

JOURNAL OF PUNJAB STUDIES

Special Number on Agriculture and Rural Economy of Indian Punjab

Volume 12	Number 2	Fall 2005
	Contents	
<u>Articles</u>		
	Editorial Introduction	195
H. S. Sidhu	Production Conditions in Contemporary Punjab Agriculture	197
Sucha S. Gill	Economic Distress and Suicides in Rural Punjab	219
H. S. Shergill	Wheat and Paddy Cultivation and the Question of Optimal Cropping Pattern for Punjab	239
Sukhpal Singh	Contract Farming for Agricultural Development and Diversification in Punjab: Problems and Prospects	251
Lakhwinder Singh	Deceleration of Industrial Growth and Rural Industrialization Strategy for Indian Punjab	271
Nirvikar Singh & Deepali S. Kohli	The Green Revolution in Punjab, India: The Economics of Technological Change	285
<u>Book Reviews</u>	Contents	307
	Reviews	309
<u>In Appreciation</u>	Amrita Pritam Nirmal Azad	327

JOURNAL OF PUNJAB STUDIES

Editors

Indu Banga	Panjab University, Chandigarh, India
Mark Juergensmeyer	University of California, Santa Barbara, USA
Gurinder Singh Mann	University of California, Santa Barbara, USA
Ian Talbot	University of Southampton, UK
Shinder Singh Thandi	Coventry University, UK

Book Review Editor

Eleanor Nesbitt	University of Warwick, UK
-----------------	---------------------------

Editorial Advisors

Ishtiaq Ahmed	Stockholm University, Sweden
Tony Ballantyne	University of Otago, New Zealand
Roger Ballard	University of Manchester, UK
Gerald Barrier	University of Missouri – Columbia, USA
Parminder Bhachu	Clark University, USA
Anne Bigelow	North Carolina State University, USA
Verne Dusenbery	Hamline University, USA
Ainslee T. Embree	Columbia University, USA
Lou Fenech	University of Iowa, USA
Sucha Singh Gill	Punjabi University, Patiala, India
Tejwant Singh Gill	Guru Nanak Dev University, Amritsar
David Gilmartin	North Carolina State University, USA
Will Glover	University of Michigan, USA
J.S. Grewal	Institute of Punjab Studies, Chandigarh, India
John S. Hawley	Barnard College, Columbia University, USA
Suzanne McMahon	University of California, Berkeley, USA
Iftikhar Malik	Bath Spa University College, UK
Hew McLeod	University of Otago, New Zealand
Farina Mir	University of Michigan, USA
Rana Nayar	Panjab University, Chandigarh, India
Harish Puri	Guru Nanak Dev University, India
Christopher Shackle	University of London, UK
Scott Marcus	University of California, Santa Barbara
Joginder Singh	Guru Nanak Dev University, Amritsar
Nirvikar Singh	University of California, Santa Cruz
Pashaura Singh	University of California, Riverside, USA
Pritam Singh	Oxford Brookes University, UK
Darshan Singh Tatla	Founder Member, Association for Punjab Studies
Michael Witzel	Harvard University, USA
Tan Tai Yong	National University of Singapore

Editorial Note

Performance of the agricultural sector has always been the most important vehicle for sustaining livelihoods of the people of Punjab and the north-west region in general. Even prior to the partition, Punjab had begun to play a crucial role in providing food security and export revenues. This role – as granary of India – continued in the post-independent period but with the spread and diffusion of new agricultural technologies to some other parts of India, Punjab's strategic importance had begun to decline. Further, after nearly forty years of adoption of the green revolution strategy, the agricultural sector is in an acute state of crisis, raising serious questions about future sustainability in output and livelihoods. This crisis manifests itself in a number of ways: stagnating crop yields and farm incomes, build up in the levels of indebtedness amongst the farmers, general economic distress, leading some small and marginal farmers to commit suicide and the environmental damage – both water and soil – caused by the relentless pursuit of the wheat-paddy crop rotation system. The latter has also disturbed Punjab's water table with potentially serious long-term implications for the availability of this scarce resource.

This special issue of the *JPS* brings together articles from eminent scholars of agricultural economics of Punjab. These articles offer diagnoses of the problem, its genesis, and potential ways forward. They address the major issues and debates pertaining to challenges facing Punjab agriculture today: sustainability of wheat-paddy crop rotation versus crop diversification, alleviating economic distress of farmers and procurement prices, the role and pitfalls of contract farming, effective water management and the importance of shifting labour away from agriculture towards non-agricultural rural employment and rural and urban industry. The policy implications to deal with the crisis have been clear for some time but poor governance structures have meant that the crisis has continued unabated, causing an undercurrent of unrest and resentment.

The Editors would like to thank Professor Sucha Singh Gill of Punjabi University, Patiala, for organising most of the papers and allowing us access to publish them in the *JPS*.

Production Conditions in Contemporary Punjab Agriculture

H.S. Sidhu

Guru Nanak Dev University, Amritsar

Punjab agriculture has made rapid strides since independence. Peasant proprietor dominance of the agrarian structure, early completion of consolidation of holdings, state's role in creation of irrigation facilities and a hard working peasantry are some of the factors which contributed towards early progress. After adoption of new agricultural technology in the mid 1960s Punjab made tremendous progress and within a few years the state emerged as a heartland of India's successful green revolution strategy. The new technology led to far reaching changes in the state's agrarian structure. However by 1990 the momentum of growth had petered out and the state is now faced with a new set of problems which are defying easy solutions.

Introduction

Punjab agriculture has made rapid strides since independence. Peasant proprietor dominance of the agrarian structure, early completion of consolidation of holdings, extension of irrigation facilities and a hard working peasantry are some of the factors which contributed towards early progress. After reorganization of the state in 1966, which incidentally also coincided with the advent of new high yielding varieties (HYVs) of wheat, rice, maize and bajra, the pace of development was further accelerated. Adoption of new agricultural technology consisting of hybrid seeds, chemical fertilizers, insecticides, pesticides, herbicides and modern agricultural practices set Punjab agriculture on to a new growth trajectory. Within a few years Punjab emerged as a heartland of India's successful green revolution strategy. This led to far reaching changes in the state's agrarian structure. However, it must also be recognized that Punjab's agrarian structure would not have been what it is today if the country had not opted in favour of technological solutions to solve the chronic food shortages with which it was faced in late 1950s and early 1960s.

Between 1970-71 and 2000-01 production of wheat has gone up more than three times from nearly five million tons to more than 15.5 million tons (Table 1). In fact if we compare the production of wheat in 2000-01 with the production figures in 1960-61 (when it was 1.7 million tons) then during these forty years it has gone up by more than nine times. Similarly, production of rice, the other major crop of the state, has gone up more than thirteen times between 1970-71 and 2000-01. Total food grains production in the state has also gone up by more than three and half times. Yields of both wheat and rice have more than doubled during these thirty

years. The proportion of area irrigated has gone up from 71 per cent of GCA to 94 per cent of the GCA. Use of fertilizer (NPK) per hectare was 38 kg/ hectare in 1970-71, it was 179 kg/hectare in 2000-01. Number of tubewells and pump sets has gone up from 19,200 in 1970-71 to 935,000 by 2000-01. The number of tractors in the state was 30,000 in 1970-71; it is more than 4 lakh in 2000-01. Intensity of cropping has jumped from 1.40 in 1970-71 to 1.86 by 2000-01. The point we are trying to make is that in terms of use of modern inputs as well as production of food grains, Punjab agriculture has achieved remarkable progress since the adoption of modern technology in the late 1960s. It has also led to major changes in the structure of the economy and has in the process thrown up a new set of issues and problems which are now creating difficulties for planners and policy makers. The rest of the paper is devoted to the explanation of those issues and problems which Punjab agriculture is now faced with and how this technology has affected the structure of state's agrarian economy, the nature of tenancy in the state and employment prospects of agricultural labourers and their incomes.

Table 1: Some Selected Indicators of Growth of Punjab Agriculture

Indicator	1970-71	1980-81	1990-91	2000-01
Wheat production (MT)	5.1	7.7	11.7	15.5
Wheat yield (kg./ha.)	2238	2730	3715	4563
Rice production (MT)	0.7	3.2	6.7	9.2
Rice yield (kg./ha.)	1765	2733	3229	3506
Total foodgrains (MT)	7.3	11.9	20.0	25.3
Total foodgrains yield (kg./ha.)	1860	2456	3391	4033
All commodities production index (triennium ended 1969-70 = 100)	109.76	170.23	269.55	332.59
Cropped area irrigated (%)	71	81	94	94
Nutrient (NPK) use (kg./ha.)	38	113	163	179
Total tube wells ('000)	192	600	800	935
Total tractors ('000)	30	119	265	435
Gross cropped area (m./ha)	5.7	6.8	7.5	7.9
Net cropped area (m./ha)	4.0	4.2	4.2	4.3
Cropping intensity (%)	140	161	178	186

Source: *Statistical Abstracts of Punjab*, various issues.

Changes in the Agrarian Structure

Since the introduction of the green revolution technology, the agrarian structure of Punjab has witnessed interesting changes. In the first phase extending up to 1980-81, the number of marginal and small holdings declined sharply, while those in the higher-size categories showed a modest increase. These changes occurred primarily due to three reasons. First, with the onset of the green revolution technology, crop production activities became economically attractive, which created an active land-market for leasing and selling land. Secondly, progress of agriculture under the green revolution technology created additional employment opportunities in the non-farm sector. These encouraged many marginal farmers either to sell their land or lease it, to earn higher incomes from non-farming jobs. Finally, the new technology turned out to be more attractive to the large farmers, mainly because the mechanical inputs associated with it were indivisible, and thus uneconomic for use in smaller-size farms.

In the second phase beginning from 1980-81, when profitability in farming started falling and growth of employment opportunities in the non-farm sector became limited, the absolute number of holdings in the state increased, although there was no significant decline in the total operated area. Consequently, the average holding size in the state fell sharply from 4.01 hectare in 1980-81 to 3.61 hectare in 1990-91. All categories except the small farmers registered a decline in average land-holding size. The number of marginal farmers increased steeply from 197,000 in 1980-81 to 296,000 in 1990-91 (an increase of more than 50 per cent), while their operating land base, during the same period, increased from a total of 126,000 hectare to around 164,000 hectare (i.e. an increase of about 30 per cent). Small farms too increased but marginally, with more than a proportionate increase in their total operated area, primarily due to progressive subdivision of medium and large farms under the law of inheritance.

These negative developments in Punjab agriculture appear to have been slightly arrested now. Data from the 1995-96 agriculture census indicated that the average holding size in the state had improved to nearly 3.80 hectare, though it still remained considerably below the level attained in 1980-81. However, except for small and marginal farms, the number of holdings in all other categories of farms has considerably increased. As a result, the average operating land base for all categories of farms has declined, except for the marginal ones. Apparently, the serious unemployment situation in the state has had a telling effect on its agrarian structure.

The distribution of land in three sub-regions of the state revealed that during 1991, the average size of holdings in the sub-mountain region was 2.53 hectare. It was 3.70 hectare in the central region and 3.79 hectare in the southwest region (Table 2). The size-class distribution of holdings in various districts revealed that concentration of small and marginal farmers was the highest in the sub-mountain region, while concentration of large and medium farmers was the highest in the southwest region. Central districts were at the top in terms of concentration of semi-medium holdings.

The present state of agrarian structure points to the fact that marginal and small-

size holdings, though the largest in numbers, are fast becoming unviable. With increasing pressure on land for more production per-unit of area through adoption of modern technologies and use of capital inputs, marginal and small farmers are unable to keep pace with the rapid technological advances in crop production.

Table 2: District-wise Trends in Number and size of Operational Holdings in Punjab.

Region/ District	Total holdings ('000)			Average size (Ha)		
	1971	1981	1991	1971	1981	1991
Sub-Mountain Region						
Rupnagar	65	49	54	1.84	2.61	2.09
Hoshiarpur	1.48	94	98	1.65	2.69	2.64
Gurdaspur	123	100	113	2.11	2.60	2.64
Sub-total	336	243	265	1.85	2.63	2.53
Central region						
Patiala	84	79	96	4.63	4.95	4.05
Ludhiana	91	74	83	3.46	4.44	3.91
Jalandhar	116	75	86	2.44	3.99	3.41
Kapurthala	53	35	39	2.49	4.19	3.63
Amritsar	187	115	124	2.08	3.64	3.52
Sub-total	531	378	428	2.84	4.19	3.70
South West region						
Sangrur	108	90	102	4.16	5.13	4.49
Bhatinda	107	91	102	4.79	5.53	4.80
Faridkot	136	114	107	3.67	4.60	4.83
Ferozepur	158	111	112	2.94	4.46	4.51
Sub-total	508	406	424	3.78	4.89	4.66
Punjab	1375	1027	1117	2.95	4.10	3.79

Source: *Statistical Abstract of Punjab*, various issues.

The scarcity of employment opportunities in the non-farm sector and increasing indebtedness due to increase in cost of inputs and various other factors have made the survival of small and marginal farmers difficult. With growing market demand

for quality produce, suitable technical and credit support needs to be given to marginal and small farmers, to upgrade their skills for the production of quality goods. Given the preponderance of marginal and small farms in the state, the strategy for agricultural production should give more attention to meet their specific requirements. Extension services should be reoriented to cater to the marginal and small farmers. Besides, appropriate policies will have to be designed to generate more off-farm employment opportunities, so that more and more small and marginal farmer can withdraw from agriculture and go for other vocation.

Changes in the Cropping Pattern

The green revolution brought significant changes in the cropping pattern of Punjab. In 1970-71, about 41 per cent of the gross cropped area was under wheat, which increased to nearly 44 per cent in 1990-91 and hovered around 42-43 per cent thereafter. Similarly rice, which occupied around 6.8 per cent of the gross cropped area in 1970-71, increased to over 25 per cent in 1990-91, and then rose further to around 33 per cent in 2000-01. The increase in wheat cultivation has been at the cost of gram, rapeseed and mustard, while that of rice has been obtained through shift in the area from maize, groundnut and millets. Areas under legumes and foliage crops too have declined considerably. Areas under crops such as sugarcane, sunflower, potato, etc., have not remained stable (Table 3). Area under cotton has been adversely affected due to water logging in the cotton belt and pest attack. It is, however, encouraging to see that productivity (Table 4) of most crops has been increasing over the years except for bajra, which in any case is a very minor crop.

Table 3: Shift in Cropping Pattern in Punjab (Area in '000 ha.)

Crop	1970-71	1980-81	1990-91	1999-2000	2000-01
Rice	390 (6.87)	1183 (17.49)	2015 (26.86)	2604 (33.18)	2612 (32.92)
Maize	555 (9.77)	304 (4.50)	183 (2.44)	163 (2.08)	164 (2.07)
Bajra & Jowar	212 (3.73)	70 (1.03)	12 (0.16)	5 (0.06)	6 (0.08)
Groundnut	174 (3.06)	83 (7.23)	11 (0.15)	5 (0.06)	4 (0.05)
Cotton (American)	212 (3.73)	502 (7.42)	637 (8.49)	381 (4.86)	358 (4.51)
Sesamum	15 (0.26)	17 (0.25)	18 (0.24)	145 (1.85)	19 (0.24)
Sugarcane	128 (2.25)	71 (1.05)	101 (1.35)	108 (1.38)	121 (1.52)
Kharif pulses	33 (0.58)	58 <0.86)	73 (0.97)	51 (0.65)	42 (0.53)

Wheat	2299 (40.49)	2812 (41.58)	3273 (43.63)	3388 (43.18)	3408 (42.95)
Barley	57 (1.00)	65 (0.96)	37 (0.49)	51 (0.65)	32 (0.40)
Gram	358 (6.30)	258 (3.81)	60 (0.80)	6 (0.08)	8 (0.10)
Rapeseed & Mustard	103 (1.81)	136 (2.01)	69 (0.92)	56 (0.71)	55 (0.69)
Potato	17 (0.30)	40 (0.59)	23 (0.31)	76.0 - (1.00)	64 (0.81)
Other vegetable	23 (0.41)	24 (0.36)	31 (0.41)	47 (0.60)	46 (0.58)
Fruits	50 (0.88)	29 (0.43)	69 (0.92)	30 (0.38)	34 (0.43)
Net sown Area	4053	4191	4218	4243	4264
Total Cropped Area	5678	6763	7502	7847	7935
Cropping Intensity	140	161	178	185	186

Source: *Statistical Abstract of Punjab*, 1971, 1981, 2000 and 2001

Note: Figures in parentheses indicate area under crops as percentage share to total cropped area.

Area under pulses has recorded a sharp decline. Gram, which used to be the most important pulse crop in the state during the sixties, declined from a level of nearly 360,000 hectares in 1970-71 to less than 10,000 hectares in 2001. Yield of gram, which stagnated till 1990-91, has started improving though given the field levels and price structure of its competing crops it has not yet become attractive enough to arrest the decline in its area and production.

Table 4: Yield (Kg. per hectare) of Principal Crops in Punjab

Crop	1970-71	1980-81	1990-91	1999-2000
Wheat	2238	2730	3715	4696
Rice	1765	2733	3229	3347
Maize	1555	1602	1786	2577
Barley	1022	1640	2754	3521
Gram	797	582	744	974
Bajra	1176	1244	1107	703

Sugarcane (Gur)	4117	5526	5941	6265
Cotton (American)	399	329	481	337
Cotton (Desi)*	338	241	285	352
Rapeseed & Mustard	553	567	1003	1117
Groundnut	970	1249	816	969

Source: *Statistical Abstract of Punjab*, 1971, 1981, 1991 and 2001.

Note: * In term of lint

Table 5: District-wise productivity of crops (1999-2000) (kg per hectare)

Region/ District	Wheat	Rice	Cotton	Oil Seeds	Sugar Cane	Pulses	Bajra	Maize
Majha								
Gurdaspur	4362	2831	-	738	68450	560	-	2042
Amritsar	4885	3108	274	932	65870	338	703	2407
Doaba								
Kapurthala	4710	3489	-	1190	55040	500	-	3357
Jalandhar	4925	3487	-	1326	58720	625	-	2949
Nawanshar	4597	3481	-	1216	58060	667	703	2550
Hoshiarpur	3591	2920	-	1030	62010	600	-	2680
Malwa								
Ropar	4022	3112	-	909	54540	592	-	2426
Ludhaina	5064	3611	-	1250	70510	716	-	3122
Ferozepur	4648	3509	335	1103	70630	649	703	-
Faridkot	4662	3388	353	1090	60740	425	-	-
Muktsar	4725	3208	344	898	66360	658	703	2577
Moga	4928	3355	280	1187	-	655	703	-
Bathinda	4614	3453	302	1051	-	617	572	-
Mansa	4582	3202	374	1000	66560	765	719	-
Sangrur	4828	3562	346	1050	69720	695	753	2577
Patiala	4800	3248	-	1120	59840	706	-	3050
Fatehgarh Sahib	5148	3679	-	1388	62380	1060	-	2759
Punjab	4696	3347	337	1065	62650	665	703	2577

Source: *Statistical Abstract of Punjab*, 2001.

An examination of district-wise data reveals an interesting pattern in the variability in crop yield (Table 5). Crops such as wheat, rice, cotton and sugarcane, which have now become important in the state, have generally lower inter district variability in their respective crop yields than those which have been marginalized, such as oilseeds, pulses, bajra and maize. For instance, wheat yield ranges from a low of 3,591 kg per hectare in Hoshiarpur district to a high of nearly 5,148 kg per hectare in Fatehgarh Sahib district. Similarly, rice yield varies from around 2,831 kg per hectare in Gurdaspur district to a high of nearly 3,679 kg per hectare in Fatehgarh Sahib district. In the cotton-growing districts, yield has been fluctuating in a narrow range around an average of 340 kg per hectare. However, the yield of oilseeds, cultivation of which has now been marginalized in the state, has recorded wide variations, from as low as 738 kg per hectare in Gurdaspur district to as high as 1,388 kg per hectare in Fatehgarh Sahib. Similarly yield level of pulses, bajra and maize crops, which too have been marginalized in the state, have recorded wide inter-district variations. Thus we find that the cropping pattern in the state has got confined to those crops which have lower variability in yields and fetch relatively better prices so that farmers have more or less assured returns from these crops. Any effort to diversify state's agricultural economy will bear results only if the alternative crops being suggested have stable yields and more remunerative prices so that farmers have better and assured returns from the alternative cropping patterns being suggested by the agricultural scientists. Mere lecturing to the farmers is unlikely to have any impact on them and their decisions will be dictated by economic considerations.

Implications of Wheat-Rice Rotation

In the initial stage, green revolution in Punjab was confined to wheat only because traditionally Punjab has never been a rice growing area. But after a few years, new varieties of rice also became popular with the farmers. Given the superior yields of wheat and paddy compared to the competing crops and given the input/output price structure, wheat and rice started replacing other crops in a massive way and presently wheat and rice account for nearly three fourth of the total cropped area of the state. Data for the reorganized Punjab are available since 1960-61 onwards. Between 1960-61 and 2001-02 Punjab agriculture has grown at a rate of nearly four and a half per cent (4.48 per cent) per annum. But production of wheat and rice has been growing at a much faster rate.

Table 6: Growth of Wheat and Rice in Punjab

Year	Wheat		Rice	
	Area (000) hec	Production (000) tons	Area (000) hec	Production (000) tons
1960-61	1400	1742	227	229
1970-71	2299	5145	390	688

1980-81	2812	7677	1183	3233
1990-91	3273	12159	2015	6506
2001-02	3420	15499	2487	8816
Growth Rate				
1970- 71 over 1960-61	5.08	11.43	5.55	11.62
1980-81 over 1970-71	2.03	4.08	11.73	16.73
1990-91 over 1980-81	1.52	4.70	5.47	7.24
2001-02 over 1990-91	0.45	2.23	2.12	2.80
2001-02 over 1960-61	2.20	5.47	6.01	9.31

Source: Statistical Abstract of Punjab for Various Years.

However, when we have a close look at Table 6, we find that momentum of growth in Punjab agriculture had petered out by 1990 and during 1990s the performance of not only the agricultural sector as a whole but even of wheat and rice has been rather dismal. During the 1990s Punjab agriculture grew at a rate of 2.38 per cent per annum only. In fact, between 1993-94 and 2000-01, Punjab agriculture has recorded a rate of growth of only 2.19 per cent per annum, which is more than half a per cent lower than the growth rate recorded by this sector at the all India level during this period. Even in the case of wheat and rice, two major crops which together account for nearly 75 per cent gross cropped area of the state, one finds a definite slow down after 1990. During 1990s wheat production recorded a rate of growth of 2.23 per cent per annum whereas rice production grew at a rate of 2.80 per cent per annum. In the case of wheat, output growth in 1990s is mainly because of productivity increase as the area under wheat has almost reached a saturation point. There is some consolation that wheat yields are still rising though at a much slower pace compared to 1960s, 1970s and 1980s. In the case of rice, however, out of 2.80 per cent growth in production achieved during 1990s, 2.12 per cent is attributable to area increase and only 0.68 per cent is the result of productivity increase. In fact the peak yield of 3510 kg (rice) per hectare was achieved way back in 1989-90 and this peak has never been crossed throughout the 1990s. Thus rice yields have almost totally stagnated.

It is not merely deceleration in the agriculture's rate of growth which is disturbing, but even more important is the fact that wheat area monoculture has seriously affected Punjab agriculture's capacity to absorb labour over time. The employment elasticity with respect to aggregate agricultural output in Punjab has already turned negative. An idea of the magnitude of this phenomenon can be had from the man hours used per hectare in the case of these two major crops. For example, in the case of wheat, per hectare use of labour was 680.27 man-hours per

hectare in 1975-76. Thereafter it started declining almost continuously and finally stood at 301.15 man-hours per hectare in 1999-2000. Similarly, in the case of paddy the labour use per hectare was 961.44 man-hours in 1974-75, the first year for which cost of cultivation data are available for paddy in Punjab. In 1998-99, the last year for which cost of cultivation data are available, it stood at 450.54 man hours/hectare. Thus we find that the man-hours used per hectare in the case of wheat in 1999-2000 were less than half of what it was in 1975-76. Similarly in the case of paddy the labour use per hectare figure in 1998-99 is less than half of what it was in 1974-75 (Cost of Cultivation of Principal Crops in India, 2000). No wonder then that the proportion of workers engaged in agriculture (cultivators and agricultural labourers) in Punjab came down drastically from 55.26 per cent of the labour force in 1991 to 39.4 per cent in 2001 (Census of India, 2001). Whether Punjab's small and medium scale industries will be able to absorb this massive shift of labour force, which has gone away from agriculture, is doubtful. Already there is a huge army of unemployed in the state and most of them are educated unemployed. The fourth Economic Census carried out by the Economic and Statistical Organisation of Punjab in April-June 1998 covering all villages, towns and cities of the state put the figure of unemployed persons in the state at 1,471,527 out of which 897,860 (61 per cent) were educated. Currently this figure is estimated to be in the region of 18-20 lakhs. A situation in which nearly 20 per cent labour force is unemployed (most of them being educated ones) in a state which passed through a decade long phase of militancy, is certainly a cause for concern.

There is a large-scale use of farm machinery in Punjab. Right now the state has 4.35 lakh tractors, 1.45 lakh seed drills, 5.40 lakh sprayers, 3.25 lakh threshers, 7,300 combine harvesters and 9.5 lakh tubewells (Statistical Abstract of Punjab, 2002). If we also take into account other small implements required in agricultural operations, the total present value of capital investments in farm machinery alone is estimated to be approximately Rs. 8,000 crores. These capital assets were created keeping in view the requirements of the existing cropping pattern in the state. This capital stock is not that malleable as to suit any other cropping pattern which is being attempted through diversification. Thus, any attempt at diversification of the state's agricultural economy away from the existing wheat-rice dominated cropping pattern would also require corresponding changes in the structure and composition of capital assets which would require additional investment of a couple of thousands of crores. But this is only one part of the story and a small one. Much more serious problem is posed by the falling water table in the state and its potential consequences. Already 90 Development Blocks of the state out of a total of 138 blocks have been declared 'black', meaning that in these blocks water table has gone down to a dangerously low level and the drawing of water is more than the recharge (Sidhu and Dhillon, 1997). Shallow tubewells are unable to draw water and farmers have to occasionally resort to deepening their tubewell bore and/or place the electric motor at a lower place like a pit. For this they incur extra costs. A study by the Punjab Agricultural University shows that the cost of deepening the tubewells has on average increased from Rs. 4,219 per deepened tubewell (or Rs. 177 per tubewell) prior to 1990 to Rs. 6,201 (Rs. 492) during 1991-95 and to Rs. 8,184 (Rs. 2046) during 1995-99. These costs are at 1999 prices. This means that every year

farmers in Punjab are spending roughly Rs. 200 crores on deepening their tubewells (Singh and Kalra, 2002). Further, some well off farmers in these 'problematic' areas have started shifting to submersible tubewells. A submersible tubewell costs anything between Rs. 70,000 to Rs. 150,000 depending upon the depth of water table and the size of the bore. Once a farmer has installed a submersible pump, it creates problems for the neighbouring farmers as their shallow tubewells capacity to draw water is seriously affected. This starts a chain reaction. Even if we assume Rs. 1 lakh as the average cost of a submersible pump and if in due course of time even one-half of the tubewells in the state are converted into submersibles, it would require a staggering Rs. 5,000 crores of additional investments thereby further worsening the problem of indebtedness.

But much more serious than the immediate investment requirements of shifting over to submersible pumps will be the long term socio-economic consequences of this problem. In Punjab, 26.50 per cent of the farmers have a holding of less than one hectare each. Another 18.26 per cent have between 1 and 2 hectares. Considered together nearly 45 per cent farmers are small and/or marginal farmers with a holding below 2 hectares. A small or marginal farmer would not be in a position to mobilize resources for a submersible pump. With well-off farmers shifting over to submersible pumps, small and marginal farmers will be effectively disfranchised from their right to underground water which is a community resource. The loss of the most reliable irrigation source will affect their livelihood, land values and may even lead to their alienation from land for they will either have to sell their land or stop farming. This development is causing deep concern to small and marginal farmers and is adding to social unrest in rural Punjab.

Pattern of Tenancy in Post-Green Revolution Punjab

Tenancy, particularly of the share cropping variety, has been in existence in India since ancient times. Even Kautalya's *Arthashastra*, a fourth century B.C. manual about state policy and management, refers to a system under which 'lands were assigned on half share generally to those who had nothing else to supply but their bodily labour'. This system existed with wide spatial and temporal variations across the country. Its extent, form and content have been changing with time and pace of development. Under the British rule about three-fifth of the cultivated area of Punjab was under tenancy. However, there was relatively higher concentration of tenants in the canal colonies which after the partition became part of Pakistan. But even in the Indian Punjab in 1947, 48.6 per cent of the total cultivated area was under tenancy cultivation (Chadha, 1986). The main suppliers of land in the lease market in Punjab were big land owners. A survey of land holdings conducted during 1920s reveals that in the above 50 acre category, there were around 121 thousand owners but only 20 thousand operators. Thus more than one lakh owners (83 percent) were renting out a part or whole of their land. Tenants were generally either landless or small owners who were leasing in land to provide gainful employment to their family labour. After the enactment of Tenancy Legislation in 1953, providing security to tenants-at-will, area recorded under tenancy cultivation in 1957 decreased to 33.56 percent. According to NSS data for 1961-62 area under tenancy

in Punjab was 35 percent. In fact, however, tenancy legislation had driven the tenancy underground and promoted the unrecorded oral lease arrangement and the NSS data (26th Round) shows that in 1971-72 the percentage of operated area leased in to total operated area was only 26 per cent (Singh, 1985). The most affected were landless tenants as purely rented holdings decreased from 22 per cent of all operational holdings in 1953-54 to around 4 per cent in 1971-72. A large majority of them joined the ranks of agricultural labourers. Consequently the proportion of agricultural labourers to total agricultural workers increased from 12 per cent in 1951 to around 32 per cent in 1971 and further to 40 per cent in 2001.

With the introduction of high yielding varieties in the late 1960s and large-scale mechanization of farm operations, Punjab agriculture has been totally transformed. A technological transformation of this magnitude is bound to have a profound impact on agrarian relations. Share cropping has given way to fixed rent tenancy. Compositions of tenants have also undergone a sea change from landless poor farmers to relatively better off entrepreneurial land owning tenants. Some of the large farmers are also leasing in land to optimally utilize their capital assets. Already there is evidence in empirical literatures to the emergence of such entrepreneurial tenants, (Bharadwaj and Das, 1975; Singh, 1989). With the development of capitalism in agriculture, the value system of society is also undergoing change. Family prestige is getting associated with income and wealth rather than leisure and withdrawal from work. Consequently the main group of lessors are not leisure preferring big landowners but those landowners who are engaged elsewhere and hence are unable to spare sufficient time to supervise cultivation with hired labour. Under these circumstances it should not be their unwillingness but inability to supervise cultivation with work that is likely to be the determining factor in choosing the contract. In the following paragraphs we shall verify the hypotheses set out above on the basis of *a-priori* expectations and casual empiricism. The results are based on a recently conducted primary survey of 90 households engaged in tenancy in three villages, one each from Amritsar, Jalandhar and Moga districts of Punjab. The entire area under tenancy in these three villages was recorded and all the tenants were surveyed. Survey was conducted in October 2003. In fact it is a census of tenants in these three villages.

