — are studied. Thirdly, an attempt is made to review some aspects of agricultural policies in India. Finally, several alternative proposals of policy are indicated in the concluding section and, at suitable places throughout this analytical review.

The chief points of the thesis presented in this chapter are: that agricultural development depends upon a number of complex and interdependent factors and not one single factor of the price levels of agricultural commodities; that the agricultural price policy in India has proved to be a great disincentive to agricultural development; that the measures directed for resource expansion offer more direct and lasting benefits to agriculture and the economy as a whole; that such a policy should be given preference over
direct state meddling with agricultural prices because the latter creates more problems than it solves; that it is not possible to effect rapid labour movement from agriculture to non-agricultural sector of the type witnessed during western industrialisation, which is limited by the sheer weight of the agricultural sector in the Indian economy, the prevailing underemployment and the paucity of funds for accelerating investment; and that the policy of balanced growth should be adopted, i.e., agricultural development should not be neglected in preference for rapid industrialisation. As the study touches the wider issues of agricultural problems and policies, the discussion though centered round the problems of groundnut economy, is more general.

I. PRICE PRODUCTION RELATIONSHIP

The function of price is to integrate cost, supply and demand; as price fluctuations are integral to this function, any drastic interference with them is considered undesirable. The resource allocation function of prices assumes that the pattern of farming and approach of farmers are flexible, that the incentive element of prices is not dissipated in the marketing process and that the farmer will evaluate the incentive and respond to it. An attempt is made below, with the help of the case study of groundnut, to examine the generally held view that in underdeveloped countries crop-pattern is rigid in its response to prices.

1908-09 to 1913-14

The First World War was preceded by a decade of prosperity in world production and trade. For the first time the influence of external factors -- the growth in demand for products of Indian agriculture -- made an impact on Indian price-level. The general rise in prices and production was
shared by groundnut. Unfortunately, the price-data for groundnut is not available, as it was an oilseed of lesser significance then. However, as shown in TABLE III.1, in response to a threefold increase in exports, groundnut's acreage and production doubled. The rapid expansion of groundnut acreage (and other crops acreage) during the pre-War period consequent upon the growth of international demand and rise in prices seems to be an evidence that the Indian peasants are not so terribly backward after all.

1914-15 to 1918-19

During this period groundnut manifested an irregular decline in prices while the general price level was rising (see APPENDIX VIII.1); the former phenomenon is mainly attributed to the breakdown of international trade during the War and absence of domestic industrial use of this crop. With the drastic fall in exports and prices, groundnut acreage declined considerably; production remained high during this period inspite of the decline in acreage because of "good seasons." During a short span of six years — 1913-14 to 1918-19 — the acreage under groundnut adjusted to the decline in exports and prices. This further supports our view regarding the responsiveness of the Indian farmer to the price factor.

1 Cf. ante, Chap.III, Sec.I, pp.32f.
2 Cf. ante, Chap.V, TABLE V.7.
3 Cf. ante, Chap.V, TABLE V.8.
4 Cf. ante, Chap.III, Sec.II and TABLE III.3.
5 Review of the Trade of India. To study price-response, acreage fluctuations provide a better measure than production fluctuations in Indian context.
During the pre-depression decade prices of groundnut fell whereas acreage, production, exports and the total value of exports rose (APPENDIX III.6). The correlation coefficient between exports and acreage for this period is positive and highly significant (+ 0.971). As far as export-prices and prices-acreage correlations are concerned, they are both negative (-0.6 and -0.7) respectively. The index of total value of exports (base, pre-War quinquennium = 100) rose from 78 points in 1920-21 to an all-time peak of 612 in 1928-29. The data indicate that first, the increase in acreage was predominantly export-induced; secondly, exports moved up when prices were low; and, thirdly, groundnut producers could maximise their total revenue by exporting larger quantities at lower prices. One may be tempted further to conclude — and it contradicts our earlier conclusion — that groundnut prices were an insignificant factor to determine the acreage under groundnut. Apart from ready sales in export markets, the explanation for the rapid extension of groundnut acreage may be found in the changes in relative prices. While the prices of food crops were generally higher than those of non-food crops during the War period — the latter chiefly consisting of export crops — the position was reversed during the pre-depression decade (APPENDIX VIII.1), the prices of cereals and pulses fell at a far steeper rate than the prices of export crops.

The curve of the index of groundnut prices remained flat during the pre-depression decade, though leaning slightly downward during the latter years. It may be noted that prices remained higher than what they were before 1919-20 throughout this period. Thus, relative price-advantage in favour of groundnut and ready sale in export markets pushed up groundnut acreage during this period.

1 Cf. ante, Chap. III, Sec. III, pp. 61f. and TABLE III.5.
During 1908-09 to 1928-29, barring First World War years, the expansion in groundnut acreage was continuous. During the depression period there were years when owing to the slump in continental markets, there was some decline in acreage. But looking to the period as a whole the acreage under groundnut increased (APPENDIX III.6). In other words, even during depression years, groundnut production was more attractive than other crops. The factor which pushed up groundnut cultivation even during depression merit attention.

First, as in the predepression decade, the positive and significant correlation value between exports and acreage (0.565) indicates that ready sale in export markets, among other factors, induced the uptrend in groundnut acreage.

Secondly, the correlation coefficient between prices and acreage is negative and insignificant (-0.307). As shown in APPENDIX III.6, the acreage under groundnuts increased when prices declined by nearly 50 per cent. The depression was accompanied by all-round decline in prices. However, the prices of cereals, cotton and jute, etc. registered far steeper decline than those of oilseeds and groundnut. The reduction in the exports of some cereals and fibre crops was responsible for the curtailment of their acreage. Oilseeds including groundnuts were an attractive group of crop to farmers because of their sustained exports even during depression. Thus, the depression period confirms the relative advantage of the groundnut crop over competing crops.

Thirdly, the gradual replacement of foreign demand by domestic demand and the growth of domestic oil-crushing and oil-using industries were major factors governing uptrend in acreage during the depression decade. Several factors like

1 Vide Chap.III, Sec.IV, p.82 and TABLE III.9.
the rapid growth of India's population since 1921, the scarcity of pure ghee, the use of groundnut oil, being cheapest oil, as an adulterant, the relatively larger rise in prices of groundnut products — oil and oilcakes — as compared with groundnut, the protection granted to various oil-using industries in 1930 and the growth of exports of oil and oilcakes due to introduction of imperial tariff assisted the above development which also sustained the relative price structure in favour of groundnut as compared to other Indian products.¹

Fourthly, one of the dominant factors to influence the rapid extension of groundnut cultivation in Indian agriculture, since it received the initial push of exports, is the hardy nature of this crop. Groundnut can withstand the strains of weather and rain and its soil requisites are of very general nature. In addition, groundnut is an ideal rotational crop and can be advantageously cultivated jointly in the system of mixed farming. The development of new strains of short-duration varieties increased the potentiality of its utilisation as a rotation crop. Hence, its popularity in dryland areas.

Fifthly, apart from the factor narrated above, technical changes like the introduction of improved seed facilitated not only a shift from irrigated cultivation to rainfed cultivation but also generated geographic shifts in technically suitable new areas, particularly former Indian princely states like Hyderabad, Saurashtra, Rajasthan, Madhya Pradesh, etc. The productivity index of groundnut² (base, 1934-35 to 1938-39 = 100) was above 100 during the decade preceding 1928-29 indicating that, inspite of the consistent increase

² See Chapter VI, TABLE VI.7.
in acreage, groundnut production responded proportionately more than the acreage; it was highest in 1935-36 (145). The case of sugarcane in United Provinces (now Uttar Pradesh) is quite similar for its acreage rose during the depression decade due to the extension of improved varieties and irrigation facilities, though prices were falling. The cultivation of high yielding varieties in spite of the falling prices of groundnut or sugarcane proved more profitable to farmers than the growing of other crops. The increase in agricultural income through a change in production function, however, has no relation whatsoever with prices.

To conclude, first, the commercialisation of Indian agriculture was initially pushed up by export demand. More generally, the changes in the area under non-food crops seem to arise from the impact of prices or foreign demand or both; and they indirectly govern the rise and fall in the area under food crops. The area under non-food crops has increased at a faster rate than the area under food crops except during the First World War (1915-16 to 1919-20), the depression quinquennium (1930-31 to 1934-35) and the Second World War (1940-41 to 1944-45). Inspite of this secular uptrend of the area under non-food crops, the commercialisation of agriculture had made a small dent on Indian agriculture.

1 The increase in the area under sugarcane is mainly attributed to the extension of irrigation facilities and the growth in domestic demand; however, the external factor did play a part in it. In 1931, in an attempt to raise sugar prices, the Chadbourne Plan emerged from the International Conference of Sugar Producers. They decided to restrict production by allocating export quotas to producers. But all producing countries did not join, particularly British Commonwealth, the U.S.A., the Japanese Empire and the U.S.S.R. Thus, by 1935, while the sugar production of Chadbourne Countries had fallen to 49 per cent, that of the rest of the world had increased by 41 per cent. In India, the sugar production rose from 2.8 million tons in 1929-30 to 6.2 million tons in 1935-36, and the output was maintained thereafter though at a somewhat lower level.
As it might be misleading to confine our observations to the price-production relationship of one commodity only, below an attempt is made to study the behaviour of agricultural production aggregate and commodity-wise.

The responsiveness of Indian farmers in the manner of an entrepreneur is also illustrated by the relative changes in foodcrops and fibre crops acreage in British India during the depression decade. Due to the drastic fall in the exports of fibre crops during 1930-31 to 1935-34, the prices of fibre crops declined heavily. Unlike foodgrains which were utilised mainly in the domestic market, these crops partly depended upon exports for their disposal. Consequently, the prices of fibre crops declined more than the prices of food crops, particularly pulses. The acreage under fibre crops declined to 1.9 million acres during 1930-31 to 1935-34 as compared with 2.4 million acres during 1925-26 to 1929-30. The reduction in fibre crops acreage was compensated for by the increase in acreage under foodgrains, plantation, sugarcane and groundnut. However, with the improvement in export trade during the latter half of the depression decade and rise in jute prices, the acreage under fibercrops recovered rapidly and the area under major foodgrains declined.

<table>
<thead>
<tr>
<th>Year</th>
<th>Major foodgrains</th>
<th>Major oilseeds</th>
<th>Major fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925-26 to 1929-30</td>
<td>46.9</td>
<td>3.7</td>
<td>2.4</td>
</tr>
<tr>
<td>1930-31 to 1935-34</td>
<td>48.6</td>
<td>3.9</td>
<td>1.9</td>
</tr>
<tr>
<td>1934-35 to 1938-39</td>
<td>46.4</td>
<td>3.7</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Source: W. Burns, op. cit.

1 Vide Chap.V, TABLE V.6.

2 Vide TABLE III.4 and APPENDIX VIII.1.
Moreover, aggregate agricultural production main­tained a 'steady gait' during 1930's depression. As a matter of fact, as compared with the previous quinquennium there was an increase of 8.2 million acres during 1930-31 to 1934-35 and 1.3 million acres during 1935-36 to 1939-40. (Vide TABLE V.8). As indicated above, during 1930-31 to 1934-35, the decline in the area under fibre crops and increase in the area under food crops was obviously due to relative price advance in growing the latter. It was, at least, less unprofitable to grow food crops than fibre crops. Moreover, the coefficients of correlation between groundnut prices and acreage as worked out for different period are insignificant and, in some cases negative. Thus, production and prices in agriculture have not revealed any significant correlation particularly during the period of falling prices either commodity-wise or agricultural output as a whole. Moreover, agriculture prospered, as in the pre-War period (1908/14), with the general economic prosperity. This supports the theory that agricultural price cycles show a great correspondence with industry as compared to agricultural production cycles.

From the preceding review, we find that, firstly, relative price changes do effect shift in production within agriculture and, secondly, agriculture production is inelastic to price falls. Once output has expanded, it is difficult to reduce it when prices fall. The output stability is attained at a higher level. The following

1 Cf. ante, supra, pp.432f.
2 Infra, pp.471-478
3 These findings collaborate Schultz' thesis: "Increasingly we find that the supply of agricultural commodities as a whole has in the short-run a one-way flexibility. Higher prices induce an expansion; lower prices, however, do bring about a comparable contraction. But changes in relative prices within agriculture induce shifts in the use of resources quickly and effectively when agricultural prices as a whole are stable". T.W. Schultz, Agriculture in an Unstable Economy, op. cit., p.11.
generally recognised factors explain the economic stability of agriculture during the depression: atomistic nature of production, length of the production process, high proportion of fixed cost, backward rising supply curve of family labour, changes in the marginal opportunity cost of factors in favour of agriculture during the downswing of the business cycle with resulting flow of unemployed resources from industry to agriculture and, in addition, the nature of factor markets in subsistence agriculture, etc.¹

1939-40 to 1944-45²

The exports of groundnut played but a minor role as a determinant of groundnut acreage since 1939. For the review of price-acreage movements the relevant data are given in TABLE VIII.¹

During 1939 to 1945, the index number of wholesale prices increased from 100 to 241. During the same period, the acreage index of foodgrains moved up from 100 to 119 whereas the acreage index of non-food crops declined from 100 to 77. Again, during 1939-45, there has been an increase of 8 million acres under jowar, 7 million acres under bajra, 5 million acres under rice, 2 million acres under maize and 2.5 million acres under gram whereas cotton


² Vide Chap. IV, Sec. I, p. 127.
TABLE VIII.1

PRICES AND PRODUCTION OF AGRICULTURAL COMMODITIES IN INDIA, 1939-40 TO 1944-45

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acreage 1</th>
<th>Price Index 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1939-40</td>
<td>1940-41</td>
</tr>
<tr>
<td>Rice</td>
<td>A</td>
<td>55,335</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>115</td>
</tr>
<tr>
<td>Jute</td>
<td>A</td>
<td>789</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>166</td>
</tr>
<tr>
<td>Wheat</td>
<td>A</td>
<td>24,393</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>113</td>
</tr>
<tr>
<td>Cotton</td>
<td>A</td>
<td>18,211</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>142</td>
</tr>
<tr>
<td>Jowar</td>
<td>A</td>
<td>32,539</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>101</td>
</tr>
<tr>
<td>Bajra</td>
<td>A</td>
<td>15,850</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>94</td>
</tr>
<tr>
<td>Gram</td>
<td>A</td>
<td>11,306</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>119</td>
</tr>
<tr>
<td>Groundnut</td>
<td>A</td>
<td>8,410</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>109</td>
</tr>
</tbody>
</table>

Note: 1 Acreage in thousands as given in Estimates of Area and Yield of Principal Crops in India, 1936-37 to 1945-46.
2 Economic Adviser's Index Number of Prices, Base, Aug. 1939=100
3 Figures for 1945-46.
area decreased from 18 million acres to 11 million acres and jute area from 3.1 million acres to 2.1 million acres (jute figures including Pakistan). Among non-food crops, the increase in area under groundnut from 8.4 million acres to 10.6 million acres is noteworthy. It follows from the above that non-food crops like cotton and jute must have been replaced by rice, inferior foodgrains like jowar and bajra and oilseeds like groundnut.

The growth of food deficits and the resulting price rise induced the extension of food crops acreage during the War. The Government of India had to embark upon a policy of food self-sufficiency, the two phases of which are marked by Grow More Food Campaigns (1943-47) and the Five Year Food Plan (1947-52). The Government of India encouraged the cultivation of food crops during the War. To discourage the cultivation of non-food crops, it resorted to cotton and jute acreage restriction schemes. It is difficult to say how far the governmental restrictions contributed to the decline in area under both these crops. It may be due to the price fall in both these commodities, initially induced by the loss of continental export markets. Their prices remained below the 1939-40 level till 1942-43 and were far below the prices of foodgrains (TABLE VIII.1). The relative price advantage in favour of foodgrains must be enormously higher than what is reflected in their index numbers as their compilation were based on controlled prices and not the black market prices (which are really the market prices). It is worth-noting that groundnut prices remained uncontrolled throughout the War and post-War period while the prices of other crops like cereals were controlled. As a result

1 Cf. ante, Chap.IV, Sec.II, pp.139f.
the index of groundnut prices rose to 333 in 1946. Assuming that the inflationary pressures in India since 1939 uniformly affected the relative cost structure of different crops, the uncontrolled prices of groundnut played its role; its area increased during the period of Grow More Food Campaigns. From the price data, it appears that the price incentives or disincentives have played a greater role than acreage restrictions employed by the Government.¹ We have a reason to accept this hypothesis as the acreage under groundnut increased and reached new heights in 1944-45 and, again in 1950-51 inspite of the Government’s Grow More Food Campaigns; it was against the government policy of increasing area under food crops. It seems that the price factor is a better agent for bringing desired shifts in the crop-pattern than acreage control.²

¹ During the War and post-War periods Indian farmers resorted to hoarding of foodgrains. The relative failure of compulsory levy or procurement at fixed prices — which were considerably lower than those prevailing in black markets — is an indication of farmers response to price incentives.

² Professor I.W. Schultz, while studying the effects of land rationing upon crop production, brings out the following: "The acreage reductions called for under the A.A.A. in 1937, 1938 and 1939 reduced the acreage put to corn, in the six central Corn Belt states, by 8% (compared to 1929-32). Corn production, however, in these states actually averaged 17% more than in the earlier years inspite of the cut in acres... The A.A.A. has induced an expansion in substitute crops, especially of soyabeans and of the more productive legumes, with the result that the feed supply of concentrates and roughages combined increased. As a consequence of A.A.A. corn program... more capital has been invested in soil productivity. Instead of shrinking the farm plant they have had the effect of facilitating plant expansion... The conclusion, however, stands that the administrative techniques of rationing the use of land, unless applied in an exceedingly drastic form, are not likely to reduce production appreciably". Production and Welfare of Agriculture, 1950, pp.141-145.
The inflationary trend continued during the post-War period; prices of all commodities ruled high but groundnut prices surpassed all. During 1946 and 1951, while the general index rose from 266 to 439, the index of groundnut prices rose from 333 to 765. There was no such corresponding movement in groundnut acreage for the area fell from the War-time peak of 10.6 million acres in 1944-45 to 9.2 million acres in 1948-49, though it again rose to 11.1 million acres in 1950-51. This decline in groundnut area may be explained by the impact of the partition of the country as a result of which the Indian Union felt to embark upon a policy of self-sufficiency not only in foodgrains but in raw cotton and raw jute as well—the partition left India weak in respect to cotton and jute supplies as proportionately higher area under these commodities went to Pakistan. The Government of India had to satisfy the textile and jute industries demand for cotton and jute as these industries were chiefly localised in the Indian territory. The situation became more complicated by Pakistan's non-devaluation of the rupee. Unlike in the War period, the prices of cotton and jute rose sharply. Hence, the phenomenon of the continuous decline in groundnut area from 1944-45 to 1948-49. The decline was checked thereafter. The Korean War push had its favourable impact on groundnut acreage till 1951-52 season.

