SOME ASPECTS OF STRUCTURAL CHANGE
IN INDIAN AGRICULTURE*

V. S. Vyas†

The agrarian system in a country reflects the main attributes of production units and their mutual alignment. These are not independent of each other, and factors influencing one aspect of the system affect other aspects as well. However, those favouring structural change stress upon changes in the relative position of different categories of agricultural producers as a pre-condition for changing the attributes of constituent units. It is understood that, without appropriate supporting measures, gains from structural change can soon evaporate. Similarly, unless some vigour is imparted to non-agricultural activities, changes emanating from the agricultural sector cannot last long. The importance of generating and extending appropriate technology and measures to contend with demographic pressures is also realized in this context. While there is substantial agreement on these issues, there is not much clarity on the nature and magnitude of structural change witnessed during the last few years or the process by which such change could have come about.

In this paper, we will examine the changes in the structure of land holdings, an important, if not key, aspect of agrarian structure. The discussion will be carried out for the country as a whole and for major States. The period selected for this study is mid-fifties to early seventies although our major emphasis will be on the decade of 1960s. We will speculate on various processes by which the changes could have come about and the impact that such changes could have made on production level. We will conclude by underlining the need for a proper alignment of institutional, technological and organizational factors in the context of the changed agrarian scene in the country.

I

CHANGES IN THE SIZE PATTERN OF OWNERSHIP HOLDINGS

Production units in agriculture can be classified on the basis of size of land holdings, gross or net produce, value added, capital employed, extent of wage labour, extent of marketable surplus, gross or net worth of the enterprise, etc. As should be expected, Indian economists are not fully satisfied with a unidimensional measure of classifying production units in the agricultural sector. Holdings have been classified on the basis of area covered, gross product, gross and net worth and extent of wage labour (15, 11, 8).‡ Yet, the predominant form of classifying production units is size of land

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‡ Figures in brackets denote references cited at the end of the paper.
holdings expressed in acres (or hectares). This is partly because data on acreage of holdings are readily available and a whole set of information (land utilization, cropping pattern, yield, etc.) is related to the size class of holdings thus defined.

Another reason for the bias towards the size of holdings in terms of acres is that, in Indian villages, control over land and control and authority over local level institutions usually go together. Access to other factors of production in the villages is largely determined by the size of land holdings. In relatively homogeneous rural areas even income differences among different households can be better explained by the size of land holdings than by other important variables (10). Due to the overwhelming importance of land size, intervention in any scheme of structural reform in agriculture is sought, in the first instance, to affect the changes in the size pattern of land holdings.

By selecting acreage as the principal classifying element, comparability between different size classes of production units is not automatically ensured. The quality of land, tenurial arrangement, and intensity of land use may differ significantly for different size-groups. These problems can be best tackled at the micro level of a homogeneous region. However, due to paucity of data, in most of the cases one cannot analyse the structural phenomena below the State level. Our analysis will also be based on State level experiences. While taking the State as a unit for analysis, we are making two additional assumptions: (1) the land market is essentially confined within a State, and (2) inter-State rural migration is not significant.

Changes in Holding Pattern

The reports of various Rounds of the National Sample Survey (NSS) are the principal source for obtaining an all-India picture of the distribution of land holdings. The land holding pattern in India has been investigated under three different Rounds of NSS: Eighth Round (pertaining to 1953-54), Seventeenth Round (1961-62), and Twenty-sixth Round (1971-72). For 1970-71, a census of holdings was also conducted as part of the world-wide Agricultural Census. The findings of the Agricultural Census, especially on the size of holdings, are not comparable with those of the NSS owing to differences in concepts and methodology (12). Partly for this reason and also because only the NSS provides broadly comparable information over a period of time, we have relied on the data collected in various Rounds of the NSS for our study. Because of territorial reorganization of the States and also because of minor changes in definitions, it is not possible to obtain three-point data for all States. In such cases, emphasis is laid on the comparison between the results of the 17th and 26th Rounds.¹ The period between

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¹. Comparison of the results of the 17th and 26th Rounds also causes some problems. For example, estimates of area owned for all States in the 26th Round are lower than that for the 17th Round. For the country as a whole, the estimates suggest a decline in area owned by nearly 7 per cent. In Bihar and Orissa, the measure of decline (—23.6 and—21.1 per cent respectively) is such that the comparison of estimates warrants extreme caution. Estimates of operated area, though differing in the two Rounds, are closer to each other for the country as a whole as well as for individual States.
the Eighth and Seventeenth Rounds is termed as phase 1; the period between
the Seventeenth and Twenty-sixth Rounds is termed phase 2.