The total cultivated area in these surveyed villages was 3824 acres. Out of these, 878 acres is under tenancy. Thus 22.96 per cent of the total cultivated areas is under tenancy. The entire area is irrigated. It has canal water as well as tubewell irrigation facility. Tenants belonged to all age groups; the youngest one being 23 years old and the oldest one is 65 years old. Four tenants (4.4 per cent) are in their 20s, 13 (14.4 per cent) in their 30s, 30 (33.33 per cent) in their 40s, 26 (28.88 per cent) are in their 50s and the rest 17 (18.8 per cent) are above 60 years of age. In term of education 14 (15.87 per cent) of them are illiterate the rest are educated. In fact 46.6 per cent of them are Matric and above. Seventeen of them are graduates or above including four postgraduates. Caste-wise, a predominant majority of them 62 (69 per cent) are Jat Sikh 16 (17.7 per cent) Kamboj (a peasant caste), 7 (7.77 per cent), Harijans (Mazbhi Sikhs), 4 (4.4 per cent) Khatri/Aroras and the remaining 3 (3.3 per cent) Ramgharia Sikhs.

None of the 90 tenants in our sample is a landless tenant. All owned some land.

The smallest landholders 4 (4 per cent of them) owned one acre each. The biggest tenant in our sample owned 105 acres. He has leased in another 20 acres. He is a forty five years old Jat Sikh arts graduate, owns two tractors, 10 tubewells and the estimated present value of his machinery is Rs. 8.5 lakhs. Ownership holding size-wise, 6 (6.6 per cent) tenants in our sample are in the size group of below 2.5 acres, 14 (15.55 per cent) own between 2.5 to 4.99 acres, 26 (29.9 per cent) owned between 5-9.99 acres. The largest number, 31 (34.41 per cent) own between 10 and 19.99 acres and 13 (i.e. 14.44 per cent) are having land ownership above 20 acres each. In fact six of them own more than 35 acres each. Thus in our sample, nearly half the tenants (44 out of 90) are rich peasants owning more than ten acres each. On an average a tenant in our sample owns 12.84 acres of land. 77 out of 90 tenants in our sample own tractors. In fact nine of them have two tractors each. All but one of them have their own electric motors for operating tubewells. The average value at non-landed capital assets owned by a tenant in our sample works out to be Rs. 3.06 lakh.

There is a distinct preference on the part of lessors to lease out land to bigger and better off farmers because they can make better and timely payments of rent and give at least half the rent in advance. Sometimes the entire amount of rent is given in advance by these capitalist tenants. Thus, it is no longer possible and/or viable for a landless labourer or a marginal farmer to compete with large capitalist farmers for leasing in land. No wonder then that in our sample not even a single tenant is found to be a landless tenant or pure tenant. In fact no one would like to lease out his land to a landless tenant. Therefore, tenancy as a source of employment for self and family labour is no longer an option available to the landless workers and marginal farmers. This has serious implications for their employment opportunities within the agriculture sector.

As far as the area under tenancy is concerned, as already mentioned, the total area under tenancy with these 90 tenants in our sample is 878 acres. Thus, on average, each tenant has leased in approximately 9.75 acres. However 20 tenants have leased in less than five acres each. Forty tenants have leased in between 5 and 9.99 acres each. Another 16 of them have leased in between 10 and 20 acres each. Only 14 of them have leased in more than 20 acres each. As far as the percentage of area leased in is concerned, 38 acres (4.32 per cent) are leased in by marginal farmers owning less than 2.5 acres of land. Another 179 acres i.e. (20.38 per cent) have been leased in by small farmers owning between 2.5 and 4.99 acres. Altogether 217 acres (24.71 per cent) of the total leased in area are with tenants who own less than five acres of land. Another 143 acres i.e. 16.28 per cent of the area leased in are with those owning between 5 and 9.99 acres of land. Rest of the 518 acres under tenancy (i.e. 58.99 per cent) are leased in by those owning 10 acres or more. In fact 196 acres (i.e. 22.32 per cent) of the area under tenancy are with those owning more than 20 acres each. Thus we find that less than one-fourth of the total area under tenancy is with small and marginal farmers. The rest of the area is with relatively better off farmers. In fact nearly 60 percent of the area under tenancy is with the rich peasants owning more than ten acres of land.

We also inquired into who has leased out this land to these tenants. The 878 acres under tenancy covered by our sample have been leased out by 123 parties

including three panchayat landholdings. Altogether these 123 lessors own a total of 1170.5 acres of land out of which they have leased out 878 acres i.e. nearly 75 per cent. The average size of holding of lessors work out to be 9.51 acres compared to lease's average size of 12.84 acres. Thus the lessor in Punjab happens to be a smaller holder compared to the average tenant. Out of 123 lessors, 14 are marginal farmers owning less than two and a half acres. Forty-eight of them own between 2.5 to 4.99 acres of land. Another 34 own between 5 and 9.99 acres. Ten lessors have holding between 10 acres and 19.99 acres. The rest 17 are large land holders owning more than twenty acres of land each.

As far as the motive behind leasing in land is concerned only 8 tenants said they have leased in land to find gainful employment for self and family labour. Thirty-eight of them replied that they have leased in to make their land holdings viable and also use their capital assets optimally. Thirty of them have leased in to make optimal use of the capital assets which they have with them. Two of them said the land they have leased in was contiguous to their plot of land and they did not want any inconvenient neighbour around. Five of them have leased in because the land belonged to their own relatives' brother and/or uncle and they did not want any outsider around. One tenant who happen to be a former Sarpanch but who lost the election this time has leased in panchayat land at an unusually high rate of rent simply to show to the other party that his writ still runs in the affairs of the village. But leaving these few cases of non-economic considerations apart, the most important reasons why they have leased in land is (a) to make their owned holding viable followed by (b) optimal use of machinery and capital assets, and (c) to have access to gainful employment for the family but this is the least important economic reason for hiring in land by the tenants in Punjab. We also inquired from lessors the reason why they have leased out their land. Out of a total of 123 lessors three are leasing common property i.e. panchayat lands and in any case these have to be leased out. Out of the remaining 120 individual lessors, an overwhelming majority i.e. 73 reported to be doing some full time job (in the army, police, education department, as agriculture inspector/officer, advocate etc.) and therefore they cannot cultivate their land themselves. Twenty lessors were involved in some other vocation such as dairying, poultry, *atta chaki*, commission agent, workshop, plumber, electrician, shop keeping etc. and were unable to spare time for cultivation. Ten families had gone abroad and their land is always leased out to somebody or the other, reliability of the person being a major consideration. Five of them reported to be too old or a widow and therefore cannot go for self cultivation. Another five of them have moved to the nearby town or city and are no longer interested in self cultivation. In one case the owner happened to be studying and has leased out his land. Only in four cases was it reported that since their size of holding was too small, it was not viable for them to go for self-cultivation. And only in the case of two lessors (both being large holders but opium addicts) leisure preference is the reason for leasing out land.

In all the 123 cases studied by us lease was on a yearly basis and in lieu of cash rent. But there is no formal written agreement between the parties except in the case of Panchayat lands where records have to be maintained. Usually half of the rent is paid in advance, sometimes 3-4 months in advance, from the date of taking actual

possession of land and the rest of the payment is made after six months of the taking over of actual possession or after the *kharif* crop is sold, whichever is earlier. Earlier possession of leased lands was given to the tenants around 15th of June. Now, with new agricultural technology and advent of early maturing varieties, the timing of handing over or taking over has advanced somewhat and normally the possession of leased land is handed or taken over around 15th of May every year. The rent per acre of land in our sample varies from Rs. 7,000 to Rs. 14,500 depending on the productivity of land, cropping pattern, location of land, source of irrigation, relative demand-supply position, whether access is through a metalled road and reliability of the tenant etc. The average rent per acre in our sample works out to be Rs. 11,075.

To sum up, our study shows that in Punjab about 23 per cent of the total cultivated area is still under tenancy. Tenancy has become a fixed cash rent tenancy. Tenants are no longer landless or small owners. In fact, nearly two third of the total area under tenancy is leased in by farmers owning more than ten acres of land. The motive for tenants to lease in land is either to make their owned holding more viable or to optimally utilize the capital assets. In fact none of the tenants is a landless tenant. There is a distinct preference on the part of lessors to lease out land to bigger farmers. Tenancy as a source of employment for self and family labour is no longer an option available to the landless workers and marginal peasants. On average, a tenant owns nearly thirteen acres of land. Eighty five per cent of the tenants own tractors. Nearly all of them have their own tubewells. An average tenant owns capital assets worth Rs. 3 lakhs. In fact the lessor in Punjab is a relatively smaller land holder compared to the lessee. Thus most of the lessors are not leisure preferring big landlords but middle peasants or small holders who are gainfully engaged elsewhere and are not in a position to cultivate their land themselves. It is a predominantly capitalist agriculture dictated by economic considerations, with fine regard for marginal costs and returns.

Condition of Agricultural Labour

There has been a steep rise in the proportion of agricultural labourers to total agricultural workers in Punjab up till 1991. This proportion has remained stagnant between 1991 and 2001. In 1951 their proportion in agricultural workers was just around 12 percent. It rose to 32 per cent in 1971 and further to 41.5 per cent in 1991. Census 2001 puts this figure at 41.2 percent. It appears both demand and supply factors have been responsible for this rise. Initially after independence their supply increased as a large number of tenants-at-will who were evicted from land joined the ranks of agricultural labourers. Simultaneously, however, demand for agricultural labourers grew because landlords who resumed self-cultivation in the wake of enactment of tenancy legislation started cultivating with the help of hired labourers. This led to a fast increase in the proportion of agricultural labourers in total agricultural workers. Later on, factors such as growth of irrigation, increasing cropping intensity with the introduction of short duration varieties, changes in cropping pattern towards more labour intensive crops such as paddy and increasing volume of output all led to the increase in demand for hired labourers. In the initial years of green revolution, at least till the early 1970s, increased demand for

agricultural labourers also resulted in the increase in real wages. Until then the intensity of mechanization was still at a moderate level.

After mid 1970s as the pace of mechanization picked up, the use of labour per hectare started declining in the case of both the major crops i.e. wheat and paddy. In the case of wheat, it came down from 680.23 man-hours per hectare in 1975-76 to 301.15 man-hours per hectare in 1999-2000. Similarly in the case of paddy it came down from 961.44 man-hours per hectare in 1974-75 to 450.54 man-hours per hectare in 1998-99 (GOI, 2000). This along with large influx of agricultural labourers from other states during peak seasons started exerting downward pressure on wages of agricultural labourers. It is not surprising therefore that some studies have shown a slight fall in the real wages in the latter half of 1970s and early 1980s compared with 1970-71 (Chadha, 1986; Jose, 1988). Almost all agricultural labourers in Punjab belong to lower strata in terms of caste and class hierarchy. More than 90 per cent of them are from landless households belonging to scheduled caste families. The rest are from other backward castes. To examine the socio-economic conditions of agricultural labour we surveyed 75 agricultural labour households from three clusters of three villages, one each from Amritsar, Jalandhar and Moga districts of Punjab. The main conclusions that can be drawn on the basis of this primary survey are summarized below.

There are two types of contracts between landlords and agricultural labour. One is yearly contract for attached labourers and the other category consists of casual labourers. Attached labourers are usually employed on a yearly basis and are paid in cash but the employer also provides them with tea twice or thrice a day and two meals a day. The amount of contract varies from Rs. 18,000 to Rs. 22,000 per annum depending on the labourer's age, health and demand and supply conditions in the village. The average cash wage of an attached labourer in our sample works out to be Rs. 20,000 per annum. Perquisites in the form of tea and meals have been evaluated at approximately Rs. 12 per person per day. Normally an attached labourer is given 15 days off in a year but these are allowed only in the off seasons. However if an attached labourer abstains from work during busy seasons or beyond the 15 days allowed to him, deductions from his salary are made at a penal rate which varies from area to area. In our sample this penal deduction rate works out to be Rs. 125 per day. On average, in our sample, an attached labourer remains absent for 20 days in a year for which he receives salary deduction at the rate of Rs. 125 per day. Thus the effective cash wage which an attached labourer in our sample gets in a year is Rs. 17,500 instead of Rs. 20,000 mentioned earlier. Thus the effective wage rate for 330 days he actually works is Rs. 53 in cash and Rs. 12 as perquisites i.e. Rs. 65 per day or Rs. 21,450 in a year.

On the other hand, a casual labourer as per our survey, gets work for 140 days in a year. Out of these 140 days, around 70 days work is in the peak seasons when the average cash wage is Rs. 90 per day. He is also given tea at least thrice a day and two meals, which have been evaluated at Rs. 15 per day. Thus for 70 days his average wage is Rs. 105 per day. For the remaining 70 days the average wage works out to be Rs. 80 in cash plus tea and meals valued at Rs. 12 per day or a total of Rs. 92 per day. The weighted average wage of a male casual worker works out to be Rs. 98.50 per day. Thus the average daily wage of a male casual worker works out to be

nearly 37 per cent higher than the average daily wage of an attached labourer. However, because of the fewer number of days for which he gets work, his annual income works out to be only Rs. 13,790, which is roughly 35 per cent lower than the average annual earnings of an attached labourer. But then he enjoys far greater leisure and flexibility in timings. Even otherwise the drudgery of work of an attached labourer is far greater compared to that of a casual labourer - normally he reports to the employer for work quite early in the morning and leaves for his home quite late in the evening. He remains at work approximately for 12-14 hours a day depending on the season. The only advantage he has is that he gets at least half the annual wage in advance and the rest he receives as per his day to day requirements or whenever he needs it.

A female casual labourer on the other hand gets paid work in the fields for about 70 days in a year during peak seasons. During these 70 days she gets a daily wage of Rs. 60 in cash and tea and two meals valued at Rs. 10 a day. For the remaining nine months or so she earns on an average Rs. 20-22 per day by working for rich farmers, washing their clothes, sweeping their courtyards and carrying cow dung to the pits on the periphery of the village. Thus, with all her efforts she manages to earn approximately Rs. 10,000 in a year in cash and kind. Our study shows that an average casual agricultural labourer family with both husband and wife working, manages to earn Rs. 24,000 in a year which is less than what a farmer earns from one acre of self cultivated owned land or what a pure tenant earns from two acres of land taken on lease. However, it must be born in mind that even the ownership of one acre of land gives lot of economic security as well as social prestige to the small peasant which is not there in the case of landless workers. Thus, this comparison in terms of annual income between landless labourer and a peasant who cultivates one acre of land or a tenant cultivating two acres of land is only notional and not real.

Conclusions

Punjab is a small state with only 1.53 per cent of country's geographical area but it is producing 22.6 per cent of wheat, 10.8 per cent of rice and 12.9 per cent of the total food grains in the country. Food grain production in the state jumped from around 3 million tonnes in 1960-61 to more than 25 million tonnes by 2000-01. Agricultural production during these four decades grew at a rate of around four and a half per cent per annum. Production of wheat and rice has been growing at an even faster rate. In the process the state's agricultural economy has become a wheat-rice dominated one to the exclusion of other crops. But the momentum of growth has petered out and during the decade of 1990s agricultural production in Punjab has been growing at a slower pace compared to the growth of this sector at the all India level. Our study shows that rice yields have totally stagnated. Although wheat yield is still rising it is at a much slower rate. In the mean time the food scenario at the national level has changed almost completely. From the food shortages of early 1960s the country is having burgeoning surpluses in food grains. In this situation the state is finding it difficult to sell its wheat and rice.

Our study shows that farmers in Punjab have not been given a due share out of increased productivity. In fact, a major share of the increased productivity has been

siphoned off by the state through the mechanism of administered prices. Till mid 1980s farmers' incomes were rising despite the fact that per hectare returns from wheat and paddy were stagnant primarily because they were shifting over area from less remunerative crops like gram, pulses, maize, coarse grains and oilseeds to more remunerative and steady crops such as wheat and paddy. Intensity of cropping was also going up. Since the area under wheat and paddy cultivation as well as the intensity of cropping, have reached saturation levels, farmers' incomes from per unit of area have almost totally stagnated. In the meantime, average size of holding is going down. Consequently their real incomes have in fact been falling since the mid 1980.

Furthermore, excessive dependence on wheat and rice cultivation has created several problems for the state. Growing the same crops over and over again has led to sharp deterioration in the productivity of soil. Now higher doses of chemical fertilizers have to be applied to achieve the same level of output. This is leading to a rise in the cost of production. Early plantation of rice is leading to depletion of underground water. The water table in Punjab is going down at the rate of 30cm annually. Ninety development blocks have already been declared 'black'. Shallow tubewells are not able to draw out water in many areas. Any shift over to submersible tubewells, apart from the huge costs involved, is likely to have dangerous socio-economic consequences as small and marginal farmers will have been effectively disfranchised from their right to underground water which is a community resource.

Agriculture in Punjab is not in a position to absorb any more additional labour force. In fact, the per hectare use of labour in the case of both the major crops i.e. wheat and paddy, has come down to less than half the level of the mid 1970s. There is a huge army of unemployed youth, most of them educated ones. Whether the state's medium and small-scale industry is capable of absorbing at least some of them appears doubtful. The general feeling is that the Central Government must help the state in a 'Crop Adjustment Programme' in the wake of the changed food scenario at the national level. That help does not appear to be forthcoming. Hence the resentment against the Central Government and there is a feeling of being let down after use.

Tenancy in Punjab has undergone a radical change. It is no longer the landless and small owners who are leasing in land on a share cropping basis to provide gainful employment to family labour. Tenancy has become a fixed cash rent tenancy. Tenants, in fact, are rich farmers who own tractors, tubewells and other farm machinery. They are leasing in land to make their holdings more viable and make a more optimal use their capital assets. Our study shows that none of the tenants in Punjab is a landless tenant. In fact, the average size of holding of tenants is larger than the average size of holdings of those who have leased out land. The lessors are not leisure preferring big landlords but middle class landowners who are gainfully engaged elsewhere and are not in a position to supervise cultivation themselves. Average cash rent is around Rs. 11,000 per acre but it varies from area to area. Although official records show a very small percentage of area under tenancy, our survey shows that around 23 of the total cultivated area is still under tenancy and it does not always enter the revenue records because most of the

contracts are oral contracts. Tenancy in Punjab is like any other activity in a capitalist economy dictated by economic considerations with fine regard for marginal costs and returns. But at least one thing is clear. Lessors in Punjab have a distinct preference to lease out land to bigger and better off farmers. Consequently, tenancy as a source of employment for self and family labour is no longer an option available to the landless workers and small peasants as it used to be in the past.

Agricultural labourers in Punjab which constitute around two-fifth of the total agricultural workers mostly belong to scheduled castes and other backward castes. Some of them work as attached labourers on a yearly contract basis but most of them are working as casual labourer on a daily basis. During certain agricultural operations such as paddy transplantation, wheat and paddy harvesting and cotton picking, they also work on piece rate basis. This way they can engage their entire family labour and perhaps can also earn more. Attached labourers on an average get Rs. 53 in cash and two meals and tea from the employer. His total cash earnings work out to be approximately Rs. 17,500 per year. If however we also take into account his perquisites he earns approximately Rs. 65 per day for 330 days in a year i.e. Rs. 21450 per annum.

An average male casual labourer on the other hand gets work for 140 days in a year and receives a wage of Rs. 98.5 per day including perquisites i.e., tea and meals. Thus the average daily wage of a male casual worker is roughly 37 per cent more than the average daily wage of a worker employed on yearly basis. But the total yearly earnings of a casual worker (Rs. 14,000 approx) are about 35 per cent lower than the yearly earnings of an attached labourer. A casual female worker in Punjab gets wage paid work for about 70 days in a year at a daily wage of Rs. 70 (Rs. 60 + 10 as perquisites). If her earnings from work during the rest of the year are also taken into account she earns around Rs. 10,000 in a year. An average casual labouring family in Punjab earns Rs. 24,000 per year which is roughly equivalent to the earnings of an owner cultivator cultivating one acre of land or a pure tenant cultivating two acres of rented-in land.

Different sections of the peasants in Punjab have responded to the agrarian crisis in different ways. A small section of the peasants who were under heavy debt and distressed resorted to consumption of liquor and narcotics which further deepens the crisis and leads to family discord. Hundreds of distressed farmers committed suicides during the last decade or so. But a large majority of them are now in the process of organizing themselves under various banners and are getting ready to fight back politically for their just demands and negotiate a better deal. A large section of the Punjab peasantry is now convinced that they are being ill treated because they are not organized. They wonder how the Indian government can spend several thousand crores on a package to bailout Unit Trust of India to protect 20 million urban middle class investors but it has no funds to waive off the loans of poor farmers. The threat of withdrawal of the state from food grains trading is sending shivers down the spine of Punjab farmers because they know that given the financial condition of the state it would not be possible for the state government to handle this task.

Even the state government has given sales tax and other exemptions worth several thousand crores of rupees to industry in the state but has withdrawn the

benefits of free power to Punjab farmers on the pretext that Punjab State Electricity Board is on the verge of bankruptcy. While nobody would argue in favour of providing free electricity to the rural rich but the subsidies given to the urban rich also cannot be justified on any grounds of equity and social justice. Hordes of unemployed youth are roaming around looking for jobs which are scarce and generally bagged by the highest bidders. There is an atmosphere around of despondency in rural Punjab. The situation is alarming and calls for introspection on the part of powers that be.

Bibliography

- Bhardwaj, Krishna and Das, P.K., (1975) 'Tenurial Conditions and Mode of Exploitation: A Study of Some Villages in Orissa', *Economic and Political Weekly*, Vol. X, Nos. 5-7.
- Chadha, G.K., (1986) *The State and Rural Transformation: The Case of Punjab 1950-85* (Sage Publications, New Delhi).
- Ghosh, Jayati and Amit Thorat, (2003) *Corporate Agriculture: Implications for Indian Farmers*, paper presented at All India Conference on Agriculture and Rural Society in Contemporary India held at Barddhaman, West Bengal from December 17-20.
- Government of India, (2000) *Cost of Cultivation of Principal Crops in India*, Ministry of Agriculture, New Delhi.
- Government of India, (2002) *Census of India*, Series 4 Punjab, Paper 3 of 2001, New Delhi.
- Government of Punjab, (1998) *Report on Unemployed Persons (Age Group (18-35) Desirous of Self Employment*, Mimeo, Chandigarh.
- Government of Punjab, (2002) *Statistical Abstract of Punjab*, Chandigarh.
- Iyer, K.G. and M.S. Manick, (2002) *Indebtedness, Impoverishment and Suicides in Rural Punjab*, Institute for Development and Communication, Chandigarh, Monograph Series No.5.
- Johl S.S., (2002) *Agricultural Production Pattern Adjustment Programme in Punjab for Productivity and Growth*, Chief Minister's Advisory Committee on Agriculture Policy and Restructuring, Government of Punjab, Chandigarh (2002).
- Jose, A.V., (1998) 'Agricultural Wages in India', *Economic and Political Weekly*, Vol. XXIII, No. 26.
- Kautilya, (1992) *The Arthashastra*, edited by L.N. Rangarajan, Penguin Books, New Delhi.
- Sidhu, H.S., (1992) 'Crisis in Agrarian Economy in Punjab: Some Urgent Steps', *Economic and Political Weekly*, Vol. XXXVII, No. 30, Review of Agriculture.
- Sidhu, R..S. and M.S. Dhillon, (1997)'Land and Water Resources in Punjab: Their Degradation and Technologies for Sustainable Use', *Indian Journal of Agricultural Economics*, Vol. 52, No.3, July-September.
- Singh, Iqbal, (1985) *Changing Tendency Structure in a Developing Agriculture: A Case Study of Punjab*, Ph.D. unpublished Thesis, CRSI, JX4, New Delhi.

- Singh, Iqbal, (1989) 'Reverse Tenancy in Punjab Agriculture: Impact of Technological Change', *Economic and Political Weekly*, Vol. XIV, No. 25.
- Singh, Karam and Sajla Kalra, (2002) 'Rice Production in Punjab: Systems, Varietal Diversity, Growth and Sustainability', *Economic and Political Weekly*, Vol. XXXVII, No. 30, Review of Agriculture (2002).

Economic Distress and Farmer Suicides in Rural Punjab

Sucha S. Gill

Punjabi University, Patiala

Suicides by cultivators and agricultural labourers have been reported in Punjab since the mid 1980s. This paper argues that this unprecedented phenomenon is caused by a multi-dimensional crisis of the rural economy in the post green revolution phase of agricultural development. A combination of economic factors such as, economic hardship of the pauperized peasant households, crop failure, unemployment and indebtedness has pushed the victims to end their lives. This is happening in wake of decline of community sense/support mechanism as result of the emergence of new production relations. This phenomenon can be checked through appropriate policy measures such as debt moratorium of the debt trapped households and creation of safety nets for marginalized rural households.

Rural areas of Punjab experienced a general spurt in their prosperity after the green revolution in the mid 1960s. The potentials of green of revolution technology began to be exhausted in the 1980s generating pressure of economic stress among the poor strata of peasantry and agricultural labourers. The impact of economic distress and decline of traditional social support system based on community support made the poor people helpless and unable to fend for themselves as individual families and persons. The non-existence of formal and informal social support mechanisms caused many poor peasants and agricultural labourers to break under economic and social stress and to commit suicides. The phenomenon of suicides under economic distress has been observed in rural Punjab since the mid 1980s. This phenomenon is not observed equally across all the regions of the state. There are some areas with high intensity of suicide while in other areas this phenomenon is little known. The phenomenon of suicides of poor farmers and agricultural labourers has been observed in other states of India also especially where agriculture is highly commercialized. The other states where suicides among the farmers are regularly reported include Andhra Pradesh (Reddy et. al. 1998) and Karnataka (Assadi, 1998; Deshpande, 2002; Vasavi, 1999). There are also newspaper reports of farmers' suicides from the states of Maharashtra and Haryana. But this phenomenon is much widespread in the state of Karnataka where suicides are reported from all over except for one or two districts. In the present paper an attempt has been made to examine this phenomenon in the Punjab state in relation to growing economic distress in the rural areas. The paper is divided into three sections. Section one examines the emergence of economic distress and its manifestations. Section two deals with the magnitude of this phenomenon and causes of suicides in rural Punjab. The final section raises some policy issues.

1. Emergence of Economic Distress and its Manifestations

Economic activities in the state are showing structural change over period of time. Primary sector is experiencing a decline both in its share of state domestic product (SDP) as well as the share of workforce. This sector accounted for 49.13 per cent of the share of SDP in 1980-81, which declined to 40.32 per cent in 2001-02. Correspondingly, the shares of secondary and tertiary sectors have increased respectively from 20.01 per cent and 30.86 per cent in 1980-81 to 24.03 per cent and 35.65 of the SDP (Table 3). The share of agriculture and livestock in SDP of the primary sector has been more than 98.10 per cent during 1980-81 to 2001. The share of agriculture alone (cultivators and agricultural labourers) in the total workforce of the state stood at 58.01 in 1981 but declined to 39.4 per cent in 2001. Thus, agriculture and livestock, though experiencing a decline in their importance, yet remains the single largest sector of the economy of the state.

The backbone of the rural economy continues to be agriculture and allied activities', mainly livestock. Cultivators and agricultural labourers, directly dependent on agriculture, account for 53.5 per cent of the rural workforce in terms of the 2001 census data (Table 1) and 62.7 per cent in terms of 1999-2000 NSS data (Table 2). Recently the share of other activities such as transport, communication, storage, construction and manufacturing has grown but still remain dependent on agriculture and allied sector. NSS data (Table 2) reveal that 37.3 per cent (46.5 per cent according to 2001 Census) of the workforce in the rural areas is engaged in non-agricultural activities. These include trade, hotel and restaurant (8.0 per cent), manufacturing (7.9 per cent), construction (7.4 per cent), public administration, education and communication (7.2 per cent), transport (5.3 per cent), electricity, water etc. (1.1 per cent) and financial services and business (1.1 per cent). Thus, agriculture is not only the most dominant activity but an activity around which other activities are woven. The performance of agriculture determines the scope and rate of development of other activities.

Table 1: Percentage Distribution of Rural Workforce of Punjab (1971-2001)

S. No.	Industrial Category	1971	1981	1991	2001
1.	Cultivators	53.64	46.11	44.39	31.5
2.	Agricultural Labourers	24.79	31.82	31.62	22.0
3.	Allied Activities	1.06	0.92	0.65	-
4.	Mining and Quarrying	0.02	0.01	0.01	-

5.	Manufacturing (a) Household industry	3.42	2.23	1.15	3.1
	(b) Other than household industry	3.23	4.71	5.31	43.4
6.	Construction	1.54	1.42	1.81	
7.	Trade and Commerce	3.17	3.64	3.95	
8.	Transport, storage and Communication	1.28	2.12	2.47	
9.	Other services	8.48	7.00	10.24	
		100.00	100.00	100.00	100.00

Source: Census of India, 2001.

Table 2: Distribution of working Rural Persons in the Principal Status of Broad Industry (1999-2000)

Sr. No.	Industry division	Per cent Distribution
1.	Agriculture	62.7
2.	Mining and Quarrying	0.0
3.	Manufacturing	7.9
4.	Electricity, Water, etc.	1.1
5.	Construction	7.4
6.	Trade, Hotel, Restaurant	8.0
7.	Transport	5.3
8.	Financial Services and Business	0.5

9.	Public Administration, Education and Communication	7.2
	Total	100.00

Source: NSS, 55th Round, *Employment and Unemployment Situation in India*, Report No. 485, Govt. of India, New Delhi, 2001.

Table 3: Percentage Distribution of Net State Domestic Product at Factor Cost at Constant Prices

Sr. No.	Sector	1980-81	1990-91	2000-01
1.	Agriculture	33.76	31.17	27.15
2.	Livestock	14.44	15.19	12.64
3.	Forestry and Logging	0.88	0.53	0.14
4.	Fishing	0.03	0.08	0.39
5.	Mining and Quarrying	0.02	0.04	0.00
Sub total (Primary)		49.13	47.01	40.32
6.	Registered manufacturing	6.70	10.10	9.92
7.	Unregistered manufacturing	4.96	6.69	5.41
8.	Electricity, Gas and Water supply	2.64	3.79	2.65
9.	Construction	5.71	3.76	5.05
Sub Total (Secondary)		20.01	24.34	24.03
10.	Trade, Hotels and Restaurants	13.10	10.37	12.53
11.	Transport, Storage and Communication	2.61	3.11	5.22
12.	Banking and Insurance	2.30	4.28	4.84
13.	Real Estate, Ownership of Dwelling and Business Services	4.70	3.49	4.28
14.	Public Administration	2.85	3.35	4.68
15.	Other services and Sanitary	5.30	4.05	4.10

	Services			
Sub Total (Tertiary)		30.86	28.65	35.65
Total State Domestic Product		100.00	100.00	100.00

Note: Figures for 1980-81 and 1990-91 are at 1980-81 prices and for 2000-01 at 1993-94 prices.