1951-52 to 1960-61

The trends in the prices and production of groundnut may be conveniently divided into two phases. In the first phase broadly covering the First Plan period, the index of groundnut oil prices declined from 124 in 1951-52 to 74 in 1955-56 (APPENDIX VIII.3). The general index of prices

1 Vide Chap.IV, Sec.II, pp.138-140.
also declined from 118 to 93 during the years indicated. Unlike the depression period, this price fall was mainly confined to the agricultural sector and was the chief cause of the decline in the general index.¹ This price fall was partly caused by favourable seasons with a sustained rise in agricultural output during the last three years of the First Plan and was partly assisted by post-Korean War recession. The acreage under groundnut reacted sharply, falling from 12.1 million acres in 1950-51 to 10.5 million acres in 1953-54. It jumped, in the next year, to 13.7 million acres, probably due to the release of a large export quota during 1953, the exports of groundnut oil in that year being 68,000 tons.²

The second phase starts with the beginning of the Second Plan. The trend of falling prices was reversed in 1955-56 and thereafter the general index witnessed a sustained rise attaining a peak of 125 in 1960-61. The high tempo of the investment programme with a heavy dose of deficit financing and the over emphasis on heavy industries was chiefly responsible for inflationary rise in prices. The price index of groundnut oil rose at a far greater speed than the general index, from 74 in 1955-56 to 138 in 1960-61. While an unusually high exports of groundnut oil during 1954-55 (1 lakh tons) and 1955-56 (1.25 lakh tons) helped the recovery of groundnut prices during the mid-'fifties, the shortfall in oilseeds production during the latter years of the Second Plan (65.3 lakh tons in 1960-61 as against the target of 76 lakh tons) helped to double the prices of groundnut oil.³ It may be noted here that area under groundnut increased from the First Plan low of 10.5 million acres in 1953-54 and 12.7 million acres in

¹ Cf. ante, Chap. VI, Sec. III, pp. 315f.
² Vide Chap. IV, Sec. III.
³ APPENDIX VIII.3.
1955-56 to 15.5 million acres in 1960-61. Thus, between 1955-56 to 1960-61, the general index of prices rose by 38 per cent and the index of groundnut oil prices rose by 86 per cent. In response to this larger relative price rise, the acreage of groundnut increased by 22 per cent whereas the production rose by 11 per cent. It appears that the relatively higher rise in groundnut price has generated acreage shifts but the productivity has remained unaffected; on the contrary the productivity of groundnut declined which might be due to acreage extensions.¹

The rise of 2.7 million acres during the Second Plan period in a crop which claims only 4 per cent of the arable land is unusual. Exports being insignificant, this may be partly attributed to sustained high level of groundnut prices. Two other probable non-price factors may be noted here.

First, the phenomenal increase in acreage since 1939 partly reflects the statistical changes resulting from better coverage or inclusion of acreage figures which were previously non-reporting. As TABLE VIII.2 indicates, the bulk of the statistical increase is accounted by the years immediately following independence. According to V.K.R.V.Rao,² during 1951-52 to 1956-57, this increase was shared between Rajasthan and Saurashtra in terms of States and jowar, bajra, other millets, gram, other pulses, groundnut, sesamum and cotton in terms of individual crops. No cropwise figures are available.

¹ Cf. ante, Chap.VI, Sec.I, p.278 and TABLES VI.7 and VI.9.
Table VIII.2
ADDITIONS TO REPORTING AREA IN INDIA,
1947-48 TO 1956-57
(Million Acres)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres</td>
<td>20.0</td>
<td>4.2</td>
<td>91.0</td>
<td>22.0</td>
<td>0.7</td>
<td>7.3</td>
<td>0.7</td>
<td>0.2</td>
<td>0.5</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Secondly, in an agriculture of perennial capital starvation, the convenience of procuring quick cash tempted farmers to substitute groundnut for cotton. The short duration groundnut varieties have shortened the seasonal cycle in production. Moreover, the relative economic advantage of groundnut over cotton is enhanced by the fact that it is possible to get immediate cash after harvesting groundnuts whereas in cotton cultivation, a farmer has to wait a long time for the realisation of full earnings because cotton harvesting is spread over time.¹

We have contended throughout that Indian farmers have attempted to re-allocate their land inputs according to the changes in the structure of relative prices. This tendency is in line with the findings of a recent study undertaken by United States' Department of Agriculture.² A statistical analysis of the Indian data for the period 1929-30/1942-43 indicates that farmers tended to expand or contract groundnuts acreage in response to the increase or decrease in the preceding crop year in the ratio of the price of groundnut to the price of jowar and bajra, the most competitive crops with groundnuts.

Using Nerlove's method, groundnuts acreage in a given year was correlated with groundnut acreage of the preceding year, with the preceding years ratio between the price of groundnuts and the price of jowar and bajra and with time (the "trend variable"). This analysis gave statistically significant results for the year 1929-30/1942-43. The relationship appeared to be following:

(1) Acreage in a given year tended to return 20 per cent of the way from the preceding year's acreage towards the average; (this is net relationship after allowing for the effect of the two factors).

(2) There was a net upward trend during the period of 173,000 tons a year (about 2.5 per cent a year).

(3) Acreage also varied in accordance with the ratio between groundnut and jowar-bajra prices at the average of the ratio for the period (117), the elasticity of response was 0.8. That is a 1 per cent increase in ratio would be followed the next year by 0.8 per cent increase in groundnuts acreage.

In the intervening years, 1942-43 to 1950-51, there was no consistent relationship between groundnut acreage and prices. This may have been due to a rapid general price inflation during the 1940s, distortion of normal economic relationships by price controls, rationing of foodgrains and Grow More Food Campaigns which emphasised the production of foodgrains.

Nerlove, The Dynamics of Supply, John Hopkins Press, 1958. The following equation was derived by the least squares criterion for the period 1929-30/1942-43. 

\[ X_1 = -5743 + 81x2 + 50x3 + 173x4 \]

where \( x_1 \) = average in a given year (in 1000 acres); \( x_2 \) = average of the preceding year (in 1000 acres); \( x_3 \) = ratio of the preceding year between the price of groundnuts and the prices of jowar and bajra; \( x_4 \) = \( x \) the given year (1929-30 = 1, 1930-31 = 2 etc.).
The following significant conclusions emerge from the foregoing analysis:

1. Groundnut acreage (and production too)\(^1\) is responsive to rising prices, for example, during the periods 1908-09 to 1913-14, 1939-40 to 1951-52, 1955-56 to 1960-61.

2. The response of production to rising prices is not as high as it should be or as in the technologically developed agriculture, both with respect to individual commodities and aggregate agricultural output. Here, it is necessary to distinguish between farmers' 'willingness' and 'ability' to respond. The former is visible in Indian agriculture in as much as farmers have attempted to expand acreage. The latter is limited as the capacity to tone up production in a backward economy is constrained due to paucity of capital resources and primitive technology.

3. Aggregate agricultural production is inelastic to price falls. Once output has expanded, it is difficult to reduce it when prices fall. The output stability is attained at a higher level.

4. Relative price changes do effect shifts in production within agriculture, both in the period of falling prices and rising prices. The behaviour of the acreage under groundnut during the two decades preceding and succeeding 1939 substantiate this conclusion. However, the influence of relative prices on production is mainly through shifts in acreage between competing crops and not through changes in productivity (compare (2) above).

5. Relative prices may affect the output response of an individual firm or enterprise. It follows that a different line of action would be necessary for raising the output of the entire agricultural industry.

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\(^1\) In the case of groundnut, the correlation coefficient between acreage and production is positive and highly significant (0.998) for the period 1908-09 to 1958.
6. In agriculture, the non-price factors — climatic, physical and technical — are perhaps of greater importance in guiding production pattern. The study of supply response to prices may sometimes be vitiated by parameters like technological change.

7. Indian farmers' behavior seems to conform generally to that of profit-maximizing entrepreneurs as the change in crop-pattern broadly followed the structure of relative prices. Price incentives or disincentives are effective not only in case of cash crops but also in case of closely competing farm products like rice-jute or rice-sugarcane or cotton-groundnut even in the subsistence sector.

There is, therefore, theoretically a possibility of using differential price incentives to different crops for bringing about a change in the cropping pattern.

The above analysis throws significant light on the operational aspects of agricultural policy.

First, relative prices bring about shifts of resources from one crop to the other. But in India where the problem is to raise the production of the entire agricultural industry, the emphasis needs to be shifted from price policy to measures aimed at raising the production function.

Secondly, farmers' sensitiveness to relative prices is an asset of considerable importance. This response of farmers in an underdeveloped agriculture emphasises the need for a continuous review of inter-sectoral and inter-commodity price variations. If one set of prices are controlled in the planning process leaving the other set of prices uncontrolled, it will inevitably result into diversion of resources from the production of controlled commodities to uncontrolled commodities.

Thirdly, this response to relative price changes demonstrates the ease with which the weapon of selective
price incentives may be utilised, as a short term remedy, in raising the production of a particular crop. It also emphasizes the danger of tempering with relative price trends. Such tempering might have a misallocative effect which may be detrimental to the interest of the farmers as well as the economy. It should be recognised that selective price incentives can be at best a short term remedy but with longrun ill-effects. In the long run, demand may not remain inelastic; high prices may influence the consumption function by changing the tastes and preferences. A continuous rise in the price of a product, other prices remaining constant, may reduce the demand of that product or it may lead to research in the development of substitutes by the organised industrial sector. In any case, agriculturists as a class will suffer. Such a danger is particularly inherent in a commodity like groundnut whose substitutability with other oils and fats is very high.

Fourthly, as it is not possible to operate through the manipulation of product prices in raising the agricultural output as a whole, the price policy at best can be fruitfully utilised though subsidising unconventional farm inputs like fertilisers, pesticides, improved seeds, etc.

II. SHORT TERM VARIATIONS

Short-term fluctuations -- hour-to-hour, day-to-day, or week-to-week -- are attributed to variations in market receipts, temporary fluctuations in consumer demand and the experimentation involved in the discovery of 'normal price'.

Frequent weekly or even daily fluctuations in prices before the War were a principal cause of peasant indebtedness, and apparently a principal factor enabling middlemen to exploit the peasants. This danger is likely to be magnified wherever markets are imperfect due to monopsony, usury, transport difficulties, etc. and where the population has a very imperfect understanding of the operation of a money economy, for example, in tribal areas of India. As Messrs Bauer and Paish have pointed out, the high degree of concentration in external trade had enabled the merchant firms in underdeveloped countries in general and West Africa in particular to influence prices both of exports and imports. The marketing boards in West Africa were successful in removing day-to-day and even intra-seasonal variations in prices by maintaining a fixed price throughout the season. However, such institutional arrangement may not be advisable in India, as it involves some wider problems. The removal of imperfections in the marketing organisation by encouraging competition in market functionaries and forward trading are more effective remedies without long-run ill-effects.


3 The reasons for this are considered in some detail in an article "Concentration in Tropical Trade : Some Aspects and Results of Oligopoly", Economica, November 1953. Further compare : "At the beginning of the 20th century, the export trade in cotton, grain, oilseeds was controlled by a few foreign firms, e.g.Ralli Bros., Volkart Bros., Lois Defrus and Company, etc. They maintained a widespread marketing organisation of upcountry buying agencies at most of the important markets in the interior". Vide P.G.Salvi, Commodity Exchanges, Bombay 1947, p.25.

4 Infra Sec.VII.
III. REGIONAL VARIATIONS

Regional integration of markets is one of the preconditions for facilitating specialisation of agricultural production and maximising agricultural output. Fluctuations in prices over space as well as over time indicate the heterogeneous character and lack of mobility in the economy. They imply that price differences between different regions are generally more than what may be explained by the normal market service changes. Subsistence farming, small and variable quantity of marketable surplus, lack of bargaining power due to insufficient transport, storage and credit facilities, prevalence of malpractices in the wholesale markets, and, recently in India, misconceived governmental restrictions on crop movements are some of the contributory factors for market price disparities between different markets.

As index of integration is prepared to study the extent of regional integration in groundnut prices. It is compiled by working out the mean of "ready prices" ruling at different forward markets for a particular month and thereafter calculating the percentage relationship between the ready prices at different market centres and the mean. For example:

\[
\text{Index of Integration for Groundnuts in June 1956} = \frac{\text{Ready Prices at Bombay in June 1956} \times 100}{\text{Mean of ready prices at all markets in June 1956}}
\]

TABLE VIII.3 indicates that groundnut markets are fairly well integrated.\(^1\) The difference between maximum

---

\(^1\) Compare: "There is a favourable trend towards regional price integration in the case of rice, wheat, sugar, groundnut and cotton". E.S. Michel, "Agricultural Price Policy", Indian Journal of Agricultural Economics, Vol. XVII, No. 1, p. 62.
and minimum prices at different places at a point of time have gradually lowered down considerably. This confirms Mr. Natu's conclusion that "due to the continuous arbitrage transactions between the different markets, the prices of groundnut and groundnut oil have remained more or less in close alignment at various centres."\(^1\) Fortunately, in the case of cash crops of durable nature, such as cotton, groundnut, etc., various regional markets seem to have integrated because both the producers and consumers (textile mills, vanaspati, soap and oil-milling factories) are fairly organised and have considerable holding and bargaining power.\(^2\)

One of the recent retrograde steps which has imparted instability to commodity prices in India and has widened regional price differentials, is the control over interstate movements of rice, wheat and sugar imposed by the Central Government on the one hand and restrictions on movements on certain inferior foodgrains imposed by several State Governments on the other. It seems that the present state of anarchy in State regulations over food movements might be the outcome of the constitutional weakness; though agriculture constitutes the largest industry, it happens to be a state subject.

The theory behind food zones seems to be that the zones may facilitate a better mobilisation of regional surpluses, prevent their hoarding, conserve local production for local needs first, and localise the surpluses in particular regions so that the problem in the deficit regions may be effectively tackled through concentrated efforts. These claims are unconvincing.


### TABLE VIII.3

**INDEX OF SPATIAL INTEGRATION OF GROUNDNUT PRICES: 1956-1960**

<table>
<thead>
<tr>
<th>Year/Month</th>
<th>Average price</th>
<th>Difference in prices in Rs.</th>
<th>Index of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>Bombay (3) Rajkot (4) Adoni (5)</td>
</tr>
<tr>
<td>1956</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>152.78</td>
<td>52.46</td>
<td>112                78  110</td>
</tr>
<tr>
<td>Sept.</td>
<td>153.76</td>
<td>62.34</td>
<td>115                74  112</td>
</tr>
<tr>
<td>Dec.</td>
<td>157.39</td>
<td>18.88</td>
<td>100                94  106</td>
</tr>
<tr>
<td>1957</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>170.29</td>
<td>3.20</td>
<td>101                101 99</td>
</tr>
<tr>
<td>July</td>
<td>178.45</td>
<td>8.35</td>
<td>102                100 98</td>
</tr>
<tr>
<td>Sept.</td>
<td>161.98</td>
<td>6.39</td>
<td>98                 100 102</td>
</tr>
<tr>
<td>1958</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan.</td>
<td>158.20</td>
<td>6.71</td>
<td>101                102 97</td>
</tr>
<tr>
<td>April</td>
<td>169.41</td>
<td>12.32</td>
<td>101                103 96</td>
</tr>
<tr>
<td>July</td>
<td>191.02</td>
<td>9.37</td>
<td>102                102 97</td>
</tr>
<tr>
<td>Sept.</td>
<td>202.47</td>
<td>5.38</td>
<td>102                100 99</td>
</tr>
<tr>
<td>1959</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan.</td>
<td>172.20</td>
<td>5.76</td>
<td>99                 100 102</td>
</tr>
<tr>
<td>April</td>
<td>192.70</td>
<td>4.57</td>
<td>99                 100 101</td>
</tr>
<tr>
<td>July</td>
<td>169.62</td>
<td>6.74</td>
<td>101                98  101</td>
</tr>
<tr>
<td>Sept.</td>
<td>193.76</td>
<td>11.25</td>
<td>101                97  102</td>
</tr>
<tr>
<td>1960</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan.</td>
<td>203.90</td>
<td>6.90</td>
<td>102                98  100</td>
</tr>
<tr>
<td>April</td>
<td>218.38</td>
<td>9.84</td>
<td>102                98  100</td>
</tr>
<tr>
<td>July</td>
<td>233.33</td>
<td>8.51</td>
<td>101                98  101</td>
</tr>
<tr>
<td>Dec.</td>
<td>221.85</td>
<td>19.02</td>
<td>99                 96  105</td>
</tr>
</tbody>
</table>

**Note:**
1. Prices: Rs. per candy of 560 lbs., average of ready prices at Bombay, Rajkot and Adoni.
2. Difference between maximum and minimum prices, quoted on per candy of 560 lbs.
4. The Saurashtra Oil and Oilseeds Association Ltd., Rajkot.
5. The Adoni Groundnut Seeds and Oil Merchants' Association Ltd., Adoni.