Table I gives the distribution of land holdings owned by households in
1953-54, 1960-61, and 1971-72 as revealed by the Eighth, Seventeenth, and
Twenty-sixth Rounds.2 One way to gauge the changes in the holding structure
is to calculate the concentration ratios for these distributions. The calcu-
lation of Gini coefficient for 1961-62 and 1971-72 shows that the land hold-
ing structure had become slightly less skewed (from 0.525 to 0.512)3 by the
end of the decade compared to the early years. However, the concentration
ratio may conceal more than what it reveals. There are various ways in which
the value of the concentration ratio may increase without in fact meaning
an enlargement of bigger holdings at the cost of small sized holdings. For
example, medium size holdings may expand in number and area at the
cost of small and large holdings and may thus raise the coefficient of concen-
tration (4). It will be necessary, therefore, to take a close look at actual
changes in different size-groups of holdings.

To facilitate inter-class comparison, we have consolidated size-groups
of holdings reported in the NSS Rounds in five categories: marginal land-
owners (those owning less than one acre); small landowners (owning land
between 1 and 5 acres); medium landowners (5 to 15 acres); big landowners
(owning 15 to 50 acres); and large landowners (owning more than 50 acres
of land). Following facts emerge from the study of data for 1953-54, 1961-62,
and 1971-72 (see Table I).

1. The number as well as proportion of households in the marginal
holding group has significantly increased.
2. During the period 1961-62 to 1971-72 the acreage under marginal
holdings has slightly declined.
3. The number of small landowners has increased but their importance
in terms of proportion of total number of landowners has marginally
declined.
4. The area under small holdings has increased both in acreage as
well as in proportion to the total owned area in the country.
5. In numbers, total area, and per household area, medium sized
holdings displayed trends more or less similar to small sized holdings.
6. The number as well as proportion of big and large holdings has
declined, the only exception being a slight increase in the number of
big farmers in 1961-62 compared to 1953-54.
7. The acreage under large holdings has declined both in absolute
terms and as a proportion of total acreage. This also holds true for
big farmers but for a marginal increase in acreage in 1961-62 com-
pared to 1953-54.

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2. In subsequent discussion, "holdings" and "households" are used synonymously. Since the proportion of jointly owned holdings in the NSS sample was very small(12), such usage would not vitiate the results.
3. Gini coefficient can vary slightly depending on the exact formula used. In the above calculations, the formula used is that given by Kendall and Stuart (7).
### Table I—Estimated Number of Households and Area Owned by Different Size-Groups of Holdings (All-India)

<table>
<thead>
<tr>
<th>Size-group of ownership holdings</th>
<th>1953-54</th>
<th>1961-62</th>
<th>1971-72</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of households</td>
<td>Area owned (acres)</td>
<td>Average area (acres)</td>
</tr>
<tr>
<td>Marginal (below 1 acre)</td>
<td>15,360 (31.43)</td>
<td>4,166 (1.36)</td>
<td>0.27</td>
</tr>
<tr>
<td>Small (1.4-9.99)</td>
<td>17,448 (35.71)</td>
<td>45,670 (14.95)</td>
<td>2.62</td>
</tr>
<tr>
<td>Medium (5.14-9.99)</td>
<td>11,145 (22.81)</td>
<td>95,230 (31.18)</td>
<td>8.54</td>
</tr>
<tr>
<td>Big (15.49-99)</td>
<td>4,306 (8.81)</td>
<td>106,795 (34.97)</td>
<td>24.80</td>
</tr>
<tr>
<td>Large (50 and above)</td>
<td>604 (1.24)</td>
<td>33,580 (17.54)</td>
<td>88.71</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>48,863 (100.06)</td>
<td>305,441 (100.00)</td>
<td>6.25</td>
</tr>
</tbody>
</table>

**Note:** Figures in parentheses are percentages to the total.

Thus an impression is created that since the mid-fifties small and medium holdings gained in importance while big and large holdings, relatively speaking, lost their importance. This impression is confirmed by Table II. These changes are depicted in Figure 1, with the distribution of rural households on the left and the corresponding distribution of owned area on the right, both plotted over 12 class intervals of ownership holding size.