Cropping Pattern

Punjab had a fairly diversified cropping pattern before the green revolution. The share of cereals in the total cropped area was 45.65 per cent and food grains 64.73 per cent as pulses accounted for 19.08 per cent of the area in 1960-61. Other important crops were cotton, oil seeds and sugarcane respectively grown on 9.45 per cent, 3.94 per cent and 2.81 per cent of the total cropped area. Though wheat was the most dominant crop, it was cultivated on only 29.59 per cent of the area. The share of rice in the area was only 4.80 per cent in 1960-61. Over the years, Punjab agriculture has progressively moved towards the mono crop culture. This situation was nearly obtained by 1980-81. The area under food grains had increased to 77.77 per cent and under cereals to 66.76 per cent. The area under wheat had increased to 41.57 per cent and under rice to 17.49 per cent of the cropped area. Crops like oilseeds, sugarcane and pulses were nearly decimated with their respective share being 1.39 per cent, 1.35 per cent and 1.91 per cent of the total area under cultivation. The situation had gone from bad to worse by 2000-01. The share of food grains in the total area has increased to 79.11 per cent of the total cropped area and that of cereals to 78.41 per cent, which is predominantly occupied by wheat-rice combination accounting for 75.87 per cent of the total cropped area. Along with oilseeds, sugarcane and pulses, cotton had also suffered in the decade of the nineties. The share of cotton in total area had been above 9 per cent during 1960-61 to 1999-2000 but declined to 5.96 per cent by 2000-01 (Table 4). The share of all other (that is, other than wheat-rice) crops has been reduced to 24.13 per cent in the total cropped area. In winter it is wheat everywhere and in summer, rice is cultivated in the fields of Punjab.

**Table 4: Shift in Cropping Pattern in Punjab 1960-61 to 2000-01
(Percentage of Gross Cropped Area)**

Year	Food-grams	Cereals	Wheat	Rice	Cotton	Oil seeds	Sugar-cane	Pulses
1960-61	64.33	45.65	29.59	4.80	9.45	3.91	2.81	19.08
1970-71	69.18	61.89	40.49	6.87	6.99	5.20	2.25	7.29
1980-81	77.77	66.76	41.57	17.49	9.60	3.52	1.05	5.04
1990-91	75.55	73.65	43.63	26.86	9.34	1.39	1.35	1.91
1995-96	74.17	72.94	41.17	28.33	9.62	3.07	1.76	1.23
1997-98	72.87	71.63	41.34	27.62	9.16	3.15	2.23	1.24
1998-99	74.60	73.55	41.94	28.94	9.20	1.77	1.60	1.05
1999-00	78.29	77.35	42.35	32.53	7.27	2.07	1.33	0.94
2000-01	79.67	78.90	43.18	33.18	6.07	1.25	1.38	0.78
2000-01	71.11	78.41	42.95	32.92	5.96	1.08	1.52	0.69

Source: *Statistical Abstract of Punjab*, various issues.

Stagnating Productivity

The green revolution technology raised the productivity of both wheat and rice significantly. Per hectare yield of wheat increased from 2,095 Kg. during 1967-68 to 1969-70 to 4,530 Kg. during 1998-99 to 2000-01 and rice from 1,392 Kg. to 3,335 Kg. during this period. But recently productivity rise is either very slow or stagnating showing exhausting potential of green revolution technology. The rice yield per hectare has stagnated around 3335-3341 Kg. during the last one decade (1990-91 to 2000-01). The case of wheat, however, is different. The wheat productivity (yield per hectare) is continuously growing but its rate of growth is declining. In case of cotton the productivity level has declined in absolute terms giving a negative growth rate (Table 5). The farmers have achieved 75 per cent of the realizable potential yields of rice and wheat (PAU, 1998). The irrigation potentials are fully exhausted and irrigated area as percentage of net sown area has stagnated at 95 per cent (Table 5). There is no scope of increasing the area under cultivation. At the same time Punjab has become nearly a double crop area with

cropping intensity also stagnating around 186 (Table 6).

Table 5: Average Yield of Wheat, Rice and Cotton in Punjab (Kg/ha)

Period	Wheat	Rice	Cotton American (in lint)
1967 -68 to 1969-70	2095	1392	374
1971-72 to 1973-74	2279	2113	415
1974-75 to 1976-77	2400	2410	400
1977-78 to 1979-80	2683	2818	368
1981-2 to 1983-84	2985	3055	280
1985-86 to 1987-88	3346	3230	505
1990-91 to 1992-93	3762	3292	569
1993-94 to 1995-96	3995	3341	481
1996-97 to 1998-99	4134	3337	280
1998-99 to 2000-01	4530	3335	318

Source: *Statistical Abstract of Punjab* (various issues).

Table 6: Net Sown Area and Cropping Intensity

Year	Net Sown Area (000 hectare)	Cropping Intensity
1960-61	3757	126
1970-71	4053	140
1980-81	4191	161
1990-91	4218	178
1996-97	4234	185
2000-01	4264	186

Source: *Statistical Abstract of Punjab* (various issues).

Declining Returns and Viability of Farming

The initial years of the green revolution brought a sharp increase in productivity in the major crops leading to reduction in cost of production of output. The increase in use of fertilizers and such other chemical inputs, machinery, fuel, etc. was at the slower rate than increase in productivity. From 1971-74 to 1985-88, the total cost of production per unit of output in case of wheat, rice and cotton declined at constant prices of 1971-72. But after 1985-88 to 1993-96 the total cost of production per unit of output experienced a marginal increase (Rs. 39.13 to 40.64 per quintal) in case of wheat, at a slightly higher rate in case of rice (Rs. 31.74 to Rs. 35.35) and sharp rise in case of cotton (from Rs. 90.39 to Rs. 166.67). The main reason for this has been a rise in fixed cost (due to over capitalization) both in the case of wheat and rice. But in the case of cotton both variable as well as fixed costs have increased during this period. With rising costs of production, the rise in minimum support price (MSP) at which market clearance takes place in Punjab, have not compensated the agricultural sector. Leaving aside the case of wheat - which continues to give a rising rate of return per hectare - return on rice declined from Rs. 684 to Rs. 298 in 1995-96 at constant prices and cotton declined from Rs. 1418 in 1991-92 to Rs. 217 in 1995-96 (Sidhu and Johl, 2002).

Similar findings are also reported by another study (Ghuman 2002). It is estimated that a 5 acre (2 hectare) farm in 1995-96 with existing level of technology generates a gross income of Rs. 72,370. After meeting paid out costs, a farmer is left with income of Rs. 40,740 from wheat-rice rotation. However, returns over cash costs for this farm with wheat-rice-dairy farming system increased to Rs. 42,180. This works out to be less than the salary of an unskilled worker in the service (public) sector which stood at Rs. 45,134 and for skilled worker at Rs. 73,224 per annum at minimum of their pay scales. Even by raising productivity by 10-15 per cent from the present 75 per cent of the realizable potential, these farmers can not be taken out of the poverty cycle (PAU, 1998). The present patterns of agricultural practices have put a question mark on the viability of small and marginal farmers who constitute 45 per cent of the total cultivators (1990-91). These cultivators remain trapped in agriculture for want of jobs, though many of them want to leave agriculture.

The rising cost of production and commercialization has made Punjab agriculture high cost and risk sensitive to crop failure. The falling income, along production period with occasional crop failure, accompanied by high consumption standards (determined by peak income levels) and inflated aspirations demonstrated by ostentatious expenditure on celebrations has brought various sections of the peasantry under mounting debt.

In 1997 it has been estimated that the debt burden on farmers of Punjab stood at Rs. 5,700.91 crore. The share of formal credit agencies (commercial banks and co-operative institutions) stood at 46.56 per cent while the share of non-formal credit agencies (commission agents 46.32 per cent and agricultural mortgages 7.12 per cent) was 53.34 per cent (Table 7). The average debt on per acre of cultivated land stood at Rs. 5,721 but it was the highest among small (and marginal) farmers i.e. 10,105 compared to 4228 (lowest) among the medium category of farmers (Table

8). The small and marginal farmers have a greater debt burden in relation to their resource base.

Moreover, it is this category of farmers who have a high mortgage debt. The mortgage debt makes their dependence on informal sources much greater than other categories of farmers (Shergill, 1998). It is a well-known fact that interest rate on informal debt is much higher than the formal debt. Some of the farmers from this category have resorted to suicide when pressed to pay debt or face auction of their land. The unbearable debt burden becomes deadly when there is crop failure due to floods, pest attack etc. Many of these farmers are facing crisis of viability and their existence as farmers is threatened.

Table 7: Estimates of Indebtedness of Punjab Farmers (Rs. crore) in 1997

Sr. No.	Nature of Debt	Credit Agency				Total
		Commercial Banks	Cooperative Institutions	Commission Agents	Agricultural Mortgages	
1.	Short Term Productive Credit (Annual Flow)	146.89	1059.86	1912.58	-	3119.33 (54.72)
2.	Long Term Productive Outstanding Loans	960.06	487.56	-	-	1447.62 (25.39)
3.	Long term Non-Productive Outstanding Loans	-	-	727.94	-	727.94 (12.77)
4.	Long term Mortgage Debt	-	-	-	406.02	406.02 (7.12)

	Total Debt	1106.95 (19.42)	1547.42 (27.14)	2640.52 (46.32)	406.02 (7.12)	5700.91 (100.00)
--	------------	--------------------	--------------------	--------------------	------------------	---------------------

Note: Figures in parentheses are percentages.

Source: H.S. Shergill (1998), *Rural Credit and Indebtedness in Punjab*, IDC, Chandigarh.

Table 8: Size Classes and Indebtedness of Punjab Farmers

Sr. No.	Size Class	Total Debt (Rs. Crore)	Debt Per Operated Acre (Rupees)
1.	Small (up to 5 Acres)	1229.58 (21.57)	10,105
2.	Semi-medium (5-10 Acres)	1651.31 (28.97)	7,941
3.	Medium (10-15 Acres)	1694.49 (29.72)	4,228
4.	Large (Above 15 Acres)	1125.53 (19.74)	4,230
	All holdings	5700.91	5,721

Note: Figures in parentheses are percentages.

Source: H.S. Shergill (1998), *Rural Credit and Indebtedness in Punjab*, IDC, Chandigarh.

Market Clearance Problems

With the introduction of the Targeted Public Distribution System (TPDS) in 1997, the off take of food grains (wheat-rice) has fallen considerably compared to the allocation. This has led to building up of huge stocks of food grains with the government. Against the minimum norm of 24.3 million tonnes, the actual stocks of wheat and rice had increased to 33.1 million tonnes in July 1999, 42.2 million tonnes in July 2000, 61.7 million tonnes in July 2001 and 63.0 million tonnes in July 2002 (Government of India, 2002-03). This has put a heavy financial burden on the exchequer along with cost of management and logistic efforts for purchasing, handling, transportation and storage of these stocks. Under the new policy regime,

the government agencies have been entering late in procurement of food grains at the MSP, causing procurement and market crisis in Punjab. Punjab being the largest contributor (46.72 per cent in 2001-02) to central stock faces immediate crisis as and when procurement agencies show slackness in the market. This is reflected in the flooding of market yards with food grains at the time of harvest and loud protests by farmers against the procurement agencies. Farmers of the state have faced this situation every year for the last many years. This has led, many times, to a situation when farmers sell their produce at a price below the MSP. This has caused harm to farmers and lowered their income and added uncertainty to future procurement. A message has spread that procurement of wheat and rice is under threat.

The recommendation of the Sen Committee (July 2002) for the withdrawal of central agencies from procurement and replacement of state agencies in North-Western states, along with statements by Punjab Government spokespersons suggesting shifting crops away from wheat-rice rotation (following submission of report by Chief Minister's Advisory Committee on Agriculture Policy and Restructuring in 2002), contributed to the impression that wheat-rice crops are not needed in the state and future procurements, procurement price and market clearance are in doubt. The uncertainty about procurement at the MSP for wheat and rice and absence of any other viable cropping pattern, which would be equally remunerative, is a source of resentment and unrest among the farmers. The farmers have tried sunflower (oilseeds) vegetable and fruit cultivation in the past but failed due to problems of market clearance. Livestock, the second major source of income for rural people, is facing problems with stagnating prices of milk in face of rising cost of production. Further, degradation of the environment has put a question mark on the sustainability of agriculture. The present cropping pattern has put heavy pressure on the physical resources of the state. A resource that has been strained the most is water for irrigation. Irrigation is the lifeline of agriculture of the state. But the wheat-rice production system has created serious imbalance in the use of water resources. The total demand for irrigation water in a year in the state is estimated at 4.377 million hectare meters with existing technology and cropping pattern, against a total supply of 3.130 million hectare meters both from surface and annual recharge of groundwater sources. This is leading to an annual deficit of 1.247 million (39.84 per cent) hectare meters (Sondhi and Khepar, 1995). The over-exploitation of ground water resources through tube-wells has led to falling of the water table at an alarming rate. The proportion of area with more than 10 meters depth of water table increased from 12.7 per cent in 1973 to 29.8 per cent in 1996 and of 5-10 meters from 50.6 per cent to 56.1 per cent. There are only six blocks in Punjab which are 'white' as well as technically exploitable (Sidhu and Johl, 2002). Most the area in the state falls either in the 'dark' or 'grey' blocks. This is likely to cause major drinking water problems both in rural as well as urban areas. With rivers getting polluted, canal water is increasingly becoming unfit for drinking. On the other hand, South-West Punjab is facing water logging due to greater supply of canal water, as ground water is saline.

The increased cropping intensity has over exploited the soil and lowered its fertility. Chemical fertilizers are excessively used leading to greater use of basic

elements of soil than what is added. The low application of organic manure has reduced the organic carbon to a very low level. Consequently, the soil has become poor in nitrogen (N). The same is the case with phosphorous (P). The soil has also become deficit in such micro-nutrients as iron and manganese. The area under forest cover is becoming alarmingly low (5.6 per cent). Thus, declining water resources, depleting quality of soil and degrading environment has put a question mark on the present cropping pattern and system of farming. Apart from the rising cost of production and falling incomes, the rural areas are likely to face new problems like drinking water scarcity and attack of old and new disease patterns, the signs of which are already visible in the state.

Agrarian Relations

The remarkable change, which Punjab agriculture witnessed as a result of the green revolution in production and productivity, has made the state agriculturally the most advanced amongst all states in the country. This change has also been observed at the level of technology and intensive use of modern inputs. These include mechanical implement/machines, chemical fertilizers, weedicides, insecticide and pesticides etc. and seeds of hybrid varieties and recently genetically modified. These changes have increased cropping intensity, per acre yield and production by several folds. The changes in the field of technology and inputs have made agriculture of the state a highly commercialized economic activity. Agriculture of the state is very sensitive to market conditions and signals. As mentioned in the earlier section, the increased risk and uncertainty influences a farmer's decision because agriculture is high cost and capital intensive. The changes in farm practices and orientation of agriculture towards the discipline of the market have significantly influenced agrarian relations.

Agriculture in the state is no longer a way of life. It has become a commercial activity where various decisions are governed by profitability/rate of return. Though some sections of farmers are trapped in agriculture, yet they are also substantially affected by market forces and take decisions accordingly. Agriculture of the state can be characterized by dominance of capitalism. On one side there are big farm households with operational holdings of above 10 hectares (25 acres) who cultivate 26.70 per cent of the area and constitute 6.01 per cent (in 1990-91) of the cultivators (Table 9). They include most enterprising farmers like potato growers of Jalandhar and Hoshiarpur region (Brar and Gill 2001), horse breeders and orchard owners of Muktsar and Bathinda region and like. Most of the politicians having rural origins belong to this category. They also have interests in urban property and business, particularly in transport, cinema, hotel, commission agent work etc. On the other extreme are agricultural labourers who constituted 31.62 per cent of work force in 1991 (and 22.0 per cent in 2001). They earn their living by selling their labour to cultivators, don't own any land and they also generally belong to the the scheduled caste (SC) and backward caste (BC) population. Above the agricultural labourer but quite near to them in economic status come marginal farmers each cultivating less than one hectare of land. They constituted 26.47 per cent of the farm households and cultivated 4.07 per cent of the total area in 1990-91. Above this category are small

farmers cultivating land holdings of 1-2 hectare. They account for 18.24 per cent of the farmers and cultivate 8.13 per cent of the cultivated area. The marginal and small farmers together account for 44.71 per cent of the farmers in the state and cultivate only 12.20 per cent of the land (Table 9). These categories of farmers are in serious crisis. They are fighting for their existence which is under threat. Caste-wise they belong to other categories of farmers (Jat Sikhs). They are in a debt trap with quite low income levels. There is a large chunk of farmers who cultivate area between 2-4 hectares and 4-10 hectares. These farmers constitute 25.85 per cent of the total and cultivate 20.87 per cent of the area while latter constitute 23.41 per cent of the farmers and cultivate 40.46 per cent of the area. Both of these categories are called (lower and upper) medium farmers. They are considered to be very active and the backbone of farming in the state. They are moderately under debt and falling rates of return from cultivation is also affecting them.

Table 9: Size Class of Operational Holdings in Punjab (1990-91)

Sr. No.	Size Class	Number of holdings	Percentage
1.	Marginal (Below 1 Hectare)	295668	26.48
2.	Small (1-2 Hectare)	203842	18.25
3.	Semi-Medium (2-4 Hectares)	288788	25.85
4.	Medium (4-10 Hectares)	261481	23.41
5.	Large (Above 10 Hectares)	67172	6.01
	Total	1116951	100.00

Source: Agricultural Census of Punjab 1990-91.

Total operated Area = 4033000 hectares; Average size of holdings in Punjab = 3.651 hectares

Farm cultivation is highly mechanized and market-oriented both for input acquisition and output disposal. In terms of use of machinery, chemical inputs, hybrid varieties of seeds, irrigation, Punjab is ranked number one in the country (Bhalla and Singh, 2001). The cultivation in the state is organized on the basis of individually owned family farms.

The organization of agriculture is based predominantly on hired labour (Sidhu and Johl, 2002; Gill and Ghuman, 2001). All categories of farmers hire labour but medium and large farmers heavily depend on hired labour. Similarly all categories of farmers are producing a marketable surplus but medium and large farmers' share is much larger. There is differentiation among the farmers in terms of economic

status but unity in terms of caste composition, participation in labour hiring-in and selling of marketable surplus/output. The differentiation is also found in terms of educational levels of the farmers and the type of schooling their children are getting. The medium and big farmers are more educated and are increasingly sending their children to city based private English medium schools which are coming up in the rural areas also. On the other hand, the children of small and marginal farmers and those of agricultural labourers join government schools with miserable teaching standards. Punjab agriculture is at the threshold where the differentiation among the farmers will further result in marginalization of the small and marginal cultivators.

This process is already taking place via three routes. One root is via tenancy. In the earlier period (1950s), it was the small owners who leased in land to supplement their operational holdings and large owners unable to cultivate their land indulged in leasing out. But today it is the medium owners who lease in land and small owners lease out their land. Many marginal and small farmers with low income level are in search of jobs outside agriculture. As and when they find alternative source of employment they move out of agriculture, leasing out their land. Although large-scale empirical studies on this phenomenon are still lacking, a major shift of rural workforce away from agriculture during the last decade is partly explained by this factor. Consequently, a dominant form of tenancy, generally unrecorded, is the leasing in land by middle and big cultivators from small and marginal owners, often referred to as reverse tenancy (Gill, 1989; Singh, 1989; Singh and Grewal, 2001; Brar and Gill, 2001).

The second way of shifting land away from small and marginal owners is via mortgage. Faced with acute financial needs when other sources of credit, both formal and informal are closed, these poor farmers resort to mortgage of land, generally to medium and large cultivators (and sometimes to commission agents also). Of the total estimated mortgage loan (of Rs. 406.02 crore) the share of small (and marginal) farmers was 60.05 per cent in 1997. This is much larger (five times) than their combined share of (12.20 per cent) of the total area cultivated by them. The share of middle farmers was 10.03 while the share of large farmers was 29.92 per cent (Shergill, 1998). This indicates that some land via mortgages is getting transferred from small and marginal farmers to middle farmers.

Thirdly, some land is also getting transferred from small (and marginal) farmers to large cultivators through sale-purchase of land (Baldev Singh, 1982). Although recent studies on this aspect are not available yet this phenomenon is continuing in the rural areas. The scale of land transfers is low through mortgages and sale-purchase process. But transfers via tenancy are relatively high. These processes are leading to concentration of land with medium and large cultivators while small and marginal farmers are losing the battle and leaving cultivation.

The changing agrarian relations have replaced the traditional *Jajmani System* by employer-employee system in farm cultivation. Commercial relations have replaced the traditional support system for the weaker and the poor and they are losing their productive assets to the rich. The rich would like to purchase land and other resources of the weaker in crisis instead of helping him. This is the crux of agrarian relations in Punjab today, which also partly explains the phenomenon of suicides among farmers in some regions of the state.

2. Magnitude of the Problems and Causes of Suicides

The number of farmers and agricultural labourers committing suicide has been growing in the recent past especially between 1994 and 1997 (Bhalla *et. al.*, 1998). But it is very difficult to arrive at the exact estimate of suicides in the rural areas especially by the poor cultivators and agricultural labourers. The obvious reason for lack of such statistics is the negative fall out of suicide cases for the family members left behind. If the suicide case is reported to the police (the necessary condition for recording it), then the case has to be registered by the police for investigation to establish the cause of the death and fix the responsibility to specific individual(s) responsible for the suicide. This involves a lot of harassment of the family members at the hands of the police officials. At the same time, the dead body of the victim has to be taken to the hospital for post mortem before cremation. This leads to delay in cremation and also removal of some organs from the body in addition to its disfigurement. The rural people do not appreciate this. Thus, most of the suicide cases are not reported to the police and are recorded as normal deaths caused by factors not related to suicides such as illness of various types. The estimates prepared by various individuals and organizations are mostly guesstimates. The data collected and presented by Hardev Singh Arshi, a Communist Party of India MLA in 1998 and by Sardar Indeljit Singh Jaijee Ex. MLA (Akali Dal) are rough estimates. Both of these estimates are based on incidence of suicides in Sangrur, Mansa and Bathinda districts. These districts show a high tendency among farmers to commit suicide compared to other districts of the state. Any estimate based on the average of one or two or more blocks in the high intensity districts, is likely to generate over estimate of the number of suicide cases of farmers and agricultural labourers. There is no systematic study as yet conducted in Punjab to cover all districts of the state to arrive at accurate estimates of such suicide cases.

A study sponsored by the Government of Punjab (Bhalla *et. al.* 1998) to examine this phenomenon at the aggregate Punjab level based itself on police records which are very inaccurate on this issue for the above stated reasons. The studies based on sampled cases by individuals and organizations are extremely useful and contribute to our understanding of the emerging phenomenon of suicides among the distressed sections of rural population in the state. Reports from leading newspapers in the region (*The Tribune, Indian Express, The Hindu, Business Standards, Hindustan Times*) focused on this issue and made the public aware of this problem in the most agriculturally advanced state in the country. The farmer organizations attempted to mobilize the peasantry on this issue and linked it to the problem of indebtedness and especially to debt trap among the farmers. The issue became a subject of debate in political circles of the state with outstanding contribution by two politicians (Mr. Hardev Singh Arshi and Indeljit Singh Jaijee) and farmer and peasant organizations. The focusing of this issue in political circles was accompanied by three studies by academics based on areas and districts highly prone to farmers' suicides. The study by Bhalla *et. al.* examined the 53 confirmed cases of suicides spread over 14 villages (11 in Sangrur district and one each in Amritsar, Nawanshahar and Ludhiana district). The report brought out that 45.20 per cent of the victims were landless labourers, 24.50 per cent small and marginal

farmers (0-5 acre land holding), 18.80 per cent lower medium farmers (5-10 acre land holding), 5.60 per cent upper medium farmers and 5.60 per cent large farmers (15 and above acres of land holdings). This study showed that agricultural labourers and poor peasants or farmers accounted for 70 per cent of the suicides from the confirmed cases in the villages. It further brought out that the majority of the victims, 60.30 per cent belonged to young persons in the age group of 15-29 years and another 30.20 per cent belonged to the age group of 30-44 years. The relatively aged victims, of 45 years and above, constituted the remaining 9.50 per cent of the cases. In terms of educational attainment, 58.50 per cent of the cases belonged to illiterates, 11.30 per cent to primary level, 11.30 per cent to middle level of schooling and matriculation and above constituted 18.90 per cent of the total cases. The study reported that the largest cause of suicides was family discord accounting for 35.79 per cent of the suicides whilst alcohol and illicit drug use caused 17.89 per cent of the suicides. The economic causes, such as indebtedness (17.89 per cent), loss of status (16.84 per cent), lack of resources (6.32 per cent) and crop failure (1.05 per cent) accounted for 42.10 per cent of the suicides. The rest of the suicides were caused by death in the family (3.16 per cent), quarrel with in laws (1.05 per cent) and impotency (1.05 per cent). Compared to this, the study by Iyer and Manick (2000) based on 80 suicide cases from 7 villages of three blocks of Sangrur district (Lehragaga, Andana and Bamala) has confirmed the findings of Bhalla *et al.* in the matter of age group, educational level and socio-economic background but differed widely in the matter of causes of suicides. It has been brought out that economic factors such as distress have been primarily responsible for (78.75 per cent) suicides among the confirmed 80 cases. It is reported that pauperization and marginalization led to 32.50 per cent of the suicides. This was followed by crop failure and social factors (26.25 per cent), and poverty and unemployment (20.00 per cent). Alcoholism and drug addiction caused another 10 per cent of the suicides and marital tension was responsible for the remaining 11.25 per cent of the suicides. Another study, (Gill, *et al.*, 2000) based on 79 cases of confirmed suicides in 29 villages in the districts of Patiala, Sangrur, Mansa and Bathinda brought out similar findings to the previous two in terms of age group, educational background, socio-economic background including class and caste of the victims. The victims were generally from families of agricultural labourers and poor cultivators, lacked education or had low level of schooling, were young in age and poor in terms of resource endowment. This study brought out not only primacy of economic distress among the weaker sections (poor peasants and agricultural labourers) but also explained the multiplicity of economic causes (more than one cause combining with another) leading to suicide. At the same time, it linked economic and non-economic factors with each working to the disadvantage of the victim. According to this study 83.6 per cent of the suicides were caused by purely economic factors, namely economic hardship (19.0 per cent) crop failure (5.1 per cent), indebtedness (15.2 per cent), economic hardship and indebtedness (15.2 per cent), economic hardship and crop failure (2.5 per cent), economic hardship, indebtedness and crop failure (16.5 per cent) and indebtedness and crop failure (10.1 per cent). Addiction to drugs caused only one suicide (1.3 per cent) and individual reasons or family tension led to 5 suicides (6.3 per cent). The remaining suicides were caused by economic

hardship, indebtedness and drug/alcohol addiction (3.8 per cent), economic hardship and drug/alcohol addiction (3.8 per cent), indebtedness and drug/alcohol addiction (1.3 per cent). Out of the 12 causes of suicide listed by the relatives of the victims 7 causes related to economic factors individually or in combination. There were only 2 causes that were purely non-economic. In the remaining three causes, economic and non-economic (mainly addiction) factors reinforced each other to cause suicides accounting for 8.9 per cent of the suicides cases. In most of the cases economic hardship and indebtedness independently or in combination with other factors led to suicide of the victims.

Thus, this study establishes a close linkage between economic hardship, indebtedness and suicide. This study further brought out that economic hardship/poor economic condition led to indebtedness and indebtedness (high interest rate) led to economic distress causing suicide. The study examined the immediate incidents that prompted the victim to take the extreme step. In 59.5 per cent of the cases it was a quarrel between family members, primarily caused by indebtedness and economic hardship.

The pressure of commission agents or banks for return of loan and fear of being arrested and consequently loss of social status led to 21.6 per cent of the suicides. The threat of land auction/notice caused 1.3 per cent of the suicides in the study area. The largest source of credit has been from non-institutional sources such as commission agents and landlords separately or in combination with commercial banks and co-operatives. The high interest rate charged on loans and diversion of loans for non-productive purposes or crop failure had placed them into a debt trap, creating pressure for suicides through a variety factors mentioned earlier.

These above studies bring out that the suicide cases among poor peasants and agricultural labourers are spread over all the three regions of Punjab i.e. Majha, Malwa and Doaba but there is high concentration of such cases in three the districts of Malwa. These districts are Sangrur, Mansa and Bathinda. These suicides are predominantly caused by economic distress and indebtedness. The highly commercialized form of agriculture accompanied by spirit of individualism and decline of traditional social support mechanism and non-existence of a formal safety system have pushed several rural poor into suicides when faced with acute economic hardship and indebtedness, along with social and family pressures associated with them.

3. Conclusion and Policy Implications

There is a need to organize a comprehensive survey in the state to arrive at accurate estimates of economic stress related suicides among the farmers and agricultural labourers. This task cannot be performed by an individual or a research institution on its own. This would require support and sponsorship of the Punjab government. The government can appoint an expert group to make estimates and analyze causes and suggest remedial measures to prevent this unfortunate phenomenon.

At the same time immediate steps are required for rehabilitation of families of poor peasants and agricultural labourers who have lost their earning members and are facing a destitute situation. This would require immediate compensation to the

family (Rs. 2.00 lakh) as support to the family, on the pattern of Andhra Pradesh. In a case where no earning member is left in the family, widow/old age pension scheme can be extended to such families. Since debt has been one of the prominent causes of suicide, a moratorium on debt originating from all sources, including debt from commission agents, landlords, banks, etc. should be declared immediately for such families. Ultimately the victim families must be freed from the pressure of debt burden by writing off all debts as a part of their rehabilitation.

The areas with high incidence of farmers and agricultural labourer suicides, especially Sangrur (particularly Andana and Lehragaga blocks), Mansa and Bathinda (Rampura, Phul) districts need special attention. It is a well-known fact that areas around the Ghaggar river have shown high proneness towards suicides. This is because of regular flooding of the areas causing regular crop failure, leading to economic hardship and high indebtedness. At the same time, this belt is also a cotton growing area. This crop has been facing devastating pest attacks, largely uncontrolled by pesticides. An end to this would require control over the sale of spurious pesticides on one hand and bio pest management on the other.