**Source:** Basic data obtained from W.R. Natu, op. cit., p. 118.
First, zonal restrictions have created multiple prices within India. Zones have penalised producers in the surplus areas and consumers in the deficit areas. Under the influence of relative price penalty in surplus zones, it would inevitably lead to diversion of land and resources from food to non-food crops. As all lands under foodgrains may not be fully technically substitutable, such a diversion would adversely affect resource productivity.

Secondly, in deficit areas, it has lead to a demand for measures to attain self-sufficiency in foodgrains as in Gujarat and Maharashtra. Needless to say that food self-sufficiency within the 15 states of the country would lead to economic stagnation and high cost production structure by obstructing the tendency towards regional specialisation of crops.

Thirdly, the national economic plans rightly assumes the existence of a completely free or unrestricted trade in the various commodities throughout the country. Food surpluses in particular States are not merely the outcome of their own efforts but a direct result of greater investment in agriculture undertaken under the national Plan. The fruits of national planning must be allowed to be distributed among the entire population. The zonal system is anti-national, both in conception and in operation.

Fourthly, zonal restrictions have a meaning only if the stocks from surplus States are moved quickly to deficit areas. There is no evidence that official agencies are equal to the task; they have not been able to manage efficiently the imports under P.L.480. Apart from transport and storage difficulties, the political pressures in the surplus States, with a view to obtain maximum advantage of scarcity conditions in other regions, have prevented desirable grain movements, though the same States are anxious at the same time to have
the advantages of the availability of other products such as cotton, cloth, vegetable oils, etc. made in food deficit states without any restriction. Such a situation may ultimately foster a separatist tendency and is anti-national per se. It would break India into warring States which will raise more and more barriers against one another on principles of reciprocity and even retaliation as is done between some countries. The restrictions imposed by the Government of Gujarat on the exports of groundnut oil is an instant in point.

Fifthly, it would prove difficult to allocate agriculture products through official decisions in the absence of guide lines of market mechanism. For example, the inter-State movements of sugar is controlled and the sugar quota for different States is more or less arbitrarily determined. The determinants of sugar consumptions in a particular region are so diverse and complex — size of the population, income distribution, income per capita, food habits, size of the adivasi population (who generally do not consume sugar) etc. — that it is difficult to derive a just formula for State-wise allocation of sugar. The resulting maldistribution of goods would inevitably encourage smuggling of such products intra-regionally over State-boarders and inter-sectorally from rural areas to urban areas. By encouraging black markets, it works contrary to the raison detre of zonal divisions.

To conclude, the continuation of foodzones has accentuated the food deficits in the country, resulted into the maldistribution of agricultural products intra-regionally and harbingered parochial anti-national feelings among the member States. Such a policy is beset within long-run ill-effects. It would lead to misallocation of resources in agriculture breeding inefficiency and high-cost structure in the rural economy and would simultaneously work contrary
to the objective of a fully integrated planned economy. The control over the inter-state movements of commodities has neither logical nor empirical justification and needs to be removed. 1

IV. SEASONAL VARIATIONS

The slow response of production to rising prices in a backward economy is generally linked with the 'leakages' in the marketing organisation, which affects the structure of price-spread and the producers share in final price. It has been estimated 2 that producers bring only 70-80 per cent of the marketable surplus of groundnuts to the assembling markets; the remaining 20-30 per cent represents village sales. Price in the system of village sales are generally lower than in the assembling markets due to monopsonic element in the former. Prices would be still more depressed in village sales, when a farmer sells his crop in advance of harvest, or when he is indebted to or has accepted advance payment from a village money-lender or wholesale merchant or commission agent.

Agricultural commodities in general are characterised by some seasonality of production and marketing. The seasonal nature of production affects prices which, in different seasons tend to rise and fall according to market receipts. Law prices at harvest time and price-rise thereafter induces traders to hold stocks for retailing out until the next harvest. The price-difference should cover the cost of storage, interest on capital value of stocks, deterioration, shrinkage, damage by insects, normal profits for the risks

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1 Compare: Such a "measure prevents the movement of food $z$ from surplus to deficit areas, restricts markets, enhances shortages and retards the growth of production for the market. It reverses the process of the widening of the market for agricultural produce." P.T.Bauer, Indian Economic Policy and Development, 1961, p.91.

borne and processing cost if any. Thus, some seasonal price variations are a functional necessity. TABLE VIII.4 gives the percentage variation from the annual mean for different groundnut markets which are important assembling or milling centres. The table suggests the following inferences:

1. A deep harvest trough is noticeable between September to December, the lowest point depending upon the time of harvesting in a particular market.

2. In some markets a deep trough is noticeable in April, May and June. It appears to be a result of the harvesting of irrigated crop in those areas.

3. Generally, the price-rise starts from January which marks an end of harvesting season. In the case of irrigated crop, the price-rise is noticeable in July or August (Madras, Cuddapah, Guntur, Khandwa, Devanagere) which marks an end of the harvesting of irrigated crop.

4. In all markets the plus deviations are maximum in March. It is attributed to the expectation of export quota in March. The benefits of this price-rise go to traders.

5. The magnitude of minus deviations is low in Bombay and Madras. The reason may be traced to the existence of processing and other oleaginous industries in these centres. Their continuous and regular demand tend to moderate seasonal variations. Moreover, it appears that seasonal variations are more in primary assembling markets where transactions take place between producers and traders as compared with these secondary and terminal markets where transactions take place between wholesalers or between wholesalers, and retailers or between wholesalers and consumers.

6. The magnitude of minus deviations is also low in Cuddapah (Madras), Raichur and Latur (Mysore) because of the existence of the regulated markets.

7. Even the most liberal allowance for the functional price difference do not justify the extent of seasonal price variations in groundnut. The maximum

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TABLE VIII.4
PERCENTAGE DEVIATION OF THE AVERAGE MONTHLY PRICES OF GROUNDNUT KERNELS FROM THEIR
ANNUAL MEAN (AVERAGE 1942-43 TO 1946-47)

<table>
<thead>
<tr>
<th>Month</th>
<th>Bombay</th>
<th>Dhulia</th>
<th>Kolhapur</th>
<th>Madras</th>
<th>Guddapah</th>
<th>Guntur</th>
<th>Kham-</th>
<th>Khandawa</th>
<th>Malka-</th>
<th>Deven-</th>
<th>Raichur</th>
<th>Latur</th>
<th>pur</th>
<th>agere</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>-8.2</td>
<td>-4.6</td>
<td>-6.9</td>
<td>-9.4</td>
<td>-7.6</td>
<td>-8.4</td>
<td>-2.8</td>
<td>-9.2</td>
<td>-3.4</td>
<td>-10.5</td>
<td>-4.9</td>
<td>-7.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>-0.7</td>
<td>+5.0</td>
<td>-3.3</td>
<td>-6.6</td>
<td>-3.3</td>
<td>-4.5</td>
<td>+3.0</td>
<td>-6.7</td>
<td>-0.1</td>
<td>-6.3</td>
<td>+2.2</td>
<td>+0.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>+2.2</td>
<td>+9.7</td>
<td>+2.5</td>
<td>-4.6</td>
<td>-3.5</td>
<td>-2.0</td>
<td>+4.7</td>
<td>-2.7</td>
<td>+1.1</td>
<td>-3.3</td>
<td>+5.0</td>
<td>+2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>+3.3</td>
<td>+10.7</td>
<td>-2.2</td>
<td>+0.9</td>
<td>+1.3</td>
<td>-2.4</td>
<td>+2.5</td>
<td>+3.8</td>
<td>+0.3</td>
<td>-0.5</td>
<td>-1.7</td>
<td>+0.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>+0.2</td>
<td>+2.2</td>
<td>-6.1</td>
<td>+2.4</td>
<td>+5.8</td>
<td>+1.8</td>
<td>-5.0</td>
<td>+7.2</td>
<td>+0.9</td>
<td>+3.4</td>
<td>-3.3</td>
<td>-1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>-1.6</td>
<td>-1.8</td>
<td>-2.7</td>
<td>+0.2</td>
<td>+2.1</td>
<td>-1.1</td>
<td>-27.6</td>
<td>+1.2</td>
<td>-15.3</td>
<td>-0.7</td>
<td>-4.3</td>
<td>-0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>-2.8</td>
<td>-26.7</td>
<td>-2.3</td>
<td>-1.7</td>
<td>+0.6</td>
<td>-4.5</td>
<td>-19.7</td>
<td>-3.8</td>
<td>-12.4</td>
<td>-2.5</td>
<td>-7.5</td>
<td>-0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November</td>
<td>-4.8</td>
<td>-5.9</td>
<td>-11.5</td>
<td>-4.3</td>
<td>-1.4</td>
<td>+1.5</td>
<td>-2.0</td>
<td>-5.8</td>
<td>-4.4</td>
<td>-2.5</td>
<td>-2.3</td>
<td>+1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>-4.7</td>
<td>-5.9</td>
<td>-2.6</td>
<td>-2.3</td>
<td>+6.1</td>
<td>+0.6</td>
<td>+10.3</td>
<td>+1.7</td>
<td>+6.3</td>
<td>-3.7</td>
<td>-0.9</td>
<td>-4.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td>-2.6</td>
<td>+0.5</td>
<td>+3.6</td>
<td>+0.7</td>
<td>+1.4</td>
<td>+0.7</td>
<td>+11.3</td>
<td>+2.6</td>
<td>+7.6</td>
<td>-5.8</td>
<td>+0.5</td>
<td>-1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>+3.2</td>
<td>+4.1</td>
<td>+13.1</td>
<td>+7.2</td>
<td>-0.2</td>
<td>-2.4</td>
<td>+10.2</td>
<td>+1.2</td>
<td>+8.4</td>
<td>+8.3</td>
<td>+7.2</td>
<td>+4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>+16.6</td>
<td>+12.7</td>
<td>+18.3</td>
<td>+17.5</td>
<td>+18.8</td>
<td>+21.5</td>
<td>+15.2</td>
<td>+4.6</td>
<td>+14.4</td>
<td>+14.4</td>
<td>+10.2</td>
<td>+7.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest(+)</td>
<td>16.6</td>
<td>12.7</td>
<td>18.3</td>
<td>17.5</td>
<td>18.8</td>
<td>21.5</td>
<td>15.2</td>
<td>7.2</td>
<td>14.4</td>
<td>14.4</td>
<td>10.2</td>
<td>7.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest(-)</td>
<td>8.2</td>
<td>26.7</td>
<td>11.5</td>
<td>8.4</td>
<td>7.6</td>
<td>8.4</td>
<td>27.6</td>
<td>9.2</td>
<td>15.3</td>
<td>10.5</td>
<td>4.9</td>
<td>7.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

plus deviation is 21.5 per cent above the mean in Guntur market and the maximum minus deviation is 26.7 per cent below the normal mean in Dhulia. As illustrated by Dr. R. N. Poduval, the seasonal price variations in raw cotton, rice and wheat hardly exceed 6 per cent of the normal mean. The cultivation of different varieties of groundnut in different regions and their harvesting seasons falling in different months should ensure evening out of market supplies, and, hence, price variations. The index of market integration of groundnut crop reveals that groundnut markets in different regions are integrated. In spite of these facts which ensure continuous marketing of groundnut crop throughout the year, we find that the extent of seasonal price variations in groundnut crop is very high.

Several factors which govern seasonal fluctuations are indicated below; all or some of them operate simultaneously—farmers weak credit and capital position resulting in many cases into their indebtedness and sales in advance in harvest, lack of proper storage facilities, inadequate transport and communications, absence of market intelligence service oriented towards furnishing information to farmers, lack of knowledge regarding scientific storage, absence of processing units in villages (particularly, in cases of crops which can be stored only after initial processing), etc.

It is apprehended that the agricultural financing by the Reserve Bank often provides opportunities to wholesale dealers in agricultural products in hoarding and cornering the produce. The provision of storage facilities at the marketing centres serve only the wholesale trade and actually helps traders to gain at the cost of farmers and consumers. Such a situation is the outcome of the following factors: First, the development of cooperative institutions has

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1 Dr. R. N. Poduval, "Prices, Trade and Marketing of Agricultural Commodities in India", in Studies in Indian Agricultural Economics, J. P. Bhattacharjee (ed.), Bombay, 1958, pp. 51-54.
touched only the fringe of the problem. Secondly, small farmers being illiterate and poor cannot avail themselves of the credit provided by banks, government, cooperative and other institutions. Thirdly, warehousing facilities are generally available at the assembling and terminal markets.

Seasonal price variations lead to post-harvest shifts in income. To quote Professor Shenoy:

"Such large seasonal price variations were prima-facie evidence of possible distress levies upon the producers by the trade. They call for preventive or protective measures not only on the ground of the human factor but also because if larger benefits accrued to the producers, it might induce larger production, while the unmerited gains accruing to the trade might not yield the same result."

Thus, steps to even out undue seasonal price variations are necessary for encouraging the market oriented behaviour of farmers and for better allocation of agricultural resources. The objective to reduce seasonal fluctuations in prices of durable commercial crops to the minimum can be best achieved by:

1. the extension of warehousing, credit, transport and other marketing facilities;

2. integration of credit, production and marketing activities through cooperative institutions;

3. an organised body - it may be farmers unions, cooperative institutions, All-India Radio, etc. - advising farmers about the real market situations;

4. research and propaganda regarding scientific storage of different crops;

5. incentives to locate processing units - rice mills, decorticating machines, oil mills, cotton ginning and pressing factories etc. - in rural producing areas;

6. declaring export quota of commodities during the harvesting season;

7. permitting forward trading in all important commodities,\(^2\)

8. undertaking state purchases for buffer stocks during the harvesting season.

Seasonal price variations may be smoothed out by taking the surpluses off the market. In this respect an interesting device adopted in Southern Korea may be noted.\(^3\) The new grain loan system enables farmers to avoid the selling of paddy during the harvest glut. The farmer deposits his

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1 R.L. Cohen noted that "An organised body may publicly state its conviction that prices are incorrectly adjusted to the true situation, and urges producers either to hold their own product to higher prices, if it thinks prices are too low, or alternatively, to sell at once, if it thinks they are too high. Such bodies, in fact, have frequently advised producers that prices are too low.... But the opposite advice, also needed on occasion, is rarely if ever given, since few organised bodies are willing to tell their members that they are receiving a higher prices than is really justified." The Economics of Agriculture, 1954, p.183.

2 Infra, Sec.VIII.

grain at a local warehouse and obtains a loan from the local branch of the Agricultural Banks on the security of the receipt from Warehousing Corporation. The Government set up a "loan and release" programme providing for a certain total quantity of paddy to be secured in storage under lien during the period October to the following January, and to be released for sale in monthly quotas over the period from March to September following. The maturity dates of the loans are timed accordingly. The farmer chooses the time at which he will sell his paddy and repay his loan, plus storage and interest charges. The farmer will normally sell at the market price when his loan falls due. In order to overcome the difficulty of paying out small amounts to a large number of small farmers with small marketable supplies, the scheme may be innovated by channelising loan programme through cooperative societies.

The problem of seasonal price variations is supplanted now-a-days in the Indian economy by the phenomenon of hoarding encouraged by some ill-advised governmental inter-vention in agricultural marketing. ¹ It appears that Indian farmers have recently become market conscious in as much as they are withholding and augmenting marketable surplus according to the prevailing price situation. The Report of the Foodgrains Enquiry Committee (1957) observed that it was variations in marketed surplus even more than variations in production which were important from the point of view of prices. ² On a priori grounds it may, of course, be said that if the production increases and prices fall marketed surplus will increase more than proportionately owing to the de-hoarding tendency initiated thereby. Similarly, if production falls and prices rise marketed surplus will decrease more than proportionately

¹ Supra, pp. 452-456
² Op.cit., p.44.
owing to the stimulus to greater hoarding imparted thereby.\textsuperscript{1}  
But a situation can arise with prices and production moving in the same direction, and marketed surplus tending towards the other.

Marketable surplus is closely related to prices of different components of agricultural products. Firstly, an increase in value of sales of commercial crops either due to their higher production or price result in greater hoarding of foodgrains. It has been pointed out that the relative cheapness of wheat in comparison with such crops as green peas and other pulses and oilseeds appeared to induce the cultivators in Uttar Pradesh, Madhya Pradesh and Punjab to sell more of these commodities at the prevailing high prices and to keep back their wheat in the hope of getting higher prices later.\textsuperscript{2}  
Secondly, any diversion of area and other production resources through sectoral imbalance in prices affects the flow of foodgrains supplies to urban areas as a result of less production of foodgrains. If prices are unfavourable to commercial crops as compared with foodorups, the reverse would probably happen.

V. ANNUAL PRICE VARIATIONS

Annual price variations may be caused by changes in demand or supply or both and, in turn, affect incomes of producers. Annual changes in demand for farm products are generally not so extreme as changes in supply. Fluctuations in annual crop production are mainly caused by changes in acreage and yield, of which the latter is usually more important.

\begin{itemize}
\item \textsuperscript{1} Anon., "Some Investigations on Marketable Surplus", \textit{Agricultural Situation in India}, Vol.XVIII, No.1, April, 1963, p.6.
\item \textsuperscript{2} \textit{Agricultural Situation in India}, loc.cit.
\end{itemize}
Farmers cannot to a large extent control their output as per acre yields fluctuate due to natural factors. The uncertain effects of weather may result in several successive or alternating years of good or bad crops. Fluctuations in yield being unexpected cannot be counter-balanced by varying acreages and hence affect prices pronouncedly. The suitability of weather at the time of harvest decisively and instantaneously affect acreage devoted to a particular crop. Uncertainty also emnates from individual farmer's lack of knowledge about his fellow producers' production plans. Annual price variations caused by variations in supply from year to year are bad in themselves -- even if they do not also cause income fluctuations -- as long as variations in price cannot be foreseen. As a result of price-yield uncertainty farmers may diversify their production and thus forgo some of the advantages of specialisation. This implies that production will be at a higher cost than if prices were reasonably predictable.

