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STRUCTURAL CHANGES IN LANDHOLDING IN INDIA: A STUDY BASED ON NSS DATA

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INTRODUCTION

At a descriptive level, the purpose of the present per is to document the structural changes in the landholding ttern in the 1970s with respect to (a) the size distribution of nership holdings, (b) the incidence and forms of tenancy and d the size distribution of operational holdings. We shall point certain contrasts in the pattern of changes in the 1970s vis-is those in the fiftees and sixtees as well as the inter-te differences in the pattern of changes in the seventees. We not however, attempt here any comprehensive explanation of the erved contrasts between the two periods or of inter-state fferences in the seventees.

At an analytical level the purpose of the study is the llowing: (a) to identify, through a decomposition exercise, the lative importance of demographic and non-demographic factors in counting for the observed change in the average size of nership holdings for individual status and all India, (b) to e the relationship between changes in the average size of nership holding, incidence of landless households on the one nd and changes in the level and pattern of concentration of nership holding on the other, and (c) to examine the effect of nges in the incidence of tenancy on the concentration of erational holding.

The analysis is based on the data available from the 26th nd 37th rounds of National Sample Survey (NSS) relating to the

years 1971-72 and 1981-82 respectively. Both the surveys used the same concepts and sample framework and therefore, the estimates derived are fairly comparable[1]. To anticipate the broad conclusion regarding the change in the landholding structure in the seventees, is that there has been rapid marginalization of landholding structure in most parts of India, due to mainly a disproportionate proliferation of marginal holdings (both ownership and operational). Such a change in the distribution of households has been a factor accounting for a decline in the average size of ownership holdings and in the change in the structure of landholdings in the seventees compared to the preceeding two decades.

Thus, as a prelude to the present study, it is useful to review the structural changes in landholding in the fifties and sixties. The trends in landholding during this period as revealed from the various rounds of the NSS may be briefly summarised as follows; (i) the number as well as the proportion of households in the marginal size groups of holdings had declined, (ii) the number of small holdings had increased but their share in total holdings declined. The area under this size group had increased in absolute terms and also as a proportion to the total area, (iii) in the case of medium sized holdings, the trend noted was the same as that for small holdings, and (iv) the number as well as proportion of big and large holding declined the area under these holdings had also declined both in absolute terms and as a proportion to the total area. These trends were observed to be similar in all the states. The above periods also witnessed a decline in the incidence of tenancy. There was also decline in the proportion of landless households. The average

size of ownership and operational holdings had shown a sharply falling trend in all the states.

What had been the effect of these changes in the landholding pattern on the concentration of land? According to Sanyal (1977) though the period had witnessed a reduction in the proportion of landless households and the number of large holdings, the concentration ratio remained high. Since the distribution can change even when the concentration ratio remained the same, this measure is not a good indicator to capture the changes in the land distribution over time. In this context, one method adopted by Vyas (1979) was to estimate the changes in the scale of landholding. His principal finding from this exercise is summarised below:

" Over the years top concentration of 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 decreased, the proportion of non-owning, non-cultivating households has declined. Thus, now in large parts of the country ownership structure has become less skewed over a period of time and access to land more equitably distributed". (Vyas: 1979)

Vyas identified the operation of a ladder process as the principal force behind the structural changes in landholding pattern. This process has worked both in the upward and downward direction. The upward manifestation has taken place by landless workers acquiring land and becoming marginal land owners and small land owners by the same process becoming medium land owners. The process can come in the reverse direction by the sale of land by the higher size groups to the lower size groups and

downward movement of the higher size groups to the lower size groups due to partitioning of households. Thus, in states where there has been a decline in the bottom concentration, the number of landless households showed a declining trend. This suggests that the landless have been acquiring tiny plots of land. The possible explanations cited for the decline in bottom concentration of the households are (1) Purchase of land by marginal and small farmers and sale of land mainly by large a medium farmers, (2). impact of land reforms, (3). demographic pressure necessitating the division of holdings. Sanyal (1977) has also offered a similar explanation for the botto concentration of land. However, he also observed that th creation of small landowners through various re-distributiv measures would rather increase than solve the problem of th inequality in the distribution of owned land.

It is evident from the foregoing review that t structure of landholding has undergone significant changes in t fifties and sixties. Further there has been a definite tre (though not very strong) towards more even distribution of l and improvement in its access among rural households.

To what extent the structural changes in landholdi in the fifties and sixties continued to operate in the sevent will be analysed in this paper. Since data on landholding in eighties are not available, we could not examine the changes landholdings in recent years. However, using the agricult census data for 1981 and 1986, we will briefly indicate t direction in which the size of landholdings has been moving the first half of the eighties.

This paper is organised in five sections including this introduction. In section I, we will examine the changes in the size and distribution of ownership holding. In section II, the changes in the incidence and form of tenancy are analysed. The changes in the size distribution of operational holdings are examined in section IV. The last section brings together the main findings of this paper and highlights the policy implications.

II. Size and Distribution of Ownership holding

A comparison of the estimates from the 26th and 37th rounds of the NSS shows a decline in the average size of ownership holding for the country as a whole: from 1.53 hectares in 1971 to 1.28 hectares by 1981. Across states the average area owned has declined in all the states except Assam, Haryana and Orissa (see table 1).

There is also large disparity among states in terms of average size of ownership holding. This disparity has declined during 1971-81, as reflected in the reduction in the coefficient of variation from 63.9 per cent in 1971 to 53.67 per cent in 1981.

The changes in the average size of holding may be due to the influence of the following factors: (a) Per capita owned land: If it declines with increase in population the formation of new households can take place only through bringing changes in the existing area of owned land. Conversely if the per capita owned land increases, the new households can be accommodated in the additional area that has been created. Thus changes in per

Table 1
Average Area Owned by Households in Various States in India

States	Average area (hectares) 1971	1981	% change
Andhra Pradesh	1.48	1.29	-12.84
Assam	0.88	0.91	2.90
Bihar	0.89	0.79	-11.24
Gujarat	2.33	1.83	-21.46
Haryana	1.67	1.72	2.99
Himachal Pradesh	1.30	1.24	-4.62
Jammu & Kashmir	1.08	0.93	-13.89
Karnataka	2.05	1.78	-13.17
Kerala	0.42	0.36	-14.29 ✓
Madhya Pradesh	2.77	2.13	-23.10
Maharashtra	2.55	1.97	-22.75
Orissa	0.96	1.01	5.21
Punjab	1.43	1.40	-2.10
Rajasthan	4.39	3.39	-22.78
Tamil Nadu	0.74	0.56	-24.32
Uttar Pradesh	1.08	1.03	-4.63
West Bengal	0.70	0.55	-21.43
All India	1.53	1.28	-16.34 ✓

Note : Estimates include landless households.
Source: a. Government of India (1976): Tables on Landholding: All-India, 26th round, July 1971- September 1972, Report No.215, Department of Statistics, Ministry of Planning.
b. Government of India (1982): Sarvekshana, Vol.5, No's.3 & 4, Issue No.16, January - April, Department of Statistics, Ministry of Planning.
c. Government of India (1989): Some Aspects of Household Ownership Holding, 37th round, Jan - Dec 1982, No. 330, Department of Statistics, Ministry of Planning.

capita land can influence the average size. (b) Average family size: Households with larger family size will have diversified sources of income, better ability to take risk and accumulate land because of their higher income position etc. Thus changes in the average family size may influence the average size of holding[3]. (c) The distribution of households: Because of the ladder process, households may move up or down in the scale of landholding and effect changes in the average size of holding.

In order to bring out the effect of the above variables on the average size of holding, we have formulated the following identity.

$$\text{Average area owned} = \frac{TL}{TH}, \quad \text{where } TL = \text{Total land owned}, \; TH = \text{Total households}$$

This can be expressed in terms of the three factors discussed earlier as follows:

$$\text{Average area owned} = \sum_{i=1}^{n} \frac{L_i}{P_i} \times \frac{P_i}{H_i} \times \frac{H_i}{TH} = \Sigma\, A\, B\, C$$

where L_i = land owned in the ith size class and $\Sigma L_i = TL$;
P_i = Number of persons in the ith size class;
H_i = number of households in the ith size class and
TH = Total number of households.

The first component $A = L_i/P_i$ defined as the size class distribution of per capita land owned; second component $B = P_i/H_i$ represent the size class distribution of household size and the third component $C = H_i/TH$ is the size class distribution of households.

Let AO(1) be the average area owned for the year 1 and AO(2) be the area owned for the terminal year. The changes in the average area owned can be written as

$$AO(2) - AO(1) = \Sigma\, A_2\, B_2\, C_2 - \Sigma\, A_1\, B_1\, C_1$$

$$= \Sigma\,(A_2 - A_1)\, B_1\, C_1 + \Sigma\, A_1\, (B_2 - B_1)\, C_1 + \Sigma\, A_1\, B_1\, (C_2 - C_1) + \Sigma (A_2 - A_1)\, (B_2 - B_1)\, C_1 + \Sigma (A_2 - A_1)\, B_1\, (C_2 - C_1) + \Sigma\, A_1\, (B_2 - B_1)\, (C_2 - C_1) + \Sigma (A_2 - A_1)\, (B_2 - B_1)\, (C_2 - C_1)$$

In this equation, the first term of the right hand side $\Sigma\,(A_2 - A_1)\, B_1\, C_1$ explains the effect of changes in the size class distribution of per capita land; the second term $\Sigma\, A_1\, (B_2 - B_1)\, C_1$ explains the effect of changes in the size class distribution of household size and the third term $\Sigma\, A_1\, B_1\, (C_2 - C_1)$ represents the effect of changes in the size class distribution of households. The last terms indicate the joint effects. The results of the

decomposition exercise for the period 1971-72 to 1981-82 for all India and states are given in table 2. From this table the following inferences can be drawn.