The whole of this regional belt is educationally the most backward in the state. As a long term measure, educational infrastructure need to be strengthened and rural schools especially must be made functional. It is not only literacy which matters but mean years of schooling which is crucial. Higher educational attainments empower individuals to understand their surroundings and change the environment favourably. The area is not only educationally backward but lacks urban linkages especially employment opportunities compared to the area around Amritsar-Delhi National Highway. Overall development of the region would require an area development approach. The requirement is not merely for economic development, it must be participatory in nature so as to distribute its benefits to the disadvantaged sections of society. Without this type of development, suicides among the poor peasants and agricultural labourers cannot be controlled in the long run. In this task, social movements have a major role to play. It is social movements and their pressure that can make governments attend to the problem. The concerned scholar can only raise this issue in the media, analyze the causes and suggest alternative policy measures. Ultimately it is for civil society and the government to respond positively and take preventive and curative measures.

Bibliography

- Assadi, Muzaffar, (1998) 'Farmers' Suicides: Signs of Distress in Rural Economy', *Economic and Political Weekly*, Vol. 33, No. 14.
- Bhalla, G.S. et. al., (1998) *Suicides in Rural Punjab*, IDC, Chandigarh.
- Bhalla, G.S. and Singh, Gurmail, (2001) *Indian Agriculture: Three Decades of Development*, Sage Publications, New Delhi.
- Brar, J.S. and Gill, S.S., (2001) 'Tenancy Reversal and Operational Enclosures: A Study of Doaba Region', in Sucha Singh Gill (Ed.), *Land Reforms in India, Vol. 6: Intervention for Agrarian Capitalist Transformation in Punjab and Haryana*, Sage Publication, New Delhi.
- Deshpande, R.S., (2002) 'Suicide by Farmers in Karnataka: Agrarian Distress and

- Possible Alleviatory Steps', *Economic and Political Weekly*, Vol. 37, No. 26.
- Ghuman, R.S., (2002) 'World Trade Organization and Indian Agriculture With Special Reference to Punjab', in S.S. Johal and S.K. Ray (Eds.), *Future of Punjab Agriculture*, CRRID, Chandigarh.
- Gill, S.S., (1989) 'Changing Land Relations and Implications for Land Reforms', *Economic and Political Weekly*, Vol. 37, No. 25.
- Gill, S.S. *et. al.*, (2000) *Suicides in the Rural Punjab* (in Punjabi), Association for Democratic Rights, Punjab, Patiala.
- Gill, S.S. and R.S. Ghuman, (2001) 'Changing Agrarian Relations in India: Some Reflections from Recent Data', *Indian Journal of Labour Economics*, Vol. 44, No.4.
- Government of India, (2002) *The Report of the High Level Committee on Long Term Grain Policy*, (Sen Committee, New Delhi).
- Government of India, (2003) *Economic Survey 2002-03*, Ministry of Finance, New Delhi.
- Iyer, K. Gopal and Manick, Mehar Singh, (2002) *Indebtedness, Impoverishment and Suicides in Rural Punjab*, Indian Publishers Distributors, Delhi.
- Punjab Agricultural University, (1998) *Proceedings of Brainstorming Meeting on Farmers and Farming in Punjab*, Ludhiana.
- Reddy, Sudrashan *et. al.*, (1998) *Gathering Agrarian Crisis - Farmers Suicides in Warrangal District (AP): Citizens Report*, Voluntary Organizations of Warrangal.
- Shergill, H.S., (1998) *Rural Credit and Indebtedness of Farmers in Punjab*, IDC Chandigarh.
- Sidhu, R.S. and Johl, S.S., (2002) 'Three Decades of Intensive Agriculture With Special Reference to Punjab', in S.S. Johl and S.K. Ray (Eds.), *Future of Punjab Agriculture*, CRRID, Chandigarh.
- Singh, Baldev, (1982) *Land Market: Theory and Practice in India*, Agricole, New Delhi.
- Singh, Iqbal, (1989) 'Reverse Tenancy in Punjab Agriculture: Impact of Technological Change', *Economic and Political Weekly*, Vol. 37, No. 25.
- Singh, R.P. and Grewal, S.S., (2001) 'Tenancy Pattern in Post Green Revolution Punjab', in Sucha Singh Gill (ed.), *Land Reforms in India Vol. 6: Intervention for Agrarian Capitalist Transformation bi Punjab and Haryana*, Sage Publications, New Delhi.
- Sodhi, S.K. and Khepar, S.D., (1995) 'Water Resources Development and Management for Sustainable Agriculture Production', *Proceedings of Water Management Symposium*, P AU, Ludhiana.
- Vasavi, A.R., (1998) 'Agrarian Distress in Bidar: Market, State and Suicides', *Economic and Political Weekly*, Vol. 34, No. 32 (1999).

Wheat and Paddy Cultivation and the Question of Optimal Cropping Pattern for Punjab

H.S. Shergill

Punjab University, Chandigarh

This paper examines the causes of continued dominance of wheat-paddy cultivation in Punjab. It is argued that under the present scenario this cropping pattern represents best congruency of a variety of factors such as market infrastructure, MSP, capital base, etc. and gives the highest income level to cultivators. Recognizing the problems like declining water table, environment and degrading of soil caused by this cropping pattern, it is argued that these problems can be tackled through alternative legislative measures without disturbing wheat-paddy rotation. On the strength of economic theory and evidence of failure of crop diversification policy of the Punjab government launched recently, incompatibility of crop diversification with modern commercial farming has been brought out.

The confusion over the optimal cropping pattern for Punjab agriculture continues. There is a constant call by some economists for a massive shift of area from wheat and paddy to alternative crops like pulses, oilseeds and vegetables etc to change the existing cropping pattern in the State. They are projecting this diversification policy as a panacea for solving Punjab's current agrarian problems. The Punjab government has also adopted this 'shift area out of wheat and paddy' as a major plank of its agricultural policy and is making efforts to induce farmers to shift to other crops. In the 'crop adjustment scheme' submitted to the central government for approval and funding, the Punjab government has proposed to reduce the present area under wheat and paddy by about 30 percent, by shifting 10 lakh hectares to alternative crops. Punjab farmers, however, are firmly sticking to wheat and paddy cultivation and are in no mood to reduce the area under these two crops. The Central Government also does not favour any reduction in area under wheat and paddy at this juncture, because this will endanger the country's food security. The confusion over shifting of area from wheat and paddy to other crops has, thus, thickened. In view of this confusion, the question of wheat and paddy cultivation and diversification of cropping pattern needs to be examined in a holistic political economy framework, to find out the optimal cropping pattern for Punjab. The question of optimal cropping pattern for Punjab has to be considered, not only in the context of current agrarian crisis, but also keeping in view the goals and constraints of the next phase of agricultural development in the state. It needs to be emphasized that the 'wheat and paddy area reduction' policy being proposed so vociferously is not the outcome of any serious analysis of the agrarian crisis in the state. It actually emerged in the peasant lore in the early 1980s when there was a temporary glut of

paddy in the markets, and was picked up and projected as a panacea by some economists and journalists for solving the agrarian problems of the state.

A correct diagnosis of the current agrarian crisis in the state is a necessary condition for formulating an effective policy for solving this crisis and for finding out the optimal cropping pattern for the next phase of agricultural development in the state. The present agrarian crisis is the natural outcome of the level of agricultural development reached in the state. It is quite complex and has many dimensions. For a clear understanding, the core issues need to be separated from the peripheral problems. The core of Punjab's current agrarian crisis is the stagnation of farm incomes for the last many years, and farmers fear of imminent fall in their incomes if the World Trade Organization (WTO) agenda is implemented wholesale and thoughtlessly. For almost three decades (1960-90) farm incomes in Punjab have been rising steadily; as a result of expansion in sown and cropped area, extension of irrigation, introduction of new HYV seeds and chemical fertilizers and modern machines. After reaching a plateau in the early 1990s, farm incomes have stagnated since then. The joining of WTO in 1995 further exacerbated the problem by creating a fear psychosis about the fall in farm incomes as and when WTO stipulations are implemented. This stagnation and fear of fall in farm incomes is the central issue in the current agrarian crises. The fall in water table and environmental degradation are, no doubt, also issues of concern that need attention but certainly not the central issue. The policy challenge, for economists and policy makers of Punjab, is to devise a strategy that not only breaks this stagnation in farm incomes, but also ensures a steady rise in farm incomes in the years to come. A number of requirements must be kept in mind while designing this strategy. It should be realistic and feasible in terms of its financial and administrative demands. It has to be compatible with central government's food security concerns, and broadly acceptable to farmers of the state. Its short run and long run direct effects and indirect side effects and externalities must be properly weighted before hand. It should be congruent with the goals of the next stage of agricultural development in the state. Hastily drawn grandiose schemes that promise quick results but cannot be implemented are not only useless, but also dangerous because these distract the focus of policy makers and public from the real issue. The focus must be kept firmly fixed on the central issue: breaking the current stagnation and ensuring a steady rise in farm incomes in years to come. This central issue is the acid test for determining the optimal cropping pattern for Punjab agriculture.

Incompatibility of Diversification with Commercial Farming: Theory and Evidence

At the very outset it needs to be understood that a diversified cropping pattern is not possible on a modern commercial farm. Both economic theory as well as empirical evidence is quite clear and conclusive about the incompatibility of crop diversification with modern commercial farming. The cultivation of many crops in each crop season is the inherent trait of subsistence farming. It is the natural outcome of the autarkic state of a subsistence farmer engaged in meeting the limited customary consumption needs of his family. A modern commercial farm, on the

other hand, specializes in the production of one main crop in each crop season; the crop that is most profitable on a given land, climate and market environment in which it is operating. The factors and forces inherent in its own micro economic structure and in the macro market environment in which it operates induce as well as compel it to specialize in the most profitable crop of each season. The logic of relentless pursuit of profit maximization induces a modern commercial farmer to plant the most profitable crop of the season on the largest possible area of his farm. Being a 'price taker' in the market, this simple strategy of planting the most profitable crop on the largest area of the farm results in the maximization of profits. The minimization of unit fixed costs of specialized machinery and specialized crop culture skills, when a single crop is cultivated on a large scale, also compels him to plant the most profitable crop on the largest possible area of his farm.

The macro market structure in which it is integrated and operates also makes specialization in a single crop in each season a compulsion for a modern commercial farm. The emergence as well as the economic viability of modern marketing and processing infrastructure and arrangements for a particular farm product in a region is possible only if the marketed surplus of that product is sufficiently large in that region. When a large number of crops are grown in a region, then marketed surplus of none of these crops is sufficiently large for the economic viability of modern marketing and the processing infrastructure needed for each of these large numbers of crops. In fact, in a region with such a diversified cropping pattern, modern marketing and processing arrangements simply do not emerge in the first instance. The existence and sustainability of modern marketing and processing arrangements for a particular crop in a region, therefore, has a symbiotic relationship with farms of that region planting that crop on the largest possible area of their farms. This structural feature of modern marketing combines with the micro economic processes mentioned earlier to enforce the rule of crop specialization not only on each commercial farm, but also on the whole region. There is always a co-evolution and symbiotic coexistence of regional crop specialization and the farms of that region specializing in the cultivation of that particular crop. Neither economic theory admits any exception to this rule, nor is any exception to it found to exist in the empirical world.

Somehow, this stark fact has completely escaped the attention of those who are pleading for shifting to a diversified cropping pattern to solve the current agrarian crisis in the state. Whether one likes it or not, the fact is that Punjab farms have become fully commercialized modern farms and cannot escape the economic logic of profit maximization and crop specialization. In Punjab, the era of diversified subsistence farming is over forever and cannot be now resurrected. The complacent peasant soul has been irreversibly transmuted into that of a profit hankering modern commercial farmer. The choice in Punjab agriculture today, therefore, is not between wheat and paddy specialization and a diversified cropping pattern consisting of many crops grown in each season by each farmer. Rather, the choice open to commercialized Punjab farms is limited to specialization in wheat and paddy cultivation versus specialization in some other crop combination grown on equally large scale. The policy challenge, therefore, is to find out the optimal crop

specialization for Punjab given the current and plausible future goals, parameters and constraints under which the farm sector in the state is to operate.

Ten Arguments on why Punjab should stick to wheat and paddy specialization

A careful analysis of the relevant goals, parameters and constraints clearly suggests that in the immediate short run, salvation of Punjab farmers lies in sticking to wheat and paddy specialization; no feasible alternative seems to exist to this crop combination. This crop combination also seems to be the optimal specialization even for achieving the long-term goals of agricultural development in the state. The long-term strategy has to focus on inducing and coaxing more and more farmers and farm labourers to shift to non-farm occupations. This will make it possible for farmers remaining on the land to cultivate bigger and bigger area and ensure a continuous rise in their incomes in the years to come. Wheat and paddy combination seems to be the most suitable specialization for enlarging farm size by speedy withdrawal of labour force from the farm sector of the state. In the immediate short run, as well as in the long run, there are sufficient and sound reasons, outlined below, for continuing with wheat and paddy specialization.

1. Only crop combination to sustain current farm incomes

At present, wheat and paddy are the only crops that can sustain the current income levels of Punjab farmers; no feasible alternative exists. None of the alternative crops being recommended, (pulses and oilseeds etc), to replace wheat and paddy, can ensure even half the income being earned by farmers from the cultivation of these two crops. Any sizeable reduction in area under wheat and paddy, as proposed in the crop adjustment programme, will result in a big fall in farm incomes. Farmers will not be alone to suffer from such a reduction in area under wheat and paddy; even incomes of agricultural labourers and other rural and urban strata dependent on agriculture will be adversely affected. It will have a devastating, depressing impact on the Punjab economy as a whole. Given the class mobilization and heightened political consciousness of the Punjab peasantry, such a big fall in farm incomes can spell political disaster and may endanger the hard won social and political equilibrium of the state.

2. Unmatched stability of wheat and paddy yields

The cultivation of wheat and paddy at the current scale is not only necessary to protect farmers' current incomes, but also to keep their income free from violent year to year fluctuations. The stability offered by wheat and paddy yields is not matched by any other crop. These crops have never completely failed during the last 40 years. Even in the worst years the fall in wheat and paddy yields has been only marginal. The alternative crops being recommended are very risky affairs; their yields fluctuate very widely from year to year. In the absence of any crop insurance system in the country, this yield risk plays an important role in the farmers' cropping pattern decisions. The net financial returns from these alternatives crops

are highly uncertain. That is why farmers are not willing to shift even small amounts of area to these alternative crops and are sticking to wheat and paddy cultivation.

3. High complementarity with country's food security needs

Further, wheat and paddy cultivation in Punjab has a high degree of complementarity, current as well as future, with the country's food needs and central government's food security concerns. The myth of overproduction of food grains in the country has already been exploded. All reasonable assessments of food situation in the country indicate a very precarious balance up to the year 2050. India will be barely self-sufficient in food grains up to that year. Given such a future food security scenario, no government at the center would agree to a massive reduction in wheat and rice production in Punjab. Rather, owing to its own food security compulsions, the central government would be willing to go a long way to sustain the cultivation of wheat and rice in Punjab. But such an active support from the central government cannot be expected in the case of the alternative crops being recommended to replace wheat and paddy. It is under no compulsion to extend such support to alternative crops.

4. MSPAP for wheat and paddy sustainability

It is reasonably sure that the existing system of Minimum Support Prices and Assured Purchase (MSPAP) of wheat and paddy will continue in the near future, despite the WTO membership. On account of its own food security compulsions, the central government cannot afford to abandon the MSPAP programme of wheat and paddy for many more years to come. This MSPAP programme of wheat and paddy is also not that incompatible with WTO stipulations as is being propagated by interested parties. The subsidies being given under this MSPAP programme are well within the WTO permitted norms and limits. It can and will be continued with minor modifications and with some window dressing to make it look congruent with WTO requirements. However, a similar minimum support prices and assured purchase programme cannot be now created for any other crop that may replace wheat and paddy. The fiscal crisis and budgetary compulsions of the central government and WTO pressure rule out the creation of a new MSPAP programme for the alternative crops being recommended to replace wheat and paddy. But without an effectively functioning minimum support price and an assured purchase programme, the cultivation of none of the alternative crops can be sustained for long. It is thus clear, that under the existing parameters and constraints, it is much easier for Punjab to press for and ensure the continuation of the existing tradition sanctified, food security necessitated and WTO compatible MSPAP programme for wheat and paddy than to get a new MSPAP programme created for any other crop that may replace wheat and paddy.

5. Stable and growing demand and good export prospects

Every agricultural economist knows that marketing is the real rub in the successful cultivation of any crop. The experience of developed countries over the last century, has clearly and convincingly shown that there is no free market solution to the marketing problem of farm products. Institutional arrangements through cooperatives, marketing boards, direct and indirect government intervention are the only known solutions to the marketing problem of farm products. The marketing problems are particularly acute in the case of crops planted on a small fraction of the total cropped area, because area under such crops can fluctuate wildly from year to year. It is well known that markets for the more remunerative alternative crops, (such as vegetables and fruits), being recommended are extremely thin and uncertain. Even a small increase in the production of these alternative crops results in market saturation and price crash, thus causing untold misery to farmers who cultivate these crops. The stories of potatoes abandoned in fields and on the roads for want of market are too recurring to be ignored. In the absence of a well developed agro-processing industry and an effective minimum support prices and assured purchase programme, the marketing prospects of such alternative crops are indeed bleak and uncertain. That is why farmers are extremely reluctant to shift to the cultivation of such risky crops.

In sharp contrast to the above scenario, the market for wheat and rice is very large and stable. The existence of an efficient and functioning MSPAP programme for wheat and rice in the country has almost completely eliminated the marketing worries of farmers producing these two grains. Moreover, being commodities of mass consumption, with relatively longer shelf life even under ordinary conditions, and requiring very little processing, the demand for these two grains is quite large and stable. Further, the domestic demand for wheat and rice is growing steadily because of fast population growth and rising per capita incomes. All reasonable estimates show that there is little risk of domestic wheat and rice market being saturated till the middle of twenty first century. Even the export prospects of these two grains to neighbouring countries are good. The whole of Africa, Middle East and Central Asia is a food grains importing zone; Pakistan alone imports 20 to 25 lakh tones of wheat every year. It should not be difficult to create a stable export market for Punjab's wheat and rice in these neighbouring countries, by making suitable investments in transport and storage infrastructure and adopting a proper export marketing strategy. The shifting of some area to more exportable varieties of these two grains, durum wheat and basmati rice, can also help in creating a secure foreign niche for Punjab wheat and rice. In view of these contrasting marketing scenarios, it will be sheer folly to shift out of wheat and paddy cultivation in undue haste, towards the cultivation of new crops with small markets and highly uncertain marketing prospects.

6. Competitive advantage of Punjab in wheat and paddy

The economics of comparative cost advantage also suggests that Punjab should stick to wheat and paddy production. Punjab has a clear competitive advantage in wheat

and rice production in the South Asian market. The cost of production of wheat and rice in Punjab is the lowest among the Indian States. Punjab wheat and rice can compete even in the international market if the heavy farm subsidies being doled out to farmers by developed countries are withdrawn. Moreover, production efficiency and competitiveness of Punjab wheat and rice can be improved considerably by suitable investments in research, transport and storage infrastructure. It is much easier to retain and further strengthen the already acquired competitive advantage in wheat and rice production, than to acquire such an advantage in the production of new crops. The competitive advantage of a region and a people in the production of a particular commodity does not emerge suddenly in a single day; it evolves gradually over time as a result of the constellation of favourable factors and circumstances. Luckily, the circumstances have been favourable for the production of wheat and rice in Punjab during the last four decades. As a result, Punjab farmers have become quite good experts in wheat and paddy cultivation. The sub-routines of wheat and paddy culture have become part of their instincts and they feel quite comfortable in the cultivation of these two grains. But it will be very difficult, if not impossible, to quickly acquire the same degree of expertise in the cultivation of the alternative crops being recommended. The process of shifting to new crops is not all that simple and easy, as some economists naively think. The learning of a new crop culture is a long and tedious task and it is also not always successful. It is attempted only when the reward is handsome as well as certain. But there is little incentive for farmers to learn the culture of alternative crops being recommended. These alternative crops are not only much less remunerative than wheat and paddy, but the returns from these crops are also highly uncertain. That is why Punjab farmers are not willing to undergo the unpleasant and long task of learning the cultivation of the alternative crops being recommended.

7. Low opportunity cost of capital infrastructure in wheat and paddy cultivation

Furthermore, all the necessary machinery and other paraphernalia for wheat and paddy cultivation have been gradually acquired by farmers over the last four decades and are already in place. The opportunity cost of using this machinery and paraphernalia in wheat and paddy cultivation is almost zero. If 10 lakh hectares are withdrawn from under wheat and paddy then the marginal cost of using it on the remaining wheat and paddy area will go up sharply, thus pushing up the cost of production and lowering the net returns from these two crops. The creation of a similar modern paraphernalia and machinery for the alternative crops being recommended will require huge investments which the farmers are not in a position to make due to their strained financial position and heavy indebtedness. In the current scenario of fiscal crises, the government is also not in a position to make the huge investments to build the public sector storage, processing and marketing infrastructure needed to make the cultivation of these new crops successful and remunerative. In the absence of such public sector processing, storage and marketing arrangements, the farmers shifting to these new crops will be easy prey to the exploitation by private traders and processing firms. The bitter experience of

Punjab farmers over the last two years has convinced them about the risks involved in diversification through private contract farming.

8. Best congruency for double cropping and machine use

Among the crop rotation combinations available to farmers in Punjab today, wheat and paddy rotation is the most suitable for double cropping on an extensive scale. The dovetailing of sowing and harvesting seasons and the time span of their 'sowing to maturity periods' fits very neatly and makes these two crops ideal for double cropping on almost the entire sown area. The time gap between harvesting of wheat and sowing of paddy, and between harvesting of paddy and sowing of wheat, is sufficiently long to give farmers adequate time for carrying out the necessary tilling and other operations. Consequently, the sowing of both wheat and paddy can be done at the most suitable time for best yields, even by resource poor small and marginal farmers dependent on hired machinery. It is this feature of wheat and paddy that has enabled double cropping on an extensive scale and the resulting high farm incomes in the state. At present, no other crop rotation combination can match wheat and paddy rotation combination in this respect. To cite only one example, the cultivation of cotton does not properly dovetail with the cultivation of wheat because of the problems created by a considerable overlap in the sowing and harvesting periods of these two crops. The sowing of wheat on cotton planted lands gets delayed because cotton crop is still not fully harvested by the time best suited for wheat sowing. The same problem occurs at the time of cotton sowing, because wheat crop is not yet harvested when it is the ideal time to sow cotton. This overlap between sowing and harvesting periods of wheat and cotton not only creates considerable pressure and strain on farmers, but also adversely affects yields of both these crops because of delayed sowing. Similar overlap problems in sowing and harvesting periods are there in most of the other crop rotation combinations competing with wheat and paddy rotation combination. Furthermore, harvesting operations of both wheat as well as paddy are tractable to mechanization and are carried out with the same harvesting combine. This lowers the fixed cost per hectare of using the harvesting machine considerably and consequently reduces the overall cost of production of both these crops. No other crop combination has this attractive quality. This easy congruency of wheat and paddy in rotation and use of machinery is another factor that gives these crops a comparative advantage over any other crop rotation combination.

9. Most Suitable for Withdrawal of Labour from Agriculture

The shifting of area away from wheat and paddy cultivation cannot be separated from the question of optimal cropping pattern for Punjab in the next phase of agricultural development. In planning the optimal cropping pattern for the state the reduction of labour engaged in farming has to be the most important goal. Further increases in farm incomes in Punjab will now come more and more from enlargement of area cultivated by each farmer, rather than from yield increases. The enlargement of area cultivated by each farmer is possible only if number of farmers

in the state declines continuously. In terms of capital intensity, mechanization, land productivity and commercialization, Punjab agriculture has reached almost the level of developed countries and its structural transformation, through reduction in labour force, is long overdue. At the present level of agricultural development in the state, no more than 10 percent of Punjab labour should be engaged in agriculture. Owing to the constellation of many political and economic factors and circumstances, the withdrawal of labour from agriculture has been delayed considerably. Luckily for Punjab, wheat and paddy are the ideal crops for speedy withdrawal of labour from agriculture, because these are amenable to large scale mechanized farming. In fact, most of the operations in these two crops have already been mechanized and only the surplus labour lingering on Punjab farms needs to be shifted out. The need of the hour is a massive shifting out of labour from wheat and paddy cultivation, and not the shifting out of area from under these two crops. Most of the alternative crops being recommended to replace wheat and paddy are highly labour intensive. A massive shift to these labour intensive crops will trap majority of Punjab labour in farming for many more decades to come. Introduction of these new labour intensive crops will abort the process of labour shedding and structural transformation of Punjab agriculture that has already begun since the early 1990s. Rather than speeding up this process of structural transformation of Punjab agriculture, the proposed shift to other crops will put it in reverse gear. To sort out some peripheral problems, like falling water table and environmental degradation, it will be extremely unwise to ignore the long-term benefits of wheat and paddy cultivation in the structural transformation of Punjab agriculture.

10. Falling Water Table and Environmental Stress Problems Tractable Through Legislation

Lastly, the seriousness of falling water table and environmental degradation problems need to be properly assessed, and costs and benefits of different solutions to these problems properly weighted and evaluated. The fall in water table and environmental stress, no doubt, needs due attention but the fact remains that these are peripheral problems and not the main issue. But unfortunately, the gravity of falling water table and environmental degradation problems has been blown up out of proportion. The situation is not as alarming as the doomsayers are projecting. Somehow, it has become an intellectual fashion to exaggerate the severity of falling water table and environment stress problems. A mere fall in water table by a few meters does not indicate anything; only with reference to the optimal level of water table, it conveys whether or not the situation is worsening. However, little is known about the optimal water table level for different regions of Punjab as it is yet to be worked out. The optimal water table level is not a matter merely of water table depth in meters; the costs of pumping out ground water and returns from its use play a major role in determining the optimal level of water table in a region. The optimal level of water table is determined by the balance between the marginal social cost of pumping out ground water and the marginal social returns from its use. In the current discussions on falling water table, it has been implicitly assumed, without any basis whatsoever, that the present water table level is the optimal level; to be

maintained even at the cost of a large fall in farm incomes. This fetish of sustainability of present water table level is misleading the public and policy makers, and prevents a rational assessment of the optimal water table for different regions of the state.

Maintaining the present water table is not the end in itself. The end is to ensure a steady rise in farm incomes; the water table level is only one of the means to that end. Furthermore, in the commotion created on the falling water table, the beneficial effects of the fall in water table level are being completely ignored. It is conveniently forgotten that almost half of Punjab lands were water logged, when paddy cultivation started on an extensive scale in the late 1960s. But for paddy cultivation on an extensive scale, half of Punjab's land would have remained water logged even today. A major portion of the land under paddy today was not cultivable and not yielding anything much earlier simply because very little could be planted on it during the kharif season due to water logging. Furthermore, the fall in water table improves the prospects of growing cotton in the northern Malwa belt where it was an important kharif crop before being displaced by paddy. The fall in water table, therefore, is not all that bad, it has a positive side as well. The beneficial effects of the fall in water table should not be ignored in determining the optimal water table level for different regions of the state. Moreover, the problems of falling water table level and environmental degradation can be more cheaply solved through a suitable legislation strictly enforced. It will be counter productive to solve these problems by a sizeable reduction in area under wheat and paddy and causing a massive fall in farm incomes; that will be too high a price for solving these problems. When cheaper solutions are available, why is there a need to use the more costly ones?

Short Run Strategy for Wheat and Paddy Cultivation

There are, thus, sufficient and solid economic reasons for continuing with wheat and paddy cultivation in the near future to avoid any fall in farm incomes. At present, a massive reduction in area under wheat and paddy is neither desirable, nor feasible; neither central government approves it, nor are Punjab farmers willing to do it. Only a gradual reduction in area under these two crops is possible and should be attempted. The pace of area reduction should be convenient to and decided by farmers themselves keeping in view their goals and constraints. A feasible and painless course for doing this would be to freeze wheat and paddy production at the present level, through a quota assigned to each Punjab farmer under the minimum support prices and assured purchase programme, leaving the question of area under these two crops to the judgment of farmers themselves. Such a policy will induce farmers to gradually reduce area under wheat and paddy by improving the yields of these crops. Guided by their own self-interest, farmers will produce their assigned quota of wheat and paddy on the smallest farm area possible. This strategy will not only keep current farm incomes intact, but will also ensure a steady rise in farm incomes from the other crops grown on the area gradually released from wheat and paddy cultivation. This policy will ensure a gradual and painless reduction in area under wheat and paddy to the extent it is permitted by the relevant economic

parameters and constraints. Furthermore, this policy is not only compatible with central government's food security concerns, but also does not require any central government subsidy for its implementation. Its administrative demands are very modest. Its implementation is simple and straight-forward at the farm level and it will not encounter any resistance from the farming community. On the area gradually released from wheat and paddy cultivation cotton and sugar cane have the best chances of succeeding. These two crops give comparable returns and the culture of their farming is known to Punjab farmers. The MSPAP programs already exist for these two crops. The crops being recommended, (pulses, oilseeds and vegetables etc.) have little chance of success.

Consolidation of Tubewell-Canal Network through Legislation

The question of water table level should be dispassionately and rationally evaluated to find out whether or not the water table level has really fallen below the optimal level. If the problem is found to be serious, then it should be tackled directly through suitable legislation. The number and spacing of tubewells should be regulated through a suitable farmer friendly law. The quantum and timing of pumping out water should be regulated through a properly tailored price regime and a strict control over the supply of power to tubewells by the Punjab State Electricity Board. Punjab is probably a unique case of a simultaneous existence of an extensive and integrated network of canals and tube wells. The canal system was planned by the government, but the tubewell network has evolved spontaneously and haphazardly over the last 40 years. Now this canal-tubewell irrigation network needs proper consolidation; to create a symbiotic irrigation system in which no tubewell should be at a distance of more than 15 Km from a canal or its tributary. The brick lining of canals and water channels also needs reconsideration because seepage from canals and water channels can help in maintaining the water table at the optimal level. The creation of such a symbiotic canal and tube well irrigation system will require the digging of a few more canals with marginal investment. The existing network of flood drains can be easily remodeled to make it suitable for ground water recharging. Such a consolidation of canal-tubewell and drain network is quite feasible. It is much less difficult to accomplish than the consolidation of holdings that Punjab succeeded in doing in the pre-green revolution period.

Long Term Strategy for Structural Change and Shifting of Labour

In the long-run there is no alternative to a massive shift of labour out of Punjab agriculture, if farm incomes are to continue to grow. Wheat and paddy are the best available crops even from this long-term perspective of reducing labour engaged in agriculture. The reduction in labour engaged in agriculture can be engineered only through bold and innovative changes in laws and institutions; to induce and coax those who can and want to shift out of farming. The agricultural labourers and big landowners are the most suitable groups, at present, for being induced and coaxed to shift completely out of agriculture. A detailed and deep study of farm population reduction patterns, spontaneous as well as policy induced, in other countries may

also provide useful clues for devising a suitable strategy for shifting population out of Punjab agriculture. This structural change and shifting out of population from agriculture has already been delayed considerably, and cannot be avoided and postponed any further if farm incomes are to be kept growing in the years to come.