The annual variations in yield cause prices to fluctuate to a greater or less extent, according to the elasticity of demand of a particular product. The more inelastic the demand, the greater the fluctuations in prices. For storable products the variations in annual prices may be somewhat diminished by storage. If the elasticity of demand is low and, resultantly, prices fall in a bumper crop year below the expected price in the subsequent year by more than the costs and risks of storage, merchants or producers will certainly store. As a result prices will be higher than otherwise would be in a bumper year and lower in the next year when the sale of stored stocks will be added to the sale of small amount produced that year. The non-conformity of groundnut prices with production fluctuations, as indicated later, might be explained by this factor.

1 Infra, Sec.XI, pp. 523f
groundnut and its derivatives - oil and Vanaspati being storable products. Thus, if the variations in crop yields are sufficiently great and consumers' demand sufficiently inelastic, it is advisable to store greater quantum of the bumper crops to be able to augment the short crops expected during subsequent years. It would be desirable to encourage private trade interest or farmers' cooperatives to undertake this task as, unlike governmental operations, they are more likely to consider price-cost issues.

Annual price variations usually result in fluctuations in farmers' income. Production costs remaining constant, farmers will be benefited by a smaller crop than a larger crop, if the demand is inelastic; and by a larger crop than a smaller crop, if the demand is elastic. Fixed costs are unaffected by variations in yield, but the costs of harvesting a bumper crop will be greater than those of harvesting a light one. "For this reasons", as Miss Cohen has maintained, "the elasticity of dealers' demand must be greater than unity and that of consumers far greater than unity if producers are to be well off when yields are good as when they are bad."²

The impact of the changes in output of a particular crop of a given area upon the prices of that crop and the producers' income is chiefly governed by (i) the extensiveness of the market for that crop, (ii) the contribution of the given area to the total supplies of the entire market and (iii) the impact of weather on the output of competitive areas. The larger the market area, the less is likely to be the proportionate fluctuations in supply. As pointed out by Messrs. Bauer and Paish,³

1 Vide Chap. VI, Sec. IIC, pp. 315f.
3 Ibid., pp. 750-751.
"When the output of a given area forms a large proportion of the total supply available to a particular market, or to the world as a whole, or where the output of a competitive area is similarly affected, the loss of income due to a smaller output may be partly, wholly or even more than wholly, offset by higher prices. Where, however, the area affected is in competition with other areas which have not suffered similarly, the fall in output will not be compensated by higher prices, and producers' income will fall."

With the exception of tea, coffee, coconut and some fruit crops, Indian agriculture is predominated by annual plants. Extreme annual price variations are most characteristic of these crops. TABLE VIII.5 indicates the magnitude of annual price variations for sixteen major crops, covering the period 1939-1958. Annual price fluctuations were exceptionally high in jute, tea, tobacco, groundnut, crops and castor which were all non-food crops and all of them were export crops. The magnitude of these variations were lower in cotton and sugar. In the case of the former, it was due to fixation of maximum and minimum prices and rigid adherence to these prices whereas in the case of the latter, it appears to be due to Government's price fixing of sugarcane. The prices of jute and groundnut have remained generally uncontrolled. All food crops also reveal wide fluctuations; however, fluctuations in rice and wheat seem to be substantially higher than those in jowar, Bajra and gram. The prices of rice and wheat have been kept down by a number of regulatory measures whereas they have been unregulated in the case of latter group. ¹

¹ According to Dr.B.N.Ganguli, the coefficients of variation of harvest prices of major crops over the last decade have been as follows:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>12.5</td>
</tr>
<tr>
<td>Wheat</td>
<td>10.9</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>8.1</td>
</tr>
<tr>
<td>Cotton</td>
<td>11.6</td>
</tr>
<tr>
<td>Jute</td>
<td>14.3</td>
</tr>
<tr>
<td>Groundnut</td>
<td>20.3</td>
</tr>
<tr>
<td>Gur</td>
<td>17.1</td>
</tr>
<tr>
<td>Jowar</td>
<td>17.8</td>
</tr>
</tbody>
</table>

### TABLE VIII.5
PROFILE OF ANNUAL PRICE VARIATIONS OF MAJOR AGRICULTURAL COMMODITIES: 1939-1958

<table>
<thead>
<tr>
<th>Changes from preceding year</th>
<th>Rice</th>
<th>Jowar</th>
<th>Bajra</th>
<th>Wheat</th>
<th>Gram</th>
<th>Cotton</th>
<th>Jute</th>
<th>Tea</th>
<th>Tobacco</th>
<th>Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over</td>
<td>+50</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>+41  - 50</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>+31  - 40</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>+21  - 30</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>+16  - 20</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>+11  - 15</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>+0   - 5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
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<td>±5</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>±6   - 10</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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<td></td>
<td>±11  - 15</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>±16  - 20</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>±21  - 30</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>±31  - 40</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>±41  - 50</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Over</td>
<td>±50</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>18</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Change from the preceding year</th>
<th>Groundnut</th>
<th>Sesamum</th>
<th>Rape-Mustard</th>
<th>Linseed</th>
<th>Castor</th>
<th>Copra</th>
<th>Groundnut oil</th>
<th>Groundnut cake</th>
<th>Vanaspati</th>
<th>All Commodities</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
<td>(10)</td>
<td>(11)</td>
</tr>
<tr>
<td>Over + 50</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 41 - 50</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 31 - 40</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 21 - 30</td>
<td>1</td>
<td></td>
<td>2</td>
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<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>+ 16 - 20</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td>+ 11 - 15</td>
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<td>+ 5 - 10</td>
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<td>5</td>
<td></td>
</tr>
<tr>
<td>± 0 - 5</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>- 6 - 10</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
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<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 16 - 20</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>- 21 - 30</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 31 - 40</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over - 50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>20</strong></td>
<td><strong>11</strong></td>
<td><strong>11</strong></td>
<td><strong>20</strong></td>
<td><strong>11</strong></td>
<td><strong>20</strong></td>
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<td><strong>11</strong></td>
<td><strong>11</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

**Note:** Calculations are based on the Economic Adviser's Index Number of Wholesale Prices: Sensitive series, week ended 19th Aug. 1939 = 100 till 1946, commodities included 25; subsequently, General Purpose Series, year ended Aug. 1939=100, Commodities included 73. Data for tea not available for 1943. Data for Sesamum, rape-mustard, castor, groundnut oil, groundnut cake मक and Vanaspati for 11 years, 1947-1958.
According to TABLE VIII.5, 3 out of 20 frequencies of annual price variations in groundnut were in the class of fluctuations over 50 per cent. The coefficient of variation of groundnut prices, as calculated by Dr. B.N. Ganguli, is 20.3 — probably the highest among Indian crops. In spite of this severe instability in prices, the annual rate of increase of output has been 4.5 per cent on an average as against 4.2 per cent in the case of non-food crops, during the planning decade. Groundnut prices remained uncontrolled throughout. It appears, therefore, that the greater per acre monetary returns of groundnut crop is the main determinant of the rapid growth of groundnut output, and the lure for profit is so powerful that it has supplanted the negative impact of erratic fluctuations of groundnut prices.

TABLE VIII.6 gives the profile of variations in groundnut production, prices and income in Madras State, covering the period 1928-29 to 1949-50. For the sake of the homogeneity of geographical area and statistical data Madras State has been selected for this statistical compilation. Aggregate gross income was calculated by multiplying the wholesale prices of groundnut kernels with the production of groundnut kernels. The magnitude of annual variations were more or less of equal magnitude in groundnut production and prices but year-to-year income variations were substantially larger than production and price variations. The average percentage variation was 20 in groundnut production and prices each; the corresponding variation in income was 34. Thus instabilities in production and prices have resulted in far greater instabilities in income.

1 Dr. B.N. Ganguli, loc. cit.
2 Cf. ante, Chap.V, Sec.VI, pp.247-249.
### TABLE VIII.6

**PROFILE OF ANNUAL VARIATIONS IN GROUNDNUT PRODUCTION, PRICES AND INCOME, MADRAS 1928-29 TO 1949-50**

<table>
<thead>
<tr>
<th>Change from preceding year</th>
<th>Production</th>
<th>Price</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Over ± 50</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>± 41 - 50</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>± 31 - 40</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>± 21 - 30</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>± 16 - 20</td>
<td>3</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>± 11 - 15</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>± 6 - 10</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>± 0 - 5</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

**Average Variation in per cent**

<table>
<thead>
<tr>
<th>Production</th>
<th>Price</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.9</td>
<td>19.6</td>
<td>34.0</td>
</tr>
</tbody>
</table>

**Relationship**

<table>
<thead>
<tr>
<th>Production-Prices</th>
<th>Production-Income</th>
<th>Prices-Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ leading to -</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>- leading to +</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>- leading to -</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>+ leading to +</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

**Note:** Production and prices data obtained from the *Report on the Marketing of Groundnuts in India*, 1953.

Income data calculated by the following formula:

Gross Income = Output of groundnut X Wholesale Prices
The mutual relationship between groundnut production, prices and incomes is more revealing. Firstly, out of 21 frequencies, on 10 occasions groundnut production and prices, as usual, revealed an inverse relationship. However, on 8 occasions, increases in production resulted into increases in prices, revealing that the demand push is far more important than the variations in supply. Secondly, there was a high degree of conformity between variations in production and income. Increase in production on 10 occasions and decreases in production on 7 occasions generated similar movements in income. Thirdly, we find similar relationship between prices and income. On 9 occasions we find correspondence between increase in prices and income and on 6 occasions decreases in prices and incomes. It seems that the continual increase in groundnut production has not adversely affected the incomes of groundnut producers.

VI. CYCLICAL VARIATIONS

Cyclical variations are related to price-production fluctuations over a period of years. In agriculture, they are of two categories: (1) Cycles pertaining to individual crops and the agricultural sector generally; (2) General cycles affecting the economy as a whole. The former emanates from the peculiar characteristic of agricultural production whereas the source of the latter lies in industrial fluctuations. Variations in the former may be minor relatively to the latter.

AGRICULTURAL PRODUCTION-PRICE CYCLES: These * cycles represent changes in production and prices of individual commodities. They occur more or less regularly over a number of years, which are self-energised and in which one part of the movement follows or is caused by another part. Production cycles are inversely related with price cycles. High prices in a particular year induces larger production.
Prices decline in turn, which causes contraction of production. As the contraction continues, prices rise until they reach a level that again encourages expansion, marking the beginning of a new cycle. As the length of the time required for producers to increase or decrease production varies from different commodities, the production-price cycles also vary in length. Most annual field crops are immune from such cycles as they require only one year or less to vary production in response to price changes. In a mono-culture economy or where few crops predominate in agriculture, the production-price cycles in predominant crops may affect the entire agricultural economy.

The graphs of the annual data of the prices and production of groundnut do not reveal any regular cycles. Wide irregular annual variations are noticeable mainly due to erratic fluctuations in yields. An accidental sequence of high-yield or low-yield years might deflate or inflate agricultural prices but these fluctuations should not be confused with the type of cycles narrated above.

CYCLICAL VARIATIONS IN PRICES : The volatility of agricultural prices is closely related to industrial fluctuations. Most raw materials of agricultural origin have a derived demand. Cyclical fluctuations in industrial countries are transmitted to primary producing countries through fluctuations in their import demand. It has been widely recognised that agricultural prices seem to have at the most only a remote connection with production of agricultural produce or supply.

1 To quote Professor Schultz : "Much of the farm problem that loomed so large in the years between the two wars was not caused by maladjustments within agriculture, but by the erratic performance of the rest of the economy." T.W. Schultz, "Two Conditions Necessary For Economic Progress in Agriculture" Canadian Journal of Economics and Political Sciences, Vol.X, No.3, Aug.1944, p.307.
During the post-War period few countries witnessed cyclical variations in prices, and, unlike during the inter-War period, their magnitude is much less. With the aid of the monetary and fiscal techniques developed from the lessons of the inter-War period it has been possible to reduce their adverse impact on the national economies. At least, depression is not feared when an underdeveloped economy attempts to accelerate economic development. On the contrary rapid increase in population which live at a subsistence level and increase in national income resulting from their development efforts elevates the price and income elasticity of demand for foodgrains to a very high level. Moreover induced industrialisation would lead to greater demand for industrial raw materials of agricultural origin. In such a situation the problem would not be one of maintaining or supporting prices at a certain level but of arresting sharp rise in prices, of increasing efficiency in agriculture and industrial sectors and of improving the distribution system.

The fall in agricultural prices, however, is to be viewed in a different context in underdeveloped countries. The adoption of new technology in farming generates cost-reducing and price-reducing effects in the agricultural sector. This tendency poses serious problems particularly when it is helped by sustained sequence of good crop years. For example, as a result of increased agricultural production in 1954-55 and again in 1961-62, the prices of agricultural products and the contribution of agriculture towards national income declined. Sometimes the price support policy is also suggested for the technology-induced price falls, for

\[\text{Cf. Chap. VI, p. 316}\]

Compare: Contribution of Agriculture (excluding forestry and fisheries) towards national income (Rs. in Abja at current prices).

<table>
<thead>
<tr>
<th>Year</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953-54</td>
<td>Rs. 52.0 Abja</td>
</tr>
<tr>
<td>1954-55</td>
<td>Rs. 42.3 Abja</td>
</tr>
<tr>
<td>1960-61</td>
<td>Rs. 66.9 Abja</td>
</tr>
<tr>
<td>1961-62</td>
<td>Rs. 66.6 Abja</td>
</tr>
</tbody>
</table>

example, the price support policy initiated during the depression has been continued till today in the U.S.A. It is in this context that it is worth while here to examine the raison d'être of the general and selective price support policy. In both cases the government undertakes to buy farm produce at a price expected to be above the market level. For the technology-induced price fall in agriculture it need not be emphasised here that the benefits of new technology must spread in the entire economy particularly where agriculture bulks large. With reference to the price support policy aimed at mitigating the harmful effects of cyclical price fall, it is contended here that in underdeveloped economies generally this policy is neither desirable nor feasible on financial, institutional, economic, administrative and social grounds.

Firstly, prices can be artificially pushed up only temporarily. In the long run it is bound to prove costly. A general subsidy will probably no doubt affect output in the short period but, sooner or later, it would lead to diversion of resources from rest of the economy to agriculture. Cyclical downswing in prices would affect the agricultural industry generally. It would necessitate the price support for all products affected. Moreover, a cyclical price support would require holding of surplus stocks for more than one season. Such a policy may not be feasible financially because agricultural commodities constitute bulk of the national income. To cover all the commodities under price support would involve huge amount of budgetary resources which are scarce in underdeveloped economies and which can be more fruitfully employed in raising productivity in agriculture and elsewhere.

Secondly, price support involves income transfers from the non-agricultural sector to the agricultural sector. The efficacy of such a measure is governed by the
ratios of national income earned from the two sectors. Large sustained transferred payments for this purpose from other sectors of the economy to agriculture, of the kind common in western industrialised countries, for example, are ruled out both by the general low levels of income and by the size of the agricultural sector which embraces nearly 70 per cent of the population and contributes nearly 45 per cent of the national income.

Thirdly, if a country produces mainly agricultural products, alternatively, any substantial assistance to agriculture as a whole can only be obtained if it is possible to extract contributions from foreigners. Most countries however are unable individually to influence greatly the course of world market prices in the case of internationally traded commodities. As a consequence of price support the resulting artificially inflated cost structure would drastically reduce the international competitiveness of export products. In fact that is what has actually happened in the case of most of the traditional export crops of India.

Fourthly, realising the impracticability of the scheme of general price support, a policy of selective price support is advocated. It has been rightly pointed out that such a policy would be inequitable and arbitrary. Moreover, a subsidy on only a few products will certainly rapidly increase their output at the expense of other competing farm products. If it is not intended to have this result, it would be necessary to undertake ancillary measures like acreage control, control over market quota,

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1  Unless a differential price structure is made operative for foreign markets.

2  B.R. Shenoy, op. cit., p.185.
etc. as has been used in the U.S.A. since 1938. But crop planning and restrictions on production are not practical policies in the background of 67 million farmers and many more millions of tiny holdings.¹

Fifthly, in the execution of price-support operations administrative difficulties loom large and are more difficult to overcome. Limited funds, insufficient storage and transport facilities, lack of qualified staff experienced in commercial activities are chief impediments in executing price-support programmes. It should be noted that the agricultural economy of India is far from homogeneous in its composition and behaviour. The harvesting period differs with different commodities and even with the same commodity in different regions. The price support authority will have to be under constant vigilance to maintain the price-support of large number of commodities and that, too, on a vast geographical area. Moreover, without adequate organisation at local levels producers price policies could hardly be fully effective.

Sixthly, one of the operational requirements of the cyclical stabilisation measures is the maintenance of buffer-stocks for longer period, at least longer than one season. Surpluses must be mopped up at a supported price through open-market purchases. But the accumulation of surpluses only postpones their sale, it does not solve the problem permanently. Firstly, if the policy is successful in raising prices, it may induce larger production. The maladjustment between supply and demand is likely to be aggravated with the lapse of time. Secondly, as an offshoot to above, the amount required to acquire surpluses will be increasingly larger in each season.² Thirdly, the

¹ In the words of Prof. Shenoy: "To restrict price support to some crops would be invidious, would cause discontent and would distort the pattern of agricultural production." Ibid., p.162.

² B.R. Shenoy, op.cit., p.186.
bufferstock operations would provide a strong disincentive to stockists and buyers in the open market. In anticipation of the government release of stocks, they would postpone their purchases and their decisions might shake market confidence. Fourthly, in the case of internationally traded commodities the raising of prices over a period of years simply by storage operations would be financially very risky. The price problems of such commodities will be world problem and not a domestic one. Fifthly, the policy of price support has encouraged political pressure groups in industrially advanced countries of Europe and North America. Producers or their spokesmen have seldom accepted the need for downward revision of prices, even though it may be necessitated by advancement of technology or a change in the community's scale of preferences and, have always resisted such attempts. "Stockpiling once resorted to cannot be abandoned at will without peril. It would be like holding the tiger by a tail. Abandonment of the policy might lead to a price crash."  