<table>
<thead>
<tr>
<th>Ownership of holding</th>
<th>Difference in 17th Round over 8th Round</th>
<th>Difference in 26th Round over 17th Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of holdings</td>
<td>Area owned</td>
</tr>
<tr>
<td></td>
<td>('000)</td>
<td>('000 acres)</td>
</tr>
<tr>
<td>Marginal</td>
<td>8,219</td>
<td>896</td>
</tr>
<tr>
<td>Small</td>
<td>5,020</td>
<td>12,795</td>
</tr>
<tr>
<td>Medium</td>
<td>1,857</td>
<td>14,473</td>
</tr>
<tr>
<td>Big</td>
<td>208</td>
<td>2,457</td>
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<tr>
<td>Large</td>
<td>−167</td>
<td>−18,201</td>
</tr>
<tr>
<td>Total</td>
<td>15,137</td>
<td>12,420</td>
</tr>
</tbody>
</table>

*Source: Same as Table I.*

II

**STRUCTURAL CHANGES IN DIFFERENT STATES**

For a country as large as India, the significance of structural change can be appreciated more fully on a less aggregated plane, say a State. There is another reason for selecting the State as a unit of analysis. According to the Indian Constitution, land reforms are exclusively within a State’s purview. The legislation affecting agrarian relationship can differ and has differed from State to State. For this reason we shall be analysing the changes in agrarian structure, i.e., changes in ownership as well as access to land, in major States.

For a summary view of the changes over time in different distributions recourse is taken to Gini-Lorenz ratio. The limitation of Gini-Lorenz ratio as is well-known, is its inability to distinguish between different types of concentrations. Particularly, when used to study the changes in structure over time, it does not give any clue as to which part of the distribution has changed. For cross-sectional analysis these limitations are not very serious. We shall also be using this ratio to understand the impact of structural change on the level of production in a cross-sectional exercise. For understanding temporal changes we propose another measure.
Intermedian Lines as Measure of Skewness

In order to give a precise yet sufficiently representative notion of land holding structures—at this stage we are considering ownership holdings—in different States and at different times, it is proposed to calculate medians of households as well as medians of holdings and to plot the intermedian distance as a vector from the household median to the area median as shown in Figure 2. Thus, the structure at a point in time is represented by a line of particular length having a particular starting point and a particular end point. This line will be extremely sensitive to changes in the concentration at either end of distributions. When the left end of the line shifts rightwards,
it implies an upward mobility of households; when the right end shifts leftwards, a reduction in top concentration is implied. Besides, an intermedian line extending far to the right implies top concentration while one which stops to the left suggests middle concentration.

On the basis of the intermedian lines drawn in Figure 2, we can draw conclusions about the structural changes in different States and, by superimposing the lines, the changes over time in these very States. It will be seen that these lines reflect the changes which were described in previous para-
graphs. For example, if the intermedian line ends before 10 acres, middle concentration may be assumed to exist (or less top concentration is indicated). We see that Assam, Bihar, Jammu & Kashmir, Kerala, Tamil Nadu, Orissa, Uttar Pradesh, and West Bengal conform to this, and indeed have middle concentration. In the remaining States, though top concentration continues, it is significant to note that in each State the intermedian line is shorter for successive rounds, denoting a reduction in top concentration over time. Similarly, upward mobility of households in Assam, Jammu & Kashmir, Kerala, Maharashtra, and Rajasthan can be verified, so also regression in few States like Gujarat, Karnataka, and Uttar Pradesh. Thus, it can be said that Figure 2 gives a precise idea of Statewise changes in the structure and that the intermedian distances between medians of households and holdings can be used as a fair measure of the structure of land holdings. We propose to use this measure in discussing the changes in access to land as suggested by size and distribution of operational holdings in different States.

Access to Land

Access to land is more relevant in determining the relative economic position of different categories of farmers. In our terminology, size of operational holdings denotes access to land. Given a general idea of the nature of tenancy, information on operational holdings provides necessary feedback about the command over resources as well as distribution of gains in the agricultural sector among different households. As a policy measure, changes in operational holdings, mainly by regulating leasing practices, can be more easily affected than changes in ownership pattern.