Table 2
Contribution of Different Factors to the Change in Average Size of Owned Land (1971-81)

States	Observed Change (hectares)	Relative Contribution by (%) Per capita land	Household size	Household distribution	Joint Effects
Andhra Pradesh	-0.1918	15.68	-21.23	-88.71	-5.74
Assam	0.0224	-208.88	148.34	138.48	22.06
Bihar	-0.0994	24.83	-6.34	-112.69	-5.80
Gujarat	-0.5957	-61.65	42.45	-72.18	-8.62
Haryana	0.0537	-221.80	270.26	208.49	-156.95
Himachal Pradesh	-0.0585	-49.16	6.17	-84.59	27.58
Jammu & Kashmir	-0.1881	-109.45	30.72	-32.82	11.55
Karnataka	-0.2693	-28.56	35.68	-92.36	-14.82
Kerala	-0.0638	48.01	-64.74	-75.31	-7.96
Madhya Pradesh	-0.7193	-40.67	31.43	-85.30	-4.46
Maharashtra	-0.5800	-4.28	0.44	-95.16	-0.44
Orissa	0.0475	-109.53	109.04	101.19	-0.70
Punjab	-0.0309	-14.13	44.63	-134.42	3.92
Rajasthan	-0.5954	0.61	22.37	-107.76	-15.22
Tamil Nadu	-0.1754	29.45	-18.83	-97.27	-13.35
Uttar Pradesh	-0.0604	-132.20	133.76	-78.05	-23.51
West Bengal	-0.1471	-22.77	25.23	-98.76	-3.70
All India	-0.2546	-22.22	21.00	-98.41	-1.40

Change in household distribution has an unambiguous and 'positive' contribution to change in the average size of ownership holding for all India and for all states. That is to say, change in household distribution helps to account for either an increase or decrease in the average size of ownership holdings, something that is not in general true of the other two components. Moreover, change in household distribution emerges as the single most significant component (in terms of its relative percentage contribution) in accounting for the observed change (decline) in the average size of ownership holding for all India

and all states except a group of five states (namely, Assam, Haryana, Orissa, Jammu and Kashmir and Uttar Pradesh) where, in any case, this along with one of the other two components (per capita land and household size) together account for the observed change.

In order to bring out the effect of the changes in the size distribution of ownership holding on concentration of land, we have estimated the lorenz ratio for 1971 and 1981 (see table 3). We have given two sets of estimates one including landless households and another excluding them. The latter estimates are higher than the former estimates, thereby indicating that the inclusion of the landless has resulted in an increase in the concentration ratio of land.

The value of the lorenz ratio is high for all India and for most of the states. In the case of Jammu and Kashmir and Himachal Pradesh, the values are far below the all India average. In the seventies, the lorenz ratio at the all India level, has remained almost the same. But, the interregional variation has slightly increased, as is evident from the increase in the coefficient of variation from 12.38 % to 16.22 %. The trends across the states have shown significant variation. The concentration ratio has declined in Assam, Bihar, Haryana, Himachal Pradesh, Kerala, Orissa, Punjab and Uttar Pradesh. The rate of decline is very sharp in Himachal Pradesh. The ratio has increased in Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and West Bengal.

What are the factors that may have contributed to the changes in concentration ratio across states? Taking clue from an earlier study (Sanyal:1977) that creation of small and marginal

holdings may lead to increase in the concentration of land, we estimated the correlation between percentage changes in average size of holdings and percentage changes in the lorenz ratio for the inter state cross section data. The estimated value of the correlation coefficient was negative (r=-0.513) and significant at 5 percent level, indicating that there is a negative and proportional relationship between change in average size of holding and change in the concentration of land.

Table 3
Estimates of Lorenz Ratio for Ownership Holdings by States in India: 1971 and 1981.

States	Lorenz ratio					
	(excludes 0 size class)			(includes 0 size class)		
	1971	1981	per cent change	1971	1981	per cent change
1. Andhra Pradesh	0.73	0.74	0.97	0.75	0.77	2.37
2. Assam	0.62	0.56	-10.50	0.72	0.59	-17.64
3. Bihar	0.69	0.69	0.00	0.70	0.70	0.00
4. Gujarat	0.69	0.69	0.00	0.73	0.74	1.60
5. Haryana	0.75	0.70	-7.30	0.78	0.72	-8.40
6. Himachal Pradesh	0.55	0.31	-43.12	0.57	0.36	-35.92
7. Jammu & Kashmir	0.42	0.52	23.52	0.43	0.56	29.49
8. Karnataka	0.66	0.68	3.29	0.70	0.73	3.26
9. Kerala	0.69	0.68	-1.16	0.74	0.72	-2.20
10. Madhya Pradesh	0.62	0.65	4.43	0.66	0.70	6.35
11. Maharashtra	0.68	0.71	3.71	0.73	0.77	5.07
12. Orissa	0.64	0.61	-4.17	0.68	0.64	-5.17
13. Punjab	0.78	0.77	-1.30	0.79	0.78	-1.40
14. Rajasthan	0.61	0.62	2.50	0.62	0.65	5.56
15. Tamil Nadu	0.75	0.76	1.00	0.79	0.80	1.43
16. Uttar Pradesh	0.64	0.63	-1.65	0.65	0.64	-1.06
17. West Bengal	0.67	0.69	3.55	0.70	0.75	6.29
All India	0.71	0.71	0.00	0.74	0.75	1.00

In order to gain further insight into the effect of changes in size of holding on the distribution of land, we estimated the share in area owned of bottom 40 per cent, 40 to 80 percent, 40 to 90 percent, top 5 percent, top 10 percent, top 1 percent and top 20 percent of the households. For computing th

share the lagrangian interpolation formula was used[5]. A comparison of interpolated values with known functional values was done to verify the accuracy of the estimated values by using the graph of the estimated decile values[6]. The estimated values of the various segments are given in table 4.

The trends in the estimated share of owned land of various segments in the scale of landholding has shown the following patterns across the states. (a). The states where the bottom and middle concentration (40 to 80 percent and 40 to 90 percent) have increased and the top concentration declined. The states falling in this group are Gujarat, Haryana, Himachal Pradesh, Orissa and Punjab; (b) The states where the bottom and middle concentration have declined and the top concentration increased. This pattern is noted in Jammu and Kashmir, Karnataka, Kerala and Maharashtra; (c) In the remaining states the pattern is mixed and the changes are not striking. In Andhra Pradesh, bottom concentration remained almost unchanged, middle concentration showed slight increase and top concentration slight decline. In Assam, bottom concentration declined; middle concentration increased; coming to the top concentration, it is seen that the share of the top 5 percent increased, but that of other segments declined. In Bihar, the share of the various segments showed only marginal change. A similar pattern is noted in Madhya Pradesh also. In Rajasthan the middle concentration has slightly increased, and the top concentration showed a slight decline. In Uttar Pradesh, the bottom concentration has slightly increased and the top concentration slightly declined. In West Bengal, the distribution has remained almost unchanged. For the country as a whole, the share of the various segments remained almost the same.