1 Coffee valorisation schemes undertaken during 1931-37 in Brazil, International Conference of Sugar Producers' Chadbourne Plan for restriction of sugar production initiated in 1931, Stevenson scheme for restricting rubber production in British territories during 1921-22, Federal Farm Board's operations in the U.S.A. during 1929-31, etc., are the examples of unsuccessful attempts of prices and production controls undertaken during the inter-War period.

2 B.R. Shenoy, op.cit., p.187, Compare: "The result of this policy in the United States - the ever mounting accumulation of surplus stocks, the existence of which has become a new threat to the stability not only of American but of world agriculture, the fundamentally arbitrary and yet ineffective and irrational allocation of acreages, and so on - are too well known to need description. Few people will deny that American agriculture would be in a healthier state if the Government had never meddled with prices and quantities and methods of production." F.A. Hayek, The Constitution of Liberty, 1960, Chapter 23, p.362.
To conclude, agricultural problems are in fact monetary problems i.e. problems which concern the whole system of exchange relationship. The cycle in agriculture mainly takes the form of a price-income rather than an output-income cycle. The problem of income fluctuations can be effectively tackled by monetary and fiscal policy. It cannot be solved by intervention on an industry-by-industry basis. As K. Boulding has argued out:

"We must avoid any attempt on the part of agriculture to emulate industry and turn its income cycle into an output rather than a price cycle. Such a policy, if successful, would be utterly disastrous for society.... We eat just about as well in depression as in boom, thanks to the blessed instability of agricultural prices and the stability of agricultural output.... The solution to this problem lies, of course, not in the restriction of agricultural output."

VII. MARKETING BOARDS AND STABILISING POLICIES

We may refer in passing to the organisation of marketing boards in the territories of West Africa, particularly because suggestions for the establishment of such boards for export crops are often heard in India. The organised marketing of major export products fully developed in British West Africa. The West African Produce Control Board was the pioneer organisation, established in 1942 in British West Africa. It handled all exports of palm oil, oilseeds and cocoa during the War. Since its dissolution in 1947, statutory marketing boards covering various export products have been constituted in different territories; the principal products with which they deal are cotton, groundnuts, palm oil, palm kernels and cocoa. These boards are statutory export monopolies, employing commercial firms as licensed buying agents to purchase produce from the farmers and selling on the world markets for the best prices they can get, thus,

1 K. E. Boulding, op. cit.
combining advantages of monopolistic selling and monopolistic buying. They announce, at the beginning of each season, a fixed price at which they will buy produce as well as various commissions and transport allowances which the licensed buying agents are to receive. Shippers' and brokers' margin are also fixed by law.

Similar boards with varying powers control the marketing of some of the principal exports in most of the other British, Portuguese, and French territories. Most of these so-called price stabilisation schemes are based on reserve funds of marketing boards or of export organisations accumulated through special taxes or otherwise withholding from producers a part of the proceeds of export sales during periods of high world prices, with a view to use this surplus to support domestic prices of export crops above the world market level when they were low.¹

Before switching to the trenchant attacks levelled on the stabilisation policies in general and the policies of marketing boards in particular,² it must be said to the credit of the boards functioning in British West Africa that they have been able to do much useful work in raising agricultural productivity, though farmers had not accepted the burden uncomplainingly.

Firstly, these boards were successful in eradicating day-to-day and intra-seasonal price fluctuations. Prior to the era of marketing boards, farmers, ignorant of latest

¹ The largest stabilisation fund was that of the Ghana Cocoa Marketing Board, amounting to 51 million sterling. In Nigeria, in 1954, when four former boards, for individual commodities were converted into regional boards, their combined reserves totalled 75.5 million sterling. Vide F.A.O., The State of Food and Agriculture, 1958, Rome, 1958, p.147.

price trends in world markets, were at the mercy of the better informed middlemen. There were handful of export firms owned by foreign merchants and, price rings and speculation were rampant in the market. These boards by stabilising prices over seasons reduced uncertainty which greatly hampered productive investment in agriculture. They have been successful in completely eradicating the short period speculative element in crop marketing.

Secondly, these boards have successfully attempted to raise productivity by spreading technical information and carrying out research. The three Nigerian Regional Production Development Boards were financed by the marketing boards, being allotted 22% per cent of the boards' surpluses each year. The Government of Ghana could make substantial contribution towards the Volta River Project because the Cocoa Marketing Board facilitated the levy of export duty on cocoa. The Gambia Oilseeds Marketing Board has succeeded in improving the quality of groundnut by distributing selected seeds and instituting produce inspection regulations. The improvements in the quality of cocoa and palm oil in Ghana and Nigeria is also attributed to the efforts of boards.

3 In Ghana, money-lenders were charging up to 150% interest on loans. See Report of the Commission on the Marketing of West African Cocoa, H.M.S.O.,Cmd. 5545, 1938. Quoted by Anne Martin, op. cit., p.128.
6 Ibid.
7 Polly Hill, op. cit., p.470.
Several of the criticisms levelled against the policies of the marketing boards in West Africa by Messrs. P.T. Bauer and F.W. Paish are brought together here.\(^1\) They need to be reminded to the protagonists of integrated price policy in India.

First, it is not clear whether the boards were interested in stabilisation of prices and/or incomes.\(^2\) Attempts to stabilise prices have more generally resulted into destabilisation of producers' income. The history of the boards have significantly brought out that the problem of smoothing out long term fluctuations or stabilisation of real income is a difficult task, particularly in an uncertain world and over an indeterminate period.\(^3\)

Secondly, it was maintained that "on an average of the period of years, the average prices paid in West Africa will be substantially equal to the average net prices realised on world markets, and the boards' buying and selling transactions will, therefore, approximately balance."\(^4\) Though it was clearly stated that the boards will not make profit at the expense of producers (which is belied), the period over which this levelling process will take place was left unspecified.\(^5\)

Thirdly, large sums were withheld from producers. The officially declared surpluses of various boards were under-estimates for two reasons. Firstly, these surpluses were computed after the payment of heavy export duties which were

\(^{1}\) Op. cit.
\(^{5}\) Ibid.
Included in costs. Secondly, the sales effected by boards for oilseeds and cotton on a long term contract basis with British Colonial Authorities were far below those received by other bulk suppliers. Thus, these boards became instruments of taxation to the detriment of producers whose interests were supposed to be advanced.

Fourthly, this policy of withholding a part of earnings has affected the incentive to produce as output has not risen to a level which it would have reached otherwise. Such a policy depresses the standard of living of producers in the short period and tends to undermine their competitive position in the long run.

Fifthly, besides yield and demand uncertainty, administrators of the marketing boards provided an added uncertainty. Enormous powers were vested in the hands of administrators and it was difficult to assess how changes are likely to be interpreted by them.

Sixthly, these boards covered a very large area and operated over an indeterminate period. The boom in exports induced geographic shifts of crops to new areas. It may happen that the producers who contributed to the building up of the reserve funds in prosperous years will not be those who benefit from price support in bad years. Moreover, British West Africa is bordered by the French possessions where prices were closer to the world market level had prevailed. This facilitated large-scale smuggling because

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2 Ibid., p.759.
3 Compare: "It is well known that organisations and institutions tend to become ends in themselves and that deep-seated cleavages of interest develop between managers and administrators of such organisation and their unorganised charges, particularly when the former have statutory monopoly powers and the latter are not only unorganised but illiterate, ignorant and vocal." Economic Journal, Vol.LXIV, Dec.1954, p.721.
prices paid in British West Africa for chief export products were substantially below world levels. The British West African boards had to support producers' prices since 1953. Consequently, the smuggling process was reversed and groundnuts, in particular, were smuggled into British West Africa from French territories. ¹

Seventhly, in the absence of a defined and specific mandate, the actual operations of the marketing boards have had the effect of largely socialising peasant production and saving in West Africa. If such measures are considered desirable, they should be introduced on their own merits and not through a backdoor in the guise of stabilisation. Again the suggestion that producers have no right to receive the full market prices (especially, if they are high) is an ethical postulate, which, if desired can always be realised by means of taxation, including the imposition or raising of export duties but which has nothing to do with stabilisation or smoothing. Similarly, the prevention of inflation — the argument officially advanced in support of price policies — is a national problem to be dealt with by the Government as a political decision. ²

The history of these boards demonstrates the difficulty of stabilising prices to farmers in countries where agriculture is by far the largest sector of the economy. The boards cannot, in fact, act solely as the agents of producers. It should be realised that agriculture should contribute the surplus to economic development in underdeveloped countries due to its predominant share in national income. Most of the underdeveloped countries depend heavily on the exports of agricultural products. It is quite obvious that a part of the benefit of the agricultural export earning should be distributed in the entire economy.

¹ Anne Martin, op.cit., p.129.
National attempts to operate on prices of internationally traded commodities can be broadly classified into manipulative measures and stabilisation measures. A few countries like Brazil, Malaya, Pakistan have been successful to influence world prices of coffee, rubber and jute respectively in view of their coveted position of being bulk suppliers in world markets. But the policies to restrict output or withholding of supplies have proved self-defeating in the long run. Since most countries are unable individually to influence greatly the course of world market prices, national stabilisation measures are generally directed primarily at reducing the world price fluctuations on producers. The following methods are used for this purpose: (i) variable export duties, (ii) variable and multiple exchange rates, (iii) centralised marketing of export through a state agency.

Variable export duties have been used extensively during the extremely rapid price movements but adjustments in export duties have generally lagged behind changes in price movements. During the periods of falling prices its incidence usually falls on producers. Under variable and multiple exchange rates, various special rates are calculated for individual export products or group of products with the consideration to their relative competitiveness on world markets; adjustments are made by devaluations or appreciations of special rates. Under state export monopolies the difference between domestic price and export price is diverted either to stabilisation fund or government revenue.  

Several issues involved in these measures have been discussed elsewhere.  

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1 Messrs. Bauer and Paish were of the opinion that huge reserve funds of marketing boards enabled the Government of British West Africa to raise export taxes frequently, op.cit.

2 Vide Chap. IV, Secs. II and III.
All these methods may be operated for revenue as well as stabilisation purposes. However, because of heavy dependence of underdeveloped countries on export earnings, these various types of export taxes are more likely to be raised than lowered. Moreover, unduly high level of these taxes may sap inducement to produce, particularly when producer prices are set too low: if importers bear this burden, it may induce policies for self-sufficiency in the long run. Though all these methods are flexible, theoretically, they have tended to become rigid due to administrative conservatism, political pressures, etc. Particularly, it is doubtful whether India can profitably use any of these methods as, in most export crops, her comparative cost advantage is marginal. Actually, she is currently engaged in wooing exporters through various temptations of export incentive schemes. It has been rightly pointed out that national measures on individual basis have not been effective; when effective, they have proved self-defeating in the long run or deleterious for the growth prospects of other countries exports. Thus, at best, the national price policy should aim at cooperating with the schemes of stabilisation of international prices of primary commodities undertaken under the auspices of international agencies, for example, International Wheat Agreement, 1949, International Sugar Agreement, 1953, etc.

VIII. PRICES AND THE ROLE OF FUTURE MARKET

It is proposed to examine below the role of future markets in affecting intra-seasonal and annual fluctuations in prices and the utility of forward markets under conditions of short supply. The statistical evidence is centered round the data regarding trading in oilseeds and oils, particularly groundnut.
Two extreme views are prevailing in India. Some consider future markets to be a rational development of a free market economy designed for facilitating transfer of risks flowing from price uncertainties which cannot be covered by any other means of insurance. Just as a clinical thermometer registers the temperature of human body, forward markets register prices which in the ultimate analysis depend upon the forces of supply and demand. Others doubt the real utility of futures trading in a developing economy and maintain that, in a socialist economy there is no room for futures trading at all; that the scarcities now being experienced in many commodities make forward trading unnecessary and, that it tends to aggravate inflationary potential.

In a thorough-going socialist economy prices at every stage in the marketing process are fixed by government and the distribution of supplies conforms to the decisions of the State. Hence there would be, probably, no need for the futures market as price fluctuations at production and marketing stage will not exist. But the Indian economy is not a completely planned economy. It is fairly clear that in the near future the existing process of marketing of agricultural commodities which is characterised by a number of functionaries-producers, dealers, processors, exporters, consumers - would continue. The scope of direct physical controls are limited especially in an economy where millions of farmers will have to be controlled. As long as there are likely to be changes in supply and demand, there will be fluctuations in prices, with the attendant uncertainty and risk against which various concerned interests would like to insure themselves by utilising hedging facilities in the futures markets.

From the long-term point of view, the case is for forward markets in India rests on the following grounds:
First, agriculture is the largest industry in the private sector where minute planning is not feasible. The allocation of resources in agriculture would follow the trends in prices of different commodities. Economic development and the resulting commercialisation of agriculture tend to make a farmer market conscious. He would look forward to the advance indicators of the futures prices before planning his production programme.

Secondly, though, currently, the increase in supply in many commodities is lagging behind the increase in demand, by the end of the Third or the Fourth Plan, the present shortages would be probably overcome. Then would arise the problems of carrying surpluses from one season to another with the attendant risk of inventory depreciation through adverse price variations which would necessitate forward markets.

Thirdly, industrialisation inevitably leads to the lengthening of the processes of production which will increase risks in production and marketing. It will call for specialised institutions prepared to underwrite some of these uncertainties.

Fourthly, artificial barriers currently clamped on foreign trade will have to be removed, sooner or later, for international trade and commerce is a two way traffic. Our economy, then, will have to absorb world influences and the risks emanating from unforeseen variations in the world demand and supply. The forward markets are an essential appendage of a sophisticated modern economy to tackle these risks.

We may now examine the commonly held view that speculation in forward markets in acute scarcity conditions pushes up prices much more than magnitude of scarcity would permit. The hypothesis can be examined by computing the values of the elasticity of expectations — a concept originally developed by J.R. Hicks in *Value and Capital* and used by Kaldor — from

the data of ready and futures prices of different commodities. Kaldor's concept seeks to measure a change in the expected price as a proportion of a given change in ready price. The elasticity of expectations is defined as unity when a change in the current price causes an equiproportionate change in the expected price. If it is greater than unity, speculation destabilises, but if it is less than unity, speculation certainly imparts a stabilising influence.

Mr. M. G. Pavaskar\(^1\) has worked out the elasticity of futures prices for the consecutive four-week periods for the six crop years ended 1962-63 for groundnut, castorseeds and rape-mustard, and for the last five years ended 1962-63 for Jute and Jute goods after making due allowance for carrying costs.\(^2\) His results are summarised in TABLE VIII.7.

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2 It is rightly contended that the elasticity of futures prices is a better concept than the elasticity of expectations. According to Mr. Pavaskar (op. cit.), "Carrying costs are included ab initio in every futures price; ready price, during a given period, therefore, must rise more (or fall less) by an amount equal to the actual costs of carrying stocks during that period than the rise (or fall) in the futures price. A variation caused in the ready price on account of carrying costs, however, cannot be interpreted as a destabilising influence of the futures market and, therefore, for the purpose of measuring the elasticity of futures price in any commodity, such variation should be excluded from the actual gross change in the ready price. The elasticity of futures price for any period of time, therefore, should be expressed as a percentage change in the futures price during that period as a proportion to a like percentage change in the ready price for the same period after excluding from the latter the percentage change that may be attributed to normal carrying costs." See also footnote to TABLE VII.7.
From the table we find that out of 60 four-week periods from November 1957 to October 1963, the elasticity of futures price was positive and more than unity during only 17 occasions, while during the remaining 43 four-week periods the elasticity of futures prices was less than unity. In almost three out of four observations, the forward markets in groundnut at Bombay imparted a stabilising influence on the ready price during the six years from 1957-58 to 1962-63. The stabilising influence was rather sharply in evidence when ready prices were falling than when they were rising. But although the forward markets tended to accelerate during 12 occasions the rising trend in the spot prices of groundnut, during 21 other occasions, it tended to arrest such trend. Similarly, 47 observations in the case of castor seeds (out of 77 four-week periods), 45 observations in the case of rape-mustard (out of 75 four-week observations), 45 observations in the case of Jute (out of 56 four-week observations), 37 observations in the case of Hessian (out of 54 four-week periods) indicated the elasticity of futures prices less than unity.

The above analysis confirms that commodity futures market, more often than not, exert a steadying influence on ready prices.

"Despite the strong inflationary pressures in the economy and the acute shortages of edible oilseeds ... the forward markets by and large assisted in arresting the rising trend in the prices of these commodities."1

"...When supply is inadequate and demand is strong, a rise in price is inevitable whether a forward market exists or not, and the closer of the forward market in such circumstances not only will give any relief, but is likely to reinforce the tendency to

### Table VIII.7

ELASTICITY OF FUTURE PRICES, GROUNDNUT, CASTOR, RAPE-MUSTARD, RAW JUTE, HESSIAN, 1957-58 TO 1963-64

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Year</th>
<th>No. of 4-week periods when the elasticity of futures prices was more than unity (+1)</th>
<th>No. of 4-week periods when the elasticity of futures prices was less than unity (-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In rising</td>
<td>In falling</td>
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<tr>
<td></td>
<td></td>
<td>market</td>
<td>market</td>
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<tr>
<td>I Groundnut</td>
<td>1957-58</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>(Bombay)</td>
<td>1958-59</td>
<td>4</td>
<td>3</td>
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<td>1959-60 a</td>
<td>4</td>
<td>3</td>
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<td></td>
<td>1960-61 b</td>
<td>2</td>
<td>4</td>
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<tr>
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<td>1961-62 c</td>
<td>3</td>
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<td>II Castorseed</td>
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<td>III Rape-Mustard (Agra)</td>
<td>1958-59</td>
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<td>1959-60</td>
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<td>IV Raw Jute (Calcutta)</td>
<td>1958-59</td>
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<tr>
<td></td>
<td>1959-60</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1960-61</td>
<td>2 g</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1961-62</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1962-63</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

Note: See next page.
Note: The ready and futures prices used for calculating the 'elasticities' were those recorded at the Bombay Oilseeds and Oils Exchange Ltd., Bombay, in the case of groundnut and castorseed, the Agra Merchants Chamber Ltd., Agra for rape seed/mustard seed and the East India Jute and Hessian Exchange Ltd., Calcutta for raw jute and hessian.