Coming to the access structure, we intend to analyse access to land to see (a) whether it follows for each State the structure of ownership or substantially modifies it, and (b) how access structures of different States have moved over time.

Access and Ownership

Using the methodology outlined above, we obtain Figure 3 which shows the spread between medians of household and area distributions for both owned and operational holdings. It shows that the access structure in Tamil Nadu and Karnataka has been more skewed than ownership. By this it is implied that the difference between the acreage size ($x_1$) below which 50 per cent of the bottom most households lie (own/operate) and the acreage size ($x_2$) above which top 50 per cent of the area (owned/operated) lie is greater for access than for ownership. This does not specifically say whether there is higher top concentration or bottom concentration or both; it only gives a measure of their joint effect (individual effects are analysed later). In the case of Punjab-Haryana, the access structure is similarly more skewed than ownership at the end of phase 2. This is more remarkable for two reasons. Firstly, the access structure in Punjab-Haryana was much less skewed than ownership at the end of phase 1. Secondly, the greater skew-
ness is now manifest in both top concentration and regression at the bottom. (The regression at the bottom could be due to swelling of bottom class by former landless labourers, a phenomenon to which we will come later).

States where access structure is clearly less skewed than ownership are Assam, Bihar, Orissa, Uttar Pradesh, and West Bengal. For the remaining States, no clear-cut conclusion seems to emerge.

**Demographic Pressures and Change in Access to Land**

From Figure 2 it is evident that over time top concentration of land has reduced in all States. However, this is a conclusion which implicitly assumes that an acre is an acre, wherever it be, in Kerala or Rajasthan. In fact, each State has a fairly distinct demographic pressure on land. Given
our initial assumption of independent land markets and non-mobility of rural population over States, and coupled with the fact that occupational shifts from agriculture to non-agricultural sectors were hardly important in any State, the demographic pressure on land in a State gives it a distinct parameter. Further, for the same State the demographic pressure on land may be different at two points of time. A comparison of the structure between States or over time will include two effects: one due to changes in the structure itself, and the other due to differences in demographic pressure on land. In order to capture the first effect (henceforth called ‘pure effect’), it is essential to normalize the overall distribution for changes in demographic pressure. Figure 4 transforms the access structure into pure effect’s by dividing the median values with the “average land available per household” in a State at a point of time. The two medians are thus converted from acres to per cent of the average acreage.

Changes in Relative Top and Bottom Concentration

On the basis of Figure 4 the States can be ranked in decreasing order on the basis of relative skewness: Punjab-Haryana, Tamil Nadu, Andhra Pradesh, Kerala, Gujarat, Maharashtra, West Bengal, Bihar, Orissa, Uttar Pradesh, Rajasthan, Madhya Pradesh, Assam, and Jammu & Kashmir. It is significant that, if we see Figure 2, Kerala will certainly not appear so high in terms of absolute skewness while Rajasthan will be at the top of the scale.

Regarding top concentration, Figure 4 shows that, relative to demographic pressure, the concentration has generally gone down except in Tamil Nadu, Gujarat, Punjab-Haryana, and West Bengal. There is a marginal increase in top concentration in Uttar Pradesh while in the remaining States there is marked reduction in top concentration.

As in top concentration, bottom concentration can also be analysed relative to demographic pressure. Referring to Figure 4 the conclusions on increased concentration at the bottom are the same as in the preceding paragraphs, i.e., Punjab-Haryana had considerably increased relative bottom concentration while in Gujarat and Karnataka it had somewhat increased. However, this figure also indicates reduction in relative bottom concentration in Kerala and Tamil Nadu. Other States had also somewhat reduced their relative concentration at the bottom as regards access to land. It would bear repetition here that a relative higher bottom concentration does not necessarily imply a regressive agrarian structure. It may also signify upward movement of landless labourers, a phenomenon to which we have made a reference earlier.