Conclusions

In the immediate short run as well as in the long run, wheat and paddy rotation is the optimal crop specialization for Punjab agriculture. No feasible alternative seems to exist. Punjab should stick to wheat and paddy cultivation and further improve its competitive advantage in these two crops. The falling water table problem should be tackled through legislation and by consolidating the canal-tubewell and flood drain network to make these symbiotic and sustainable.

Bibliography

- Chand, R., (1999) 'Emerging Crisis in Punjab Agriculture: Severity and Options for Future', *Economic and Political Weekly*, March 27.
- Gill, S.S. and J.S. Brar, (1986) 'Global Market and Competitiveness of Indian Agriculture: Some Issues', *Economic and Political Weekly*, August 10.
- Johl, S.S., (1986) *Diversification of Agriculture in Punjab, Report of the Expert Committee*, Govt. of Punjab, Chandigarh.
- Johl, S.S., (2002) *Agricultural Production Pattern Adjustment Programme in Punjab For Productivity and Growth*, Govt. of Punjab, Chandigarh.
- Kurosaki, T., (2003) 'Specialisation and Diversification in Agricultural Transformation: A case study of West Punjab, 1903-92', *American Journal of Agricultural Economics*, Vol 85, No.2.
- Shergill, H.S., (2002) Crop Adjustment Program for Diversification of Punjab Agriculture: Can it deliver the goods?' Working Paper, Department of Economics, Punjab University, Chandigarh.
- Shergill, H.S., (2002) 'Will Diversification Solve The Agrarian Crisis', *Hindustan Times*, November 28.
- Sidhu, H.S., (2002) 'Crisis in Agrarian Economy in Punjab – Some urgent steps', *Economic and Political Weekly*, July 27.
- Sidhu, R.S. and S.S. Johl, (2002) 'Three Decades of Intensive Agriculture in Punjab: Socio-Economic and Environmental Consequences' in S.S. Johl and S.S. Ray (eds): *Future of Punjab Agriculture*, Centre for Research in Rural and Industrial Development, Chandigarh.
- Singh, Joginder and R.S. Sidhu, (2002) 'Factors in Declining Crop Diversification: Case study of Punjab', *Economic and Political Weekly*, December 25.
- Singh, S., (2004) 'Crisis and Diversification in Punjab Agriculture: Role of State and Agribusiness' *Economic and Political Weekly*, December 25.

Contract Farming for Agricultural Development and Diversification in Punjab: Problems and Prospects

Sukhpal Singh

Indian Institute of Management, Ahmedabad

The farm sector in Punjab is plagued with declining farm incomes, monoculture of wheat and paddy, decline of ground water table, ecological degradation, and over capitalization. But, agriculture is the primary engine of growth without which Punjab will neither be able to accelerate growth nor achieve fiscal sustainability. Therefore, diversification within agriculture is intended to stabilise incomes and employment in the farming sector. This diversification can either be in terms of variety of crops grown or technologies used for the same set of crops. Contract farming is being promoted to achieve this diversification by promoting high value crops, lowering costs of production with better extension and raising returns by assured market and higher prices for the produce. This paper examines the role of contract farming in helping agricultural diversification and development in Punjab. It examines briefly its nature, growth and status including the performance of different models of contract farming based on empirical studies. The paper concludes by drawing lessons for agribusiness policy for contract farming to play an effective role in agricultural development in the state.

Introduction

The entry of large businesses into agribusiness sector has led to a new arrangement in raw material production and procurement in India, known as contract farming. This is happening as good quality, timely, and cost effective raw material is a pre-requisite for any successful agribusiness firm, whether operating in the domestic or the international market. Given the Land Ceiling Act in India, agribusiness firms cannot own and cultivate land for their raw material requirements. Also, most of the times, it is not a viable option (Singh, 1998). Therefore, the only option for them to procure raw materials is to have contractual arrangements with the primary producers which are also suggested as an alternative to corporate farming or liberalisation of land ceiling laws (Vyas, 2001). Contract farming refers to the production and supply of agricultural produce under advance contracts, the essence of such contracts being a commitment to provide an agricultural commodity of a type, at a time and a price, and in the quantity required by a known buyer. It basically involves four things - pre-agreed price, quality, quantity or acreage (minimum/maximum) and time. The contracts could be of three types; (i) procurement contracts under which only sale and purchase conditions are specified; (ii) partial contracts wherein only some of the inputs are supplied by the contracting firm and produce is bought at pre-agreed prices; and (iii) total contracts under which the contracting firm supplies and manages all the inputs and the farmer becomes just a supplier of land and labor. The

relevance and importance of each type varies across products and over time, and these are not mutually exclusive (Key and Runsten, 1999).

A contract reduces price risk for a farmer and can be terminated at reasonably short notice. Also, contractual arrangements are attractive to farmers seeking capital and new technology and other inputs and production services as generally new crops with modern technology or existing crops with new seeds and other inputs are promoted under such arrangements. On the other hand, food processors can minimize their overhead costs per unit of production by operating their plants at or near fully capacity by obtaining assured, stable and quality raw material supplies from farms under contracts. For a processor, contracts are more flexible in the face of market uncertainty, make smaller demands on scarce capital resources and impose less of an additional burden on management. They also overcome land constraint for corporate firms, reduce production risk, and are politically more acceptable than corporate farming (Eaton and Shepherd, 2001). Contracting can give a positive image to the company as it may be perceived as progressive especially if it works with small farmers, and can help it get access to state or donor funds (Baumann, 2000).

At more macro economic level, contracting can help to remove market imperfections in produce, capital, land and labor markets, remove intermediaries and therefore make upstream value chain (agricultural marketing) more efficient, and can help in better co-ordination of local production activities as it often involves initial investment in processing, extension etc. (Grosh, 1994; Gill, 2004). From an institutional economics perspective, contract farming could be looked upon as a way of creating positive externalities, created better by private sector instead of the state, which can result in overall rural development. Contracting can lead to more employment opportunities for farm and non-farm labour as generally it deals with labour intensive high value crops requiring labour for harvesting, grading, and packaging at the farm level, and in processing, transportation, packaging and marketing at the post-farm stage, reducing the seasonality of employment and giving higher wages through competition in the labour market. There can also be larger developmental effects from the improvement in infrastructure and other amenities due to contracting and general expansion of demand due to higher incomes under contracting (Haque and BIRTHAL, 1998).

Given the failure of government mechanisms for support to agriculture, there is wide support for contract farming under the Structural Adjustment Programme (SAP) and liberalisation. Given the enthusiastic promotion of this mechanism by the international development agencies like the World Bank, the United States Agency for International Development (USAID), the International Finance Corporation (IFC) and the Commonwealth Development Corporation (CDC) (Little and Watts, 1994), it is inevitable that new forms of contracts will be tried by the agribusiness firms. This is the only way to ensure good quality and timely availability of raw material for processing, especially when, in India, captive farming is not allowed at present under the Land Ceilings Act. Besides, captive farming means putting large resources in raw material production which may not be the best economic option for many agribusiness firms in India, especially small firms, or may not be a viable practice any more in competitive markets like in the case of tea plantations in South India (Hayami and Damodaran, 2004).

The main problems of the farm sector in Punjab include declining growth rate of farm production, declining capacity of the agricultural sector to absorb labour because the employment elasticity with respect to output in agriculture has come down to 0.2 per cent, monoculture of wheat and paddy which account for more than 76 per cent of gross cropped area of the state, decline of ground water table, ecological degradation and over capitalization of the farm sector. But, agriculture is the primary engine of growth without which Punjab will neither be able to accelerate growth nor achieve fiscal sustainability. Therefore, the economic condition of a vast majority of farmers, especially marginal and small, cannot be improved unless there are changes in the cropping pattern and in the technology of production. Diversification within agriculture is intended to stabilise incomes and employment in the farming sector. This diversification can either be in terms of variety of crops grown or technologies used for the same set of crops. Contract farming is being promoted to achieve this diversification by promoting high value crops, lowering costs of production with better extension and raising returns by assured market and higher prices for the produce.

This paper examines the role of contract farming in helping agricultural diversification and development in Punjab. It examines briefly its nature, growth and status including evaluating the performance of different models of contract farming in Punjab based on empirical studies so far. The paper concludes by drawing lessons for agribusiness policy for it to play an effective role in agricultural development in the state.

Corporate-led Contract Farming

Contract farming in Punjab which was in place by the early 1990s with the entry of Pepsi Foods - an MNC (Pepsico) subsidiary - into tomato and chillies, and a local firm - Nijjer Agro Foods Ltd. - into tomato, got further rooted with the selling off of its tomato facility by Pepsi to Hindustan Lever Limited (HLL) - a Unilever multinational subsidiary which processes one tenth of world tomato production and is the largest food processing and marketing company in India) in 1995, and Pepsi's entry into potato contracting by the late 1990s. The HLL plant in Punjab (set up by Pepsi) was the biggest tomato paste plant in Asia with a capacity to process 650 tonnes of tomatoes a day. HLL worked with about 400 contract growers during the late 1990s. Pepsi which had been working with hundreds of tomato and chilly farmers until 1997, later worked with only about a few dozen in chillies and potatoes each. Its potato contracts accounted for only about 10 per cent of its total procurement. Nijjer Agro Foods' tomato paste plant capacity is half that of HLL plant's and the company worked with about 400 contract tomato farmers in the late 1990s. Contract farming in Punjab by the corporate sector has so far been more of a case of buy back, input supply (figure 1) and also credit supply or linkage as depicted in figure 2.

There have been some studies of the contract farming system in Punjab recently. Besides describing the contract system and operations of the companies, most of them look at the economics of the contract farming system in specific crops, compared with that of the non-contract situation and/or competing traditional crops

of the region, e.g. in tomato (Bhalla and Singh, 1996; Haque, 1999; Rangi and Sidhu, 2000; Singh, 2000; Dileep et. al., 2002), potato (Satish, 2003; Singh, 2000), mustard (Singh 2000). It is found that contract production gave much higher (almost three times) gross returns compared with that from the traditional crops of wheat, paddy and potato in case of tomato (Bhalla and Singh, 1996; Rangi and Sidhu, 2000) due to higher yield and assured price under contracts. The studies of tomato contract production in Punjab and Haryana (Haque, 1999; Dileep et. al., 2002) also found the net returns from these crops under contracts being much higher than those under non-contract situations though production cost was also higher under contract system (Dileep et. al, 2002). Contract growers in Punjab and Haryana faced many problems like undue quality cut on produce and high rejections by firms, delayed deliveries at the factory, delayed payments, low price, and pest attack on the crop (Bhalla and Singh, 1996; Singh, 2000; Rangi and Sidhu, 2000; and Dileep et. al., 2002; Satish, 2003). But, more recently, HLL's tomato processing plant in Punjab (bought from Pepsi in 1995) has been shut down for the last one year. Also, most of the firms work mostly with large and medium farmers and contracts are biased against the farmers (Bhalla and Singh, 1996; Singh 2000; Satish, 2003). Breach of contracts by farmers as well as firms has been reported (Bhalla and Singh, 1996; Singh 2000). In Punjab, Pepsi and Nijjer were found to be under-performing in contracts in terms of not having written contracts and farmers not renewing contracts especially in case of the former. The situation in terms of performance of contracting was pathetic in case of some local units involved in aromatic oil, herb, and spice processing in Hoshiarpur and Patiala who neither provided any technical assistance to growers, nor procured crops at pre-agreed prices (Satish, 2003).

Fig. 1: Bi-partite Contract Farming Model

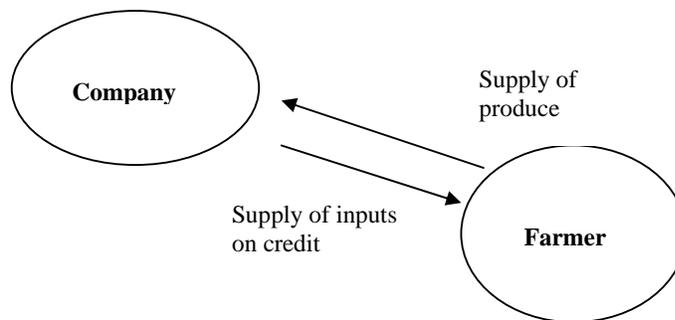
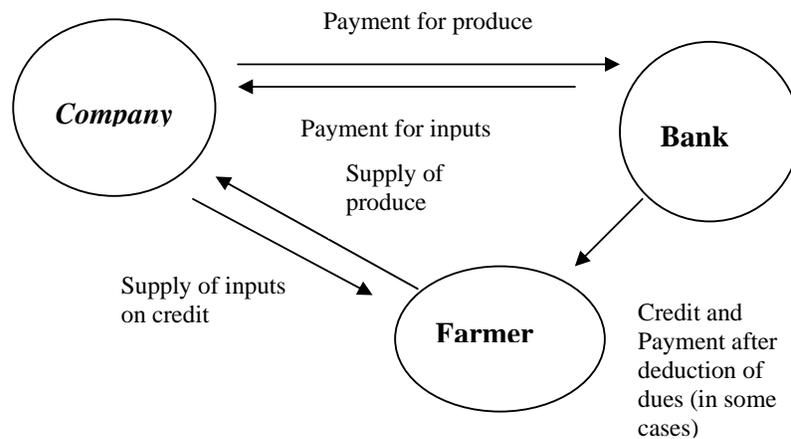


Fig. 2: Tri-partite Contract Farming Model

Though many studies recommend contract farming promotion for Punjab agriculture (Rangi and Sidhu, 2000a; Sidhu, 2002), it is likely to solve the state's farming crisis only partially. Also, as a short-term measure, although it is leading to higher incomes, given that it involves higher chemical input intensity and water use (Singh, 2000), these remain the root cause of the sustainability crisis in the state's farming sector. Of the four firms operating in the state, two are multinational subsidiaries and, are therefore, globally oriented in their operations. Both are expanding their operations in food sector as part of their global strategies, and therefore are likely to stay in this business but may not restrict themselves to Punjab alone as it is already evident in HLL's move into Haryana and Rajasthan for its procurement. Similarly, Pepsi has given up tomato and chillies contract farming by and large. But, it has moved into basmati paddy, groundnut and garlic contract farming since 1998 (Prabhu, 2004). On the other hand, the locally emerged and locally oriented firms (Nijjer and Markfed) are small in their operations and find it difficult to grow on their own. Nijjer has already become a subcontractor to Nestle so far as contract production of tomato and processing of tomato paste is concerned. It procures from farmers, processes the tomatoes into paste and supplies in bulk to Nestle. Thus, it is operating as an intermediary between the farmers and the MNC. By doing so, it not only avoids the risk of farm production by contracting but also the market risk by selling in bulk to Nestle. Thus, practically, it is operating as a subsidiary of a MNC and, therefore, all the benefits for the local economy are being reduced to that extent. Further, there are issues of monopsony of the processing/marketing firm and its disinterest in more backward areas where farmers need such interventions, besides the more crucial question of sharing of value added surplus in processing and marketing which are at the centre of whether contract farming can contribute to more broad based agricultural development (Gill, 2004).

Contracting is also promoting reverse tenancy in the state as companies prefer larger farmers for contracting (Singh, 2000). Though reverse tenancy seems to be a win-win situation for both the small farmers leasing out and the large farmers leasing in as they maximize their incomes, this practice may alienate the marginal and small farmers from land altogether without offering them alternative sources of employment (Haque, 2000).

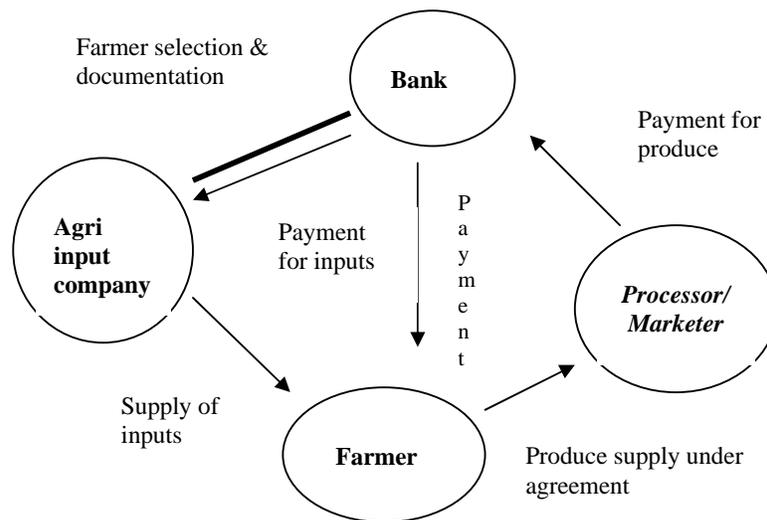
The Consortium Approach

Recently, several agribusiness companies have made forays into the farm service sector which is being perceived as private sector participation in agricultural development. They are facilitators of contract farming systems most of the time. One such model is that of Mahindra ShubhLabh Services Limited (MSSL) which has an agreement with the Government of Punjab to facilitate contract farming of maize and basmati paddy. It planned to increase farmer profitability by 35-60 per cent by better and cost effective input supply and better value realization from farm produce by finding better markets. For this, it tried to leverage its tractor brand, strong customer base, dealer network and first mover advantage. Its product portfolio includes seeds, pesticides, fertilizers, irrigation systems, equipment rentals, post harvest services, information provision, and finance. For this purpose, various partners i.e. retailers, agri input companies, logistics companies, farm equipment companies, food companies, and agri finance corporations and banks, besides agricultural universities and research centers are networked into the project. The company offers extension services to farmers for a fee but ensures a certain level of yield. If farmers get lower than the assured level of yield, then they need not pay the fee. This experiment of the company in Madurai in Tamilnadu where farmers had to pay Rs.500 per acre achieved assured yield in 75 per cent of the cases in the first year, which increased to 80 percent in the second year, despite drought conditions. This ensures that the yield risks are low, and therefore, insurance scheme can be implemented (Naik, 2002). The MSSL plays the role of an integrated farming solutions provider. Other crops planned under the company's operations in the state are mustard, castor, pulses and vegetables. In basmati paddy contract farming, Escorts Ltd, LT Overseas Ltd., United Rice Land Pvt. Ltd., and Pepsi have MoUs with the PAIC (Grewal, 2003). LT Overseas Ltd. in collaboration with Rallis India Ltd. and ICICI Bank, have launched a programme for contract farming 30,000 acres of basmati paddy in Punjab initially for three years with a possible extension for further two years, under the aegis of the PAIC (Table 1).

The facilitator companies provide all the inputs, technical support and finance to the registered growers for a specific crop and facilitate the sale of produce at reasonable price. The companies follow a consortium approach (Figure 3). They tie up with banks like ICICI and SBI and with buyers of produce like HLL, Picric and Cargill. For example, the Rallis' system is run through a network of 10 Rallis Kissan Kendras (RKKs) across the country. A farmer can take advantage of a loan of upto Rs.6,500 per acre for basmati cultivation in Panipat for a 6-month period at a rate of interest of 13 per cent per annum. In addition, every member farmer has accident insurance coverage of Rs.1 lakh. The RKK has trained farmers to harvest basmati when

moisture levels are at 16 per cent as harvesting at lower levels can lead to more broken basmati grains during milling. The farmers are paid prevailing market prices. The Rallis and the ICICI deduct the cost of inputs and the loan amount from the proceeds before paying the farmer on the spot (Karunakaran, 2002). The bank has been able to get 10 per cent loan guarantee from the buying company in case of default by the company. Encouraged by this project, the company has set up new projects in fruits at Bangalore and vegetables at Nasik. The ICICI collaborated with the company as they benefited from the rural penetration of Rallis, and the HLL gained as it could get good quality wheat for processing it into wheat flour (Subramaniam, 2002).

Fig.3: The Quad-partite Contract Farming Model



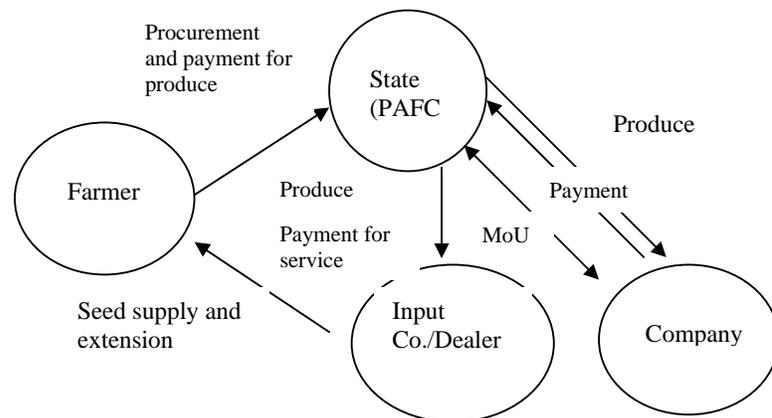
The ICICI Bank lays down pre-set criteria for farmer selection and informs input companies. The input companies/bank officials do the documentation. Input companies supply the inputs and send detailed accounts to the Bank, which debits farmer account, and credits the input company account. At the time of harvest, the processing/marketing company collects produce and pays the bank its dues and rest to the farmer. The bank credits the farmer's account and the account is closed. A MoU among the bank, the input company and the output company is signed for the above arrangement. An undertaking from the farmer to supply produce under this scheme to the output company is taken by the bank. The ICICI Bank prefers four sector projects as against tri-partite projects as it considers inputs service very crucial for cost reduction and quality enhancement leading to better value realization for the farmer. The bank provided a total of Rs.180 crore as loans for

various contract farming projects during last year (2002-2003). The bank-funded project has a ‘credit plus’ approach, which involves not only credit and input supply but also extension service and marketing support. The bank is now funding projects in basmati rice, chillies, potato and cotton, besides wheat. It aims at raising prices of agriculture produce and lowering cost to make farming viable for the growers (Sabarinath, 2003). The Rallis’ joint venture project with the government of Madhya Pradesh, in which ICICI is involved, started three years ago with 250 acres of wheat with 50 farmers. Now, there are 15,000 acres under wheat cultivation.

State-led Contract Farming

The contract farming programme launched by the Punjab government in October 2002 (for the *rabi* season) was aimed at taking away 10 lakh hectares from the wheat-paddy rotation over the next five years as part of the crop adjustment programme (read diversification) as recommended by the second (2002) Johl Committee (Table 2). In 2002, a total of 29,000 acres had been proposed by the PAFC under the program, implemented jointly by the Department of Agriculture, Punjab Agro Industries Corporation (PAIC through its subsidiary Punjab Agro Foodgrains Corporation (PAFC)) and private companies. The PAFC not only provided seeds purchased from reputed seed companies like Adventa India Limited and Pro-Agro Limited, and technical supervision and follow up on agronomic practices to the contract growers, but also promised to buy back the entire produce at pre-agreed prices through a tri-partite agreement involving PAFC, seed company through its dealer, and the farmer (Figure 4). The tri-partite agreement specifies the fixed price and bonus to be paid by the PAF to farmer for the produce (bonus only if the PAFC is able to sell the produce at a higher price), type and quantity of seed to be supplied by the seed company at a given price for given acreage, farmer’s responsibility of delivering the quality produce (produced by making use of recommended inputs bought from outlets prescribed by the PAFC) at a specified place, payment within two days after delivery and PAFC being the sole decider of weight of produce and the sole and only arbitrator in case of dishonouring of the contract by any of the parties. The contract is signed by the three parties in the presence of two witnesses for the farmer.

Fig.4: State-led Contract Farming System in Punjab (Tri-partite agreement among farmer, seed company/dealer and PAFC).

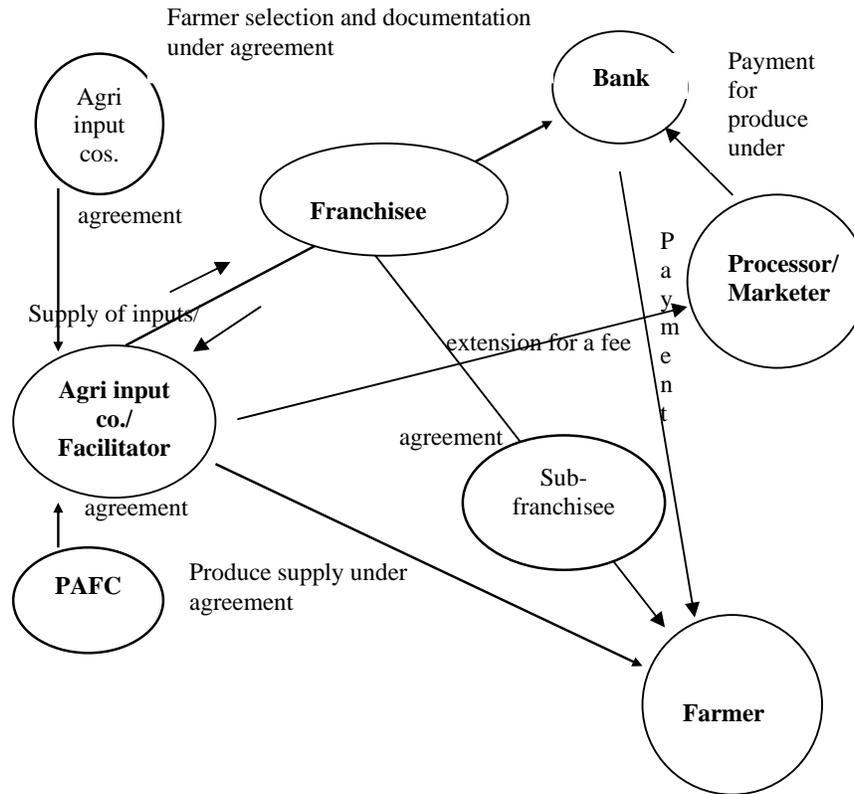


Towards the end of harvesting season for the contracted crops, the programme had run into rough weather. The contracted winter maize and hyola crops failed almost completely due to inclement weather and poor quality seeds (Grewal, 2003). In case of green peas, the contract growers were forced to dump their produce in open market, after being rejected by the PAIC on quality ground as per the contract specification, as there had been fungus infection due to inclement weather which was marked by heavy rains in winter season and then sudden rise in temperature. An area of 500 acres under contract production of green peas in Patiala and Fatehgarh Sahib districts had been affected. Some farmers found fault with the fungicide supplied by the contracted company in this regard. The dumping of contract-produced crop in the open market led to fall in local market prices and it was being sold at Rs. 3 per kg. now as against a promised price of Rs. 5 per kg. by the PAIC (Singh, 2003; Rangi and Sidhu, 2003). In general, across crops and regions, the contract farming programme could not achieve the stated area goal. Not only it fell short in terms of contracted area being less than that stated by the agency, but also the farmers did not plant the entire contracted area with the contract crops. The gap was much larger in the latter case and even as high as 50 per cent in winter maize in Ludhiana and 20 per cent in hyola in both Ludhiana and Patiala. There was a different private seed company for each crop and they only provided seed and no other extension service. Finally, none of the companies procured the produce and advised the farmers to sell in open market either because open market prices were higher than contract price or quality was not as desired. Except for the oilseed crops (hyola and sunflower), the net returns from contract crops were found to be lower than what farmers would have got from wheat crop. Most of the problems that farmers faced related to production and quality (like quality of seed and extension) and not marketing of produce (except peas) as open market could take care of contract produce. Due to this experience, a large majority (60 per cent) were not willing to enter into contract farming arrangement again (Dhaliwal et al, 2003).

The Franchisee Model

The facilitator model has been modified with the inclusion of a local arthiya/commission agent/ input dealer as a franchisee for the agri. facilitator (Fig. 5). It is more of inter-locking of factor markets coming back in another form. But, this model also does not seem to be working well as there are many problems in this model in Punjab though it has worked well in some other states.

Fig 5: The Six-Partite (networking/franchisee) CF Model



The agribusiness facilitators are ‘new players’ with knowledge and resources and strategy for sustained growth through partnership for sustainability. They will make money while helping others, including farmers, make money. Their strategies involve bundling of inputs and linking up of credit with input supply, which is the agribusiness of the twenty first century (Boehlje et al, 1995). But, what is wrong with it if it can provide what state and co-operatives have not been able to provide for so long i.e. timely and cost effective supply of quality inputs and finance and even tractors, and combine harvesters etc. on hire basis and assured market for produce? Unfortunately, what local panchayats and farmer groups are not able to do (e.g. custom hiring out of tractors) is being undertaken by agribusiness companies. They focus on more efficient use of modern inputs with a two-pronged strategy i.e. yield increase or cost reduction through inputs and value addition (market improvement). This is a must for enhancing competitiveness whether domestic or international where quality and cost effectiveness are the driving forces. In fact, this is similar to what was proposed in 2001 by HLL

Chairman M S Banga as a Farmer Service Centre (FSC) concept which can be a focal point for credit suppliers, crop insurers, agri input suppliers, food processors for buy back from farmers, and farm equipment leasing and specialized grain transport and storage agencies to help the farmers with specialized services (Banga, 2001).

Conclusions

The Punjab government has also now resigned to a role of a facilitator of contract farming in the state. The governments of Uttar Pradesh and Punjab have recently amended the APMC Act that did not permit farmer level (direct) procurement by companies. This legal reform process is being accelerated by the central government with the enactment of the Model Act for the state Agricultural Produce Marketing (Development and Regulation) Act, 2003 which deals with setting up of private markets, selling of produce by growers outside the APMCs (regulated markets), setting up of direct markets, specialized commodity specific markets, regulation and promotion of contract farming, provision for agencies and measures to promote quality, standards, alternative markets, and public-private partnerships to facilitate more and better linkage between firms and farmers (GoI, 2004).

A recent World Bank report also points to the deficiencies in the contract farming program launched by the state government of Punjab. It states that for the programme of contract farming to be successful, it should take into account the aspects of selection of crops for contracting, development of quick and effective contract enforcement and dispute resolution system, limiting fiscal risks to the state government, limiting the number of parties in a contractual arrangement, and developing farmer organizations' capability of contracting with sponsors, with a view to reducing transaction costs, increasing information flow, and improving farmers' negotiation position (World Bank, 2003).

Given that the nature of modern farming involves a tremendous amount of technological input and market orientation requiring capital resources, it is but inevitable to involve private corporate business interests in agricultural development through contract farming system. What is required is marketing extension in terms of better product planning at the farmer level, provision of market information, securing and accessing markets for farmers, provision of alternative markets and market orientation in terms of improved marketing practices at the farmer level (Patnaik, 2003). Further, it is not the contract per se which is harmful as a system but how it is practised in a given context. This involves questions about who is doing contract farming with whom, why, for what, and how. If there are enough mechanisms to monitor and use the contract for developmental purposes, it has the potential to lead to a betterment of all the parties involved, especially small and marginal farmers (Fig. 6).

