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A Spatio-Temporal Analysis of Land-Lease Market in Punjab

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Land is the most critical input in agriculture and is the nucleus of all farm activities. Adequate size of farm is essential for proper utilisation of land and other farm resources (Rai *et al.*, 1981). However, in countries like India the size of operational holdings is consistently decreasing under the impact of rapid growth of population, slow development of industrial sector and as a consequence of various agrarian laws passed by the government from time to time (Grewal and Rangri, 1981).

The new farm technology which is capital intensive has forced many small holders of land to leave farming and earn their livelihood elsewhere. On the other hand, as a result of productivity increase, due to new farm technology, many farmers have made heavy investments in farm machinery and irrigation structures. But their land area is not enough to make the full use of these investments. So, these farmers increase their farm size by purchasing/leasing in additional land. But unlike other factors of production, purchase as well as sale of land is not a common phenomenon because prices of land, particularly after the Green Revolution, have increased at exorbitant rates that an ordinary farmer cannot purchase additional land. On the other hand, very few persons are ready to sell their land even at high prices, unless there is dire economic need, because selling of land is socially discredited. Thus people are not willing to sell their land, instead prefer to lease it out. So land-lease market has developed as a substitute to land marketing system to balance the forces of demand and supply for land.

In the present study, the land-lease market has been analysed across different regions of Punjab, over two points of time with a time gap of 15 years, *i.e.*, 1971-72 and 1987-88, the early green revolution period and the post-green revolution period. The following hypotheses were sought to be tested in this study: I. The land-lease activity has increased over time since the green revolution period. II. Land rent varies from region to region depending upon productivity and other factors.

SOURCE OF DATA

The data used in this study have been taken from a centrally sponsored project, "Comprehensive Scheme to Study the Cost of Cultivation of Principal Crops" in Punjab, being conducted on continuous basis since 1970-71, in the Department of Economics and Sociology, Punjab Agricultural University, Ludhiana. The data for the two time periods, 1971-72 and 1987-88, were analysed to test the above-said hypotheses. Supporting data were also collected from secondary sources, *i.e.*, Agricultural Census Report 1971-72 and 1981-82 and Agricultural Statistical Compendium, 1988. A cross-section of sample farmers of the 1987-88 sample was also interviewed to study the characteristics of holdings which lease in and those which lease out farm land, as this information was not available in the Comprehensive Scheme.

To examine spatial variation in the land-lease market, Punjab State was divided into three homogeneous geographical regions based on crop, climate and other physical factors.

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These are:

Region I: includes the north-eastern district of Gurdaspur, Hoshiarpur and Ropar. These districts receive high rainfall and have medium irrigation facilities. A large part of these districts falls under sub-montaneous tract with deep groundwater table. Paddy, maize, sugarcane and wheat are the major crops of this region.

Region II: includes the central districts of the state, viz., Amritsar, Kapurthala, Jalandhar, Ludhiana, Patiala and Sangrur. These districts receive medium rainfall but have good irrigation facilities through shallow tubewells and canals. Paddy, groundnut, sugarcane and wheat are important crops of this region.

Region III: consists of relatively drier districts of the south-western part of the state and includes the districts of Bathinda, Ferozepur and Faridkot. These districts receive less rainfall. Sub-soil water is not good for irrigation. So canal water is the major source of irrigation in this region. Cotton in *kharif* and wheat in *rabi* are the major crops of this region.

The sample holdings of Comprehensive Scheme for both the years, 1971-72 and 1987-88 were, therefore, arranged into three regions as given in Table I.

TABLE I. DISTRIBUTION OF SAMPLE HOLDINGS IN DIFFERENT REGIONS

Year	Number of holdings in each region			
	Region I (2)	Region II (3)	Region III (4)	Total (5)
1971-72	48	91	77	216
1987-88	48	112	66	226

Since there was no sample holding of less than one hectare area in 1971-72 sample, holdings of less than one hectare were also excluded from 1987-88 data. Thus 216 holdings for 1971-72 and 226 holdings for 1987-88 were analysed to verify our hypotheses.