To conclude, over the years, top concentration in owned as well as operational holdings has decreased in a large number of States; bottom concentration has also decreased in several States. In States where bottom concentration has increased, the proportion of non-owning non-cultivating households has declined. Thus, over large parts of the country ownership structure has become less skewed over a period of time and access to land is more equitably distributed.
III

FACTORs UNDERLYING STRUCTURAL CHANGE

There are various ways by which shifts in the relative importance of different size-groups of holdings described above could have come about. There could be a ‘ladder’ process functioning in an upward direction or in a downward direction. In the upward manifestation, it would mean landless workers acquiring land and becoming marginal landowners, marginal landowners acquiring more land and becoming small landowners, and small landowners by the same process emerging as medium landowners. The
ladder can work in the reverse direction also when medium owners lose land and swell the ranks of small landowners, small owners are pushed to the marginal owner category, and marginal owners join the ranks of the landless. To compound the difficulties, positive effects of changes in ownership might be negated by changes in the operational holding structure, or the latter may reinforce the former. In respect of structural change, the pattern of ownership has a greater significance. Hence in the subsequent discussion we have mainly focused on changes in the ownership pattern.

It is interesting to note that, virtually in all States where we found bottom concentration, there was a decline in the number of non-owning households. This gives ground to suggest that the phenomenon of landless acquiring tiny plots of land cannot be ruled out (13). At least one carefully conducted study in Gujarat has concluded that there is some evidence, however feeble, of a positive ladder from landless workers to small landowner stage (5). In the absence of similar studies for other parts of the country, one can examine a few relevant hypotheses with the help of aggregate data and indirect evidence to explain the changes depicted in the preceding sections. As possible explanations, one can suggest (1) purchase of land by marginal and small landowners and sale of land mainly by large and big owners; (2) impact of land reforms and movements of similar nature like bhooadan, 'land-grab', etc., resulting in the breaking up of large holdings, and allocating of land to small owners; and (3) demographic pressure necessitating division of holdings. These could be identified respectively as market induced, institutional, and demographic processes.

Before discussing these processes, it needs to be emphasized that inter-class comparisons attempted above may conceal significant intra-class movements as well as information on 'entry' and 'exit' in different size-groups. Lack of relevant information precludes any systematic construction of a transition matrix. However, relative shifts in the importance of different size-groups at two points of time as attempted above is an important indicator of structural change in the holding pattern.

Market Processes

Even in developed countries, market transactions in agricultural land are not numerous. In traditional societies, such transactions are all the more limited because until a dire need arises a peasant would not like to sell his land. Provisions of various legislations enacted in recent years also have contributed to the freezing of land market in India; for example, a scheduled tribe landowner cannot sell his land to a non-scheduled tribe person. In spite of these factors, at least till the mid-1950s there was some evidence of land being sold by small and medium land holders and purchased by large and absentee landlords (9). The classical pattern seemed to be indebtedness due to natural calamities or social ceremonies leading to hypothecation of land with

4. There is a study focused on operational holdings in Haryana, which has concluded that small farmers were losers in terms of operated area (2). The issue we are discussing pertains to owned area.
moneylenders (who in many cases were big landowners) and eventual transfer of land to money lenders or bigger landlords. During the 1960s this process seems to have come to a halt. I have explained elsewhere the possible reasons for the discontinuation of this pattern (16). Briefly, the fear of ceiling legislation acted as a brake to further expansion of holdings of big and large farmers. Opportunities for further intensification of farming in several parts of the country lured cultivators with large liquid resources away from purchase of land. Tenancy legislations in a number of States made the process of buying land by erstwhile tenants easy; this process is well documented for the western region of the country (3, 5). For similar developments in other parts one has to rely on localized surveys and studies. Available evidence suggests that land market tended to work in favour of small and marginal landowners rather than against them.