Contract farming as a mechanism is desirable if the crop is perishable, non-bulky, perennial in nature, needs heavy processing, strict quality adherence (Goldsmith, 1985), credit market is in a state of failure, there is a need to encourage new crops or the open market has failed. But, still there are other options which should be tried out i.e. state, co-operatives and NGOs for credit and other inputs, and if contracting is a must, then, it should be regulated and monitored (Grosh,

1994). A case by case approach is necessary when allowing or encouraging contract farming as a lot depends on how and where it is practiced (Table 3). At present, most of the farmers who are contract growers were already growing the contract crops like basmati, wheat, and maize. Therefore, the objective of diversification is not being achieved in any way. Also, as the crucial question for development under contracting is the division of value added between the agribusiness firms and farmers, it is important to examine carefully the design, pricing and incentives and other aspects of the contracts.

Figure 6: Relative Benefits of Alternative Marketing Structures for Small Farmers

Structure	Sales position of Small Farmers (SF) vis-a-vis Large Farmers (LF)	Sales position of SF vis-a-vis buyer	Input Facilities/Technical assistance	Government support required
Private local firms (Nijjer in Punjab)	Can be against SFs due to bargaining power	Advantage of access to alternative outlets	May be available/based on local experience	Provision of market infrastructure, information, ensuring competition, price stabilization
MNCs/large firms (Pepsi, HLL)	Equitable prices through contract	Dependent but secure if supplies quality	Direct supply on credit/direct and intensive	Should negotiate prices and participation for SFs
Co-operatives/New Generation Co-operatives (NGCs) (Amul/Amalsad)	Equal if successful	Favourable if efficient co-op.	May arrange	Financial support may be required
State boards/bodies (PAFC/HPMC)	Equal prices if can reach official buying position	May be exploited	Rare/left to other govt. agencies	Insist on reaching small farmers
Development agency (NDDDB)	-- do --	Protected if meets quality	Direct supply on credit	Financial support required

Source: adapted from J.C. Abbott (1993).

There is a role for state agencies and NGOs to intervene in contract situations as intermediaries to protect the farmer and broader local community interests. The NGOs can also play a role in information provision, and in monitoring and regulating the working of contracts. Better co-operation and co-ordination between companies and co-operatives for agricultural development also needs to be encouraged. Further, both companies and state should promote group contracts with the intermediation of local NGOs and other organisations and institutions so that contractual relationships are more durable, enforceable, and fair. An insurance

component in farming interventions is a must to protect the farmer interest and it is noted that some companies are already doing it. But the most important thing is to ensure a market for the farmer's produce at a better price under these agribusiness projects. Government should also play an enabling role by legal provisions and institutional mechanisms, like helping farmer co-operatives and groups, to facilitate smooth functioning of contract system.

The HLL experience showed that it is important to demonstrate good results continuously to initiate change. Also, building linkages requires time, commitment, patience and perseverance. The demonstration of new crop in nurseries or on the fields can be very effective. It is important to establish quality standards right from the beginning at every stage of the operation. The inputs should be provided across a wide range of crops and enterprises and not just for the contracted crop. It is important to ensure that the farmer benefits on a scale that motivate him to do better as he is generally a small landholder. This can be achieved through a combination of technology, service and networking. Whereas technology involves providing the best inputs and harvest and post-harvest facilities, service insures that resources are made available in time and the post-harvest off take is efficient, and networking assures government support, infrastructure, banking facilities, and so on. In fact, earning the farmers' trust is very basic to success in building backward linkages. A number of small steps, such as prompt payments, being available on sight, sharing and updating best practices, can help build trust. In fact, the best step is to increase demand for the produce by the company which improves farmer profitability (Datta, 1996). It is also important to realise that companies like the HLL had the first mover advantage when they undertook contract farming. But, in more competitive markets for contracts, these steps may be even more crucial for the sustainability of contract farming.

Bibliography

Abbott, J. C., (1993) 'Marketing, The Rural Poor and Sustainability', in J C Abbott (ed.) *Agricultural and Food Marketing in Developing Countries – Selected Readings*, CAB International, Oxon (UK), 65-92.

Banga, M. S. (2001) 'Food Revolution - A Win Win for Farmer and Consumer', (an abridged version of the HLL Chairman's speech), *Economic and Political Weekly*, 36(29), July 21, 2733-36.

Baumann, P., (2000) *Equity and Efficiency in Contract Farming Schemes: The Experience of Agricultural Tree Crops*, ODI Working paper No. 139, ODI, London, October.

Bhalla, G. S. and G. Singh, (1996) *Impact of GATT on Punjab Agriculture*, Ajanta, Delhi.

Bharadwaj, M. and J. S. Palan, (n.d.) 'Co-operative Alignment with the Corporate - The New Direction', mimeo. 4.

Boehlje, M., J. Akridge and D. Downey, (1995) 'Restructuring Agribusiness for the 21st Century', *Agribusiness*, 11(6), 493-500.

Christensen, S. R., (1992) *Between the Farmer and the State: Towards A Policy Analysis of the Role of Agribusiness in Thai Agriculture*, Thailand Development Research Institute (TDRI) Background Report to the 1992 Conference on Thailand's Economic Structure: Towards Balanced Development?, Chon Buri, Thailand.

Datta, S. M., (1996) 'Linkages with Agriculture - The Experience of the Food Processing Industry', *The Economic Times*, June 27, Ahmedabad. (text of the speech delivered at the AGM of BBLIL held in Calcutta on June 26).

Dhaliwal, H. S., M. Kaur, and J. Singh, (2003) 'Evaluation of Contract Farming Scheme in the Punjab State', Department of Economics, PAU, Ludhiana.

Dileep, B. K., R. K. Grover and K. N. Rai (2002) 'Contract Farming in Tomato: An Economic Analysis', *Indian Journal of Agricultural Economics*, 57(2), 197-210.

Eaton, C. and A. W Shepherd, (2001) *Contract Farming - Partnerships for growth*, FAO, Rome.

Gill, S. S., (2004) 'Small Farmers and Markets' (a book review), *Economic and Political Weekly*, 39(23), June 5, 2356-2358.

GoI (Govt. of India), (2004) *Economic Survey 2003-04*, Ministry of Finance, GoI, New Delhi.

Goldsmith, A., (1985) 'The Private Sector and Rural Development: Can Agribusiness Help the Small Farmer?', *World Development*, 13 (10-11), 1125-1138.

Grewal, M., (2003) 'Cropped by Corporates', *The Indian Express*, Ahmedabad, April 27, Sunday, III.

Grosh, B., (1994) 'Contract Farming in Africa: an Application of the New Institutional Economics', *Journal of African Economies*, 3(2), October, 231-261.

Haque, T., (1999) *Contract Farming in India*, National Centre for Agricultural Economics and Policy Research, New Delhi (unpublished).

Haque, T. (2000) 'Contractual Arrangements in Land and Labour Markets in Rural India', *Indian Journal of Agricultural Economics*, 55(3), 233-252.

Haque, T. and P. S. BIRTHAL, (1998) 'Prospects of Contract Farming in India' in K T Chandy and O S Tyagi (eds.), *Future of Farming in India: Contract or Co-operative Farming*, Indian Social Institute New Delhi.

Hayami Y. and A. Damodaran, (2004) 'Towards an Alternative Agrarian Reform – Tea Plantations in South India', *Economic and Political Weekly*, 39 (36), September 4-10, 3992-3997.

Karunakaran, N., (2002) 'Money Grows on Trees ...', *Intelligent Investor*, August 31 (from: ISAP@yahogroups.com)

Key, N. and D. Runsten (1999) 'Contract Farming, Smallholders, and Rural Development in Latin America: The Organisation of Agro-processing Firms and the Scale of Outgrower Production', *World Development*, 27 (2), 381-401.

Little, P. D. and M. J. Watts (eds.), (1994) *Living Under Contract - Contract Farming and Agrarian Transformation in Sub-Saharan Africa*, University of Wisconsin Press, Madison.

Naik, G., (2002) 'Enhancing Food Security through Market Reforms', *Productivity*, 43 (1), 60-66.

Patnaik, G., (2003) 'Marketing, Storage, and Extension Services: State of Agriculture in India' in B Debroy and A U Khan (eds.): *Enabling Agricultural Markets for the Small Indian Farmer*, Bookwell, New Delhi, 81-120.

Prabhu C (2004), *Managing Contract Farming in Agro Industry*, FPM Thesis, IIM, Ahmedabad.

Rangi, P. S. and M. S. Sidhu, (2000) 'A Study on Contract Farming of Tomato in Punjab', *Agricultural Marketing*, 42(4), 15-23.

Rangi, P. S. and M. S. Sidhu (2003) 'Contract Farming in Punjab', *Productivity*, 44(3), 484-491.

Satish, P., (2003) 'Contract Farming as a Backward Linkage for Agro Processing – Experiences from Punjab', an unpublished paper.

Sidhu, H. S., (2002) 'Crisis in Agrarian Economy in Punjab – Some Urgent Steps', *Economic and Political Weekly*, 37 (30) July 27, Review of Agriculture, 3132-3138.

Singh, J., (2003) 'Contracted green peas dumped in open market', *The Tribune*, Chandigarh, March 28, 15.

Singh, S., (1998) 'Should Indian Farming Go Corporate?', *Business India*, Aug. 24 - Sept. 6.

Singh, S., (2000) 'Contract Farming for Agricultural Diversification in the Indian Punjab: A Study of Performance and Problems' *Indian Journal of Agricultural Economics*, 56 (3), 283-294.

Subramaniam, A., (2002) 'Field Day in Store for Farmers', in http://www.tata.com/rallis_india/articles/2002060_farming.htm.

Vyas, V. S., (2001) 'Agriculture: Second Round of Economic Reforms', *Economic and Political Weekly*, 36 (10), March 10, 829-836.

World Bank, (2003) *India: Revitalising Punjab's Agriculture*, Rural Development Unit, South Asia Region, The World Bank, Washington.

Table 1: Summary of Basmati Contract Farming Schemes in Punjab (July 2003)

	<i>Sponsors under PAFC scheme</i>				<i>Independent sponsor</i>	
	MSSL	Rallis India Ltd.	M/S Escorts	DCM-Shriram	Pepsico	HLL
Hectares signed up	8,000	12,000	16,000	4,000	3,200	4,280
Fee/hectare, payable by farmer to sponsor	Rs. 375, before planting	Rs. 200 down to Rs. 25, at the time of sale	Rs 200 down to Rs. 50, at the time of sale	---	None	None
Prospective buyer from farmer	Sunstar Overseas	L.T. Overseas	Satnam Overseas; Anima Foods; DD Int'l	KRBL	Sponsor	Sponsor
Contract with buyer and PAFC	To be signed	Signed	Signed	---	n/a	n/a
Minimum prices per qt:						
Contract price	Rs. 1,350	Rs. 1,100	Rs. 1,350	---	Rs. 1,200	Rs. 1,200
PAFC 'comfort price'	Rs. 1,100	Rs. 1,100	Rs. 1,100	Rs. 1,100	n/a	n/a
Price adjustment	---	Based on seasonal average price in Amritsar market	---	---	To be based on basmati market & returns on other crops	Av market price – Rs. 50 per qtl

--- = information not available

Source: World Bank (2003).

**Table 2: PAFC's Five-Year Plan for Contract Farming
(‘000 hectares)**

<i>Crop</i>	<i>Season</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
Hyola (hybrid rapeseed)	Rabi	20	80	120	160	180
Barley	Rabi	2	6	10	16	28
Winter maize	Rabi	1	2	4	5	6
Durum wheat	Rabi	20	80	120	160	180
Sunflower	Spring	4	16	40	60	90
Spring maize	Spring	2	6	6	16	32
Basmati rice	Kharif	34	40	60	60	60
Kharif maize	Kharif	20	120	160	200	240
Guargum	Kharif	1	2	3	4	6
Castor	Perennial	1	4	8	16	20
Groundnut	Kharif	-	-	6	8	10
Organic basmati	Kharif	2	1	2	3	6
Vegetables	Kharif/Rabi	1	2	2	4	8
Cotton	Kharif	6	20	48	60	80
Moong/other	Kharif	5	20	10	28	54
Total		120	400	600	800	1,000

Source: World Bank (2003).

Table 3
Activities/Crops Suitable for Contract Farming and Examples in Punjab

Activity/crop	Examples/sponsors in Punjab	Scale	Observations
Perishable products for agro-processing	Milk	7.9 million tons by 2001/02; 43 milk plants	<ul style="list-style-type: none"> Highly successful, grew by 4% per annum during 1990s Net returns much greater than rice & wheat Some logistical diseconomies due to large procurement zones
	Tomatoes, chillies and potatoes for processing: Pepsi (started 1989), HLL (1995) and Nijjer Foods.	Never more than 1,200 hectares	<ul style="list-style-type: none"> Pepsi/HLL operations terminated due to underlying economics, but CF system proved fully viable it facilitated R&D and highly productive system it had major beneficial side-effects on non-CF production
Perennial crops, e.g. rubber, oil-palm, citrus	None		
Crops with very exacting delivery schedules and product standards	Basmati rice: <ul style="list-style-type: none"> HLL and Pepsico – since 1998 under PAIC programme – 4 new sponsors – in 2003 	In 2003: <ul style="list-style-type: none"> original sponsors: 7,500 hectares under PAIC programme, over 32,000 ha 	<ul style="list-style-type: none"> original sponsors doing R&D all sponsors arranging seed supply and TA, and organizing traceability systems some of the PAIC supported area may not be new to date international trade pays no premium for traceable basmati
	PAGREXCO air freighting fresh vegetables (okra, bitter gourds, green chillies, baby corn) to UK market	150 growers; 200 hectares; 1-1.5 tonnes per week	<ul style="list-style-type: none"> production located in Patiala; why not close to airport in Amritsar? small supplier compared to major players in Kenya and other countries plan to charter flights of 23-24 tons, with transhipment through Dubai
As above, + requiring close adherence to production protocols	Seed production, e.g. Punseed, flower seeds for export	Not known	Minimal problems of side-selling because the seed company pays premium prices
Production is critically dependent upon credit from the sponsor	None		Formal and informal credit is widely available in Punjab

Deceleration of Industrial growth and Rural Industrialization Strategy for Indian Punjab

Lakhwinder Singh
Punjabi University, Patiala

Sustained industrial growth has been widely acknowledged as an engine of economic transformation. Less developed countries, however, remained predominantly agrarian due to lack of dynamism in the industrial economy and the low level of industrialization. Economic policy reform programme was initiated in July 1991 to generate essential dynamism in the industrial sector for successful transformation of the agrarian economy of India. In this paper an attempt is made to examine the industrial growth experience of Punjab economy during the period 1980-81 to 2001-2002, that is a decade before and a decade after the initiation of economic reforms. The empirical evidence clearly show a downturn in industrial growth in the post-reform period compared to that of the pre-reform period. Factors that have contributed to the deceleration of industrial growth in Punjab were lower investment-GSDP ratio, lower plan expenditure and lower quality of human capital and infrastructure. These factors were making the state scarce in economic activities and lacking in private corporate investment, both of domestic and foreign variety. Alternative strategy has been suggested which not only has the capacity to arrest the process of deceleration of industrial growth in the state but also has a capacity to transform agrarian economy to an industrialized one along with raising the level of employment, rural income and welfare.

1. Introduction

Industrialization is the central dynamic force in the process of economic growth of an economy. The development experience of advanced countries and the newly industrializing economies has shown that industrialization is the only way through which general level of living standards can be continuously improved upon. Their success story reveals the fact that the governments of the advanced and newly industrializing economies continuously developed and implemented appropriate policies that created a conducive and congenial environment for industrial progress. However, the development experience of the less developed countries, the backwardness and low-level of living in such countries, is a clear pointer to the lack of dynamism in the industrial economy in particular and low level of industrialization in general. This led to the realization in less developed countries to change their industrial policies from inward-looking to outward-looking so that required dynamism in the industrial economy can be generated. Within less developed countries, the growth experience in some of the regions after initiating economic reforms, however, has shown dynamism in their growth structure albeit to a limited extent. Indian Punjab is one such state/region which has shown an above average rate of growth in general and industrial growth in particular. However, this fast rate of economic growth could not be sustained due to limited progress of its

industrial sector. Economic policy reforms initiated by the Indian government have differential impact across industrial economy of different states/regions. Some of the states/region registered high rates of growth comparable to the newly industrializing countries (NICs) and others lagged behind. Punjab's industrial economy could not respond to economic policy reforms which is a cause of concern for both the academicians and policy makers. The purpose of this paper is to explore, identify and analyze the factors behind the slow industrial growth that have not allowed Punjab economy to realize its full potential. Alternative industrial development strategy is worked out to transform the rural economy of the state. The paper is developed and presented in five sections. Apart from the introductory section, economic policy reforms and limitations in the application of the reform programme are presented in section two. Industrial growth performance of Punjab in the pre- and post- reform period is presented in section three. Alternative policy for revival of industrial growth through rural industrialization for enhancing rural income is spelled out in the fourth section. Summary and conclusions are presented in the final section.

2. Economic Policy Reforms and Expected Impact on Punjab's Industrial Economy

After the demise of the centrally planned economy of USSR in 1991, the global economic management of the bi-polar world economy has shifted to a uni-polar one. Since then economic reforms, pushed by international donor agencies (IMF/WB), aims at reducing the role of state and increasing the role of markets in economic decisions. Numerous national governments of various countries of the globe now have an option only between 'Big Bang' and 'Gradualism' (Hoff and Stiglitz 2004). Indian government had chosen a path of economic reform in July 1991 to gradually reduce the role of the state to provide greater and dominant role to the market in the process of economic decision-making. Indian government dismantled controls and regulations related to the location of private economic activities to establish production units in industrial sector of the economy (Srinivasan and Tendulkar 2003). Industrial licensing policy, which had been enacted to regulate and control location of industrial activities, had been the bone of contention for quite some time due to misuse of this policy both by the Indian private capital as well as the bureaucratic-political lobbies. So was the location of public sector enterprises which was purely under state control. Therefore, the allocation of the licenses and public sector enterprises has determined the level and speed of economic development of the different states. It has been argued that Punjab state has suffered due to policy induced barriers and constrained private sector initiatives through allocation of licenses and public sector investments in the industrial sector of her economy. The reforms initiated by the Union government have been welcomed purely on the basis of expected removal of barriers and constraints by the political leadership. Thus, it was expected to unleash the constrained productive forces and flooding of investment in the state to automatically take care of deceleration of economic growth and the related problems. In addition to that, scaling down of tariff barriers for external trade and removal of restrictions on the participation of foreign capital

in the industrial sector have been assumed to fill the gap of investible resources if it exists, and in case Indian capital remains scarce, foreign direct investment will do the job. It is a generally held view that foreign direct investment brings in new technology and management practices which usually help the local private sector to emulate and therefore is a sure way to enhance the competitive capacity of the industrial economic activities, both domestic and international.

Small-scale industry, which is an important segment of the Indian economy in general and Punjab economy in particular, had received substantial protection and concessions during the import substitution regime (Mohan 2002). Reforms progressively reduced protection in terms of reservation of items exclusively manufactured by the small scale industries as well as allowing the large sector to produce and compete with small scale industry, if the large sector exports 50 per cent of its production (GOI 2004). The liberalization of imports and reduction of tariff barriers further increased stiff competition and challenge to the small scale industry. Since Punjab's industrial economy is a grooming ground for small scale industries, external and domestic liberalization was expected to put substantial constraint on this sector. An important change in paradigm of policy making under which universal applicability of market in economic decision making for alleviating all the ills of the capitalist economic system during the 1980s and 1990s (popularly known as Washington Consensus) was questioned in the late 1990s when the financial crisis was triggered in South East Asia. Around this time academic economists realized the complementary role of the state and the market as well as of the public sector. Harberger (1998) cautioned fellow economists not to recommend dismantling of the public sector for privatization until the efficiency gains of such acts are substantial. During the 1980s and 1990s growth experience of world economy in general and economies under reform programme in particular recorded substantial instability. Therefore, realization dawned on the experts to recognize the differences in the stage of economic development and institutional arrangements across countries. In fact the profit-seeking private agents, misguided by market imperfection, were mainly responsible for creating instability in economic growth and creating unprecedented economic crisis in high performing East Asian countries (Stiglitz 2002). Thus, growing empirical evidence suggested that standard recipes and sole reliance on the market for efficient allocation of resources and economic development can do more damage than good to the economy. Turnaround in the thinking of economic policy making, where state and market are regarded as complementary rather than competitive, was reflected not only in the discussions in academic circles but also from the documents and programmes enacted by the international financial institutions. This paradigm shift in recognizing and providing due respect to the role of state in policy making has been characterized as Post-Washington Consensus (Hayami 2003). Contrary to this, the process of policy making in most of the developing economies still reflect the Washington Consensus approach. The Punjab state is one such example. An attempt is made in the following section to examine the impact of liberalized economic policy on the industrial economy of Punjab.

3. Pre- and Post-Reform Period Industrial Growth in Punjab

Industrial economy of Punjab has expanded its base during the early green revolution period at a faster rate and contributed Rs.1546.12 crore in 1980-81 at 1993-94 prices which comes out to be 11.66 per cent of the Gross State Domestic Product (GSDP). The contribution of the industrial sector of Punjab increased to Rs. 7075.26 crore in the year 2001-02 and the share of the industrial sector in the GSDP comes out to be 16.64 per cent. The noteworthy feature of industrial development during the eighties and nineties is the rising share in the GSDP by nearly 5 percentage points. During the period 1980-81 to 2001-02, industrial economy of Punjab has grown at a steady trend rate of growth 7.34 per cent per annum (Table 1). The organized (registered) industrial sector of the economy has grown at a higher rate, that is, 8.4 per cent per annum during 1980-81 to 2001-02, than that of the overall rate of growth of the industrial sector. However, the unorganized (unregistered) industrial sector has grown steadily at 5.6 per cent per annum during the same period, which is substantially lower compared to that of the overall manufacturing sector, as well as the organized manufacturing sector growth rates. To examine the impact of economic reforms initiated by the union government of India in July 1991, we have estimated the trend growth rates while splitting the whole period into two sub-periods, that is, pre-reform period from 1980-81 to 1990-91 and post- reform period 1991-92 to 2001-02 and results are presented in Table 1.

Table 1: Industrial growth in Punjab 1980-81 to 2000-01 (1993-94 prices)

Sectors→ Years	Manufacturing Sector	Registered Manufacturing	Unregistered Manufacturing
1980-2001	7.34	8.39	5.61
1980-1990	9.32	9.29	9.33
1991-2001	5.74	6.94	3.78

Note: Trend growth rates are estimated while using the semi-logarithmic regression equation. Data used for estimates of growth rates is collected from Government of Punjab, *Statistical Abstract of Punjab*, various issues.

Punjab's manufacturing sector has grown at a rate of 9.32 per cent per annum during the 1980-90 decade, which is substantially higher compared to the whole period rate of growth. Pre-reform rate of unorganized industrial sector recorded slightly higher growth (9.33 per cent per annum) compared to the organized industrial sector (9.29 per cent per annum). Such a high rate of growth is quite significant given the backdrop of a highly volatile political situation in Punjab that prevailed during the eighties. Contrary to the belief of liberal policy makers, industrial growth has decelerated during the nineties. The rate of growth of manufacturing sector was recorded at 5.74 per cent per annum, which was below the overall rate of growth and was substantially lower compared with that of the pre-reform period. The organized manufacturing sector recorded a rate of growth of

nearly seven per cent per annum during the reform period. However, this is also quite lower compared to the pre-reform period rate of growth recorded in the organized manufacturing sector which is a clear sign of deceleration in the rate of growth.

The advocates of the economic policy reforms have advanced the argument that there will be temporary set backs and that too will be in the organized industrial sector because of the stiff competition from foreign companies as well as from the shift of demand in favour of multinational companies, but the stimulus of industrial growth will come from the domestic unorganized sector. It seems that the first part of the argument holds true and is visibly justified from the deceleration that has occurred in the growth rate of Punjab's industrial sector. What is surprising, however, is that Punjab's unorganized industrial sector recorded annual rate of growth of 3.8 per cent during 1991-2001, which is much lower than that has been recorded in the pre-reform period (9.33 per cent per annum). Informal industrial sector thrived during the period of political turmoil in Punjab and lost substantially during the period of peace, although the policy process was expected to unleash the constraints on private productive forces. This is a cause of concern because this sector is the main source of industrial employment, keeping in view the limited capacity of the organized sector which is labour displacing in nature. The comparative analysis of rate of growth of organized and unorganized industrial sector showed differential performance which has a severe impact on the changing character of industrial sector of the economy. Changes in the character of the industrial sector of Punjab can be examined from the relative importance of the organized and unorganized sectors as inferred from the changing composition in terms of their contribution in the overall manufacturing sector presented in Table 2.

Table 2: Sectoral composition of Value of Output of industrial sector of Punjab (1993-94 prices)

Sectors→ Years	Share of registered manufacturing sector	Share of unregistered manufacturing sector
1980-81	57.44	42.56
1985-86	59.81	40.19
1990-91	59.62	40.38
1995-96	66.10	33.90
2000-01	67.41	32.59

Source: As Table 1.

It is a generally held view that when the organized industrial sector gains in terms of its growth and relative share in the GSDP, it is considered as a healthy sign of economic development. From the perusal of table 2, it can be clearly inferred that the share of the organized manufacturing sector has increased from 57.44 to 67.41 per cent, that is, nearly a ten percentage point gain. However, unorganized industrial sector recorded decrease in the relative share from 42.56 to 32.59 per cent, which clearly showed the declining importance of the unorganized sector in the industrial

sector of Punjab economy. This could have been considered a healthy sign of development if rate of growth of the organized manufacturing had accelerated during the nineties. Since the rate of growth of the industrial sector as a whole as well as those of organized and unorganized industrial sectors had decelerated during the nineties, yet the rate of growth of the unorganized industrial sector of Punjab decelerated at a faster rate than the organized sector which is the root cause of the reduction of the relative importance of the unorganized industrial sector of Punjab. It is important to note here that the shrinkage in the relative share of the unorganized sector was faster during the post-reform period compared to the pre-reform period.

Punjab's industrial growth experience, during the pre and post-reform periods is in contrast to the overall rate of growth of the national economy. During the pre-reform period, manufacturing sector has grown at a higher rate compared to the all India manufacturing growth rate and in the post-reform period the trends were reversed. Consequently, the relative position of the organized industrial sector of Punjab has decreased in the national average which can be inferred from a number of indicators presented in Table 3.

Table 3: Punjab's share in Indian industry (Per cent)

Category→ Year	Number of registered factories	Fixed capital	Number of employees	Emoluments	Value of output	Net value added
1980-81	5.89	4.52	3.05	2.49	4.08	3.24
1985-86	5.65	4.58	4.18	3.11	4.29	3.21
1990-91	5.67	4.24	4.91	4.06	4.61	3.6
1995-96	5.10	3.90	4.70	3.60	4.00	2.90
2000-01	5.40	2.06	4.50	3.20	3.80	3.40

Note: Calculations are based on the *Annual Survey of Industries*, Various Issues, CSO, Govt. of India.

The perusal of Table 3 shows that the Punjab's percentage share of registered number of factories in the organized industrial sector of India declined sharply in the post-reform period compared to the pre-reform period. Accumulation of capital, which is the major source of increase in the capacity to produce more output in the economy, has shown a reduction in the relative share of Punjab in the national average. Share of fixed capital decreased from 4.24 per cent in 1990-91 to 2.06 per cent in 2000-01 which clearly indicates dwindling of the relative productive capacity of Punjab's industrial economy in the post-reform period. Somewhat similar trends can be observed from the share of other indicators such as emoluments, value of output and net value added except the number of employees which showed higher labour intensity of the organized industrial sector of Punjab.

When economic reforms were initiated, it had been contemplated that the informal sector of the economy will primarily bear the burden of generating more employment and will boost economic progress. The estimated rates of growth of

both employment and enterprises are presented in Table 4. Perusal of this table clearly shows that post-reform employment and enterprises growth in the unorganized sector of the Punjab economy recorded deceleration.

Table 4: Compound growth rate of employment and enterprises in the unorganized manufacturing sector of Punjab, 1980-1998

Year Sector	1980-1990	1990-1998
Rural enterprises	2.14	1.94
Urban enterprises	2.55	2.06
Total enterprises	2.37	2.01
Rural employment	3.08	2.80
Urban employment	2.36	1.46
Total employment	2.59	1.92

Note: Compound growth rate estimates are based on the data Compiled from *Economic Census*, 1980, 1990 and 1998, Govt. of Punjab

Rural enterprises have grown at 2.14 per cent per annum between the period 1980 and 1990 but the rate of growth declined to 1.94 per cent per annum between the period 1990 and 1998. Similar trends in the growth rate of enterprises located in the urban informal sector of Punjab have been observed. However, urban enterprises registered higher growth compared with the increase in the rural informal sector enterprises. So far as employment is concerned, rural enterprises recorded higher growth during pre and post-reform periods compared to the urban informal sector of Punjab. The overall rate of growth of employment in the informal industrial sector of the Punjab was 2.6 per cent per annum before the economic reform period but it recorded a dramatically lower growth rate, that is, 1.9 per cent in the post-reform period. Empirical evidence and analysis clearly indicates that industrial economy of Punjab has shown retrogression in the growth performance in the post-reform period, contrary to what was expected.

The pertinent question that begs for an explanation here is why has deceleration in industrial growth occurred in the post-reform period. Despite the fact that prerequisites required for higher industrial growth existed, a fact also recognized by the well known experts and national organizations, industrial growth experience belied the high hopes of the supporters of the liberalization policies. A comparative analysis of prerequisites across Indian states reveals that Punjab was the most suitable state for new industrial investment opportunities (Table 5). Punjab was ranked number one among the Indian states in terms of its competitive index at the beginning of new economic policy. This competitive index was computed on the basis of eleven socio-economic variables. The noteworthy feature of industrial growth here is that the high and low ranking states, in terms of competitive index, performed sluggishly in the post-reform period compared to some of the middle ranking states such as Maharashtra. The Human Development Index is now considered in economic thinking as a more appropriate indicator of development

compared to purely income based measures; here too Punjab state has shown quite a higher level of human development. It was ranked number two, just next to Kerala among the Indian states, which clearly indicates that Punjab can legitimately expect to be a highly attractive place for new investment, both domestic and foreign, in the absence of a 'license-quota raj'. Contrary to expectations investment, both domestic and foreign, tended to concentrate in few states in the post-reform period as it was the case during the license-quota raj. Perusal of Table 5 clearly shows that Punjab was among the low priority states in attracting direct foreign investment proposals as well as industrial investment of the private corporate sector of India. It was ranked number twelfth in the priority list accorded by foreign investors and eighth by the Indian private corporate sector during the post reform period. It is clear from the analysis of the table that Maharashtra, Tamil Nadu, Karnataka, Gujarat and Andhra Pradesh accounted for substantial amount of investment, both Indian private corporate and foreign direct investment. This has propelled industrial growth in these five states leaving the others as permanent laggards (Babu 2002). Differential growth performance in the post-reform period across states has attracted the attention of several scholars (Ahluwalia 2002, Bhattacharya and Sakthivel 2004). A rigorous scrutiny of the determinants that have accelerated growth in some of the states but retarded growth in majority of the states in general and Punjab state in particular, is necessary, especially in terms of investment-GSDP ratio, plan expenditure, human resources and quality of infrastructure. Among the fourteen major states, investment-GSDP ratio of the state was 18.70 in 1995-96, which was the lowest and was nearly half of the average of fourteen states.