For the purpose of measuring the "net" change in the ready price, carrying costs for each four week period were assumed uniformly at Rs. 1.25 per 250 Kg. for groundnut and castorseed for the four crop years ended 1960-61 and at Rs. 2.25 for the last two crop years ended 1962-63. The increase in carrying costs over the period followed steady increase in godown rent, interest rate and other incidental expenses. Although the increase was spread out over the years on a more gradual scale, for the sake of convenience, the entire increase in carrying costs has been assumed to have taken place in 1961-62. In case of rape-mustard, carrying costs have been like-wise assumed uniformly at Re. 0.20 for 40 Kg. for the crop years 1958-59 to 1961-62 and at Re. 0.36 for the two crop years ended 1963-64. For raw jute, the carrying costs have been uniformly assumed at Re. 1.00 per 100 Kg. for all the crop years. In the case of hessian, whose production is continuous and not seasonal, carrying costs little influence the price and therefore the actual change in the ready price was measured in them instead of the net change.

* Nov.-Oct. for groundnut and castorseed, April-March for rape- seed/mustardseed and July-June for raw Jute and Jute goods.

a There was practically no trading during the season after mid-July.

b There was practically no trading during this season from the end of January till the beginning of July.

c There was practically no trading during this season from the beginning of December 1961 till the third week of March, 1962.

d Futures trading in rapeseed/mustardseed commenced from December, 1957.

e There was no trading during this season from 5th September to 23rd October, 1962.

f Futures trading in raw jute and jute goods commenced from March, 1958.

g There was no trading in raw jute and jute goods during this season after October, 1960.

price rise owing to a possible hectic scramble among exporters, manufacturers and other consumers for the limited available goods in the absence of any hedging medium for ensuring supplies to meet their requirements."

"The sharp and sustained rise in prices witnessed in gur and bullion during the last year and more recently in groundnut, mustard seed and their oils after the total ban on future trading in them, vindicates the truth underlying in this statement."'

On the other hand if forward markets are allowed to operate as we shall see later, effective checks can be imposed on such tendencies.

The beneficial effects of futures market become operative through the hedging function and the market making function; the former acts as an insurance against price fluctuations while the latter facilitates smooth distribution of goods from the stage of production to that of the ultimate consumption. The need for hedging is most acutely felt in the export trade of agricultural commodities where export sales are made generally 1 to 6 months in advance of the actual shipments. Hedging provides protection to an exporter against the possibility of either his commodity advancing in price locally or the sellers refusing to give him delivery. In so far as the organised forward markets provide against both these contingencies, they become an useful instrument of export promotion in commodities of short supply. According to Mr. M.G. Pavaskar, in two agricultural seasons ended 1960-61, nearly 25-50 per cent of the export commitments in the

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1 Ibid., p.1495.
2 Ibid., p.1494.
different commodities were hedged (TABLE VIII.8). In the case of H.P.S. groundnut, the proportion hedged against actual exports was substantial (68.0 per cent). Besides it is possible that in all commodities the proportion of export sales hedged in the export markets may even be larger than that indicated in the table since the data was collected from special margin exemption claims preferred by the exporters to the Forward Markets Commission; some might not have claimed any exemption from payment of special margin for fear that the latter course might result in disclosure of details regarding export commitments.

The market-making function of forward markets is associated with the creation of time, place and possession utilities, although it is not a direct link in the distributive system. First, through price forecasting and commodity hedging, a forward market facilitates the even flow of goods from peak seasons to lean seasons. Secondly, it assists the creation of place utility through arbitrage between the regional markets. Thirdly, it ensures supplies through long hedges.

The efficiency of forward market mechanism in directing the course of ready prices to the changing conditions, present as well as prospective, of supply and demand is clearly demonstrated in methods of physical purchases and sales in vogue in principal commodity markets. In the domestic market many oilmills, textile mills and Vanaspati manufacturers have also used the futures market to ensure their supplies of raw materials in view of the acute shortages in such commodities. Moreover, the 'on call' transactions in cotton trade, 'Jangad' contracts in Saurashtra, unfixed contracts in the South and transferable specific delivery forward contracts are all examples of the use of forward markets whereunder the buyer receives
**TABLE VIII.8**

<table>
<thead>
<tr>
<th>Community and Centre</th>
<th>Period</th>
<th>Total exports commitments hedged during the period (in tonnes)</th>
<th>Actual exports during the period from the centre (in tonnes)</th>
<th>Proportion of Col.(3) to Col.(4) (in per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castor Oil (Bombay)</td>
<td>Jan.-June 1960</td>
<td>4,485</td>
<td>28,112</td>
<td>15.9</td>
</tr>
<tr>
<td>Linseed Oil (Bombay)</td>
<td>Oct.-Nov. 1959</td>
<td>860</td>
<td>2,013</td>
<td>42.7</td>
</tr>
<tr>
<td>H.P.S. Groundnuts</td>
<td>Oct. 1959 - June 1961</td>
<td>10,049</td>
<td>14,762</td>
<td>68.0</td>
</tr>
<tr>
<td></td>
<td>Sept. 1960 - Apr. 1961</td>
<td>10,799</td>
<td>8,062 *</td>
<td>133.9</td>
</tr>
<tr>
<td>Groundnut Oil (All centres)</td>
<td>July-Dec. 1959</td>
<td>7,624</td>
<td>27,486 **</td>
<td>27.7</td>
</tr>
<tr>
<td>Pepper (Cochin)</td>
<td>Aug.-Nov. 1959</td>
<td>1,750</td>
<td>5,520</td>
<td>31.7</td>
</tr>
</tbody>
</table>

**Notes:**

- Actual exports of HPS & groundnut were smaller than the total exports commitment hedged, probably because the latter might include commitments for shipments from ports other than Bombay.
- Exports are for all India.
delivery of goods forthwith, but is required to pay the price on some future date to be fixed at the option of the seller and at the rate then prevailing in the future market.

When the market is in short supply, the much defamed 'corners' and 'squeezes' may sometimes become reality. But they have now become a relic of economic history. Effective checks are provided in the Forward Markets (Regulation) Act 1952 to deter such development. It is necessary here to distinguish between 'speculation' and 'manipulation'. Kaldor defined the former "as the purchase (or sale) of the goods with a view to resale (or repurchase) at a later date, where the motive behind such action is the expectation of a change in the relevant prices relatively to the ruling price." Manipulation "is concerted buying or concentrated selling by two or more persons with the object of forcing prices materially higher or depressing them inordinately through the volume of such sales." While the former is made in anticipation of an impending change in prices, the latter aims at forcing a change in price in the desired direction through the volume of their purchases and sales. Thus, the remedy does not lie in advocating for closure of futures market but when market supplies falls substantially below the normal mean of previous seasons, if and when necessary, there is a need to control excessive speculation, as the circumstances are laden with such possibilities.


2 It is not difficult to determine when the market is in the hands of unscrupulous speculators. "An abnormally high turnover generally reflects the speculative forces at work, while too low a turnover is a sign of lack of interest in the market. A fairly stable proportion between the net open position and the volume of trading normally indicates the level of the genuine hedge transactions. When this proportion is unduly high, it suggests the concentration of the open position in the hands of a few operators, with consequent dangers of a 'squeeze' or a 'corner'. W.R. Natu, op. cit., p. 117.
It can be checked, as is being attempted by the Forward Markets Commission since 1954, "through the imposition of special margins, the prescription of maximum prices, withholding of permission to start trading when short supply conditions are likely to render its smooth running difficult and, lastly, the power to close our contracts in certain contingencies." These measures would entail only marginal interference in the futures market when the market moves off the normal trend. As a result of these measures, according to W. R. Natu, there has been a decline in the total speculative activity. The proportion between the net option and the volume of trading which was very high and unstable in the case of all commodities and in all futures markets generally in the initial years have declined and stabilised at a lower level.\(^1\)

To conclude, first, the working of futures markets in India has imparted stability to the commodity markets even in acute scarcity conditions; secondly, the use of this organisation by exporters, domestic processing and manufacturing industries and traders repudiate the fallacy that the forward markets are used exclusively by the speculative interest and, thirdly, there is an evidence to suggest that the absence of the forward markets has generated greater instability in commodity markets as against the stabilising influence in commodity markets in which forward trading was permitted.

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2. W.R. Natu, op. cit., Table 30, All Commodities: The Volume of Trading, Net Option Position and Quantity Tendered, p.205.
IX. A REVIEW OF AGRICULTURAL PRICE POLICY IN INDIA

An attempt is made here to review the operation of agricultural price policy in the first three Plans. An outline of the evolution of price policy is provided initially and its appraisal is attempted subsequently, indicating an alternative policy action in the end.

It is pertinent to our enquiry to state and review relevant official and semi-official views as outlined in plan documents, various committee reports and official and semi-official statements. Curiously enough all these views unanimously endorse direct state intervention in agricultural prices for one reason or another.

The authors of the Bombay Plan (1943) argued that "the government should adopt a policy of fixing prices."

The Report of the Cooperative Planning Committee (Sairaiya & Committee, 1945) recommended that "the state must adopt a policy of actively supporting agricultural prices within a range which is fair both to the producer and consumer".

The Report of the Famine Enquiry Commission (Woodhead Committee, 1945) was of the opinion that the hard core of the problem of stabilisation of agricultural prices generally is the stabilisation of the prices of food crops, particularly rice and wheat... The machinery to enforce the stabilisation policy entails measures like the determination of a range of maximum and minimum prices at which the prices of particular commodities have to be stabilised, the maintenance of buffer stocks, open market operations and the regulation of foreign trade.
The recommendations of the Report of the Prices Sub-Committee of the Policy Committee on Agriculture, Forestry and Fisheries (Krishnamachari Committee, 1947) are briefly stated below:

(i) The State should guarantee minimum remunerative prices for selected agricultural commodities, prevent the prices of such commodities from exceeding specified maxima and undertake simultaneously a wide variety of other measures of agricultural and general economic development.

(ii) Fair prices should cover the costs of production on representative holdings and leave the producer an income sufficient to maintain himself and his family at a standard of life equivalent to that enjoyed by other comparable classes of the population. The prices so determined will be the fair parity prices. Market prices should be maintained within a range about the parity prices with minimum prices at one end and maximum prices at the other.

(iii) The minimum prices should under no circumstances be permitted to fall below a certain rock-bottom level, determined by the fixed elements in agricultural costs. The state should avoid any sudden collapse of industrial prices.

(iv) The maximum prices for each area should be based on the minimum prices for that area and the former should be 25 per cent higher than the minimum prices or alternatively, equivalent to the fair parity prices, whichever are higher.

(v) The minimum and maximum prices should be calculated on the basis of the fair average quality of the product, suitable differentials being allowed in respect of other grades and qualities and it should remain unaltered during the crop year. The former should be announced well in advance of sowing operations whereas the latter, at least, not later than the beginning of the harvest.

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1 pp.203-209.
The minimum and maximum prices should be enforced by the State by (a) a guarantee to purchase at the minimum prices at an adequate number of important market centres, all supplies offered; (b) an undertaking to provide supplies to the market by sales from Government stocks at minimum prices, (c) the building up of reserve stocks, (d) the regulation of acreage under crops, and the enforcement of adequate standards of land management in special circumstances, and (g) the requisitioning of stocks, the regulation of the distribution and the statutory price control in emergencies.

The policy of price-fixation should be extended to the major foodgrains, viz., rice, wheat, jowar, and bajra and to the major commercial crops, viz., cotton, jute and sugarcane.

For facilitating administrative task, an All-India Agricultural Prices Council should be set up. It should have under it two bodies: (a) Price Stabilisation Commission, (b) Commodity Corporation.

The Report of the Foodgrains Enquiry Committee (Asoka Mehta Committee, 1957) laid down the stabilisation of foodgrains' prices as a primary objective of food policy. It advocated for the nationalisation of wholesale trade in foodgrains and, as a short term measure, the distribution of food primarily through fair price shops. It advocated for the establishment of Price Stabilisation Board for the formulation of the policy, Food Stabilisation Organisation for the execution of the policy and the Price Intelligence Division. It ruled out the possibilities of introducing a system of total control.

The issue of price policy was treated cursorily in the first two Plans. It was outlined in a separate chapter in the Third Plan. In order to avoid repetition, the extracts regarding price policy is reproduced from the Third Plan. However, as the following points from the Second Plan throw additional light, they are also reproduced below:
"A democratic system of planning eschews direct commandering of resources and it operates mainly through the price mechanism." But, surprisingly in the next sentence, it maintains that the plan objectives should be preferably attained by using "devices like export and import controls, licensing of industries or trades, price controls and allocations which influence and regulate economic activity in particular sectors of the economy." 1

"Some of the agricultural commodities, like oilseeds, for instance, are subject to strong speculative influence... it must be stated here that excessive speculation does not accord with a planned economy, and it must be regulated and controlled through all devices at the disposal of Government..........." 2

The following are the salient features of price policy outlined in the Third Plan, particularly in the context of agricultural prices: 3

(i) The price policy should be geared with the twin objective to ensure the allocation of resources according to plan priorities and to check the rise in the cost of living.

(ii) A major constituent of the price policy is the overall regulation of the economic activity through fiscal and monetary policy. However, they by themselves may also not suffice to secure the right relationship between various prices or to prevent undue hardship to low and fixed income groups. It may be necessary, then, to have physical allocations and direct controls in certain sectors.

(iii) Commercial policy can also be used to an extent for overcoming domestic shortages... in fact, considering the need to enlarge foreign exchange earnings, surpluses from domestic production will have to be created even at the cost of raising domestic prices.

(iv) In the interest of flexibility Government should take powers to alter excise duties suitably within defined limits in the course of the year.

1 Second Five Year Plan, p.38.
2 Ibid., p.40-41.
3 Selected extracts from Third Five Year Plan, Chapter VII, Price Policy for The Third Plan, pp.119-132.
The extent to which prices may have to be adjusted upward or downward will have to be determined in the light of the trends in production and demand as they arise from time to time... In the case of sugar since the domestic cost of production of sugar is higher than the world prices, sales abroad will have to be subsidised... In regard to cotton, (as) the shortage of raw cotton has to be made good by imports which cost larger exchange, a price incentive for increased production could justifiably be preferred... In the case of oilseeds, the need is to export more at the same time as domestic demand for oils is rising rapidly. The need here is to regulate prices in the interest primarily of exports.

In our high food-drain economy, "remarkable stability of food-grain prices is of vital importance. Government must always be in a position to regulate effectively the course of foodgrain prices... The production of foodgrain must get a reasonable return... A policy designed to prevent sharp fluctuations in prices and to guarantee a certain minimum level is essential in the interest of increased production... The other objective is to safeguard the interest of the consumers. The key to stabilisation is the building up of a buffer stock and operating on them through continuous purchase and sales over a wide front... The level of stocks with Government from this point of view might well have to be about five million tons. A network of cooperative and governmental agencies close to the farmer, licencing and regulation of wholesale trade, extension of state trading in suitable directions and a considerable sharing by Government and cooperatives in distribution arrangements at retail stage, are essential for the success of purchase and sale operations and correcting seasonal and regional variations.

Though price policy for the Third Plan was outlined in a separate chapter, as we shall see later, no elaborate proposals regarding price policy were worked out. The agricultural price policy pursued in India presents a fine example of slipshod thinking and lacks coherent integrated approach. Unlike the plan documents, the Krishnamachari Committee had fully elaborated the operational aspect of the stabilisation measures. However, the vagueness with respect to the aims and various facets of price policy even in the latter was alarming. It has been pointed out
that though stabilisation is often mentioned as an aim of agricultural policy and as an objective of marketing reform, the term has acquired ambiguities. "The first requirement of price and income stabilisation is a clear definition of its meaning and objectives which will make it possible to assess whether the objective itself is sensible and subsequently to compare performance with promise."¹

I. EVALUATION OF THE AGRICULTURAL PRICE POLICY

An attempt is made below to analyse critically the pitfalls, ambiguities and contradictions in agricultural price policy accepted by the Government.

The aims of stabilisation are not clearly stated. Stabilisation may refer either to prices or money incomes or real incomes.² The example of the first may be found in the policies adopted by the West African Produce Control Board, and subsequently by the marketing boards for cotton, groundnuts, cocoa, etc. in British West Africa; that of the second in the system of annual price review adopted in Great Britain since 1957 to determine aggregate guarantees of money income to the agricultural sector; that of the third in the parity formula adopted in the U.S.A. since the Agricultural Adjustment Act of 1938.

Variations in market prices often move inversely with the size of the crop and may affect total returns of farmers depending upon the elasticity of demand of a particular

² Messrs Bauer and Paish say, "Stabilisation of any one of these may actually destabilise the others; and in certain likely circumstances, such a rise in import prices or fluctuations in crops, it will necessarily do so." Economic Journal, Dec. 1952, op.cit., pp.363-364.
product. From producers point of view the stabilisation of prices and that of income have been viewed synonymous in India as yield fluctuations have generally not been taken into account in governmental price fixing. The Government does not seem to have recognised that problems involved in long-term stabilisation of either prices or income or both are not easy to solve particularly when in underdeveloped countries prices, production and income manifest upward trend simultaneously during the period of accelerated economic growth. In the Indian context it is necessary to distinguish between short term and long-term objectives of stabilisation. The operational aspect of the short term objective of ironing out sharp price fluctuations in commodity markets needs to be clearly defined. Such a policy should not generally interfere with natural long-term adjustments which necessarily permits price fluctuations arising from changes in factor costs with rapid adoption of technological innovations.