Table 4

Share of Ownership holdings in various category

States	Year	Bottom 40 %	40 % to 80 %	40 % to 90 %	Top 5 %	Top 10 %	Top 15 %	Top 20 %
Andhra Pradesh	1971	1.61	25.11	44.12	38.46	54.27	65.36	73.[illegible]
	1981	1.69	26.27	44.58	38.28	53.73	64.53	72.[illegible]
Assam	1971	8.26	37.58	56.59	21.91	35.16	45.48	54.[illegible]
	1981	7.09	37.49	58.21	23.32	34.71	45.15	55.[illegible]
Bihar	1971	1.84	27.52	49.40	33.39	48.76	60.81	70.[illegible]
	1981	1.63	27.67	48.68	33.32	49.69	60.38	70.[illegible]
Gujarat	1971	2.94	31.04	51.33	29.50	45.73	57.29	66.[illegible]
	1981	3.22	31.55	52.59	28.54	44.19	56.31	65.[illegible]
Haryana	1971	N	26.37	48.94	33.94	51.06	63.58	73.[illegible]
	1981	0.36	30.88	52.11	28.98	47.53	59.32	68.[illegible]
Himachal Pradesh	1971	8.66	33.99	51.38	26.38	39.96	49.84	57.[illegible]
	1981	8.85	35.51	53.59	24.47	37.56	47.71	55.[illegible]
Jammu & Kashmir	1971	12.55	39.44	57.30	19.47	30.15	39.52	48.[illegible]
	1981	9.58	37.16	56.22	20.77	34.20	44.43	53.[illegible]
Karnataka	1971	4.08	32.70	51.31	30.10	44.61	54.66	63.[illegible]
	1981	3.26	31.87	50.02	31.90	46.72	56.92	64.[illegible]
Kerala	1971	1.52	28.89	45.57	35.68	52.91	61.86	69.[illegible]
	1981	N	22.84	45.35	36.88	54.65	67.57	77.[illegible]
Madhya Pradesh	1971	5.66	34.19	53.11	27.02	41.23	51.57	60.[illegible]
	1981	4.93	34.75	53.65	27.24	41.43	51.79	60.[illegible]
Maharashtra	1971	3.93	32.41	51.82	29.25	44.25	55.15	63.[illegible]
	1981	3.64	30.85	50.97	30.03	45.39	55.92	65.[illegible]
Orissa	1971	5.16	32.15	51.99	28.77	42.86	53.43	62.[illegible]
	1981	5.48	33.48	53.12	28.39	41.40	51.73	61.[illegible]
Punjab	1971	N	22.24	44.75	37.66	55.25	68.50	77.[illegible]
	1981	N	22.84	45.35	36.88	54.65	67.57	7[illegible]
Rajasthan	1971	6.62	30.51	49.00	30.50	44.38	54.78	62.[illegible]
	1981	6.55	32.18	49.39	30.15	44.06	53.39	61.[illegible]
Tamil Nadu	1971	0.39	26.59	[illegible]7.71	36.23	51.90	64.05	73.[illegible]
	1981	N	26.93	[illegible]3.26	35.68	51.74	64.[illegible]	73.[illegible]
Uttar Pradesh	1971	3.74	32.22	[illegible]2.29	29.15	43.97	56.77	66.[illegible]
	1981	4.65	32.65	[illegible]5.49	28.64	43.86	54.81	62.[illegible]
West Bengal	1971	1.96	31.98	[illegible]2.[illegible]2	29.28	45.12	56.94	66.[illegible]
	1981	2.14	31.29	[illegible]2.8[illegible]	29.19	45.00	57.87	66.[illegible]
India	1971	2.60	27.55	[illegible]6.2[illegible]	35.79	51.20	61.94	69.[illegible]
	1981	2.44	27.80	[illegible]6.7[illegible]	35.36	50.84	61.81	69.[illegible]

N = Negligible

Since the shares of the various segments in the scale of landholding have undergone change, it may have affected the skewness in the distribution of land. In order to bring out this sharply, we derived a composite index of skewness by applying the Principal Component Analysis to the distribution of shares[7]. The results are given in Table 5. The estimates showed that the direction of changes in skewness has been towards the bottom size groups of holdings in 10 states and towards the larger size group of holdings in seven states. It may be noted that in majority of the states, the magnitude of change in the index is very low. The exceptions to this are a few states namely Kerala (+10.4%), Jammu and Kashmir (+19.5%), Haryana (-10.7%), Himachal Pradesh (-7.1%) and Karnataka (+5.6%).

Table 5
Index of Skewness for the Distribution of Ownership Holding

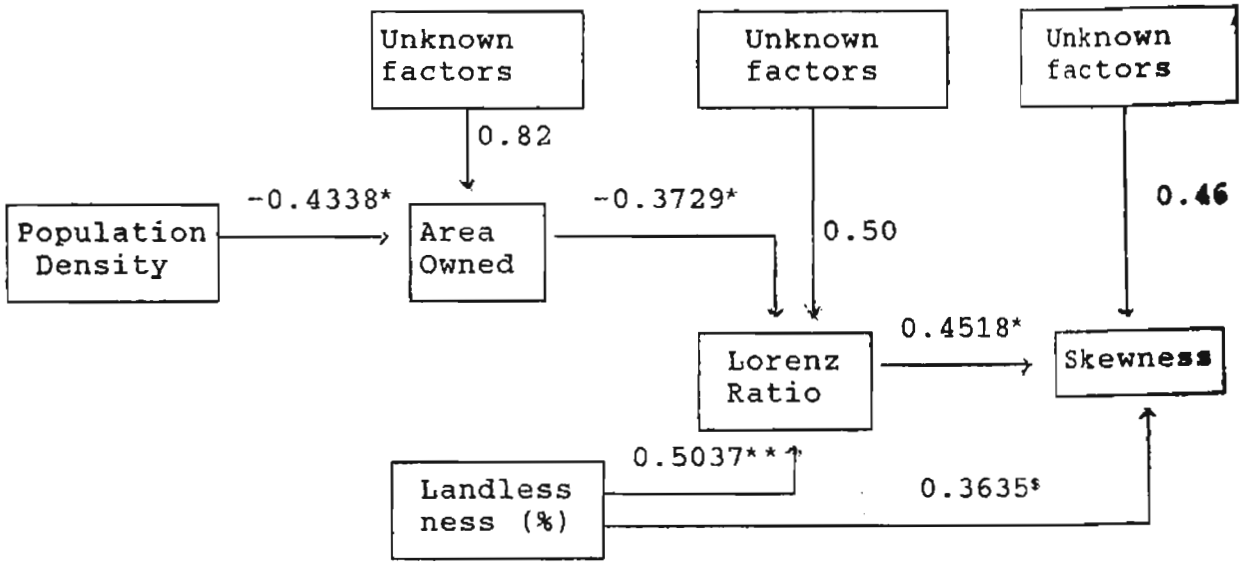
	1971	1981	% change
Andra Pradesh	86.28	84.74	-1.78
Assam	49.36	50.02	1.34
Bihar	77.52	77.97	0.58
Gujarat	70.03	67.87	-3.09
Haryana	81.83	73.02	-10.76
Himachal Pradesh	57.89	53.77	-7.12
Jammu & Kashmir	39.88	47.64	19.47
Karnataka	66.91	70.66	5.61
Kerala	80.61	89.04	10.46
Madhya Pradesh	60.78	61.02	0.39
Maharastra	66.82	69.29	3.69
Orissa	64.73	61.99	-4.24
Punjab	90.45	89.04	-1.56
Rajasthan	67.28	65.34	-2.88
Tamil Nadu	83.03	82.78	-0.30
Uttar Pradesh	66.68	65.75	-1.39
West Bengal	69.23	69.86	0.91
All India	80.00	79.47	-0.66

Path analysis has been applied to measure the determinants of lorenz ratio and skewness of the share of distribution of land (for details, see Kendall and

O'Murircheartaigh, 1977). The path coefficient is estimated using Ordinary Least Squares regression equations which measure the strength of the relationship between any pair of variables included in the model. The most important assumption of Path analysis is the specification of the causal ordering of variables in the model. The validity of the causal ordering cannot be tested from the data, but we can evaluate its appropriateness on the basis of our theoretical framework and interpret the findings accordingly.

Figure I displays the model used in the present study where population density, average size of owned area, and the incidence of landlessness are taken as the variables influencing lorenz ratio and skewness of the distribution of land.

Figure I. Path diagram of factors affecting distribution of land



** significant at 5 percent level
* significant at 10 percent level
$ significant at 15 percent level

The nature of relationships envisaged in this model is two fold: Firstly, as the population pressure on land increases, the average area owned tends to decline. And with the decline in

average area, there will be a tendency towards increasing the concentration of land and skewness in land distribution. Secondly, because of the operation of the ladder process, there will be upward and downward mobility of the households in the scale of landholding. Consequently, there will be changes in the incidence of landless households which may influence the changes in the concentration ratio and skewness in land distribution.

Table 6
Effect of Growth Rate in Density, Average Area Owned and Landlessness on Growth Rate in Lorenz Ratio and Skewness

Dependent variable	Area Owned	Lorenz ratio	skewness of share
Average area owned			
(a). Direct effect	---	-0.3729	---
(b). Indirect effect thr' lorenz ratio	---	---	-0.1685
(c). Total effect	---	-0.3729	-0.1685
Landless			
(a). Direct effect	---	0.5037	0.3645
(b). Indirect effect thr' lorenz ratio	---	---	0.2276
(c). Total effect	---	0.5037	0.5921
Density			
(a). Direct effect	-0.4338	---	---
(b). Indirec effect thr' [illegible]	---	0.1618	---
thr' av.area thr' lorenz ratio	---	---	0.0731
(c). Total effect	-0.4338	0.1618	0.0731

The estimated path coefficients for the model are given in table 6. As expected, the changes in the lorenz ratio is strongly influenced positively by the changes in the landlessness (0.5037) and negatively by the changes in the average area owned (-0.3729). However, the effect of landlessness is higher than area owned. We also observed that the changes in the skewness are directly influenced positively by both changes in the lorenz ratio (0.4518) and changes in the landlessness (0.3635). Further, changes in the landlessness indirectly (through average area owned) affect the skewness by 0.2276. Hence the total effect of

landlessness (0.5921) on skewness of the land distribution is higher than the total effect of average area owned (-0.1685) on skewness of the land distribution. Also, it should be noted that changes in the population density has a negative effect on changes in the area owned (-0.4338). Further, the population density is affecting the lorenz ratio through average area owned positively by 16.18 percent and it affects the skewness through average area owned and landlessness positively by 7.31 percent. From the analysis it can be inferred that, though the landlessness has a greater impact of changing the distribution of land, the population pressure changes the distribution of land significantly through average area owned.

In the preceding analysis we have seen the changes in the structure of ownership holding and some of the underlying factors. The extent to which the landholding pattern has responded to changes in the operation of the land lease market will be examined in the following section.