Table 5: State Wise indicators of competitiveness and investment Proposals

States	State Competitive Index	Human Development Index	FDI Approvals (Numbers) 1991-2004	FDI Approvals Amount Rs. Crore	IIP nos. Aug. 1991-March 2004	IIP proposed investment Rs.crore
Punjab	82.80 (1)	0.58 (2)	199 (12)	2434 (12)	183 (7)	4887 (8)
Kerala	67.71 (2)	0.65 (1)	325 (10)	1552 (13)	67 (11)	2782 (12)
Haryana	63.25 (3)	0.54 (3)	858 (6)	3870 (10)	233 (6)	4318 (9)
Gujarat	60.63 (4)	0.50 (5)	1204 (5)	18837 (4)	438 (3)	14567 (2)
Karnatka	56.19 (5)	0.48 (6)	2467 (3)	24138 (3)	233 (6)	9598 (6)
Tamil Nadu	49.10 (6)	0.52 (4)	2607 (2)	25072 (2)	736 (1)	11273 (3)
Maharashtra	48.77 (7)	0.48 (6)	4816 (1)	51115 (1)	558 (2)	21028 (1)
Andhra Pradesh	46.69 (8)	0.43 (7)	1226 (4)	13745 (5)	434 (4)	10715 (4)
Orissa	46.61 (9)	0.34 (10)	140 (13)	8229 (8)	37 (12)	5444 (7)
Assam	46.41	0.43	NA	NA	12	2433

	(10)	(7)			(14)	(13)
Rajasthan	38.90 (11)	0.29 (12)	341 (9)	3033 (11)	97 (9)	1626 (14)
Madhya Pradesh	36.80 (12)	0.31 (11)	242 (11)	9271 (7)	141 (8)	3160 (11)
West Bengal	34.18 (13)	0.48 (6)	670 (8)	9317 (6)	90 (10)	4047 (10)
Uttar Pradesh	25.27 (14)	0.36 (8)	798 (7)	4917 (9)	353 (5)	9752 (5)
Bihar	22.36 (15)	0.35 (9)	49 (14)	740 (14)	33 (13)	1462 (15)

Source: 1. National Productivity Council research division as quoted in Burange, P.G. (1999), 2. Rani, P. Geetha (1999), and 3. Government of India (2004).

Note: 1. NA implies not available. 2. Figures in parentheses indicate the rank.

However, Plan expenditure, as a percentage of GSDP was 5.69 during 1980-81 to 1990-91, which declined to 3.94 during the period 1991-92 to 1997-98. So far as human resources, in terms of literacy rate, are concerned, it has slowed down in the post reform period. Punjab continues to show the highest index of infrastructure both in the pre and post-reform period, but the index declined from 193.4 in 1991-92 to 185.6 in 1996-97. However, the quality of infrastructure and human resources are difficult to judge from indicators which are based on physical characteristics. Low level of investment, decline in the planned expenditure and lack of strategic human skills as well as infrastructure are the major factors that do have a bearing on the slow down in the industrial growth in Punjab (Ahluwalia, 2002, Singh and Singh, 2002).

4. Rural Industrialization Strategy

Punjab is known as the food bowl of India. Agricultural sector of the state was developed to solve the food shortage of the country as well as to reduce foreign dependence on food in the early sixties. The green revolution was ushered in Punjab due to the adoption of high yielding varieties of seeds, chemical fertilizers, irrigation and supportive institutional infrastructure. During the early green revolution period, farm income received a big boost irrespective of farm size. Remunerative prices and assured market were the two fundamental factors that perpetuated wheat and paddy rotation over a period of 40 years. As a consequence, wheat and paddy become the two predominant crops of Punjab and the state contributed 21.78 per cent of wheat and 12.22 per cent of paddy in all India production in 2002-03. The Punjab state produced surplus food grains and contributed to the national pool for nearly 70 per cent of the wheat and 42 per cent of the paddy in 1992-93, which has substantially decreased in the late nineties (Ghuman 2001). This clearly indicates the declining importance of Punjab's food grains in the national economy. The content of research and development and use of family labour declined due to rise in the intensity of farm machinery, hired labour and fertilizer and pesticides which has resulted in high cost agricultural production and decline in the agricultural household income since the early eighties (Sidhu and Singh 2004). This is a clear

case of technological constraint resulting in diminishing returns to scale. On the technological plane, solutions exist which have a capacity to raise productivity multiple times and reduce per unit costs of agricultural produce through harnessing the biotechnological revolution. This requires massive public investment in frontline technologies and strengthening of institutional infrastructure which can interact closely with the individual farmers because the small sized farmers do not have a capacity to spend resources on R&D and essential training of the manpower. However, the liberalization regime has left the farmers to fend for themselves or depend on the profit oriented agribusiness firms. Rising costs along with stagnant technology and near freezing of the minimum support price of wheat and paddy, which turned the already adverse terms of trade from bad to worse, severely reduced returns on food grain production. The reduction of differentials between returns and cost of production, increasing uncertainty of weather as well as dependency on borrowing on credit at a higher rate of interest from informal lenders were the reasons responsible for increasing indebtedness among the farmers of Punjab (Shergill, 1998, Ghuman, 2001, Gill, 2004). This has compounded problems to the extent that farmers of Punjab have resorted to committing suicide (Gill, et al 2000).

Keeping in view the evidently growing agricultural crisis, government of Punjab has shown early awareness and appointed an expert committee under the chairmanship of S. S. Johl in 1985 to diagnose the problem and suggest suitable remedial policy measures. The Johl committee put forward the idea of diversification of agriculture from the existing wheat-paddy cropping pattern (Government of Punjab 1986). Diversification aims to transfer area from cereal production to remunerative crops such as fruits, vegetables and pulses not only to increase income of the farmers but also to reduce environmental degradation for the long-term sustainability of Punjab agriculture. Agriculture diversification based rural industrialization growth strategy has been prompted, based on its successful experience in the early eighties in many Southeast Asian countries. Thus, emulating the success story of diversification through rural industrialization and increasing rural incomes in several Southeast Asian countries seems to be a fascinating policy option for the state of Punjab. However, the proposed agricultural diversification strategy of agriculture completely ignored the fundamental ingredients of the strategy which were the corner stone of success in Southeast Asia. The diversification strategy was based on the widely spread misinformation by the multilateral financial institutions and independent experts who attributed the success of diversification in Southeast Asia to the use of market forces (Jomo, 2001; Wade, 1990). Therefore, this diversification strategy, which relied upon market responses and was expected to get a cold response from the government of Punjab, however, received enthusiastic response from the individual farmers. The cruel response of the market though soon dampened the enthusiastic response of the farmers and they had no other option left but to go back to the well-known wheat-paddy cropping pattern. In a recent attempt, the government of Punjab has taken the lead to promote diversification of agriculture while adopting the path of contract farming. The government of Punjab has been playing the role of an intermediary between the farmers and agribusiness firms. However, the very design and implementation of contract farming scheme leaves small sized farmers at the mercy of the private firms

which have secured monopoly position in the market. Farmers, who have opted for contract farming with the private agribusiness firms, have filed complaints with the Punjab governments' agriculture department about the way agribusiness firms exploited them in terms of providing lower prices and charged them for services without rendering any service. These complaints of the farmers were investigated by the governments' agriculture department and found to be correct. Contract based on purely private profit considerations and market orientation in the absence of an enforcement agency acted against the farmers. Thus, farmers have no choice but continue perpetuating the wheat-paddy cropping pattern (Gill, 2004).

Diversification of agriculture of Punjab is a desired goal for the transformation of agrarian economy to an industrialized one. The transformation experience of the developed countries had shown that the agricultural sector of the economy, in the process of transformation, provides surplus resources to the industrial sector and marginalize the agriculture sector of the economy. Thus, decline in the share of real incomes in the agriculture sector was a universal phenomenon and was experienced by the OECD countries and middle-income countries. As long as the processing activities of agricultural production are taking place away from the farm gates, the agricultural sector will have the potential of exploitation and continue to face the decline in rural incomes (Timmer, 1988). Contrary to this, the experience of diversification of agriculture and rural industrialization in the Southeast Asian countries in general and Taiwan in particular, has not only integrated the agricultural sector with industry but also generated a substantial rise in rural incomes. Agricultural produce was processed on the farm gates and surplus was ploughed back to expand rural industrial activities as well as raising the level of living of the people living in the countryside. A fundamental factor in the success of Taiwan's agricultural diversification experience was the role of farmers' associations. The farmers' association of Taiwan was nothing but the farmers' cooperative in another name, responsible for controlling all the economic activities: from credit to production, processing and marketing (Moore, 1993). Therefore, the value addition was done through processing activities and was realized through marketing activities and surpluses redeployed for the welfare of the association/cooperatives. This process very successfully eliminated the intermediary agency which is the major source of exploitation and of absorbing surpluses without looking after the interest of the primary producers. However, it is important to note here that the state in the Southeast Asian countries played a crucial role in providing essential institutional infrastructure and investment in rapid technical change to raise agricultural output and rural incomes. Elimination of the high rents charged by the middleman and endogenous technological progress has the power to transform agriculture into an industry along with raising rural incomes. This is only possible if the organisation of production is changed from the individual to a cooperative. The cooperatives suggested here are not the bureaucratic-state controlled cooperatives, but modern cooperatives strictly based on membership and which adhere to market rules with accountability as an endogenous tool of organizational behaviour. There are many examples of such cooperatives that have succeeded in India too. Amul is a remarkable success story of small rural milk producers' cooperative which is now highly diversified into consumer products. The creative organization of Amul

contributed to the generation of surpluses after the elimination of the intermediary agency and these surpluses have been utilized for developing local infrastructure and investment in the technology to raise the productivity of the farmers' output (Patibandla and Sastry 2004). Another important example of farmer's cooperative is in Narayangao area in Junnar taluka in Maharashtra state for industrialization of grape cultivation, which was established in 1991. There are 45 members and they pooled 130 acres of vineyards to export table fresh grapes to the European markets. This cooperative has diversified both marketing and product related activities. It has succeeded in raising the level of rural income both of the farmers and rural labour. The reduction of risk through collective action, elimination of middlemen and investment in technological progress were the central factors which contributed to the success story of the transformation of farmers as business enterprises (Rath 2003).

Punjab government and farmers' organizations which are striving to transform farming through diversification of agriculture have a compelling need to learn lessons from the success story of the Southeast Asian countries as well as from well known Indian examples. Farmers' organizations so far have successfully organized agitations to secure some concessions for survival but completely ignored their collective role in generating economic enterprises to reduce the role of middleman. Post-reform deceleration of industrial growth and shying away of both foreign and Indian private corporate investors to invest in Punjab's industrial economy are the other hard lessons which clearly point out that local investment efforts are direly needed to transform the economy. Local investment efforts have a capacity to crowd in both foreign and Indian investment. Therefore, a strategy that needs to be adopted by the government of Punjab is not to offer purely private and market based solutions, but lead farmers' organizations to organize production, processing and marketing activities. This requires essential suitable institutional and infrastructural arrangements which should encourage farmers to process their produce at the farm gates and eliminate the mark up of the middleman. It needs to be suggested here that the government of Punjab should enact a suitable policy and provide exclusive industrial parks as agro-processing zones for farmers' cooperatives on a similar pattern as have been provided and offered to foreign and domestic private industry.

5. Concluding Remarks

Punjab economy is passing through a phase of unprecedented economic crisis. Industrial sector of the Punjab economy has clearly recorded deceleration in the post-reform period. This is contrary to what was expected at the time of adopting the market-oriented reforms in the country. Despite the fulfilment of the required prerequisites for industrial investments, Punjab economy could not receive expected investment - foreign or domestic. The diversification of agriculture through purely market oriented and contract farming with the private agribusiness firms has failed miserably. The only alternative option left for self-sustained economic growth is to change the organizational structure and involve local people to organize economic activities and eliminate the rent-seeking middleman. Involvement of the farmers in agribusiness activities through cooperatives as production, manufacturing and

marketing organizations on the pattern of Southeast Asian countries such as Taiwan could be the best strategy for self-sustaining growth. This also has the capacity to crowd in private investment. However, the role of the government is crucial in terms of providing essential institutional and infrastructural arrangements. Technological progress for agricultural production and manufacturing industries is the crucial link for any strategy to succeed and this must be the responsibility of the state on the same pattern of Southeast Asian countries. The state should reinvent itself to provide the role of a leader in terms of governing the markets as has been suggested in the Post-Washington Consensus, and harness for growth the complementariness of the state and the market. The will and capacity of the government does matter in transforming the rural economy and for increasing rural employment and income through rural industrialization based on diversified agriculture.

Bibliography

- Ahluwalia, M.S., (2002) 'State-Level Performance under Economic Reforms in India', in Anne O. Krueger (ED.) *Economic Policy Reforms and the Indian Economy*, New Delhi: Oxford University Press.
- Babu, S., (2002) 'Competition and Competitiveness among States', *Economic and Political Weekly*, Vol.37, No.13.
- Bhattacharya, B.B. and S. Sakthivel, (2004) 'Regional Growth and Disparity in India: Comparison of Pre- and Post-Reform Decades', *Economic and Political Weekly*, Vol. 39, No.10.
- Burange, P.G., (1999) 'Industrial Growth and Structure of Manufacturing Sector of Maharashtra', *Economic and Political Weekly*, Vol.34, No.9.
- Ghuman, R.S., (2001) 'WTO and Indian Agriculture: Crisis and Challenges-A Case Study of Punjab', *Man & Development*, June.
- Gill, Anita, (2004) 'Interlinked Agrarian Credit Markets: Case Study of Punjab', *Economic and Political Weekly*, Vol.39, No.33.
- Gill, Sucha Singh, (2004) 'Contract Farming Hurts Farmers: Area under Wheat, Paddy Increases', *The Tribune*, Chandigarh, September 27.
- Gill, Sucha Singh et al, (2000) *Suicides in Rural Areas of Punjab: A Report*, Patiala: Association for Democratic Rights (in Punjabi).
- Government of India, (2004) *SIA Statistics April 2004*, New Delhi: Ministry of Commerce and Industry.
- Government of India, (2004) *Economic Survey*, New Delhi: Ministry of Finance.
- Government of India, (2002) *Annual Survey of Industries*, New Delhi: Central Statistical Organization (Various issues).
- Government of Punjab, (1986) *Report of the Expert Committee on Diversification of Agriculture in Punjab*, Chandigarh: Government of Punjab.
- Government of Punjab, (1998) *Economic Census*, Chandigarh: Economic and Statistical Organization (Various issues).
- Harberger, A.C., (1998) 'A Vision of the Growth Process', *American Economic Review*, Vol. 88, No.1.

- Hayami, Yujiro, (2003) 'From Washington Consensus to the Post-Washington Consensus: Retrospect and Prospect', *Asian Development Review*, Vol.20, No.2.
- Hoff, K. and Joseph E. Stiglitz, (2004) 'After the Big Bang? Obstacles to the Emergence of the Rule of Law in Post-Communist Societies', *American Economic Review*, Vol.94, No.3.
- Jomo, K.S., (2001) 'Rethinking the Role of Government Policy in Southeast Asia', in Joseph E. Stiglitz and Shahid Yusuf (eds.) *The East Asian Miracle*, New York: Oxford University Press.
- Mohan, Rakesh, (2002) 'Small-Scale Industry Policy in India: A Critical Evaluation', in Anne O. Krueger (ed.) *Economic Policy Reforms and the Indian Economy*, New Delhi: Oxford University Press.
- Moore, M., (1993) 'Economic Structure and the Politics of Sectoral Bias: East Asian and Other Cases', *Journal of Development Studies*, Vol.29, No.4.
- Patibandla, M. and Trilochan Sastry, (2004) 'Capitalism and Cooperation: Cooperative Institutions in a Developing Economy', *Economic and Political Weekly*, Vol.39, No.27.
- Rani, P. Geetha, (1999) 'Human Development Index in India: A District Profile', *Arth Vijnana*, Vol. XLI, No. 1.
- Rath, S., (2003) 'Grape Cultivation for Export: Impact on Vineyard Workers', *Economic and Political Weekly*, Vol.38, No.5.
- Shergill, H.S., (1998) *Rural Credit and Indebtedness in Punjab*, Chandigarh: IDC.
- Sidhu, R.S. and Sukhpal Singh, (2004) 'Agricultural Wages and Employment', *Economic and Political Weekly*, Vol.39, No.37.
- Singh, Lakhwinder and Sukhpal Singh, (2002) 'Deceleration of Economic Growth in Punjab: Evidence, Explanation, and a Way-Out', *Economic and Political Weekly*, Vol.37, No.6.
- Srinivasan, T.N. and Suresh D. Tendulkar, (2003) *Reintegrating India with the World Economy*, New Delhi: Oxford University Press.
- Stiglitz, Joseph E., (2002) *Globalization and Its Discontents*, New York: W.W. Norton & Company Ltd.
- Timmer, C.P., (1988) 'The Agriculture Transformation', in H. B. Chenery and T.N. Srinivasan (eds.) *Handbook of Development Economics* Vol.1, Amsterdam: Elsevier Science Publishers.
- Wade, R., (1990) *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*, Princeton: Princeton University Press.

The Green Revolution in Punjab, India: The Economics of Technological Change

Nirvikar Singh & Deepali Singhal Kohli

University of California, Santa Cruz and New Delhi, India

This paper addresses the question of what explains the relatively rapid diffusion of 'Green Revolution' technology in Punjab, versus the rest of India. To construct an answer, the paper reviews studies that have attempted to explain the pattern of rapid innovation in Punjab agriculture, and suggests that there is no single explanatory variable that stands out in comparing Punjab with other Indian states. It is argued that relatively high levels of innovation and investment in Punjab agriculture can be understood in terms of three categories of variables: infrastructure, information and incentives.

1. Introduction

The state of Punjab in India has, in the last few decades, been one of the world's most remarkable examples of agricultural growth. Growth in Punjab has been closely associated with the well-known 'Green Revolution', which saw the development and adoption of new, high-yielding varieties (HYVs) of wheat, rice and other food crops. The impressive agricultural growth in Punjab is exemplified by the increase in the state's wheat production from 1.9 to 5.6 million tons during the years 1965 through 1972.¹ Growth in rice production has been equally strong.

Numerous state level studies have attributed Punjab's agricultural growth experience to rapid technology diffusion in the state. These studies have argued that economic growth can occur as a result of technological change or an increase in the inputs used in the production process. However, the greatest potential for development lies in the productivity advances associated with technological innovations, rather than just the increased use of inputs.

The question arises as to what explains the relatively rapid diffusion of new technology, and associated changes in the quantities and kinds of inputs used, in Punjab, versus the rest of India. To construct an answer to this question, this paper reviews studies that have attempted to explain the pattern of rapid innovation in Punjab agriculture during the Green Revolution period. We suggest that there is no single explanatory variable that stands out in comparing Punjab with other Indian states. However, we argue that relatively high levels of innovation and investment in Punjab agriculture can be understood in terms of three categories of variables: infrastructure, information and incentives (which we refer to as the 'three I's'). We use this conceptual framework in our review and analysis.

The remainder of the paper is organized as follows. Section II presents basic statistics as evidence in support of the claim that levels of adoption of innovations in

Punjab have been higher than in other states. Section III discusses several reasons that have been suggested for interstate differences in the level of adoption.² Section IV reviews the explanations that have been specifically advanced for greater adoption of technological inputs by farmers in Punjab. Section V summarises the findings of this study, discusses them in terms of the 'three I's', and briefly attempts to relate them to economic theories of technological change. In our conclusion, we also briefly discuss the current state of Punjab agriculture, and potential future problems.

II. Technology Adoption in Punjab

The statewide growth rates of production of food grains between the triennia ended 1961-62 and 1985-86 are presented in Table 1. During this period, Punjab experienced the highest annual growth rate of food grain output among all the states of India. In fact, Punjab's annual growth rate of food grain output of 6.4 per cent was almost two and a half times that recorded at the all-India level. In Punjab, the high level of food grain production resulting from these growth rates has also been accompanied by high levels of adoption of technological innovations such as high yielding varieties (HYVs) of seeds, chemical fertilisers, pesticides, tubewells, diesel pumpsets, and tractors.

Table 1: Annual rate of increase in food grain production 1961-62 to 1985-86

State	Percentage growth rate
Punjab	6.4
Haryana	4.7
Gujarat	3.4
Uttar Pradesh	3.2
Rajasthan	2.4
Assam	2.3
West Bengal	2.2
Karnataka	2.1
Andhra Pradesh	2.0
Orissa	2.0
Madhya Pradesh	1.8
Maharashtra	1.7
Bihar	1.6
Tamil Nadu	1.0
Kerala	1.0
All India	2.6

We have data on percentage of HYVs used in two sub-periods. In both the periods from 1974 to 1976 and from 1983 to 1985, the percentage of HYV of seeds in the total area under food grain was the highest in Punjab, 73 per cent and 95 per cent respectively (Table 2). Once again, these percentages are much higher than the all-

India figures. It can be argued that comparing Punjab's performance to that of India as a whole includes some states that are not comparable with Punjab in terms of size, climate, and development. However, even when compared to similar states, such as Haryana, Punjab has fared far better. Moreover, in the case of rice, which occupied about 29 percent of the total cropped area in Punjab in 1981-82, the percentage of that area under HYVs of rice was 95, while in states like Assam, Orissa, and West Bengal where rice covered 50 per cent or more of the total cropped area, the percentage under HYVs of rice was less than 50.³

Table 2: Percentage of HYV of seeds in the total area under food grain

States	1974-76	1983-85
Punjab	73	95
Haryana	54	81
Gujarat	41	61
U.P.	39	60
Rajasthan	13	31
Assam	18	46
W.B.	23	41
Karnataka	28	48
A.P.	39	66
Orissa	10	39
M.P.	18	38
Maharashtra	22	51
Bihar	29	60
T.N.	62	80
Kerala	27	40
All India	31	54

Source CMIE Vol.2: States, Sept. 1987

As in the case of the adoption of HYVs of seeds, Punjab also attained the highest level of chemical fertiliser consumption. Both the level of fertiliser consumption per hectare of gross cropped area and the level of fertiliser consumption per operational holding were the greatest in Punjab among all Indian states, for the years 1971-72 and 1985-86 (Table 3). In the latter year Punjab was also the highest consumer of pesticides both in terms of tonnes per lakh⁴ hectares of gross cropped area and in terms of tonnes per lakh operational holdings (Table 3). Even Haryana, which is very similar in terms of size, climate, and development and was second only to Punjab in the consumption of both fertilisers and pesticides, consumed much lower levels than Punjab. In the years 1979-80 and 1984-85, Punjab also had the highest number of registered tractors per lakh hectare of gross cropped area (Table 4).⁵

Table 3: Consumption of Fertilisers and Pesticides

State	Fertilisers (NPK) per ha. of GCA (kg)		Per operational holding (kg)		Pesticides per lakh ha. of GCA (tonnes) 1985-86	per lakh operational holdings (tonnes) 1985-86
	1971- 72	1985- 86	1971- 72	1985- 86		
Punjab	73.05	157.4	210	593	112.68	423.85
Haryana	24.06	65.5	91	275	97.25	267.26
Gujarat	18.20	40.5	75	167	45.73	144.28
U.P.	26.32	78.7	30	104	34.05	66.85
Rajasthan	3.49	11.6	19	46	11.82	51.34
Assam	3.12	4.7	5	7	25.63	33.47
W.B.	18.77	52.2	22	66	88.65	81.30
Karnataka	14.69	48.4	47	113	27.61	66.67
A.P.	21.87	66.3	55	108	101.69	174.97
Orissa	7.60	14.7	14	39	22.81	33.43
M.P.	5.57	19.1	22	57	15.34	44.74
Maharashtra	11.38	31.7	49	83	14.44	38.23
Bihar	9.40	48.8	14	42	17.09	14.83
T.N.	44.88	36.2	65	87	128.20	129.70
Kerala	40.37	49.8	23	29	64.57	23.11
All India	10.22	48.4	23	89	41.00	68.78

Source CMIE, Sept. 1993

GCA: gross cropped area

Note that the 1971-72 figures are found using the number of operational holdings and the gross cropped area of 1970-71.

Table 4: Tractors, Diesel Pumpsets and Energised Tubewells (per lakh ha. of GCA)

States	Tractors		Diesel Pumpsets		Energised Tubewells	
	1979-80	1984-85	1968-69	1984-85	1968-69	1985-86
Punjab	2570	4642	730	7512	1486	10756
Haryana	448	1897	87	2507	1304	7601
Gujarat	322	624	2150	7449	420	3221
U.P.	457	878	468	6974	418	3054
Rajasthan	196	190	88	348	88	1384
Assam	148	199	n.a.	32	n.a.	127
W.B.	164	184	593	2376	20	851
Karnataka	141	225	273	488	809	4124
A.P.	75	160	280	1250	906	5198
Orissa	27	32	78	361	16	627
M.P.	36	152	118	523	118	2297
Maharashtra	119	179	604	1159	590	4740
Bihar	82	165	244	1689	435	1973
T.N.	132	180	869	1833	5318	16769
Kerala	233	232	310	2000	870	8646
All India	230	426	445	2168	672	3753

Source CMIE Sept. 1993

GCA: Gross Cropped Area, n.a.: not available

GCA figures for 1970-71, 1980-81 and 1985-86 are used in the calculations.

Punjab has not always been the highest consumer of all technological innovations. For instance, in 1984-85, more diesel pumpsets per lakh hectare of gross cropped area were installed in Punjab than in any other state. However, in 1968-69, although Punjab was amongst the states with the highest levels of installations of diesel pumpsets, it was exceeded by Gujarat both in terms of installations per lakh hectares of gross cropped area and per lakh operational holdings, and by Tamil Nadu in terms of installations per lakh hectares of gross cropped area (Table 4), as well as by Maharashtra in terms of installations per lakh operational holdings (not shown). The shift in position from 1968-69 to 1984-85 reflects the higher level of technology diffusion in Punjab. In 1968-69, Tamil Nadu had a greater number of tubewells per lakh gross cropped area (Table 4) and per lakh operational holdings than Punjab. In the same year, Haryana also had more tubewells per lakh operational holdings than Punjab. By 1985-86, there were more tubewells per lakh operational holdings in Punjab than in any other state, but Punjab was still second to Tamil Nadu in terms of tubewells per lakh hectares of gross cropped area. All the same, the data support the statement that Punjab experienced high levels of technology adoption in this period.

III. Inter-State Differences

Several reasons have been postulated for the interstate differences in adoption levels of agricultural innovations. Some of these reasons are specific to the innovations. For instance, the high levels of adoption of HYVs of wheat in Punjab have been attributed to two factors. Sen (1974) claims that (1) wheat seeds responded better than rice or *jowar* (sorghum) seeds to supporting inputs and (2) wheat seeds have been adapted to local conditions with the help of agricultural research facilities. The initial success of the crop provided a strong demonstration effect that induced the farmers to adopt the HYV of wheat. These reasons may help explain the differences in the percentage of HYVs in total cropped area under different food grains, but the higher level of adoption of all the HYVs of seeds in Punjab remains unexplained. Furthermore, the data indicate that rice yields in Punjab also rose rapidly in the period from 1965 to 1985.⁶

As noted earlier, in 1981-82, 95 per cent of the gross cropped area in Punjab under rice used HYVs. In the same year, of the total area covered by *bajra* (millet), 61.7 per cent was under HYVs of *bajra*. In comparison, in Rajasthan and Uttar Pradesh, where *bajra* also occupied a very small portion of the total cropped area, 23.8 per cent and 9.3 per cent, respectively, of total area covered by *bajra* was under HYV's of *bajra*. Thus, other factors, such as levels of supporting inputs, infrastructure development, and credit availability, may help determine the interstate differences in the levels of adoption of technological innovations.⁷ In a study on sources of interstate differences in fertiliser use in India, Sharma (1993) finds that of the 86 per cent difference in fertiliser use between Punjab and all other states, 70 per cent can be explained by the following four variables: area occupied by HYVs, irrigation, retail outlets, and credit availability.

In other words, differences in rural institutional factors may determine the interstate differences in levels of technology adoption. In the process of development, rural institutions undergo change, which in turn alters incentives and access to factors of production, including innovative technological factors. The institutional characteristics considered by Zarkovic (1987) are (i) human capital, (ii) access to capital for innovation, (iii) price incentives, (iv) size of cultivated holdings, and (v) ownership of land.⁸ We discuss each of these in turn.

(i) One of the prerequisites of technology adoption is that a farmer should be aware of the benefits the new technology may bring. Thus, a farmer should be able to understand potential benefits from change. He should be able to assimilate new techniques and adopt new practices. This ability develops with increased education. Economists (e.g. Evenson, 1974) have suggested that farmers with better education tend to be earlier and more efficient adopters of modern technologies. Global studies indicate that education plays an important role in agricultural development. For example, Rosenzweig (1978) found that the probability of adoption of HYV of seeds in Punjab was positively related to education. In contrast, Fleigel *et al* (1968) argued that literacy and not education is significant for village-level adoption, because literacy is a basic skill to decipher messages in written form where as education is a long conditioning process during which the individual acquires different attitudes.

Among indicators of education are literacy rates, government expenditure on education per capita, and class enrolment ratios. For the year 1981, compared to Punjab, literacy rates - both rural and effective - were higher in Gujarat, Maharashtra, Tamil Nadu, and Kerala, while state government expenditure on education per capita was greater in Kerala (Table 5). The enrolment ratios in classes 1-5 of Gujarat, Maharashtra, and Tamil Nadu were above that of Punjab for 1983-84, while the enrolment ratio in classes 6-8 were higher in Tamil Nadu and Kerala than in Punjab. In contrast, the levels of adoption of HYVs of seeds, chemical fertilisers, pesticides, tractors, and diesel pumpsets were much higher in Punjab as seen from Tables 3 and 4. Only in the case of the number of tubewells adopted was the level of adoption in Tamil Nadu in terms of number per lakh hectare of gross cropped area higher than in Punjab. Thus, an inference we may draw is that education in general and literacy in particular did not *by themselves* play a prominent role in promoting the adoption of technological innovations.⁹

Table 5: Levels of Education

State	Literacy rate(%)		State govt. exp. on education per capita (Rs) 1980-81	Enrolment ratios 1983-84	
	Rural	Effective		Class 1-5 (6-11 yrs)	Class 6-8 (11-14 yrs)
Punjab	41.7	41	82.8	103.7	63.5
Haryana	37.3	36	56.5	88.9	54.9
Gujarat	43.6	44	53.1	111.7	55.3
U.P.	28.5	27	31.7	80.2	43.3
Rajasthan	22.5	24	42.6	74.8	36.8
Assam*	n.a.	n.a.	53.8	62.9	47.6
W.B.	40.2	41	45.6	96.0	54.5
Karnataka	37.6	38	46.6	86.9	59.9
A.P.	27.9	30	43.1	97.3	39.4
Orissa	37.8	34	41.0	89.5	36.5
M.P.	26.3	28	33.0	80.3	35.0
Maharashtra	45.7	47	60.8	125.9	59.9
Bihar	27.5	26	33.8	82.3	30.5
T.N.	45.0	47	50.0	129.8	65.3
Kerala	80.3	70	65.3	96.8	90.2
All India	36.1	36	46.1	93.4	48.9

Source CMIE, States 1993.