Where prices are regulated at a producer level, it may take one or more of the following forms: (i) a maximum price, (ii) a fixed price, (iii) a minimum price, (iv) a more or less exactly defined price range where prices are allowed to fluctuate between certain limits; in all these cases, due allowance is made for differences in quality, dates of delivery and transport distance.

Many unsurmountable difficulties crop up when one attempts to determine the level at which government prices should be fixed and their relation to each other and the prices of other products. The setting up of too high prices may affect consumers, domestic and/or foreign, may necessitate restriction on imports and may lead to over-production and accumulation of stocks. Conversely, the setting up of low prices may affect production or market supplies unfavourably. It would necessitate compulsorily
procurement and expensive rationing arrangements, and create need for higher imports, resulting into draining away of foreign exchange and, in domestic market, squatter away of much needed funds for subsidising imported stuff.

The following are the methods used in several countries for governmental price-fixing:

Cost of Production Formula: The Report of the Prices Sub-committee advocated the adoption of the formula and is being used currently in fixing sugarcane prices in India. It is obvious that a price fall below the cost of production is detrimental to production. However, it has been pointed out that this formula fails to take into account the demand aspect; that it does not take into account changes in inter-commodity and inter-sectoral prices; and that it is difficult to calculate cost of production in subsistence peasant farming.

Parity Formula: Since its adoption in the U.S.A. during the 'thirties the parity formula has been widely known and adopted. This concept has been used in India several times with regard to prices of competing crops like jute and paddy. This formula had been so severely criticised in the U.S.A. that the Government had to make several changes in its implementation. It has been pointed out that no large and sustained income transfers to agriculture from non-agriculture sector is possible in underdeveloped countries; that the selection of base period in underdeveloped economies is not easy; that it is difficult to obtain relevant statistical data to calculate the level of parity; that it neglected the changing trends in demand as an element of price formation; and that it underestimates the impact of technological progress by freezing the terms of trade between different commodities or sectors.
Farm Income Formula: This formula has been adopted in Great Britain. It may be used with respect to group of farms commodities or to an agricultural sector as a whole. Though this formula is superior to the above two, in as much as it takes into account changes in output or prices, it is much complicated, capable of being adopted in highly advanced agriculture where farm management techniques have been fully developed. Hence, its unsuitability to Indian conditions.

Moving Average Formula: In this method which was first applied in Canada, prices of a number of basic commodities are supported at not less than 80 per cent of the average price in the last 10 years. If maximum prices were set as well at which action should be taken to curb further price rise, this system would even out short term fluctuations with the added advantage that it would keep prices in accord with long term trends and so facilitate appropriate adjustment in production. This formula, however, requires modifications at times of sharp inflation or deflation. This system requires a series of relevant data and preparation of a number of key indicators.

Ad-hoc Methods: These methods take into consideration several factors like estimates of unit cost of production, prices of competing crops, relative levels of farm and non-farm prices, world market prices, demand and supply restrictions, general price levels and economic conditions. It is apprehended that this approach, which does not take into account any formula, may be too flexible and, is likely to be influenced by political pressures, considerations of temporary expediency and subjective bias of administrators concerned.
The above review of different methods sufficiently indicates the difficulties involved in arriving at a "just price" by the government. Several difficulties involved in the effective implementation of producer price policies have been noted earlier.¹ "It does not seem possible," as P. Ady has pointed out, "to devise a simple prescription for price-fixing, even for each crop separately, and still less a general formula for them all."² Agricultural prices cannot be isolated from the general price structure. Price mechanism is a delicate operation. Tampering with any part of price system causes disequilibrium everywhere. Any commodity-wise or sectoral price intervention is bound to lead logically to its extension into all other spheres of production. In order to protect it against international forces, we shall be driven to maintain more or less a closed economy or a highly totalitarian economy involving a degree of state control over many aspects of national life that would be intolerable and impracticable. To conclude in the words of Jules Backman: "Price fixing has failed in the past because it has been partial. The economic system will not work half-free and half-controlled. A complete system of price-fixing under a trained administration might work, judged by political and ethical ends, but there would be no way of getting how much it costs in well being."³

The Government price policy in India in agricultural sector appears to have operated with three objectives; (i) increase in food production, (ii) stabilisation of consumer prices to curb inflation and keep down cost of

1 With reference to policies pursued by marketing boards, see pp. 548–55; with reference to measures to counter cyclical price variations, see pp.


3 Jules Backman, Government Price Fixing, op. cit., p. 278.
of living, and (iii) in some exceptional cases, fixation of incentive prices or support to producer prices, e.g. the price guarantee to sugarcane producers or the floor prices of cotton, wheat, etc.

Though food-self-sufficiency has been accepted as an aim and the Third Plan states specially that "the production of foodgrains must get a reasonable return" a policy of deliberate price-repression for foodgrains through P.L.480 imports has adversely affected the inducement to produce. It is proclaimed that prices should be "fair both to the producer and the consumer". But, this amounts to contradiction in terms. A consumer-oriented price policy cannot remain "fair" to producers.

To quote G.A.T.T. report:

"The price of wheat and so the reward offered to domestic wheat producers has been contracted at so low a price that even the imports of U.S. wheat provided under surplus disposal arrangements have had to be subsidised in the Indian market, to bring the prices down to the low level earned by domestic producers."  

In most south-east Asian countries, producer-prices of foodgrains set by the respective Governments were lower than import prices or free market prices. This confirms Hayek's contention that the wealthy countries regularly overpay their farmers while the poor countries generally underpay them. As Dr.B.N.Ganguli has pointed out, "India

1 Cf. ante, Chap.VI, Sec.IIC, p.316; footnote on p.317.
has been to a certain degree, following the policy of agricultural protection in reverse.¹ Prices of crops other than foodgrains, particularly fibres, oilseeds, tobacco, etc., were sometimes even higher than those of manufactures or the general index.

Unlike the prices of food crops, the prices of non-food crops were either not controlled or allowed to rise intermittently. For example, oilseeds prices were not controlled, sugarcane prices were frequently revised upward and floor-ceiling prices of cotton were also upgraded. Frequent changes in the declaration of export quotas of some cash crops and attempts to export scarce commodities through export incentive schemes manytimes encouraged speculative activity. Among price-regulated crops, the floor and ceiling in the case of cotton are determined arbitrarily, and the limit to ceiling prices is much low compared to relative price rise in cotton textiles. The producers of sugarcane seem to have benefited. But, guaranteed prices to sugarcane and protection to sugar industry have encouraged highly unremunerative production structure. For example, to quote Professor Shenoy, "the price of Indian sugar per metric ton is about Rs.1,150 as against Cuba price of about Rs.315 per metric ton."² As if this blow was not enough, attempts were recently made to export sugar by restricting the production of jaggery with resulting scarcities and price rise of both sugar and jaggery in domestic market. As a result of this sporadic price-fixing in the case of non-food crops and price repression in the case of food crops, a sectoral imbalance between prices of food crops and non-food crops was created, and, which in turn has generated crop shifts

2 B.R. Shenoy, Indian Planning and Economic Development, op.cit., p.28.
unfavourable to the cultivation of foodcrops. Again, to quote Dr. Ganguli, "Is this not a paradoxical policy for a country which aims at agricultural development and self-sufficiency in foodgrains?"  

To conclude, it seems that there is an absence of integrated approach towards price policy. It may be a consequence, as pointed out earlier, of undefined policy objectives. To a large extent, price policies as they affect producers are the reflection of consumer-oriented policies. It has worked against the policy objective of self-sufficiency in foodgrains production. Only in some exceptional cases, e.g., sugarcane, price guarantees as an incentive price have been given. Thus, the explicit statements promising a better deal to producers, which planners of the welfare state cannot avoid, are illusory. Attempts to curb inflation have failed in other sectors; it is easy to deflate food prices where millions of farmers are illiterate and unorganised. Hence this policy. It is unfortunate that this camouflaged piracy of agriculture by the non-agricultural sector was continued in the name of economic development.

The policy that agricultural prices should be kept slightly depressed in relation to non-agricultural prices has been maintained on various grounds. In the Indian context, Dr. J.P. Bhattacharjee advocated such a policy for providing, first, cheap food so as to bring down the cost of living and, secondly, cheap raw materials to industries so as not to jeopardise the industrial development. He further maintained that even in the industrially advanced countries of the West which were pioneers of industrial revolution, it was possible


to undertake price support programmes when the industrial sector greatly supplanted the agricultural sector in income generation. "Over larger periods of their history of industrial development, agricultural prices in these countries have either remained or been kept depressed to keep the general prices and costs low."  

Several other economists justify such a policy by maintaining that some income differential is necessary to induce the migration of farm labour to non-farm occupations. Such transaction is in fact inevitable for establishing factor proportions that yield returns to labour in agriculture that are more or less in accord with returns to labour in other sectors, and, that insufficient movement out of agriculture will perpetuate excessively small farms and underemployment. The solution to the farm problem is fewer farmers.

In the context of the Indian economy it is difficult to agree with the above line of thinking on the following grounds:

Agricultural prices in Western countries (which were pioneers of industrial revolution) remained low because the agricultural revolution either preceded or proceeded pari-passu with the industrial revolution. A change in production function arising from an advancement of the technique, improved methods of husbandry, mechanisation,

1 Ibid.

better seeds, manures, etc., may depress prices which is 
welcome and desirable. To keep agricultural prices low in 
India when agricultural productivity has not registered 
any substantial uptrend, its disincentive effects apart, 
is against all canons of economics and social justice.

As Jesness has pointed out, in the context of 
industrial economics, "because of relatively low price and 
income elasticities of consumers demand for farm products, 
technological progress in agriculture must in general 
result in relatively low farm prices."¹ However, in less 
developed countries, the higher price and income elasticities 
of demand for farm products may not permit price 
falls unless technology-induced productivity rise is 
substantial and is not frittered away through demographic 
expansion; in fact, high price-income elasticities of 
demand for farm products may sustain adoption of improved 
technology and greater commercialisation, and make the 
process of economic development self-propelling. If one 
expects that agriculture should make a significant 
contribution in capital formation in the initial phase of 
economic development, it cannot be obtained by squeezing 
the incentives to produce by repressing agricultural prices. 
Such attempts by the communist countries like U.S.S.R. and 
China have failed after many years of planning and recently 
these countries have been forced to import wheat from their 
enemies, namely, U.S.A. and Canada.

The problem of the sectoral terms of trade between 
agriculture and industry within the country may also be 
viewed intra-nationally as between primary producing 
countries and industrial countries. It has been now 
generally accepted that there has been a decline over the 
70 years from 1870 to 1938 in the capacity to import of the

¹ Jesness (ed.), Readings in Agricultural Policy, 
op.cit., p.170.
primary producing countries because the terms of trade moved against primary commodities and in favour of industrial products. It aided the process of deterioration initiated by the phenomenon of declining export quantities which is attributed to (a) the declining "import coefficient" of the industrial countries owing partly to the policy of protection and (b) partly to increased productivity in industrial countries.

This secular phenomenon needs to be viewed in a cyclical setting and can be explained by the greater rigidity of the economic structures of the advanced countries. Several factors like the trade unions, wars, monopolistic or oligopolistic control in several fields of manufacturing and marketing, specificity of specialised skills, high ratio of skilled to unskilled workers and high ratio of overhead to the total costs, etc. contributed towards the rigidities in the economic systems of industrial countries and boosted up their secular price levels. Such rigidities prevent prices and wages from being fully reversible in a cyclical downswing. On the contrary, lack of organisation among primary producing countries (PPC), particularly among farm workers and their low supply price prevents obtaining higher wages during the period of rising prices and accept lower wages during the period of falling prices. The divergence in flexibilities of the two sets of economies forces the greater part of the burden of price adjustment on PPC.


2 Cf. ante, Chap.IV, Sec.III, p.152.

Technical progress may have price reducing effect following the reduction of costs or income raising effect via higher wages and profits. Real income increase can result in a constant level of money incomes with a fall in prices or in the rise in money incomes with a proportionately smaller rise in prices. Under conditions of competition gains in productivity will be passed on to the consumers. Entry of new countries forces its rivals to suffer reductions in export volumes or prices. Under imperfect competition, if all countries involved retain simultaneously certain proportions of their productivity gains in the form of higher incomes, firstly, productivity gains will not be passed on in the shape of lower prices and, secondly, there is also no fear of the higher prices charged causing a reduction in export volumes.

It may be noted that with the exception of Japan, productivity gains in all the industrial countries followed the path not of lowering product prices but of higher incomes. This could be done because of the simultaneousness of this operation in those countries. When Japan failed to do likewise -- it is significant that she had a heavy population pressure and no really strong trade union movement -- the advanced countries, particularly U.K., had to retaliate strongly through protection or following the practice of giving up their productivity gains.

Within each industrial country when descrepancy arose in productivity between industries, a number of devices like protection, parity prices, subsidies, etc. were adopted. The argument is illustrated below; Firstly, the low productivity industries have to face a general level of high wage rates far higher than their productivity increases; it is generally more so where labour is scarce relative to the rate of economic growth. Particularly, the export industries or import-competing industries find themselves priced out in world market not because their own productivity is lower than
that of their rivals in the world market but because it is lower than that of the other industries within their own economy. Thus emerges the paradox that increasing productivity within an economy calls not for less but for more protection. Secondly, the increased farm productivity creates the problem of surplus products or surplus men. In the case of the former, their export prices will have to be reduced; in the case of the latter, the industries must expand at a rapid rate to absorb it. If export prices are not to be reduced as required, the rate of industrial development must be stepped up and/or policies designed to protect or subsidise agricultural incomes must be put into effect.

It is interesting to state briefly the causes of failure of PPS to retain their productivity gains. Firstly, economic activity in PPS is dominated by cycles of industrial activity in advanced countries through fluctuations in export trade. The capacity of the former to influence the demand of the latter is strictly limited and levels of income in PPC determine their demand for imports. On the contrary, the industrial countries possesses this power to induce PPC to increase their demand for industrial goods. Secondly, heavy population pressure exerts a secular tendency to keep down wages and through it costs. It defers the adoption of mechanical innovations and, alternatively, creates unemployment where applied. Agricultural trade unions are incapable of increasing incomes per farmers. However, in agriculture the birth rate is so high that entrance is not free but excessive. Thirdly, PPC tend to produce commodities in which entrance is free and exit difficult with resulting incapacity

1 Raul Prebisch, op.cit.
2 Ibid.
3 Geoffrey Shepherd, "Countervailing Power Versus the Open Market" Contemporary Readings in Agricultural Economics, op.cit., p.238.
to raise prices in periods of firm long run demand and to maintain them in depression. On the other hand, the advanced countries can have a high elasticity of substitution between their foreign trade products and home trade products. \(^1\) Fourthly, several factors like colonialism and the ownership of large areas of export sectors by foreign firms prevented PFC from boosting up their export prices when their exports face at a given period an inelastic foreign demand, whereas they cannot evade high prices when their own demand for foreign goods is inelastic. \(^2\)

In the context of the inverse relationship between national per capita income and the percentage of nation's labour force engaged in agriculture, it is interesting to examine the contention that the way to increase per capita income is to industrialise as rapidly as possible.

First, the transfer of labour from agriculture to non-agricultural occupations is not easy. Occupational changeover creates many problems. There are depressed agricultural areas even in the U.S.A. Adjustments have rarely proceeded fast enough and wide disparities in rural and urban incomes have tended to persist even in industrialised countries in the long run, though they have tended to be narrowed down in the process of economic development. \(^3\) As Dovring has pointed out, the farm labour force frequently does not decline in absolute numbers until fairly late in the process of development; the absorption of surplus labour from agriculture depends not only on the rate of

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2 Ibid.

3 Bellerby found that in 1933 the average "incentive income" in agriculture was 60 per cent of the urban income and that rarely did the ratio exceed 75 per cent. Bellerby, *Agriculture and Industry*
increase of non-agricultural employment but also on the weight of the agricultural sector in the economy. The demand for labour in the industrial sector is limited by the rate of capital accumulation and investments which is likely to be slow in the initial stages of development.

Secondly, it should not be forgotten that there exists a significant potential for raising labour productivity in agriculture. The rate of return on many types of investment in agriculture are fully as high as in the industrial sectors. Even labour-saving investments in agriculture which release labour at more rapid rate than at which industrial employment increases and are used for building schools, roads, sanitation facilities, bunding, terracing, drainage and other labour intensive improvements, can be of great benefit. Given the case with which labour is induced to remain in agriculture due to social, institutional and economic factors, the primary emphasis in underdeveloped countries should not be on the movement of rural labour or on acquisition of industrial capital but on raising the levels of skills, on introducing labour-intensive technology and on raising productivity initially in agriculture.

Thirdly, it is the income of the agricultural sector in a country like India which determines the size of the market for industrial products. A need to avoid cycles in industrial sector necessitates a continuous flow of effective demand from the larger agricultural sector. Any increase in real income of the farm population will generate a demand for services of the non-farm sector. This will ultimately result in a reduction of the proportion of the population engaged in agriculture.

1 Quoted by Johnston & Mellor, Loc.cit.
Fourthly, low productivity per worker in underdeveloped countries indicates low productivity in the economy as a whole and high proportion of labour force engaged in agriculture. Any attempt to accelerate the development of the small non-farm sector at a rapid rate leads to shortage of investment funds in the farm sector and inflation. As suggested by Hayek:

"It would seem, indeed, that if such countries as India and China are to effect a rapid rise in the standard of living, only a small portion of such capital as becomes available should be devoted to the creation of elaborate industrial equipment and perhaps none of it to the kind of highly automatised capital intensive plants that are characteristic of countries where the value of labour is very high, and that these countries should aim spreading such capital as widely and thinly as possible among those uses that will directly increase the production of food."

It is pertinent here to examine priorities in Indian Planning. Forced industrialisation and massive emphasis on investment in heavy industries were the distinctive features of the Second and the Third Plan. Revolution in agriculture has virtually preceded or proceeded pari-passu with the Industrial Revolution in nearly all countries. "Planning in India," to quote Professor Shenoy, "has amounted to a reversal of this natural process. We are developing heavy industries ahead of light industries and developing both at the neglect of agriculture. Forced industrialisation at the cost of the other sectors of the economy particularly agriculture has reacted adversely in many spheres of agricultural activity.