III. Incidence of Tenancy

In the early seventies 24 percent of the households in rural India leased in land and the leased in land accounted for about 19.69 percent of their owned land[7]. The percentage of households leasing out land was however lower at about 9.8 percent and they leased out about 5.8 percent of their owned land. During the period under study, both in terms of households and area there has been a sharp decline in the incidence of tenancy. The percentage of households leasing in land declined from 23.7 to 18.5. The percentage of leased in area to owned area declined from 10.7 to 7.5. In the case of households leasing out land, it declined from 9.9 percent to 5.5 percent. The area leased out

declined from 5.8 to 4.3 percent.

Among states in the country, the incidence of tenancy varied significantly. In the early seventies 19 percent of the households in Assam leased in land; this was followed by Bihar, Tamil Nadu, Uttar Pradesh, Haryana and Punjab. The lowest percentage of households leasing in land was in Gujarat and Jammu and Kashmir. There was also no correspondence between the percentage of households leasing in land and the relative importance of leased in area to owned area across states. Regarding changes in the leasing in of land, all the states witnessed a sharp decline (see table 7) in terms of area and all but Orissa and Maharastra in terms of households.

Table 7
Percentage of Households Leasing-in Land to All Households

STATES	Households		Leased-in Area to Owned Area	
	1971	1981	1971	1981
Andhra pradesh	20.95	19.74	9.08	6.51
Assam	49.17	14.09	23.23	6.87
Bihar	33.48	17.22	16.17	10.42
Gujarat	13.74	9.01	4.31	2.00
Haryana	29.41	22.28	27.80	19.65
Himachal Pradesh	25.62	16.95	11.23	2.94
Jammu & Kashmir	13.15	5.40	8.03	2.79
Karnataka	27.68	16.95	17.14	6.62
Kerala	17.67	12.70	9.10	2.28
Madhya Pradesh	23.26	12.29	8.25	3.80
Maharashtra	14.69	16.70	6.78	5.57
Orissa	14.75	16.81	14.70	8.04
Punjab	27.52	23.03	34.33	18.98
Rajasthan	14.81	9.70	5.50	4.34
Tamil Nadu	31.16	29.22	13.99	13.37
Uttar Pradesh	24.96	21.27	13.76	11.09
West Bengal	30.63	27.09	21.57	12.29
All India	23.72	18.53	10.69	7.46

Source: a. The same as for table 1 and
b. Government of India (1988): Sarvekshana, Vol.12, No.1, Issue No.36, July, Department of Statistics, Ministry of Planning.

Table 8

Percentage of Households Leasing-out Land to All Households

State	Households		Leased-out Area to Owned Area	
	1971	1981	1971	1981
Andhra Pradesh	12.05	6.17	8.93	6.00
Assam	12.00	3.15	8.18	1.78
Bihar	15.80	7.44	6.78	4.95
Gujarat	3.79	2.32	2.29	1.67
Haryana	11.63	9.40	8.05	10.64
Himachal Pradesh	8.94	9.74	4.09	6.91
Jammu & Kashmir	3.73	1.54	3.21	0.97
Karnataka	11.05	5.81	7.90	5.01
Kerala	5.47	1.68	3.00	0.43
Madhya Pradesh	7.67	3.19	3.62	3.29
Maharashtra	5.02	3.10	3.20	2.70
Orissa	13.11	6.71	7.04	5.45
Punjab	17.67	8.35	17.69	11.07
Rajasthan	5.78	5.49	4.09	3.14
Tamil Nadu	8.44	7.78	3.88	5.89
Uttar Pradesh	10.06	6.71	6.41	4.79
West Bengal	9.48	3.71	8.95	2.48
All India	9.87	5.53	5.77	4.29

Source: The same as for table 7.

As regards leasing out of land, all the states witness a sharp decline in the percentage of holdings leasing out land as the percentage of area leased out to total owned area (see table 8). This process has taken place at different pace across states. Consequently, the ranking of the states has undergone significant change in terms of this index of tenancy.

Though the incidence of tenancy has declined in the seventies, the lease market has undergone significant change. This is reflected partly in the change in the distribution of leased in land across size group of holdings and partly in terms of lease. The distribution of leased in area across size categories of holdings are given in table 9. In the seventies, the distribution of leased in area has moved in favour of the higher size group of holdings in Assam, Bihar, Gujarat, Haryana, Karnataka, Madhya

Table 9

PERCENTAGE DISTRIBUTION OF AREA LEASED IN BY SIZE CLASS OF OPERATIONAL HOLDIN STATES

States		0.00-2.02	2.03-4.04	4.05-6.07	6.08-10.12	>10	All Sizes
1.Andhra Pradesh	1971	27.58	25.74	12.77	20.64	13.	100.00
	1981	29.09	28.53	19.21	9.99	13..	100.00
2.Assam							
	1971	70.19	25.01	3.85	0.91	0.04	100.00
	1981	48.36	38.41	8.37	3.13	1.73	100.00
3.Bihar							
	1971	69.61	20.85	5.67	3.04	0.84	100.00
	1981	69.45	20.82	6.47	3.23	0.03	100.00
4.Gujarat							
	1971	11.21	23.89	13.25	25.08	26.57	100.00
	1981	10.14	11.27	24.56	13.73	40.30	100.00
5.Haryana							
	1971	12.86	28.47	19.05	24.65	14.97	100.00
	1981	8.07	32.97	22.14	23.14	13.68	100.00
6.Himachal Pradesh							
	1971	63.02	26.95	9.55	0.48	0.00	100.00
	1981	67.40	16.17	3.45	12.81	0.17	100.00
7.Jammu & Kashmir							
	1971	44.09	38.38	15.64	1.89	0.00	100.00
	1981	48.86	43.58	4.81	2.75	0.00	100.00
8.Karnataka							
	1971	19.40	17.61	18.21	18.48	26.31	100.00
	1981	14.74	23.24	7.24	38.72	16.06	100.00
9.Kerala							
	1971	69.13	17.93	9.77	2.60	0.58	100.00
	1981	76.55	2.65	4.60	3.21	12.99	100.00
10.Madhya Pradesh							
	1971	21.58	24.42	18.67	20.57	14.49	100.00
	1981	15.80	17.53	31.59	29.35	5.73	100.00
11.Maharashtra							
	1971	14.15	22.23	12.21	19.72	31.69	100.00
	1981	6.06	16.56	18.09	32.84	26.45	100.00
12.Orissa							
	1971	56.73	26.72	7.14	5.85	3.56	100.00
	1981	40.75	19.95	3.31	2.05	33.94	100.00
13.Punjab							
	1971	9.72	32.52	18.77	23.75	15.24	100.00
	1981	12.98	21.61	24.48	22.75	18.18	100.00
14.Rajasthan							
	1971	7.72	22.12	9.41	29.24	31.50	100.00
	1981	6.65	24.15	21.22	15.13	32.85	100.00
15.Tamil Nadu							
	1971	57.60	28.13	8.59	5.24	0.44	100.00
	1981	63.03	22.50	7.47	3.67	3.23	100.00
16.Uttar Pradesh							
	1971	51.48	29.24	8.98	5.29	5.01	100.00
	1981	49.93	27.75	9.86	6.42	6.04	100.00
17.West Bengal							
	1971	71.35	24.06	2.24	2.35	0.00	100.00
	1981	57.93	25.36	3.11	1.59	12.01	100.00
All India	1971	36.97	24.99	11.44	13.70	12.90	100.00
	1981	35.12	23.86	13.69	13.87	13.46	100.00

Source: Same as for table 7.

Pradesh, Maharashtra, Orissa, Uttar Pradesh and West Bengal. I Andhra Pradesh and Jammu and Kashmir the distribution has moved i favour of marginal and small holdings. In the remaining states, the trend is mixed. In Himachal Pradesh, the distribution h shifted in favour of marginal and medium holdings. In Punj marginal and medium size groups and in Tamil Nadu marginal a large holdings gained from the distribution. On the whole, direction of land transfer has been in favour of the higher si groups in most of the states except Andhra Pradesh and Jammu a Kashmir.

As regards the forms of tenancy there has been sig nificant changes in the seventies (see table 10). For the count as a whole, the percentage of area leased in for share of prod was about 48 percent in 1971 and it slightly declined to percent by 1981. Across the states these forms of tena continued to remain important in all the states except And Pradesh, Gujarat, and Kerala. However, its incidence has decli in all the states except Orissa and Maharastra. In both states, the percentage of area under this form of tenancy h increased. The percentage of area leased for fixed money declined in all the states except Haryana, Punjab, Tamil Na Uttar Pradesh and West Bengal. In both Punjab and Haryana, importance of this form of tenancy has increased in the seventi Coming to the form of tenancy for fixed produce, its importa has increased in Haryana, Himachal Pradesh and west Bengal. percentage of area leased in under usufructuary mortgage increased in Rajasthan. In all states except Punjab, the p centage of area leased-in for other terms has shown substa increase[8].