Institutional Changes

It would be wrong to assume that market forces alone, or in the main, were responsible for obtaining the results noted above. The land market was supplementing the efforts of land reforms which played a much larger role in influencing ownership pattern. Directly, the imposition of ceiling on holding and allotment of surplus land among the landless led to diminution of bigger holding class and creation of small holdings. It is well-known, however, that direct transfer of land was not a quantitatively significant phenomenon, the total area of surplus land redistributed among the landless till the beginning of 1970s amounting to hardly one million acres. Only in a few States did legislative intervention, mainly ceiling legislation, make remarkable impact on the size distribution of holdings; for example, in Jammu & Kashmir, Kerala, and West Bengal. By and large, the indirect pressure exercised by legislation was more important. In spite of fictitious transfers and other devices employed by large landowners, enactment of land ceiling legislations led to large scale disposal of land by big landowners, particularly absentee owners, to forestall the effects of legislation. Since tenancy legislation gave the right of purchase of land to the cultivating tenant, this process was further accentuated. However, the process did not unfold itself in a neat fashion. There were a large number of cases of ejection of small tenants as there were numerous cases of acquisition of land by tenants. During the 1950s and 1960s, a remarkable shuffle took place in the countryside. It is yet to be fully documented though there is strong evidence to suggest that, in large parts of the country, small landowners and the landless were net gainers in this process. Small owners could retain their holdings against the machination of large farmers and they, as well as the landless, were the main beneficiaries once the larger farmers decided to dispose off part of their land to be on the right side of law. Movements such as bhoodan and 'land-grab', though by themselves did not benefit the small and marginal farmers in a measurable way, did contribute in creating a climate such that the large farmers thought it wise to dispose off parts of their land. Factors which led to a diminution of holding size or encroachment of a poor
farmer's land by the rich farmer proved to be weaker than those which were working in favour of small farmers or landless labourers (14, 3, 9).

Demographic Pressures

While the increase in area under small holding groups (and retention of area in the marginal holding group) could be explained by market and institutional processes, the increase in their number is basically due to population increase in cultivating households and lack of alternative employment opportunities in the countryside. An expansion of the household or, more commonly, death of the head of the household, leads to division of holdings among legal heirs. Unfortunately, there are no systematic studies of the household dynamics in the rural areas to arrive at a precise measure of sub-division of holdings over a period of time due to demographic factors. In the absence of such studies, one could only arrive at a rough approximation of changes in the number of agricultural holdings due to population pressure.

On the basis of what is decidedly a crude exercise, we have estimated the likely increase (from 1961 to 1971) in the number of holdings in different size-groups due to expansion in the number of households and partitioning of holdings and arrived at the expected number of holdings and have then compared it with the actual number as revealed in the 26th Round (17). It was found that in the case of marginal holdings the actual number of holdings was more than the expected number of holdings. This means that a large number of new marginal holdings were created, apart from those which came about due to partitioning of households. In other size-groups, the trend was just the opposite, suggesting net migration to other size-groups. The increase in the number of marginal holdings, a substantial part of which is explained by demographic factors, could be either by what we have described earlier as the reverse ladder process or by landless households acquiring small plots of land. From our discussion, the latter seems to be a more plausible explanation. Similarly, a reduction in the number of large and big holdings could be due either to migration of households, or more probably to division of land holdings sliding them in the lower size-group. It bears repetition that the synoptic picture presented above conceals intra-size-group changes; it also does not provide accurate description of the entry and exit from one size-group to other. Its chief merit is in presenting the final position after inter-and intra-size-group changes have been worked out.

IV

THE NEXT PHASE

Certain important conclusions follow from this review of structural changes in land holding pattern. It is suggested that, even in our present system, enough pressures could be generated by legislative and administrative processes enabling small farmers in the countryside to hold on their own.
Impulses released by these reforms could be cumulative. The land market could be induced to function in a way beneficial to small and marginal farmers. The reform measures may also create a climate in which non-legislative redistributive movements could gather momentum.

But these rather favourable factors did not prove adequate for raising productivity, generating surpluses in agriculture, and triggering off a process of absorption of additional work force of small and marginal land holders' households in gainful non-agricultural activities. While structural changes of the type described earlier were meant to help agricultural growth, the net outcome, judged in terms of production, was not at all satisfactory. The rate of growth in agricultural production was 3.6 per cent per annum during the 1950s, which came down to 2.2 per cent per annum in the 1960s. It is easy to summarise that the structural change we are advocating, i.e., a reduced skewness in holding pattern, is irrelevant; it could even be counter-productive. Both facts and logic go against this conclusion.

It will be instructive in this context to refer to the experience of some of the less developed over-populated countries where redistributive land reforms were pursued with vigour. After a careful examination of land reforms in various countries of Asia, the authors of the Second Asian Survey have concluded: “Successful land reforms in the Republic of China (Taiwan) and Korea demonstrate that agricultural development can be achieved with a relatively even distribution of holdings of very small size. The redistribution of land seems to have enhanced the mobilization of labour and rural savings in these countries, and undoubtedly raised the level of effective demand among the lower income groups who received the benefits of redistribution. These equity measures have tended to accelerate rather than impede economic growth” (1).