VERIFICATION OF HYPOTHESES

Hypothesis I: Increase in Land-Lease Activity

To test the first hypothesis that land-leasing activity has increased over time, the proportion of holdings leasing-in land and the area leased in during the two periods, 1971-72 and 1987-88 was worked out and is presented in Table II. It is seen from the table that nearly 26 per cent of the farmers in the state leased in 9.40 per cent of their operational area in 1971-72; while these ratios have increased markedly in 1987-88 inasmuch as 34.07 per cent of the farmers leased in nearly 13 per cent of their operational area. This fact has also been confirmed from the analysis of macro level data for the state as a whole on the distribution of holdings on the basis of ownership and operational area during 1961-62, 1971-72 and 1981-82 as presented in Table III. It shows that whereas the proportion of small and marginal landowners has increased from nearly 70 per cent in 1961-62 and 76 per cent in 1971-72 to nearly 80 per cent in 1981-82 their proportion in the operational holdings have decreased from nearly 56 per cent during 1971-72 to 39 per cent during 1981-82, whereas, it is vice versa with the upper size classes. This phenomenon shows that small land holders are leaving farming and leasing out their land to upper size class farmers.

The regional analysis reveals the same trend as for the state as a whole, i.e., in all the

three regions both the proportions of farmers leasing-in land and of area leased in have increased from 1971-72 to 1987-88. Table II further reveals that, at both the time periods, the proportions of holdings leasing-in land and the area leased in were higher in Regions I and II as compared to those in Region III. It is due to the reason that holding sizes are higher in Region III as compared to those in Regions I and II and larger sized holdings enter less in leasing-in and leasing-out activities (Grewal and Rangi, 1981). The characteristics of holdings leasing-in and leasing-out farm land were studied by personally contacting the 1987-88 sample farmers in two villages each from each region. It was observed that only small land holders, who cannot make heavy investment in farm equipments and allied inputs, leased out their land and sought employment elsewhere. Similarly, widows and some regular employees, who own some land in their villages lease it out. That is, all the persons leasing out their land were observed to be absentee landlords. As regards leasing-in of land, only those farmers lease in additional land who have made heavy investment in farm machinery and irrigation structures and have excess capacity of these resources along with surplus family labour and adequate capital. Regarding the mode of leasing-in and leasing-out land, it was observed that in over 92 per cent of the cases the lease is made on cash rent basis. It is only in a few cases, where land is unirrigated, that share-cropping on 50:50 ratio is prevalent.

TABLE II. PERCENTAGE OF HOLDINGS LEASING-IN LAND AND AREA LEASED IN DURING 1971-72 AND 1987-88 IN PUNJAB

Particulars (1)	1971-72				1987-88			
	Region I (2)	Region II (3)	Region III (4)	State as a whole (5)	Region I (6)	Region II (7)	Region III (8)	State as a whole (9)
1. Total number of holdings	48	91	77	216	48	112	66	226
2. Number of holdings leasing-in land	16	28	12	56	21	42	14	77
3. Percentage of holdings leasing-in land	33.33	30.97	15.58	25.93	43.75	37.50	21.21	34.07
4. Total area operated (ha)	298.13	757.30	676.90	1,732.33	210.51	519.24	306.61	1,036.36
5. Area leased in (ha)	33.25	87.73	41.92	162.90	34.37	73.02	26.45	133.84
6. Average size of operational holdings (ha)	6.21	8.32	8.79	8.02	4.39	4.64	4.65	4.59
7. Percentage of leased-in area to total operational area	11.15	11.58	6.19	9.40	16.33	14.06	8.63	12.91

Hypothesis II: Changes in Land Rent, Productivity and Land Price

Land rent in the present context is the value of gross produce or the amount in cash which the tenant cultivator pays to the landlord for one hectare of land leased in by him for one year period. For owned land, land rent was imputed at prevailing rates in the villages for similar type of land. Land productivity again has been worked out on per hectare basis and is the value of gross produce (main product + by-product) per hectare of land (owned +

leased in) realised during the year and evaluated at post-harvest prices. Similarly, land prices were also derived on per hectare basis and indicated the value of one hectare of land if transacted at the prevailing prices at that time.