Table 10

PERCENTAGE TERMS OF LEASED-IN OPERATED AREA OVER TERMS OF LEASE BY STATES

STATES		Terms of Lease					
		for fixed money	for fixed produce	for share of produce	for usufr-uctuary mortgage	for other terms	total
1.Andhra Pradesh	1971	28.30	14.21	35.29	2.33	19.87	100.00
	1981	13.00	11.07	10.76	0.00	65.17	100.00
2.Assam							
	1971	17.06	15.59	41.85	4.52	20.98	100.00
	1981	15.45	8.35	35.43	0.31	40.48	100.00
3.Bihar							
	1971	1.24	6.97	78.28	6.00	7.52	100.00
	1981	6.52	3.60	76.82	2.04	11.02	100.00
4.Gujarat							
	1971	22.76	10.23	39.64	17.90	9.46	100.00
	1981	5.13	0.51	11.28	13.85	69.23	100.00
5.Haryana							
	1971	12.42	8.51	53.96	7.65	17.45	100.00
	1981	24.15	10.81	46.49	0.38	18.17	100.00
6.Himachal Pradesh							
	1971	15.7	5.29	49.90	2.35	26.67	100.00
	1981	7.50	16.25	34.06	7.19	35.00	100.00
7.Jammu & Kashmir							
	1971	0.74	8.06	86.85	0.99	3.35	100.00
	1981	2.11	12.24	66.67	0.00	18.78	100.00
8.Karnataka							
	1971	30.90	18.88	39.08	2.52	8.62	100.00
	1981	3.64	4.70	33.93	0.66	57.07	100.00
9.Kerala							
	1971	13.04	39.81	7.33	3.38	36.44	100.00
	1981	3.41	0.00	13.17	2.44	80.98	100.00
10.Madhya Pradesh							
	1971	15.01	8.58	28.95	1.61	45.84	100.00
	1981	1.68	1.12	28.09	0.56	68.55	100.00
11.Maharashtra							
	1971	25.04	13.82	41.46	3.41	16.26	100.00
	1981	10.96	2.31	51.34	1.54	33.85	100.00
12.Orissa							
	1971	7.50	13.45	42.20	1.63	35.22	100.00
	1981	5.14	8.06	44.46	1.51	40.83	100.00
13.Punjab							
	1971	28.49	11.67	44.91	2.36	12.57	100.00
	1981	42.13	4.60	43.81	2.05	7.41	100.00
14.Rajasthan							
	1971	9.89	10.46	25.86	2.66	51.14	100.00
	1981	3.48	1.39	25.06	15.55	54.52	100.00
15.Tamil Nadu							
	1971	15.15	28.69	42.31	1.30	12.55	100.00
	1981	19.23	19.87	37.46	2.47	20.97	100.00
16.Utter Pradesh							
	1971	6.69	5.84	55.11	2.23	30.13	100.00
	1981	8.59	4.88	53.62	0.49	32.42	100.00
17.West Bengal							
	1971	0.69	2.56	92.43	0.48	3.84	100.00
	1981	2.84	11.91	55.83	0.49	28.93	100.00
All India	1971	15.42	11.64	47.87	3.12	21.95	100.00
	1981	10.86	6.27	44.71	2.23	35.93	100.00

Source: Same as for table 7.

In a situation in which there has been a qualitative a quantitative change in tenancy, it is useful to examine the typ of households who are involved in the lease market. According the 37th round of the National Sample Survey at the all Ind level 34 percent of the operated area leased-out was by household self-employed in agriculture; about 19 percent by agricultur labour households and about 46 percent by other households (s table 11). Across the states, households belonging to the sel employed in agriculture and others contributed to the bulk of t operated area leased-out in all the states except Andhra Prades Gujarat, Maharashtra and Karnataka, where agricultural labour also contributed to a substantial percentage of the are Regarding the type of households leasing- in land, in all t states it is dominated by the self-employed in agriculture. marked exception to this is Kerala where about 30 percent of t area leased in was by others. To what extent, the allocation land through the land lease market has affected the si distribution of operational holding will be discussed in t following section.

Table 11

PERCENTAGE OF AREA LEASED OUT AND AREA LEASED IN BY DIFFERENT HOUSEHOLD TYPE TO TOTAL AREA LEASED IN/OUT BY ALL HOUSEHOLDS; 1982

State	Percentage of area leased out by				Percentage of area leased in by			
	self employed in agri.	Agricultural labour	Others	Total	self employed in agri.	Agricultural labour	Others	Total
a Pradesh	17.81	38.63	43.56	100.00	83 41	13.52	3.07	100.00
	47.46	10.17	42.37	100.00	95.49	2.62	1.89	100.00
	39.27	10.12	50.61	100.00	75.62	9.79	14.59	100.00
t	42.42	47.98	9.70	100.00	96.00	2.00	2.00	100.00
a	39.70	4.05	56.26	100.00	90.43	1.48	8.09	100.00
i Pradesh	70.14	0.00	29.86	100.00	99.32	0.00	0.68	100.00
a Kashmir	49.47	0.00	50.53	100.00	85.30	0.00	14.70	100.00
aka	9.62	41.48	48.90	100.00	91.24	4.83	3.93	100.00
	29.27	12.20	58.54	100.00	56.14	13.60	30.26	100.00
Pradesh	26.30	11.93	61.77	100.00	82.89	8.16	8.95	100.00
shtra	14.87	48.33	36.80	100.00	82.23	12.93	4.85	100.00
	26.65	16.73	56.62	100.00	83.58	12.44	3.98	100.00
	65.43	0.09	34.48	100.00	96.36	1.16	2.48	100.00
han	64.10	2.24	33.65	100.00	83.64	0.92	15.44	100.00
Nadu	43.27	12.27	44.46	100.00	78.09	11.82	10.10	100.00
Pradesh	33.12	11.53	55.35	100.00	91.88	3.88	4.24	100.00
gal	60.16	0.41	39.43	100.00	80.23	13.51	6.27	100.00
	34.35	19.39	46.26	100.00	85.25	7.51	7.24	100.00

Same as for table 1 (c).

Size Distribution of Operational holdings

The distribution of households across size group of erational holdings has undergone several changes in the vent es. These change can be briefly summed up as follows; (see ble 1.

(a). The percentage of households operating any land has ghtly declined at the all India level from 27.4 per- ce in 1971 to 26.06 percent by 1981. Among states, this percentage has increased in Andhra Pradesh, Gujarat, Himachal Pradesh, Orissa and Rajasthan. In the remaining states there has been a declining trend.

(b). In all the states the percentage of households in the size groups above 5 hectares has sharply declined in

Table 12

PERCENTAGE DISTRIBUTION OF OPERATIONAL HOLDINGS AND AREA OPERATED OVER 5 BROAD CATEGORIES OF OPERATIONAL HOLDIN

States	Year	Marginal (1.01 ha		Small 1.01-2.02 ha		Semi-medium 2.03-4.04 ha		Medium 4.05-10.12 ha		Large) 10.1	
		no.of holdings	area operated	no.of holdings	area operat	no.of holdings	area operated	no.of holdings	area operated	no.of holdings	
1.Andhra Pradesh	1970-71	47.29	9.28	19.14	11.74	18.23	21.91	11.87	31.32	3.47	
	1981-82	48.64	10.25	22.13	15.37	15.51	21.08	10.80	30.20	2.92	
2.Assam											
	1970-71	52.40	21.64	30.23	34.90	14.30	30.54	2.99	12.20	0.08	
	1981-82	61.57	22.12	24.32	33.51	11.33	29.34	2.68	13.65	0.10	
3.Bihar											
	1970-71	58.86	18.14	23.32	26.22	12.85	28.92	4.52	21.01	0.45	
	1981-82	68.70	22.41	17.61	25.85	9.90	27.08	3.38	18.79	0.41	
4.Gujarat											
	1970-71	27.19	3.90	20.70	8.55	22.24	17.41	21.64	35.95	8.23	
	1981-82	38.63	6.53	20.33	11.31	21.30	22.42	15.82	38.60	3.87	
5.Haryana											
	1970-71	17.48	2.53	17.54	6.54	28.30	19.86	31.06	49.24	5.62	
	1981-82	42.22	3.74	12.74	7.28	22.88	25.56	18.81	45.57	3.35	
6.Himachal Pradesh											
	1970-71	53.55	19.71	25.46	25.27	14.17	26.10	6.28	23.29	0.54	
	1981-82	54.23	20.69	25.17	25.94	14.89	28.59	5.50	23.15	0.21	
7.Jammu & Kashmir											
	1970-71	54.52	24.90	30.85	37.43	12.41	28.08	2.22	9.59		
	1981-82	60.94	26.45	24.82	32.90	11.88	29.02	2.33	12.23	0.0	
8.Karnataka											
	1970-71	28.76	5.10	22.18	10.69	25.44	22.97	17.59	34.29	5.6	
	1981-82	38.40	5.80	22.53	13.18	22.18	24.14	13.24	32.74	3.6	
9.Kerala											
	1970-71	86.21	40.05	8.90	24.75	3.66	20.08	1.13	12.26	0.1	
	1981-82	88.94	45.45	7.28	24.09	12.89	18.47	10.82	10.06	0.0	
10.Madhya Pradesh											
	1970-71	26.11	3.42	20.29	8.96	25.77	21.15	21.64	37.99	6.1	
	1981-82	32.94	4.67	22.51	12.31	23.12	24.18	17.85	38.60	3.5	
11.Maharashtra											
	1970-71	23.71	3.06	21.74	8.38	23.44	17.59	22.44	35.29	8.6	
	1981-82	35.26	3.63	19.47	9.35	21.28	20.01	18.42	37.88	5.5	
12.Orissa											
	1970-71	54.52	18.60	25.78	27.32	13.90	27.06	5.25	21.55	0.5	
	1981-82	54.45	17.02	26.11	26.48	14.08	26.16	4.63	17.84	0.7	
13.Punjab											
	1970-71	11.71	1.46	19.06	7.09	32.70	24.28	30.51	45.05	6.0	
	1981-82	59.02	3.91	10.39	8.90	13.96	21.76	14.15	45.85	2.4	
14.Rajasthan											
	1970-71	31.00	2.01	16.40	5.79	21.30	14.19	21.77	33.23	9.5	
	1981-82	30.53	3.55	17.48	6.98	22.09	17.08	22.50	36.50	7.4	
15.Tamil Nadu											
	1970-71	60.06	21.93	21.26	22.73	13.17	27.32	4.93	21.72	0.5	
	1981-82	71.37	22.39	16.72	26.72	8.28	25.37	3.35	20.68	0.2	
16.Uttar Pradesh											
	1970-71	49.78	15.64	26.92	25.30	16.45	29.76	6.20	23.33	0.6	
	1981-82	59.60	18.09	21.58	23.76	12.88	28.04	5.40	23.62	0.5	
17.West Bengal											
	1970-71	61.21	24.80	22.80	28.92	12.94	31.06	2.98	14.58	0.0	
	1981-82	74.34	29.27	15.83	28.77	8.07	28.25	1.67	11.39	0.0	
All India	1970-71	45.77	9.21	22.38	14.80	17.66	22.52	11.11	30.49	3.0	
	1981-82	56.00	11.50	19.32	16.59	14.23	23.55	8.56	30.15	1.4	