Nearer home, these findings are corroborated by a study jointly sponsored by FAO and Indian Institute of Management, Ahmedabad. As a part of this study, districtwise data on production and productivity were collapsed in 57 agro-climatically homogeneous regions. Gini ratios were worked out for each of these regions. These ratios, along with per hectare application of fertilizers and proportion of irrigation, were regressed on the yield level of important commodities as well as aggregate agricultural output (per hectare) in each of the selected regions. Table III gives the results. It will be seen that the predictive value of the model is apparent only in the case of rice, sugarcane, and aggregate output, where the value of $R^2$ is more than 0.5. In the first and last cases Gini ratios are negatively and significantly related to the yield levels. It is not significantly related to the yield level of most other crops. The differing behaviour of rice and wheat yield levels in the face of structural inequalities is very significant. It suggests that if technology is as powerful as it happens to be in the case of wheat, structural inequalities probably do not matter significantly. Similarly in commercial crops where per hectare paid-out costs are high, factors other than structural features—may be access to credit, or inputs, or marketing—are more important. In other cases it appears that more equitable structure is an aid to higher productivity.
<table>
<thead>
<tr>
<th>Crop yields</th>
<th>Functional form</th>
<th>Coefficients for</th>
<th>Constant</th>
<th>D</th>
<th>R²</th>
<th>F</th>
<th>d.f.²</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X₁</td>
<td>X₂</td>
<td>X₃</td>
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<td>Rice</td>
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<td></td>
<td>(4.14)*</td>
<td>(2.66)*</td>
<td>(-1.32)**</td>
<td>(3.24)*</td>
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<td>(2.26)**</td>
<td>(0.36)</td>
<td>(1.94)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bajra</td>
<td>L</td>
<td>5.23</td>
<td>345.86</td>
<td>-67.58</td>
<td>436.00</td>
<td>-359</td>
<td>6.16*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.36)**</td>
<td>(1.33)**</td>
<td>(-0.14)</td>
<td>(1.64)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jowar</td>
<td>L</td>
<td>15.41</td>
<td>-154.28</td>
<td>-1061.70</td>
<td>975.74</td>
<td>-288</td>
<td>4.85*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.28)*</td>
<td>(0.51)</td>
<td>(-1.82)**</td>
<td>(3.05)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>DL</td>
<td>0.28</td>
<td>-0.09</td>
<td>-0.50</td>
<td>5.87</td>
<td>-196</td>
<td>3.51**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.08)</td>
<td>(-1.09)</td>
<td>(-1.15)</td>
<td>(12.52)*</td>
<td></td>
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</tr>
<tr>
<td>Cotton</td>
<td>L</td>
<td>-0.05</td>
<td>193.77</td>
<td>176.13</td>
<td>-6.48</td>
<td>-296</td>
<td>4.35*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.03)</td>
<td>(1.85)**</td>
<td>(0.85)</td>
<td>(0.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groundnut</td>
<td>L</td>
<td>5.90</td>
<td>81.62</td>
<td>567.36</td>
<td>282.07</td>
<td>-225</td>
<td>3.38**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.05)</td>
<td>(0.23)</td>
<td>(0.85)</td>
<td>(0.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapeseed and mustard</td>
<td>DL</td>
<td>0.005</td>
<td>0.16</td>
<td>-0.57</td>
<td>6.04</td>
<td>-315</td>
<td>4.29**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.07)</td>
<td>(2.54)**</td>
<td>(-1.70)**</td>
<td>(17.50)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugarcane</td>
<td>DL</td>
<td>0.12</td>
<td>0.04</td>
<td>-0.16</td>
<td>7.92</td>
<td>0.52</td>
<td>22.42*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.93)*</td>
<td>(0.99)</td>
<td>(-0.57)</td>
<td>(32.84)*</td>
<td>(7.40)*</td>
<td></td>
</tr>
<tr>
<td>Aggregate agricultural output</td>
<td>L</td>
<td>22.71</td>
<td>440.99</td>
<td>-907.78</td>
<td>1140.00</td>
<td>-627</td>
<td>24.64*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5.69)*</td>
<td>(1.59)**</td>
<td>(-1.37)**</td>
<td>(3.15)*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

X₁ = Fertilizers (kg. per hectare of gross cropped area).
X₂ = Irrigation ratio (ratio of gross irrigated area to gross cropped area).
X₃ = Gini ratio of distribution of owned land.
D = Dummy for region; taking the value of 0 for North and North-East regions and 1 for the other regions.