2 In the context of the Second Plan, P.T.Bauer rightly questioned that "It is not stated why, or in what sense, heavy industry is basic rather than say, agriculture, transport or other industrial activity... In spite of the low level and poor quality of food intake, the substantial reliance on imports, the recently discovered underestimate of the population increase, and the rise in food prices, even in 1958-59, agriculture was not included in the core of the Plan." P.T.Bauer, Indian Economic Policy and Development, 1961, pp.45 and 55.
Firstly, "a large expansion of employment opportunities" is one of the principal objectives of the Second Plan. On the employment potentialities of various industries, P.C. Mahalanobis — one of the architect of the Second Plan — states that "an investment of Rs. 1 crores would provide employment for 500 persons in large scale industries producing investment goods, 1,150 persons in large scale industries producing consumer goods and 4,000 persons in agriculture and small and household industries." The Fourth Plan will inherit the backlog of unemployment to the tune of 12 millions from the Third Plan, though the Third Plan inherited from the Second Plan 9 millions and the Second Plan from the First Plan 5.3 millions. In spite of these realities and the spectre of disguised unemployment haunting in rural areas, agriculture has been given step-motherly treatment by the Indian planners.

Secondly, forced industrialisation at the expense of agriculture has reduced the national product. During the First Plan and the first three years of the Second Plan, it has been estimated that the increase in output from agriculture was of the order of 57 to 69 per cent of the additional capital invested. The rate of additions to output from investment in industry, in particular, heavy industries, is of a very much lesser order. In 1946-1953, in five industries — cement, paper, iron and steel, cotton textiles and sugar — the additions to output varies from a low of 14 per cent in paper — iron and steel came close to paper with a percentage of 19 — to a high of 45 per cent of investments in Sugar. Professor

1 Second Five Year Plan, p.4.
3 Third Five Year Plan, p.156.
4 P.R. Brahmanand, "Investment to Speed up Rate of Growth", The Indian Express, 14 November 1959; See M.L. Dantwala, Our Food Problem, 1960, p.29.
5 G. Rosen, Industrial Change in India, 1958, p.93.
Shenoy has rightly remarked: 1 "The national product might have gone up at a much higher rate than actually — probably at 8-10 per cent per year — if the economically optimum investments had taken place in agriculture and the lighter industries."

Thirdly, forced industrialisation has created balance of payment deficits because it has taken place in defiance of the doctrine of comparative costs. 2 Considerations of comparative costs especially in underdeveloped economies demand specialisation in the field of agriculture, extractive and semi-processing industries. India's tropical and semi-tropical climate is conducive to the cultivation of a large variety of fruit crops and vegetables which she is actually growing. But, agriculture, processing and canning industries have not been given due place in the development Plans. 3 India, just like Israel, can profitably develop markets for such commodities in West European countries. The recent boom in exports of banana to Soviet Russia is an instant in point. 4

Fourthly, investment in human capital is sadly neglected in preference for heavy investment in industrialisation. India is investing much more in steel than in man. 5 This

2 As P.T. Bauer has maintained, "there is no theoretical justification or empirical basis for the suggestion that economic development requires or is accompanied by balance of payment problems" op.cit., p.41.
3 There is no mention of processing industries in the Second Plan.
5 Cf.ante, Chap.VI, Sec.II, p.310.
6 "The expenditure on education in India during the Second Plan period (Rs.218 crores) represents 1.5 per cent of the budget outlay of the Centre and the States (Rs.14,107 crores). . . . During the same period we spent over 2% as much (Rs.526 crores) on the steel plants in the public sector." B.R. Shenoy, op.cit., pp.36-37.
neglect of education is to be viewed in the context of a large class of illiterate rural proletariat. According to the Agricultural Labour Enquiry Committee, 1956-57, there were about 16.3 million agricultural labour households (average size of the family, 4.4 and wage earners per family 2.03), their estimated population amounted to 7 crores in 1956-57.\(^1\) Though productivity in Indian agriculture much depends upon their skill, the welfare of this class is grossly neglected even in the much talked about schemes of Community Development Projects.\(^2\) As pointed out by Mr. Oshima, expenditures on agriculture have a "leavening effect" unlike investment in equipment and structures which is subject to wear and tear and must be depreciated... Leavening occurs when a farmer trained in farm management techniques passes them on to other farmers. This rising level of husbandry in the village will, in turn lead to a new spirit of innovation and progress. By contrast, investment in new machines embodying new technology does not possess this leavening effect, since it cannot change the efficiency of the older machines or make itself more efficient. It is the leavening effect which accounts for the superiority of investment in farmers over investment in industry.\(^3\)

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2 To quote Milton Friedman, "In any economy the major source of productive power is not physical capital; it is the productivity of the human beings who compose the society. Yet what we call investment refers only to expenditures on physical capital; expenditures that improve the productive capacity of human beings are left out of account". Quoted by P.T. Bauer, op.cit., p. 71.

Finally, it is not contended here that agricultural development should precede or take priority over industrialisation. A balanced growth approach would be more helpful. As pointed out by Messrs Johnston and Mellor, investment activities in the agriculture and industrial sectors do not constitute independent activities. The output criterion specifies that the two sectors must provide the marketing outlets for each other's products. The investment activities must be such as to continuously sustain investment incentives in both sectors of the economy. This means that the terms of trade between the two sectors should not deteriorate substantially against each other. The input criterion specifies that the industrial sector must provide the employment opportunities for the absorption of workers released by the agricultural sector.

To conclude, unless agriculture is modernised substantially, industrial expansion in underdeveloped countries is likely to proceed at a slow speed. A sustained increase in agricultural productivity in a developing country serves the economy in various ways:

(i) it provides sustenance to growing population;
(ii) it assures raw materials to growing industries;
(iii) it guarantees a market for manufactures goods brought about of higher real incomes;
(iv) it releases export surpluses and earns foreign exchange to pay for imported capital goods;
(v) it provides a source of capital for industry through the media of capital accumulated by traders;

1 op.cit.

2 To quote Professor Lewis: "Industrialisation for a home market can make little progress unless agriculture is progressing vigorously at the same time, to provide both the market for industry, and industry's labour supply. If agriculture is stagnant, industry cannot grow." W.A. Lewis, "The Industrialisation of the British West Indies," Caribbean Economic Review, May, 1950, p.7.
(vi) it leads to growth of exchange economy which acquaints larger sectors of the population with the processes and ways of such an economy and provides opportunities for entrepreneurial and administrative skills;

(vii) it contributes to government revenues for the financing of essential services.

We may now conclude with a note of warning from U.N.O.'s report:

"The development of agriculture simultaneously with, if not in advance of, manufacturing is needed to achieve economic progress and avoid structural disequilibria. Over-rapid and unbalanced growth of the industrial sector, unaccompanied by complimentary changes in the agricultural sector may give rise to phenomena which in the long run are likely to retard economic development -- balance of payment difficulties, inflation, excessive urbanisation, the disruption of accepted social patterns."  

XI. PROPOSALS

I shall now endeavour to suggest operational aspects of agricultural policy in India.

Price-Income Instability

The dictum that stability of income or prices is always better than fluctuations should not be considered axiomatic. The operational aspects of the short-term objective of ironing out sharp price fluctuations in commodity markets needs to be clearly defined. Such a policy should not generally interfere with natural long term adjustments which necessarily permits price fluctuations arising from changes in factor costs with rapid adoption of technological change.  


2 Vide, Chap.VIII, Sec.X, p. 502
Price and income stability is fundamentally the problem of entire national economy and not peculiar to agriculture. A sectoral approach to agriculture ignoring other parts of economy will not bring a lasting prosperity to agriculture. To quote William Nicholls, "Agricultural price policy can at best do no more than supplement, while avoiding conflict with, general monetary-fiscal policy."

Agriculture must bear average risk interest in any industry. It is maintained that the price-fall in agriculture is peculiar, because (1) the development of technology in agriculture results in low prices; (2) the raw-material prices are subject to wide fluctuations for their dependence on industry; (3) the agricultural production maintains steady gait even during depression.

No state intervention is necessary in the first case as the fruits of developed technology must percolate the entire economy. In the second case state intervention in agriculture will not suffice as the root cause lies in industrial fluctuations which may be better tackled by general monetary and fiscal policies. The third case accepts the failure of general monetary and fiscal policies as otherwise a general depression could have been avoided. In this case the peculiar characteristics of agriculture should not be overlooked. It is necessary to check the spread of general depression in agriculture. The government should think of specific measures in agriculture when prices in a given year fall below the average trend substantially; the latter may be determined by taking into account the moving average of past 5 or more years. Attempts should be made to create buffer stocks during the bumper crop years or to dispose of the surplus by subsidising exports abroad if the

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2 Cf. ante, Chap.VIII, Sec.I, pp. 437f
depression is not world wide. The Government may also profitably promote consumption in low income pockets in domestic market by subsidised sale. Reduction or suspension of fixed land taxes, extension of loan repayment installments, cheapening of farm credit and other services may also mitigate strains in agriculture.

Similarly, it is necessary to scale down the extreme heights of prices. In a developing economy, several factors like increased money incomes high income elasticity of demand for farm products, rapid population growth, under-developed infra-structure of the economy etc. are likely to raise cost of living during the initial phase of economic development. The price-peak at which specific action is necessary should be determined by relating it to the average trend of last 5 or more years. The state may intervene when the actual price in a particular year is much above the average trend of a particular commodity. In that case, this problem should be better tackled by releasing buffer stocks, imports, distribution through fair-price shops for low income groups, etc., rather than by direct price control or rationing.

Production Instability

Production variability in underdeveloped agriculture is attributed to its weather-dominated agriculture and specific production cycles. The weather-generated yield instability should be reduced by providing agriculture with basic overheads and by resource expansion whereas price production cycles peculiar to certain crops may be evened out by propaganda through radio broadcast, advertisement in vernacular news-papers, etc. To reduce price uncertainty in the case of such crops, it would be better if the Government declares forward prices, as suggested by D. Gale Johnson,\(^1\) provided proper data for price fixing are available. Fixing forward prices for all crops is not feasible in India.

\(^1\) D. Gale Johnson, *Forward Prices for Agriculture*, 1949.
In a weather dominated agriculture with weak infrastructure, stabilisation of supplies is a better goal than stabilisation of prices. The latter has more often degenerated into perpetual storage of surpluses with a common tendency to push up prices. Farmers or their organisations have rarely accepted that the prices they receive are economic. Thus, stabilisation should be realised in physical-quantitative terms rather than in price terms. Such a policy would reduce annual price variations, arising from annual fluctuations in yield. The government should marginally operate in stocking and destocking operations according as market supplies rise or fall in a particular year from 5 or more years of the moving average of production of each commodity, allowing for increase in supply and demand resulting from development process.

From producers point of view it is desirable to stabilise the income of producers rather than the price of their product. Crop insurance, an important device to ensure income stability in advanced countries, has limited feasibility in India and other underdeveloped countries generally for reasons stated earlier. Encouragement of multi-product firms, selection of low variability enterprises and creation of appropriate infrastructure would help to mitigate the instability of incomes in farming.

Income Redistribution

The pricing system is not an appropriate means for redistributing income or for stabilising income from farming over a period of time. Fiscal policy or supplementary measures like distribution of food through fair price shops are superior instruments. If it is thought necessary to extract contribution from the earnings of the producers of

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1 Vidé Chap.VI, Sec.II A, pp.288-290.
commercial crops, the excess gains may be realised by rationalising the out-dated agricultural tax-structure. Similarly if it is thought necessary to stabilise the price level, the objective should be better tackled by fiscal and monetary policy. The policy of price repression in foodgrains sector should be discontinued. Sectoral price control in the midst of continual inflation is an impossibility. Sooner or later, agricultural prices are likely to regain the parity with other prices.

Price Stability in Export Crops

It has been pointed out that national stabilisation measures of internationally traded commodities have not been effective when undertaken on individual basis; when effective, they have proved self-defeating in the long run of deleterious for the growth prospects of other countries exports. Thus, at best, the national price policy should aim at cooperating with the schemes of stabilisation of international prices of primary commodities undertaken under the auspices of international agencies, e.g. International Wheat Agreement, 1949, International Sugar Agreement, 1953. The Indian experience with respect to most of the export crops in general indicates that, as the result of inflation, increased production has been frittered away in swelling domestic consumption and the Indian products are priced out of world markets. Any attempt to export scarce commodities through various export incentive schemes has proved fruitless. Speculation prior to and after the announcement of the export quota and consequent price rise defeats the very purpose of export promotion. It also needs to be emphasized that the control over forward markets is not the proper measure for solving the basic problems of scarcities and inflation; on the contrary, it was found that the absence of forward markets

1 Cf. ante, Chap.VIII, Sec.VII, pp.484f.
has generated greater instability in commodity markets.\(^1\) Moreover, the imposition of export duties and frequent changes in them in commodities in which we have a price advantage has also unfavourably affected our export prospects as most of our export products face a highly elastic export markets. The stable and long-run stream lining of our export policy is needed for export promotion.

Resource Allocation Problem

The crop pattern is a function of so many intertwined set of forces that it is difficult to measure optimality on the basis of any single criterion.\(^2\) As most of the farm products fall within the schedule of inelastic demand curve, the preference of consumers as reflected in free price system are the best criteria to determine production priorities in agriculture. The Plan priorities should generally conform to these priorities. The short period or social considerations would generally require marginal correctness in the product-mix. Ad hoc price fixing by the government distorts the crop pattern. It is not possible to devise a "just" formula for price fixing for each crop separately or for all crops.\(^3\)

Farmers responsiveness to relative prices demonstrate the ease with which the weapon of selective price incentives may be utilised as a short-term remedy in raising the production of a particular crop. It emphasizes the need for a continuous review of inter-sectoral and inter-commodity price variations. It also emphasizes the danger of tampering with relative price trends which ultimately and with long run ill-effects.

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1. Cf. ante, Chap.VIII, Sec.VIII, pp. 494f.
2. Cf. ante, Chap.V, Sec.VI, pp. 258 et seqq.
3. Cf. ante, Chap.VIII, Sec.X, pp. 503-505
4. Cf. ante, Chap.VIII, Sec.I, pp. 447-449
The contention that there is in agriculture no case for control of prices or production or any kind of overall centralised planning does not mean that the government has no important function to perform in this field. Agricultural problem in India is predominantly a production problem. In a backward agriculture the problem of the instability of agricultural prices and income is supplanting by the problems of capital starvation, primitive technology and weather dominated agriculture. Hence the emphasis needs to be shifted from price policy to measures aimed at raising the production function. Indirect or non-price support measure may take the form of subsidisation of inputs, steady expansion of the sum-total of inputs, development of credit, marketing and transport for improving the profit margin of the agriculturists, promotion of interregional market integration, reduction in seasonal variations in prices and other measures like adequate organisation of farm price intelligence service, improvement of agrarian structure, land improvement, flood control, promotion of agricultural research and extension and crop insurance in limited sectors. To hope for prosperity without increasing production by any possible means is like expecting a consumptive to gain weight and health by consuming his own fat. As it is not possible to operate through the manipulation of product prices in raising the agricultural output as a whole, the price policy at best can be fruitfully utilised through subsidising unconventional farm inputs like fertilisers, pesticides, improved seeds, electric power, fuel, etc.
### INDEX NUMBERS OF WHOLESALE PRICES

#### OF SELECTED COMMODITIES, 1914-1957

(July 1914 = 100)

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<th>Tea</th>
<th>Oilseeds</th>
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5.28

### APPENDIX VIII.2

**ECONOMIC ADVISER'S INDEX NUMBERS OF WHOLESALE PRICES**

**OF SELECTED COMMODITIES, 1939-58**

Base, week ended 19th Aug. 1939 = 100 up to 1947
Base, year ended Aug. 1939 = 100, 1947-58

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<th>Sugar</th>
<th>Cotton</th>
<th>Jute</th>
<th>Tobacco</th>
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<td>215</td>
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</table>
## APPENDIX VIII.2

### ECONOMIC ADVISER'S INDEX NUMBERS OF WHOLESALE PRICES

**OF SELECTED COMMODITIES, 1939-58**

Base, week ended 19th Aug. 1939 = 100 up to 1947  
Base, year ended Aug. 1939 = 100, 1947-58

<table>
<thead>
<tr>
<th>Year</th>
<th>Tea</th>
<th>Groundnuts</th>
<th>Groundnut Oil</th>
<th>Groundnut Cake</th>
<th>Vanaspati</th>
<th>Copra</th>
<th>Sesamum</th>
<th>All Commodities</th>
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<td>332</td>
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</table>
APPENDIX VIII.2 (Continued)

Note: Sensitive series with week ended the 19th Aug. 1939 as the base till 1947. This series included 23 commodities. Since January 1947, it has been substituted by the 'General Purpose' index series which included 73 commodities. Note cont.

<table>
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<tr>
<th>Year</th>
<th>Rice</th>
<th>Wheat</th>
<th>Jowar</th>
<th>Bojra</th>
<th>Sugar</th>
<th>Cotton</th>
<th>Jute</th>
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<td>442</td>
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<td>310</td>
<td>235</td>
<td>439</td>
<td>468</td>
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</table>
APPENDIX VIII.3

ECONOMIC ADVISER'S INDEX NUMBER OF WHOLESALE

PRICES* OF SELECTED COMMODITIES

(base, 1952-53 = 100)

<table>
<thead>
<tr>
<th>Year</th>
<th>All Commodities</th>
<th>Food articles</th>
<th>Milk and ghee</th>
<th>Fibres</th>
<th>Oilseeds</th>
<th>Manufactures</th>
<th>Edible oils</th>
<th>Groundnut oil</th>
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<td>60</td>
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Note: --*Average of months/Average of weeks ended Saturday. Groundnut oil, Average of weeks.
Source: Reserve Bank of India Bulletin.