Source: Same as for table 7 (b).

the seventies.

(c). The percentage of households falling in the size group 2 to 5 hectares declined in all the states.

(d). In the 1 to 2 hectares size group, the percentage of households declined at all India level and in all the states except Punjab, Madhya Pradesh and Andhra Pradesh, where it has increased.

(e). All the states witnessed a marked increase in the percentage of households in the less than 0.40 hectare size group. However in the 0.5 to 1.0 hectares size group the trend is mixed across the states. The percentage has increased in Bihar, Gujarat, Haryana, Punjab and Rajasthan. In other states, it remained constant or slightly declined.

Along with the changes in the distribution of operational holdings, its average area has been declining sharply in all the size groups. This trend is observed in all the states. For the country as a whole, the reduction in average size of operational holding was about 21 percent. If we exclude the landless the decline is slightly higher. In all the states, the exclusion of the non-operating households makes a significant difference to the average size.

In the absence of comparable data on operational holdings in the eighties we can not examine whether the trends in landholding in the seventies continued to operate in the eighties. However data from the census of landholdings relating to the years 1981 and 1986 has shown a sharp fall in the average size of operational holding in a number of states[9].

Since the distribution of households and their average size of operational holding have been changing, we have examined how they have affected the concentration of land by estimating the lorenz ratio, and also the share of the operated area of different segments in the scale of landholding.

The estimates of lorenz ratio has shown an increase in the seventies (see table 13). This is seen to be true, in both the estimates obtained by including and excluding the zero size class, the only difference is that the order of increase is smaller, when the zero size class is included. In the case of estimates excluding the zero size class, the lorenz ratio shows an increase in all the states, though at varying rates. On the other hand, inclusion of zero size class has resulted in the decline in the lorenz ratio in Assam, Haryana, Punjab and West Bengal.

Table 13
Estimates of Lorenz Ratio by States in India, 1971 and 1981
Operational Holding

States	(excludes 0 size class) 1971	1981	per cent change	(includes 0 size class) 1971	1981	per cent change
1. Andhra Pradesh	0.75	0.76	1.82	0.84	0.86	2.30
2. Assam	0.58	0.59	0.62	0.70	0.64	-8.52
3. Bihar	0.64	0.67	4.65	0.72	0.73	2.20
4. Gujarat	0.70	0.72	3.97	0.80	0.82	3.13
5. Haryana	0.72	0.74	3.02	0.85	0.83	-2.73
6. Himachal Pradesh	0.52	0.56	9.17	0.55	0.64	16.44
7. Jammu & Kashmir	0.44	0.53	21.00	0.47	0.58	23.14
8. Karnataka	0.67	0.70	4.48	0.77	0.78	1.67
9. Kerala	0.68	0.68	0.00	0.72	0.72	0.00
10.Madhya Pradesh	0.61	0.65	5.89	0.66	0.73	8.14
11.Maharashtra	0.68	0.75	9.42	0.78	0.85	9.03
12.Orissa	0.63	0.65	3.17	0.72	0.75	3.37
13.Punjab	0.76	0.77	1.07	0.90	0.82	-8.89
14.Rajasthan	0.60	0.63	5.12	0.63	0.67	7.10
15.Tamil Nadu	0.72	0.77	6.59	0.84	0.85	1.97
16.Uttar Pradesh	0.61	0.65	5.06	0.71	0.72	1.20
17.West Bengal	0.64	0.68	4.96	0.75	0.75	-0.86
All India	0.70	0.72	3.72	0.78	0.80	1.95

The estimated share of operated area of different segments in the scale of landholding has shown significant changes in the seventies (see table 4). In Assam, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal, the bottom and middle concentration of operated area declined and the top concentration increased. The increase in top concentration has been sharper in some states like Punjab, Haryana, Jammu & Kashmir, Tamil Nadu and West Bengal. The decline in bottom concentration has been sharper in West Bengal, Tamil Nadu, Punjab and Haryana. The trends in the remaining states have shown divergent patterns. In Andhra Pradesh, the share of bottom, middle and top segments in the scale of landholding has shown only marginal change. More or less the same trend is noted in Orissa and Himachal Pradesh also. But, in Kerala, the share of the bottom 40 per cent has virtually disappeared and the share of the middle 40 per cent and top 5 per cent has increased. In Madhya Pradesh, the share of the bottom and top segments declined slightly and that of the middle segment has increased. In Rajasthan, the share of the middle segment and that of the top 5 per cent has increased. For the country as a whole, the top concentration has increased and the bottom and middle concentration declined. It is interesting to note that except in Himachal Pradesh, in all other states the bottom concentration has declined.

Table 14

Share of operational holdings in various category

States	Year	Bottom 40 %	40% to 80 %	40 % to 90 %	Top 5 %	Top 10 %	Top 15 %	Top 20 %
Andhra Pradesh	1971	6.28	29.34	47.33	32.35	46.39	56.46	64.39
	1981	6.40	29.78	47.89	31.77	45.72	55.78	63.82
Assam	1971	12.79	39.75	57.11	18.71	30.11	39.46	47.46
	1981	6.93	36.93	56.97	22.78	36.10	46.73	56.14
Bihar	1971	6.79	33.99	52.88	26.82	40.34	50.82	59.23
	1981	4.71	32.38	51.88	29.36	43.41	54.45	62.91
Gujarat	1971	8.21	33.53	52.77	24.38	39.02	49.92	58.26
	1981	7.07	32.71	52.14	25.63	40.79	51.67	60.22
Haryana	1971	11.55	38.58	56.54	20.25	31.91	41.39	49.87
	1981	2.91	35.83	56.16	24.62	40.93	53.12	61.26
Himachal Pradesh	1971	11.56	34.60	51.81	23.74	36.63	46.50	53.84
	1981	11.7_	35.72	53.66	23.09	34.62	42.85	52.56
Jammu & Kashmir	1971	13.53	39.44	57.89	17.32	28.58	38.29	47.03
	1981	10.89	39.05	55.35	21.20	33.75	43.01	50.06
Karnataka	1971	9.31	33.14	51.07	25.90	39.61	50.81	57.55
	1981	8.45	29.86	47.24	30.21	44.31	54.35	61.69
Kerala	1971	1.35	27.36	46.39	35.78	52.23	62.66	71.29
	1981	N	31.65	47.68	38.11	52.32	60.90	68.35
Madhya Pradesh	1971	8.64	35.01	52.65	24.99	38.71	48.71	56.35
	1981	7.91	35.92	54.02	25.83	38.08	48.15	56.17
Maharashtra	1971	8.40	33.81	52.21	25.16	39.39	50.22	57.79
	1981	6.67	33.74	51.88	27.41	41.45	51.57	59.59
Orissa	1971	9.69	35.48	52.92	24.87	37.39	47.15	54.83
	1981	9.01	36.30	53.53	25.22	37.46	47.33	54.69
Punjab	1971	14.14	38.63	54.90	19.75	30.96	40.15	47.23
	1981	N	28.85	52.34	30.78	47.66	62.60	71.15
Rajasthan	1971	8.35	30.53	47.43	30.26	44.22	54.42	61.12
	1981	7.17	32.01	49.52	32.81	43.31	53.86	60.81
Tamil Nadu	1971	9.15	33.54	51.56	26.40	39.29	49.38	57.31
	1981	3.11	30.36	50.62	31.31	46.27	57.60	66.53
Uttar Pradesh	1971	10.01	36.53	53.75	23.52	36.24	45.79	53.46
	1981	6.85	34.06	52.87	26.24	40.27	50.95	59.09
West Bengal	1971	8.99	38.96	57.06	21.29	33.95	44.58	52.05
	1981	5.80	31.98	52.92	28.68	41.28	53.16	62.22
India	1971	6.90	30.74	48.47	31.06	44.63	54.55	62.36
	1981	4.52	29.89	48.50	32.24	46.98	57.45	65.59

N= Negligible

What is the extent to which the change in shares of operated area of different segments has affected the skewness of the distribution of operational holding. In order to bring out this, we derived the composite index of skewness by using the Principal Component Analysis. The results are given in table 15. The estimated values of the index has shown that the skewness has moved towards the top size groups of holdings in Punjab (88%), Haryana (40%), West Bengal (35%), Assam (31%), Jammu and Kashmir (21%), Tamil Nadu (25%), Uttar Pradesh (17%), Karnataka (14%) and Maharastra (6%). In Himachal Pradesh the index has shown a marginal decline. In the remaining states the estimated values of the index has shown only insignificant change.