**Note:** Figures in parentheses are t-values.

1. Except for aggregate agricultural output, all crop yields are in kilograms per hectare. Aggregate agricultural output of a given crop is evaluated at the same price to eliminate variation due to price differences in various regions.

2. Those regions in which the concerned crop did not have a significant place were dropped.

* Significant at 1 per cent. ** Significant at 5 per cent. *** Significant at 10 per cent.

L = Linear.
DL = Double Log.
The results of the exercise also underline the importance of technical change. Although equitable distribution of holdings is likely to contribute to the level of production (per hectare) as is clear for rice as well as total agricultural output, the importance of technical change as embodied in fertilizer application and irrigation should be fully recognized. In fact, the relative importance of technical factors in enhancing levels of productivity is greater. Presumably, a more equitable distribution of land clears the deck for the application of superior technology.

In addition to the promise of productivity rise, more equitable distribution of holdings satisfies what Joshi has aptly described as ‘equality urge’. It has far-reaching consequences. To quote him:

In a traditionally hierarchical society which was founded on the principle of inequality the introduction of the concept of equality is a revolutionary force challenging the entire ideological and institutional framework of social existence. It is the creator of new urges and aspirations among the have-nots and therefore the generator of social forces necessitating far-reaching innovations in the institutional patterns and paths of modernization... If the principle of equality—and equality also subsumes the elimination of the worst forms of social parasitism and poverty—has to be a major premise of economic growth, it brings to the forefront the question of new institutional patterns contributing to growth with equality.

In countries where the notion of equality is translated in terms of more equitable access to land, the supportive institutions to agriculture are also favourably affected. Growth in modern agriculture crucially depends on various supportive measures, i.e., those related to research, extension, credit, input, and product marketing. The extent of support received by the individual producer from organizations providing these inputs and facilities determine in a large measure his capacity to produce more. In a situation of unequal distribution of land holdings, the supportive systems are also geared to the demands of a relatively few resourceful holdings. On the other hand, in countries where a wider measure of equality in land holdings prevails although holdings may be small, these very institutions get adjusted to the requirements of small holdings. To initiate the process of modernization of agriculture may, therefore, suggest a larger emphasis on equitable distribution of holdings. In this respect, the changes in agrarian structure as witnessed during the last few decades are in the right direction, and, if anything, they need to be further strengthened.

If what has happened over the period of the mid-1950s to early 1970s can be considered as a trend, and if the same trend can be projected for the next 20 years, it looks that by the end of 1980s Indian farming will be basically characterized by medium and small holdings, roughly three-fourth of the land will be cultivated in holdings below 15 acres, compared to less than half in mid-1950s. In some sense, the structure will be more equitable than what it was at the beginning of the planning era.

Already a sizeable class of middle peasantry has emerged in the country. The hegemony of large farmers in the rural areas is broken. The reduction
in the skewness has had a favourable effect on both production and social environment. But in this process, small farmers have not materially benefited; at best they have retained their share of land. Even after a break on the process of proletarianization, the process of immiseration continues(17). The conflict in the country has also shifted to that between the middle peasantry, on the one hand, and small and marginal farmers, on the other. Since the middle peasantry is not inconsequential in numbers and has strong links with other establishments, the conflict is becoming more pervasive and acute.

It is a moot question whether structural changes per se are likely to benefit the small farmers, or whether the solution to their problems lies in terms of an adaptive technology, supportive systems geared to their requirements, and, most important, alternate or at least supplementary sources of employment. So far no effective dent has been made in these directions. Yet the emerging social conscience, new alignment of political forces, and our better understanding of the operative systems should give us greater hope for evolving a viable strategy for small and marginal farmers.

The Indian experience in land reforms is important inasmuch as it shows that the hegemony of large land holders can be challenged by a combination of legislative, market induced, and extra-constitutional moves, but a different strategy is required to enable small and marginal farmers to consolidate their gains.

REFERENCES

5. M. B. Desai, Changing Farm Production and Organisation in Surat, M. S. University of Baroda, Baroda, 1974 (mimeo.).