TABLE III. DISTRIBUTION OF HOLDINGS ACCORDING TO OWNERSHIP AND OPERATIONAL AREA BASIS IN PUNJAB, 1961-62 TO 1981-82

(per cent)

Year	Ownership holdings									
	Marginal (less than 1 ha)		Small (1-2 ha)		Semi-medium (2-4 ha)		Medium (4-10 ha)		Large (10 ha and above)	
	No. (2)	Area (3)	No. (4)	Area (5)	No. (6)	Area (7)	No. (8)	Area (9)	No. (10)	Area (11)
1961-62	61.43	3.38	9.22	6.99	13.67	20.32	11.96	38.53	3.72	30.28
1971-72	67.50	4.47	8.37	8.37	12.71	25.06	9.19	37.96	2.23	23.64
1981-82	69.87	5.59	10.08	10.76	10.61	22.87	7.94	42.23	1.47	18.52

Operational holdings										
1961-62	23.42	2.48	14.20	5.08	24.89	18.34	28.53	43.05	8.96	31.05
1971-72	37.65	5.55	18.92	9.36	20.45	20.11	17.99	38.11	4.99	26.87
1981-82	19.42	3.03	19.51	7.22	28.24	20.32	25.58	40.22	7.25	29.21

Source: Agricultural Census 1971-72 and 1981-82 and Agricultural Statistical Compendium, 1988.

Average land rent, productivity of land and land prices were, therefore, worked out on per hectare basis from the grouped data for each region separately for both the years, 1971-72 and 1987-88 and are presented in Table IV. It is seen from the table that average land rent in the state during 1971-72 was Rs. 903 per hectare. The average productivity of land and land prices were Rs. 2,616 and 24,310 per hectare respectively. However, during 1987-88 these figures have increased manifold. The land rent has increased to Rs. 3,882 per hectare, registering an increase of over 329 per cent over 1971-72. Similarly, productivity of land and land values have increased by over 531 and 390 per cent respectively during the period from 1971-72 to 1987-88. Further, it is seen that land rent has increased at a lower rate during this period than the increase in the land productivity and the land prices. That is why the ratio of land rent to productivity of land and to land prices has declined to 23.49 and 3.25 per cent during 1987-88 from 34.52 and 3.71 per cent respectively during 1971-72.

The regional analysis also indicates the state average trend that land rent has increased in all the three regions of the state but at a lower rate than the increase in the productivity of land, and land values. The regional analysis further establishes the fact that land rent, where it is related to productivity of land, is also affected by the size distribution of land in the area. The land rent was highest in Region II where the productivity of land is the highest due to better and assured availability of irrigation water. It was lower in Region I and Region III because of different reasons. In Region I, it is low because the productivity is low, whereas in Region III it is low because sizes of holdings are larger in this region, so leasing-in activity is low as compared to that in the other two regions. Moreover, the availability of

irrigation water is inadequate in Regions I and III and crop production risks are higher in these two regions as compared to Region II and thus land rent is lower in these regions due to risk factor than in Region II where crop risks are minimum.

To sum up, the analysis revealed that land-lease activity has increased markedly since the green revolution period. The land-leasing activity is high in Regions I and II as compared to that in Region III. The small holders of land lease their land to farmers of higher size classes. The land rent varies from region to region and is the highest in Region II as compared to that in Regions I and III. The land rent has increased by over 300 per cent from 1971-72 to 1987-88. But this increase in the land rent has been less in comparison to that in land prices and productivity of land achieved which increased by nearly 400 per cent and by more than 500 per cent respectively over the same period.

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