Table 15
Index of skewness for the distribution of operational holding

	1971	1981	% change
Andrapradesh	70.72	69.49	-1.73
Assam	39.57	52.09	31.64
Bihar	59.65	65.84	10.39
Gujarat	57.28	60.55	5.71
Haryana	43.31	60.77	40.32
M.Pradesh	51.97	48.31	-7.04
J&K	37.57	45.38	20.80
Karnataka	58.23	66.51	14.22
Kerala	81.52	79.49	-2.50
M.Pradesh	55.65	55.08	-1.01
Maharastra	57.61	61.03	5.94
Orissa	53.39	53.40	0.03
Punjab	40.81	76.65	87.84
Rajasthan	66.11	65.80	-0.46
Tamil Nadu	57.47	71.57	24.53
U.Pradesh	50.85	59.38	16.76
West Bengal	47.11	63.56	34.92
All India	67.24	71.90	6.92

It is clear from the preceding analysis that there has been an increase in the concentration of operated area and its skewness towards the top size groups in a number of states. This tendency is strikingly different from that of the distribution of

ownership holding. As we have seen in the previous section, this has been facilitated by the changes in the direction of land transfers through land lease market, leading to a somewhat greater concentration of operated holdings than of ownership holdings in the seventees.

V. Conclusions and Policy Implications

In this paper we have examined the structural changes in landholding in the seventees. The analysis revealed rapid marginalization of the structure of landholding in most parts of India mainly due to a disproportionate proliferation of marginal holdings (both ownership and operational). Such a lopsided change in the distribution of households has been a major factor in accounting for a decline in the average size of ownership holdings as suggested by the decomposition exercise. This perhaps suggests the operation of a ladder process predominantly in a downward direction.

The decline in the average size of owned area and the lopsided change in the distribution of households seem to have set in a process of change in the distribution of ownership holdings. The decline in the average size directly leads to increase in the lorenz ratio and the increase in the latter results in an increase in the index of skewness. The lopsided changes in the distribution of households affect the lorenz ratio and the index of skewness through changes in the incidence of landless households. The increase in population pressure affects the structure of landholding via the average size of ownership holding. The operation of this process has resulted in an increase in the index of skewness in eight out of the seventeen states. In the remaining states the index of skewness has shown a falling trend.

The changes in the distribution of operational holding strikingly different from that of ownership holding. In a er of states, the concentration of operated area and its index skewness have shown significant increase and have been litated by changes in the direction of land transfers through lease market, leading to a somewhat greater concentration and ness of operational holdings than of ownership holdings.

The incidence of tenancy has shown a declining trend in the states. The forms of tenancy has also undergone change. In w states, commercial tenancy has gained importance. In all the tes, area leased for 'other terms' showed substantial increase. ing of land for share of produce remained important in a er of states. For the country as a whole, about 38 percent of land leased out was by households self-employed in iculture, about 19 percent by agricultural labour households the remaining by other households. In Andhra Pradesh, nataka, and Maharashtra, about 50 per cent of the area leased belonged to agricultural labour households.

The findings of this paper help us to understand better, direction in which agrarian reforms should be carried out in ure. As revealed in our findings, the process of adjustments urring in the landholding structure through market and non ket factors has not helped in reducing the inequality in either ership or operational distribution of land; it has rather reased the disparity in control over land in many states. Such nges in landholding points towards the continuing importance of istributive measures for achieving some amount of equity in the tribution of land. In this context effective implementation of ceiling on ownership holding offers the possibility of

mobilishing surplus land for distribution among the landless households.

It is also evident from our analysis that the disparity in control over land has to be viewed in relation to the changes taking place in the land lease market. As we have noted elsewhere the land lease market has been working in the reverse direction in several states. As shown by region specific studies on this phenomenon, this reverse flow of tenancy is largely an outcome of the emerging technology in agriculture[10]. In order to realize the economies of scale in the new technology, the medium and large holding has entered the lease markets. However, in the case of small and marginal holdings, the ownership of work animals for cultivation has became increasingly difficult. In fact, the number of work animals in most parts of the country has shown a sharp decline in the seventies[11]. Also, the non farm employment opportunities has increased in regions where there has been faster growth of agriculture. In such a situation, perhaps it has been advantageous for the small holdings to lease out their land. Thus the tenancy relation that has emerged in agriculture is qualitatively different from that of the past. Now, more than ensuring security of the tenant it is important to ensure the security of the small lesor, who should be able to get his land back from the big leaser, as and when he wants to do the cultivation. Therefore, the land tenure policy should be suitably modified to achieve this objective. Since the changes in operational holding are essentially in response to the changes in the lease market, there is no need to impose ceiling on operational holding.

Since the structure of landholdings has been increasingly getting marginalised in recent years, it is important to design development strategies for increasing the productivity and income levels of the small and marginal holding. This requires not only application of science and technology for enhancing the productivity of small pieces of land through intensive cultivation methods, but also through diversification of agricultural activities. For instance, there is scope for augmenting income in small and marginal holdings through better integration of livestock and cropping systems. It is interesting to note in this context that there has been an increasing tendency in the recent years among the small and marginal holdings in taking up the animal husbandry activities[12]. The organisation of small and marginal holdings into co-operatives or other types of group farming activities for their better absorbtion of inputs and technology and better realisation of prices for their produce are important issues that the development planners and the agricultural administrators should give utmost priority in the present juncture of agricultural transformation in India. In this context, a systematic evaluation of the experiences of the Anand pattern co-operatives for milk, oilseeds and vegetables and the group farming implemented in Kerala for promoting paddy cultivation etc may provide lot of insights into planning and implementing such organisational forms in future.

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Note: This is a substantially revised version of a paper presented in an internal seminar at the Centre for Development Studies, Trivandrum. We wish to acknowledge Dr. Sakthi Padhi and Mr. D. Narayana for their detailed comments. However, the authors are solely responsible for the contents of the study.

FOOTNOTES

1. For a discussion of the comparability of various estimates of landholdings by National Sample Survey see, Government of India (1988) and Sanyal, S.K. (1976 & 1977).

2. Apart from the NSS, the Agricultural Census also provides data on landholdings on a quinquennial basis. The NSS estimates have been always less than that provided by the Agricultural Census because of the reasons following: (a) NSS estimates do not include land located in the non-household sector; (b) NSS followed the enquiry method, household as a reporting unit, where as the Agricultural Census was based on the concept of holding. Except in Kerala, Orissa, West Bengal, Tamil Nadu, Assam and parts of Uttar Pradesh where enquiry method based on sample surveys are followed, the census estimates are based on revenue records; and (c) NSS estimates do not include holdings below 0.002 hectares. Also, NSS under-estimated the number of households in certain states and over estimated in some states. For a detail discussion on the comparability of NSS and Agricultural Census data see, Government of India (1988).

3. For a detail discussion on the influence of average family size on landholding see, Rodgers, Gerry (ed):1989.

4. The logic underlying the decomposition exercise used here is the same as the one used for decomposing the difference in birth rates in to three factors namely, marital status, marital fertility and age distribution. For more details, see Kitagawa (1955) and United Nations (1978).

The lagrangian interpolation formula was used for computing the share of landholding in various categories of households (top 10 per cent, top 15 per cent, bottom 40 per cent and bottom 50 per cent etc) . A computer program was written which evaluated for interpolation arguments x^* the lagrangian interpolating polynomial of degree d passing through the points (x_{min}, y_{min}), (x_{min+1}, y_{min+1}), ..., (x_{min+d}, y_{min+d}). This program evaluates the appropriate interpolating polynomial and return the interpolant value, $y^*(x^*)$ with various values for d and min. The Lagrange's form of the interpolating polynomial is given below:

$$y^*(x^*) = \sum_{i=min}^{min+d} L_i(x^*) y_i$$

where

$$L_i(x^*) = \prod_{\substack{j=min \\ j=i}}^{min+d} \frac{(x^* - x_j)}{(x_i - x_j)} \quad ; \; i=min, min+1, \ldots, min+d$$

The values of d and min were changed in order to minimize the error in the estimation. For detail account of this technique see, Carnahan, Brice et al. (1969).

The graphs given in the Appendix I indicates that the lorenz curve for the estimated deciles are consistent with that of the given distribution.

The Principal Component Analysis has been applied to derive the composite index of skewness of the distribution of shares for both ownership holdings and operational holdings. The following variables were used: bottom 40 percent, middle 40 to 90 percent, middle 40 to 90 percent, top 5 percent, top 10 percent, top 15 percent, top 20 percent. The first principal

component explained 79.8 percent variation in ownership holdings. The component lodings are -0.887 (bottom 40%), -0.788 (middle 40%), -0.686 (middle 50%), 0.916 (top 5%) 0.983 (top 10%), 0.993 (top 15%), 0.956 (top 20%). In the case of operational holdings, the first principal component explained 76.7 percent of variation. The component loadings are -0.885 (bottom 40%), -0.768 (middle 40%), -0.589 (middle 50%), 0.891 (top 5%), 0.982 (top 10%), 0.990 (top 15%), 0.95 (top 20%). The data were combined both 1971 and 1981 for deriving the component loadings. The standard score has been normalised between 0 to 100 using the following formula;

$$Y_{ij} = \frac{X_{ij} - \text{Min } X_{ij}}{\text{Max } X_{ij} - \text{Min } X_{ij}} \times 100$$

Where X_{ij} is the component score. The Min X_{ij} is the component score if the land has been equally distributed. The Max X_{ij} is the component score if the land has been concentrated in the top 20 percent. Hence therefore if the index is 0, it means that the land has been shared equally in all the group, and if the index is 100, it means that land is favourable to the larger holdings.

8. The other terms includes the leases which had been only verbally contracted and not recorded on any document.

*. Number of Households, Area operated and Average size of Operational holdings available from the Agricultural Census in the eighties are given below.

States	Number of holdings 1980-81	Number of holdings 1986-87	%age change	Area operated (00) 1980-81	Area operated (00) 1986-87	%age change	Average size 1980-81	Average size 1986-87	%age change
Andhra Pradesh	73699	82314	11.69	143326	141580	-1.22	1.94	1.72	-11.56
Assam	22980	N.A	-	31210	N.A	-	1.36	N.A	-
Bihar	110296	118010	6.99	110676	102409	-7.47	1.00	0.87	-13.52
Gujarat	29301	30766	5.00	101043	101144	0.10	3.45	3.29	-4.67
Haryana	10116	13474	33.19	35617	37139	4.27	3.52	2.76	-21.71
Himachal Pradesh	6381	8198	28.48	9804	10175	3.78	1.54	1.24	-19.22
Jammu & Kashmir	10356	11602	13.96	10296	10169	-1.23	0.99	0.86	-13.33
Karnataka	43093	48188	11.82	117457	118785	1.13	2.73	2.47	-9.56
Kerala	41809	48870	16.89	18053	17528	-2.91	0.43	0.36	-16.94
Madhya Pradesh	64109	76031	18.60	219311	221553	1.02	3.42	2.91	-14.82
Maharashtra	68625	80819	17.77	213616	213944	0.15	3.11	2.65	-14.96
Orissa	33282	35855	7.73	52775	52608	- 0.32	1.59	1.47	-7.47
Punjab	10200	10884	6.71	38925	41039	5.43	3.82	3.77	-1.19
Rajasthan	44870	47628	6.15	199320	206714	3.71	4.44	4.34	-2.30
Tamil Nadu	71905	77067	7.18	77079	77959	1.14	1.07	1.01	-5.63
Uttar Pradesh	178173	187873	5.44	179707	174383	-2.96	1.01	0.93	-7.97
West Bengal	58776	61542	4.71	55548	56438	1.60	0.95	0.92	-2.96
India	888830	N.A	-	1637970	N.A	-	1.84	N.A	-

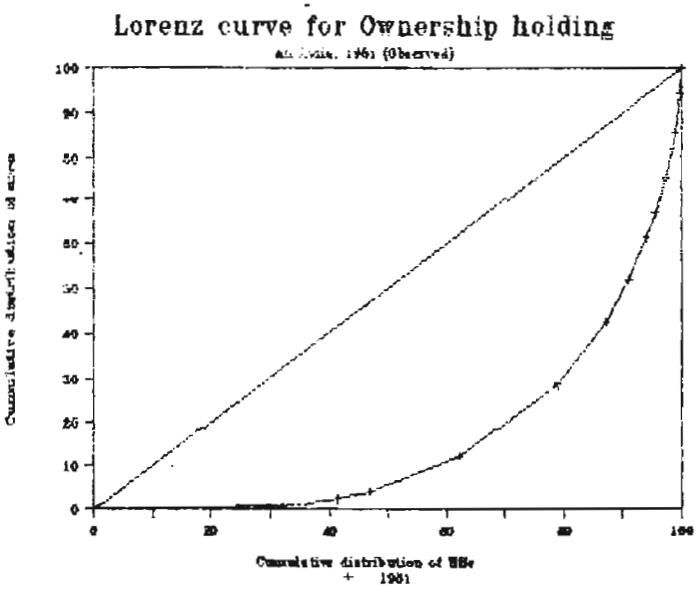
Source: Agricultural Situation in India (various issues).

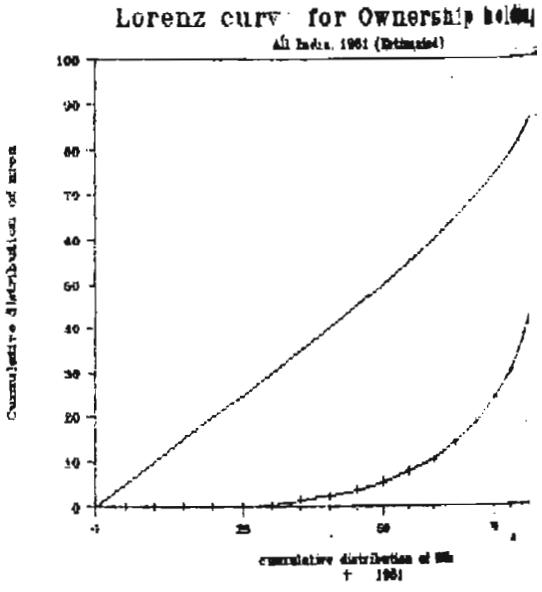
10. This aspect has been brought out clearly in the studies with reference to Punjab by Gill, S.S. (1989) and Singh, Igbal (1989).

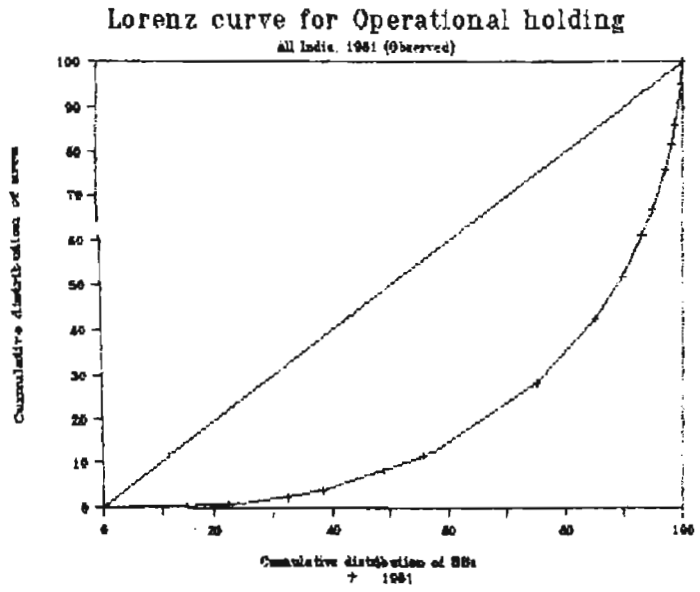
11. See for details, Nair K.N and Dhas A.C (1989).

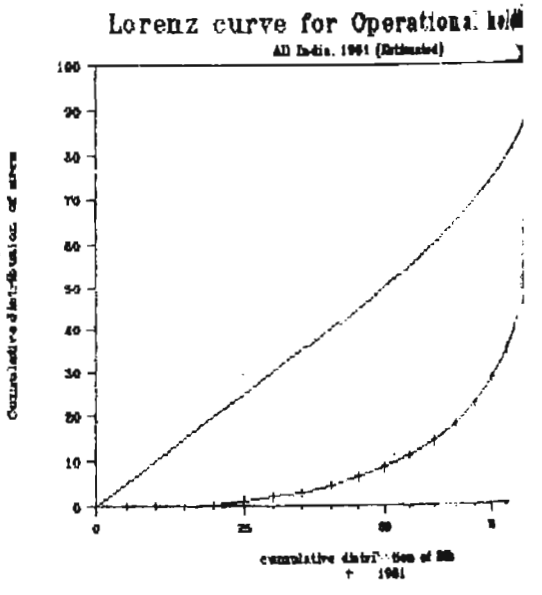
12. An analysis of the trends in livestock holdings in the seventies has clearly shown an increase in the number of milch animals kept in the small and marginal holdings and a reduction in the number of working bovines. This in turn indicates that these holdings are increasingly taking up dairying as a source of income and employment. See for details, Nair K.N and Dhas A.C (1989).

APPENDIX I


Lorenz curve for Ownership holding
All India. 1981 (Observed)
Cumulative distribution of HHs
+ 1981


Lorenz curv for Ownership hold
All India. 1981 (Estimated)
cumulative distribution of HHs
+ 1981


Lorenz curve for Operational holding
All India. 1981 (Observed)
Cumulative distribution of HHs
+ 1981


Lorenz curve for Operational hold
All India. 1981 (Estimated)
cumulative distribution of HHs
+ 1981

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