* Including Meghalaya and Mizoram

Effective literacy rates exclude 0-4 age group.

(ii) Financial constraints are a major impediment to adoption of technological innovations. Agricultural investments are financed through accumulated savings or

capital markets. Differences in access to these could lead to differences in the levels of adoption of innovations. Although rural savings rates have been increasing, they are typically not sufficient for major innovations. Thus access to financial markets is critical to most farmers. The main sources of credit in rural India are loans advanced by agricultural co-operative societies and village moneylenders.

An indicator of the ease with which farmers had access to credit would be the number of lending institutions per individual. In 1985, Punjab had the greatest number (8.8) of bank offices of scheduled commercial banks per lakh population (Table 6). In 1984, the percentage of borrowing members in primary agricultural societies was the highest (61.9 per cent) in Punjab. The amount of institutional medium and long-term loans per operational holding was also the highest in Punjab in the years 1980-81 and 1984-85. However, in the same years, Kerala advanced more institutional medium and long-term loans per hectare of gross cropped area. Compared to all the other states (except Kerala), Punjab still had the highest amount of institutional medium and long-term loans per hectare of gross cropped area. This could imply that Kerala is just an outlier. The mere fact that there were more bank offices per lakh of population, a greater percentage of borrowing members in co-operative societies, and more institutional medium and long-term loans advanced indicates that credit was easily and abundantly available to Punjabi farmers. Case study evidence such as that of Leaf (1984), who describes how credit cooperatives completely replaced private moneylenders between 1965 and 1978 in a particular Punjab village, supports the importance of this factor in making rapid technological change possible in Punjab. Hamid (1981) makes a similar point about Punjab's general experience with credit cooperatives, citing Randhawa (1974) in tracing their development in Punjab back to the 1950s.¹⁰

Table 6: Indicators of Credit Availability

State	1985(a)	1984(b)	1980-81(c)	1984-85(c)
Punjab	8.8	33.7	396.53	475.2
Haryana	5.9	40.7	253.96	347.92
Gujarat	6.2	45.3	62.94	136.13
U.P.	5.0	48.4	107.7	171.10
Rajasthan	6.7	26.5	47.49	65.98
Assam	3.0	32.1	4.53	30.83
W.B.	3.6	31.3	43.27	60.45
Karnataka	8.0	20.7	79.35	209.10
A.P.	5.8	22.1	106.47	158.23
Orissa	5.2	27.0	122.60	129.60
M.P.	5.8	13.6	36.07	62.64
Maharashtra	5.1	36.5	70.28	125.24
Bihar	4.8	29.6	42.11	107.02
T.N.	5.2	37.2	100.38	296.62
Kerala	5.5	53.2	561.94	779.34
All India	5.6	33.4	249.20	148.58

Sources: CMIE, States, Sept. (1987) and Rath, N. (1989)

(a) Rural distribution of bank offices of scheduled commercial banks, Sept. 1985, per lakh of population.

(b) Primary agricultural co-operative societies percentage of borrowing members, June end 1984.

(c) Total institutional medium and long-term loans (Rs. per hectare of gross cropped area).

Table 7: Credit Subsidy

States	Rs. per ha. of GCA		As per cent of SDP		Rs. Per operational holding	
	1980-81	1985-86	1980-81	1985-86	1980-81	1985-86
Punjab	43.12	89.41	1.26	1.57	283.12	587.17
Haryana	38.54	85.89	1.29	1.84	208.42	356.33
Gujarat	33.33	67.92	1.48	3.04	121.64	238.62
U.P.	26.07	53.82	0.93	1.3	35.95	71.68
Rajasthan	16.35	37.76	1.43	1.95	63.20	143.86
Assam	4.75	23.31	0.14	0.41	6.96	36.55
W.B.	28.61	62.30	0.88	1.04	37.07	80.90
Karnataka	36.68	98.88	1.63	3.12	90.72	224.00
A.P.	46.37	104.55	1.80	2.68	74.34	153.72
Orissa	18.53	42.23	0.99	1.34	48.66	108.9
M.P.	17.38	37.30	1.29	1.82	58.04	112.95
Maharashtra	34.44	76.42	1.85	2.91	100.78	193.44

Source: As Table 6.

Financial constraints can be encountered not only in the form of lack of access to lending institutions, but also in the form of low incentives or high costs of undertaking loans. Incentives that encourage farmers to seek credit can be provided by schemes that reduce the cost of loans, such as credit subsidies. In the years 1980-81 and 1985-86, the Punjab government advanced the most credit subsidy per operational holding (Table 7). However, in the same year, several other states offered a higher credit subsidy per hectare of gross cropped area and as percentage of state domestic product. These mixed findings, when put together with consistently high level of adoption of technological innovations per operational holding as well as per hectare of gross cropped area, suggest that credit subsidies alone may not have played an important role in reducing financial constraints in Punjab.¹¹ However, this does not imply that such incentives did not and will not motivate investments in other states, especially in combination with other favourable conditions. Punjabi farmers, with a large investible surplus resulting from the high rate of agricultural growth, may have had less need for investment-encouraging credit subsidies. The availability of a relatively large investible surplus to Punjabi farmers is evident from the high per capita income from agriculture in Punjab. In the period 1979-80 to 1981-82, this per capita income from agriculture was Rs. 1759 in Punjab, and Rs. 1463 in Haryana, while the all India average was Rs. 710 (CMIE: States, Sept. 1987).

(iii) Price incentives in the form of price subsidies can stimulate the adoption of technology. Direct price subsidies set by the central government are the same across states. Thus, this variable does not explain the interstate differences in the technology adoption levels. However, interstate variation in the responsiveness to price incentives may partially determine the state difference in the levels of technology adoption. Zarkovic (1987) found that the price had a greater positive influence in the adoption of the HYV package of technology, especially in the wheat and rice regions of Punjab. However, this explanation just leads us to rephrase the basic question posed, regarding higher rates of innovation in Punjab: what were the special characteristics of Punjab that led to greater price responsiveness?

Price incentives could also be offered indirectly through schemes like special tax concessions, credit subsidies on the adoption of a particular innovation, or greater availability of and subsidies on complementary goods and services, e.g. power supply and irrigation facilities. Since 1960-61, per capita power consumption has been the greatest in Punjab (Table 8) among all the states. The high consumption of power could reflect greater availability. According to the National Sample Survey, all villages in Punjab were electrified in 1976-77 (CMIE, States, Sept. 1987). Higher consumption could also be a direct result of lower costs of consumption. Punjab has been heavily subsidising electricity. Even in 1985, the average electricity rate in Punjab (13.5 paise per KWH) was less than half of that in Haryana (28.7 paise KWH), though Andhra Pradesh, Karnataka and Tamil Nadu had even lower rates. Similarly, among those states without all (or most of) their net sown area falling in high rainfall regions Punjab had the greatest percentage of net sown area with assured sources of water in 1978-79 (CMIE, States, 1987).

Table 8: Agriculture, per capita utilities power consumption (KWH)

States	1960-61	1970-71	1980-81	1985-86
Punjab	6.7(a)	34.7	112.0	165.2
Haryana	(b)	30.3	74.9	105.7
Gujarat	1.0	5.4	39.7	50.7
U.P.	2.7	8.2	25.2	33.7
Rajasthan	0.2	4.4	30.0	40.1
Assam (c)	n.a.	n.a.	0.2	0.4
W.B.	n.a.	0.5	1.3	2.3
Karnataka	1.2	6.2	10.7	33.2
A.P.	1.5	9.5	18.4	51.9
Orissa	n.a.	0.5	2.3	4.2
M.P.	0.1	1.6	6.7	14.8
Maharashtra	0.4	7.2	27.7	58.3
Bihar	0.4	1.2	6.3	11.4
T.N.	11.4	31.4	49.2	58.3
Kerala	1.1	2.0	3.2	3.9
All India	1.9	8.3	21.4	34.3

Source: CMIE: States Sept. 1987.

(a) Includes Haryana and Chandigarh

- (b) Included under Punjab
- (c) Includes Meghalaya and Mizoram

Inter-state differences in such indirect price incentives could be partly responsible for the different levels of technology adoption across states. As already discussed above, credit subsidies by themselves did not seem to have played a critical role in promoting investments on agricultural innovations in Punjab.

(iv) With respect to farm size, HYVs of seeds are scale neutral and high yields can be realised on any size farm.¹² However, the supporting technologies in the form of irrigation and machinery, i.e., fixed cost inputs, do lead to economies of scale.¹³ Thus only farms of at least a particular size are capable of reaping the greatest benefits from the new technology. Farmers with farms this size or larger may have more incentive to adopt supporting technology. The appropriate size of operational holdings undertaking innovations associated with the Green Revolution ranges from 3 to 10 hectares.¹⁴ The Indian government classifies farms of these sizes as medium and large. The 1971 Agricultural Census indicates that 48.5 per cent of the cultivated area in Punjab and Haryana fell in this category, compared to 38.2 per cent in Uttar Pradesh.¹⁵

Data from the All India Report on Inputs Survey of 1976-77 also lends support to the hypothesis that medium to large size farms were more likely to adopt technological innovations than smaller size farms.¹⁶ In 1977, medium and large size farms in all states used greater numbers of pumps and tractors than smaller size farms. However, Punjab farms in every size category used the greatest number of pumps and tractors (per thousand hectares and per thousand operational holdings), among all the Indian states. Thus, the greater number of medium to large size farms in Punjab can only partially account for the inter-state differences in adoption levels. What still remains unanswered is the question of the reasons for greater adoption of technology by all farmers in Punjab.

(v) Economists have also suggested that it is the ownership of land rather than the size of the operational holding that motivates the adoption of innovations. For instance, Hamid (1981) found that it was the difference in the structure of land ownership inherited by Punjab which was the primary cause of differences in agricultural development. Hamid argued that, under tenancy or sharecropping, increases in production benefit the landowner, while the cost of production is disproportionately borne by the cultivators. These conditions of tenancy or sharecropping provide little incentive to adopt new techniques whose outcome is often unknown to the cultivator. The decision to innovate also depends on the distinction between pure tenants and tenant owners. Hamid supported this argument by showing that under colonial rule, when landlord-sharecropper relationships were encouraged, farmers adopted fewer innovations. The imposition of land reform acts, such as ceilings on land ownership, encouraged rich peasants and small landlords¹⁷ to adopt more Green Revolution technology. In empirical studies, Parthasarthy and Prasad (1978) showed that owners of land were more likely to adopt HYVs of seeds than tenants because of the risk factor,¹⁸ while Bhadhuri (1973) also found lower rates of adoption among tenants.

In contrast, Vyas (1979) found that the adoption rate in India has been the same among owners and tenants with respect to the HYVs of wheat. In fact, in some regions, tenants used more fertiliser per hectare than owners. In particular, Punjab had the lowest percentage of owned farms of marginal and small size, and among the lowest in the medium and large categories.

If land ownership is responsible for the interstate differences in technology adoption levels, than Punjab should have had the highest or amongst the highest percentage of wholly owned and self-operated operational holdings. However, among the major states, the percentage of wholly owned and self-operated operational holdings was the lowest in Punjab in 1985-85 (Table 9). In contrast, the levels of adoption of technological innovations per operational holding without regard to the title, legal form, size or location¹⁹ were the highest in Punjab. Thus, land ownership by itself does not seem to have been important in motivating Punjabi farmers to invest in land improvements and adopt technological innovations that require purchased inputs.

Table 9: Land Ownership

States	Wholly owned and self-operated holdings as percentage of total number of operational holdings under all size groups (1985-86).
Punjab	84.9
Haryana	95.2
Gujarat	99.9
U.P.	98.2
Rajasthan	98.2
Assam	89.9
W.B.	88.5
Karnataka	99.8
A.P.	99.5
Orissa	91.4
M.P.	89.2
Maharashtra	98.3
Bihar	98.6
T.N.	99.4
Kerala	95.5
All India	95.9

Source: All-India Report on Agricultural Census 1985-86.

A final factor that has been frequently posited as a reason for higher levels of adoption of technological innovations in Punjab is appropriate adaptation of Green Revolution technology to local conditions. During the 1960s, the nature of mechanical inputs supplied to the market was altered. Pumpsets, automatic threshers, and tractors became smaller in scale and more appropriate for local conditions. Irrigation facilities and tractors are two technological inputs associated with the Green Revolution whose form and size are most appropriate for middle size

farms. Private tubewells were best for irrigating farms between 10 to 25 acres in size. Thus, smaller as well as larger farms would find it less profitable to adopt technologies requiring intensive water use. However, in Punjab, 44.1 per cent of the irrigated area was covered by tubewells in 1970-71.²⁰ Tractors of the kind widely used in Punjab were appropriate for farms smaller than 25 acres. Threshers were produced with locally available technology and inputs. They sufficed in capacity for small farms prevailing in Punjab. HYVs of wheat and rice were adapted to suit local conditions such as soil, climate, and taste²¹ prior to their widespread introduction to farmers in the mid 1960s. The adaptation of the Green Revolution technology to suit local conditions was facilitated by the close proximity of the farms to the research institutes such as the Punjab Agricultural University in Ludhiana, which enabled rapid feedback between research and practice. Thus, the nature of the inputs made the new technology suitable for adoption by farmers prevailing in Punjab.

IV. Punjab-Specific Studies

Although agricultural machinery was reduced in scale and made more suitable for local conditions, in some cases, their adoption was still not justifiable on economic grounds. For instance, in an early study, Sidhu (1972) argued that tractors were often bought mainly for prestige reasons.²² His econometric evidence suggested that the productivity of tractor and non-tractor operated farms was the same for the period he considered. The unit cost of producing wheat at their respective mean output levels of tractor and non-tractor operated farms was also the same. Wheat production functions faced by both types of farms were the same as well. Thus, these farms did not differ in overall economic efficiency. Wheat farming exhibited constant returns to scale regardless of the type of farm, i.e. for both tractor and non-tractor operated farms. This implies that in the wake of rapidly changing agricultural technology, tractor and non-tractor operated farms were equal in economic performance. All the same, the per cent share of tractors in the change in the composition of agricultural implements and machinery of Punjab increased steadily from 5.22 in 1951 to 51.14 in 1972.²³ Tractorisation may have helped large farmers in increasing the possibility of multiple cropping. However, it seems that the adoption of tractors by small and marginal farmers was not always economically justifiable.

Most classes of cultivators gained from the Green Revolution. However, at least initially, the benefits were heavily weighted in favour of the very large farmers, i.e. farmers with operational holdings of 25 to 35 acres or more. Although, the larger farmers experienced an absolute increase in their output, the gap between large and medium farmers widened. Till 1971, smaller farmers with 10 to 15 acres or less made only marginal gains. It was hypothesized that ultimately they could find their farm operations overcapitalised and uneconomical. Then, why did these farmers adopt the Green Revolution technology?

Herdt (1983) found that the same or similar technological innovations were available to farmers of all states in India. Thus, 'extensive observations farmers made of other farmers resulted in efficient judgement about selection of factors and their use.'²⁴ In 1961, all categories of farmers were quickly convinced of the

superiority of modern technology by observing crop demonstrations showing increased yields of 40 to 65 per cent per acre with the application of improved 'package of practices'.²⁵

In another study, Day and Singh (1977) showed that a farmer responded to prices, revenue, quotas, and the past behaviour of his neighbours. He based his decision on his past experience and on the past actions of his neighbors. The farmer reacted to the past behaviour of other farmers because their actions in the aggregate had had an impact on the market situations prevailing at the time. Thus a farmer imitated his neighbour and this imitation, at least partially, conditioned the diffusion of technology. We shall explore this characterization further in the next, concluding section.

Hamid (1981) provided an overview of Punjab's performance in agriculture, in a comparison with its Pakistani counterpart. We have alluded to some of Hamid's observations in the previous section. A more recent, and detailed comparison was undertaken in Sims (1988). Sims noted several factors similar to those discussed by Hamid. For example, she noted that procurement prices as well as market prices were higher in Indian Punjab than in its counterpart. She discussed the broader distribution of resources, including credit and fertilizer, in India, and related it to the political economy of India, where policies were more responsive to small and medium farmers. Sims emphasized the very important role played by irrigation, in particular, the spread of private tubewells in Punjab, India. On the other hand, her field surveys suggested that agricultural extension, while active in Indian Punjab, had a limited direct impact on new technology adoption. However, she found that the availability of HYV seeds did matter, and farmers were heavily influenced by their neighbours' actions, corroborating Day and Singh's earlier study. Again, we return to this in the final section. Sims also noted the importance of the development of infrastructure such as a network of rural roads and rural electrification for Punjab's exceptional performance.

A detailed empirical study by McGuirk and Mundlak (1991, 1992) supports the conclusions of Hamid and Sims. They used twenty years of district level data, covering 10 of present-day Punjab's 12 districts for the period 1960-1979. They used a choice-of-technique/production-function approach that separates the decisions on area allocated to different crops and subsequent decisions that affect yield. They also estimated long run effects, in which factors such as irrigation, fixed in the short run, were modelled as responding to economic conditions. McGuirk and Mundlak's results are striking. They found that in the short run, the transition to HYVs of wheat and rice was strongly positively influenced by increases in irrigated area, miles of roads, and availability of fertilizer. Drawing a conclusion similar to those of Hamid (1981) and Leaf (1984), they note that the 'importance of roads indicates that linking rural areas to markets strongly affected technique choice.'²⁶ McGuirk and Mundlak also found that, conditional on crop/technique choice, yield response elasticities in the short run were low. In the long run, the quasi-fixed input most responsive to economic stimuli was found to be private irrigated area. This in turn led to increases in net cropped area as well. There was some government response for fertilizer availability. The response of roads was not modelled, and data were not available on electricity, but other evidence suggests that these grew in

extent or availability, so that overall, the government was responsive to economic incentives over the period. We now turn to our overall assessment of these results.

V. Infrastructure, Information and Incentives

Many agricultural economists have suggested that instead of an individual factor determining technology diffusion, the combined effect of several factors is responsible for high levels of adoption of technology in Punjab. This emphasis on the complementarity of several factors is supported by our review in sections III and IV. In particular, the cross-state comparisons along individual potential causal factors did not reveal any striking differences for Punjab. The adaptation of the Green Revolution technology to suit local conditions in Punjab reinforces the explanation that there was a general thrust to promote the adoption of technological inputs in the state. By removing financial constraints and by making the technological innovations and their complementary inputs more easily and cheaply available, Punjab farmers were provided with an environment conducive to the extensive adoption of new technology. These factors, along with a literacy rate greater than the all-India average, may have enabled farmers in Punjab to adopt higher levels of technological inputs. An overall favourable atmosphere for the diffusion of technological innovations is reflected by the consistently high index of development of infrastructure in Punjab (Table 10). This index includes power, irrigation, transportation, communications, education, and credit as components, either through availability or use. While there is not a tight correlation between state per capita income levels and their infrastructure indices, Punjab's index is strikingly higher than other states throughout the surveyed period (and into the 1990s). Thus, while individual factors do not distinguish Punjab, this index combining many important dimensions, does single out the state.²⁷

Table 10: Index of Development of Infrastructure

States	1966-67	1976-77	1980-81	1985-86	1996-97
Punjab	201	216	215	218	186
Haryana	129	151	154	150	137
Gujarat	111	122	125	132	122
Uttar Pradesh	107	112	107	108	104
Rajasthan	59	81	77	79	84
West Bengal	152	133	132	123	91
Karnataka	90	105	101	100	94
Andhra Pradesh	93	97	98	105	93
Orissa	69	79	82	81	99
Madhya Pradesh	53	61	62	71	74
Maharashtra	117	111	118	119	111
Bihar	98	109	97	98	78
Tamil Nadu	171	152	153	142	139
Kerala	135	167	137	140	155

Source: CMIE, States, Sept. 1987. All India = 100. Index components are: (1) Per capita consumption of electricity (KWH), (2) Per capita industrial consumption of electricity (KWH), (3) Percentage of villages electrified to total number of villages, (4) Percentage of net/gross area irrigated to total net/gross cropped area, (5) Road length in km. per 100 sq. km. of area, (6) Number of motor vehicles per lakh population, (7) Length of national highways in km. per 1000 sq. km. of area, (8) Railway route length in km. per '000 sq. km. of area, (9) Number of post offices per lakh population, (10) Number of letter boxes per lakh population, (11) Literacy percentage, (12) Number of hospital beds per lakh population, (13) Per capita deposits (Rs.), (14) Per capita bank credit (Rs.), (15) Number of bank offices per lakh population.

The role of infrastructure has also been stressed by Leaf (1984), in comparing a particular Punjabi village between 1965 and 1978. He comments on improvements in transportation and communication over this period, and points out how such improvements can reduce costs in ways that make innovation more profitable. He also comments on improvements in marketing and water availability. Hamid (1981) makes similar points in a more general overview. He emphasizes, in addition to all the above factors, the importance of the growth of small towns, aided by the development of infrastructure. These towns essentially became growth poles, with supporting light industry such as repair services and manufacture of some agricultural implements. Chadha (1986), Sims (1988) and McGuirk and Mundlak (1992), with different methods and emphases, make similar points about infrastructure. Thus, in our view, the first of the 'three I's' is critical in explaining Punjab's agricultural performance in the Green Revolution period.

The fact that Punjabi farmers with holdings of all sizes, regardless of title and legal form, used greater amounts of technological inputs suggests that these variables, i.e. farm size and land ownership, were not important by themselves in motivating them to adopt technological innovations. Small farmers were almost in pace with larger farmers in their willingness to adopt new technology. Frankel (1971) found that all classes of cultivators in the Ludhiana district of Punjab were participating equally in the Green Revolution, for example 'in 1963-64, 60 per cent of farmers with holdings of more than ten acres, 60 per cent of the farmers with holdings between five and ten acres, and 50 per cent of the farmers with holdings as small as five acres were applying fertilizers.'²⁸ In fact, the majority of loan applications received for tractors by the Pilot Officer in Ludhiana in March 1969 came from small farmers. According to Frankel, easy credit tempted small farmers to purchase machines, and they paid little attention to their ability to repay their loans. Such adoption incidences indicate that the general thrust in Punjab to promote the adoption of new technology may have aided the emergence of imitative behaviour among the Punjabi farmers. Initially, farmers were stimulated to adopt by the technology promotion schemes and other favorable conditions discussed above, while the rest based their adoption decisions on favorable information imparted by the actions of the first few, which outweighed their own information that the

technology might not be profitable. Thus, informational cascades²⁹ or bandwagon effects may have partly driven the technology diffusion process in Punjab.

The informational cascades model, with its emphasis on rational decision-making by individuals absent any social constraints, is complemented by sociological theories that have also emphasized the role of information. In particular, Rogers (1983) developed a framework for describing innovations in terms of five attributes: (1) relative advantage (including profitability), (2) compatibility, which is defined to be consistency with 'existing values, past experience and needs of adopters', (3) complexity, (4) trialability, and (5) observability. Except for the first of these attributes, all the others stress some aspect of information regarding the new technology or innovation. Formal economic approaches³⁰ do not make quite the same categorization. In particular, they recognize that gains are uncertain and depend on various facets of information, so that attribute (1) above is interrelated with the other four. In any case, formal and informal empirical studies suggest that information of all four kinds embodied in attributes (2)-(5) has also been critical in the case of the Green Revolution in Punjab. In addition to the work of Day and Singh (1977), this is borne out by observations on the role of Punjab Agricultural University, agricultural extension, and learning made by Randhawa (1974), Hamid (1981) and Leaf (1984) among others, though – given the responses collected by Sims (1988), suggesting that the direct role of conventional agricultural extension was small – this may bear further analysis. In any case, information, the second of our 'three I's', was also crucial in our view.

The final 'I', incentives, one almost takes for granted. The usual focus of analysis of economic decision-making is on private profit. While direct incentives in terms of input subsidies and so on were not markedly different for Punjab versus the rest of the country, they were certainly not adverse. Furthermore, the provision of infrastructure and information would have had a positive effect on incentives as well: the availability of roads and electricity making investment and innovation more profitable in expected terms. Since it has been argued³¹ that disincentives were also present, in the form of below-market government procurement prices, two points should be recognized. First, positive input and infrastructure subsidies are still likely to have implied a net positive incentive. Second, farmers were able to get market prices for some output (more so than their counterparts in Pakistani Punjab, for example). It is also possible to maintain the position that Punjabi farmers adopted new technology quickly in spite of disincentives: this would further emphasize the role played by the first two 'I's'.

In conclusion, for understanding the nature of technological change in Punjab agriculture, the threefold classification of (1) infrastructure, (2) information, and (3) incentives, seems to be a useful framework. It was the congruence of favorable conditions with respect to the first two of these, and probably the third as well, that made Punjab special. Some of the groundwork was laid before independence, and some was the result of slow and fortuitous historical developments. However, the successful role played by contemporary state government policies should not be undervalued.

It is also useful to consider the political economy of the policies that supported innovation in Punjab agriculture.³² Decentralization with respect to agriculture and responsiveness of government to its constituents were important political preconditions for these policies. However, in the 1990s these kinds of policies appear to have been carried to extremes with respect to incentives, while neglecting infrastructure and information. Thus, while power and water have been ever more heavily subsidized, distorting cropping patterns and straining the state's environment,³³ the infrastructure (storage, air transportation, marketing support, power) and information (seeds, irrigation technologies, market needs) required for diversification into higher value-added crops have not kept pace. This paper suggests a conceptual framework for guiding a restoration of the policy balance, necessary for sustained growth as well as avoidance of environmental harm.

Notes

¹Zarkovic, M. (1987), p. 36.

² In presenting data in these two sections, we focus on the 1960s through 1980s, when the Green Revolution and its effects were greatest in Punjab. More recent data on Punjab agriculture is compiled in Singh (2001), who also considers the rural Punjab economy more broadly than this paper.

³ Sharma, A.K. (1993).

⁴ A lakh is 100,000

⁵ Similar rankings hold for tractors, diesel pumpsets, and energised tubewells per operational holding: those data are available from the authors.

⁶ See Sims (1988), Figure 4, p. 60, and Singh (2001), Table 4.2, p. 83.

⁷ Figures in this paragraph are from CMIE States 1993.

⁸ A similar analysis may be found in Chadha (1986).

⁹ Perhaps, this variable (human capital) in conjunction with other variables may have a greater influence on the adoption of innovations. We take up this issue again in the concluding section.

¹⁰ This point is also elaborated by Chadha (1986)

¹¹ A high level of credit subsidy per operational holding may imply high levels of adoption of technological innovations per operational holding. But high levels of credit subsidy per hectare of gross cropped area do not seem to be related to high levels of adoption of technological innovations per hectare of gross cropped area in this data.

¹² For evidence see Sidhu (1972).

¹³ See, for example, Feder and O'Mara (1981) on this point.

¹⁴ Zarkovic (1987), page 45.

¹⁵ Ibid.

¹⁶ The complete statewise data is available from the authors on request.

¹⁷ Small landlords had little monopolistic control over the tenant farmers or sharecroppers. Thus, there was more equal share in both costs and benefits of adopting innovations.

¹⁸ The risk factor arises because often the outcome of adopting is aggravated even more under the conditions of tenancy or sharecropping where the cost of adopting a

new innovation is disproportionately borne by the cultivator, while the benefit from adoption is disproportionately obtained by the landlord.

¹⁹ This is as defined in the Agricultural Census.

²⁰ Zarkovic (1987), p. 45.

²¹ In the eyes of the consumer, the traditional variety of wheat was superior to that of the HYV only because the HYV of wheat was brown in colour as opposed to amber. In all other aspects the HYV of wheat was appropriate for local tastes.

²² However, Leaf (1984) in his village case study that post-dates Sidhu's work, argues that tractor purchases are typically part of rational long run strategies.

²³ Chaudhri and Dasgupta (1985) p. 33.

²⁴ Sidhu (1972), p. 76.

²⁵ Frankel (1971), p. 20.

²⁶ McGuirk and Mundlak (1992), p. 137.

²⁷ Of course no index can be perfect, and in this case the data used to construct it also have flaws. But there seems to be no reason this would bias the index. Another issue could be causality: a high index is also a result of development. But the high value for Punjab in 1966-67 supports the view that favorable and critical investments were made prior to the Green Revolution. Hamid, Sims and others note that the groundwork was laid starting in the 1950s.

²⁸ Frankel (1971), p. 21.

²⁹ This term has been used recently in the economics literature to describe situations where later decision-makers are completely swayed by inferences drawn from observing previous decisions of others. See, for example, Bikhchandani, Hirshleifer and Welch (1992) and Kohli (1996). Precursors of this model in somewhat the same spirit include Feder and O'Mara (1982) and Feder and Slade (1984a).

³⁰ Surveys of economic approaches to technology adoption and diffusion may be found in Feder, Just and Zilberman (1985), Thirtle and Ruttan (1987), and Alauddin and Tisdell (1991). These surveys focus on situations where decision-makers are atomistic. Baldwin and Scott (1987) survey the same issues for strategic decision makers such as firms in a concentrated industry. Singh (1994) examines Indian agricultural experience in the light of economic models of innovation.

³¹ This point was made to us by B. S. Mann, who has headed an important Punjabi farmers' organization.

³² Again, Hamid (1981) and Leaf (1984) are good complementary references, the first being a broad conceptual overview, and the second incorporating detailed microlevel observations.

³³ See, e.g. Singh (1991).

Bibliography

All-India Report on Agricultural Census 1985-86, Department of Agriculture and Co-operation, Ministry of Agriculture, Govt. of India, New Delhi, 1992.

-
- All India Report on Input Survey 1976-77*, Vol. I, Government of India, Department of Agriculture and Co-operation (Agricultural Census Division), Ministry of Agriculture, New Delhi.
- Allaudin, M. and C. Tisdell, (1991) *The 'Green Revolution' and Economic Development: The Process and its Impact in Bangladesh*, Macmillan, London, England.
- Baldwin, W.L. and J.T. Scott, (1987) *Market Structure and Technological Change*, Fundamentals of Pure and Applied Economics, v.17, Harwood Academic Publishers, Chur, Switzerland
- Bhaduri, A.R., (1973) 'A Study in Agricultural Backwardness under Semi-Feudalism,' *Economic Journal*, 23, 1, 313-332.
- Bikhchandani, S., D. Hirshleifer and I. Welch, (1992) 'A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades', *Journal of Political Economy*, v. 100, 992-1026.
- Centre for Monitoring Indian Economy, *Basic Statistics Relating to the Indian Economy, Vol. 2: States*, 1985-87, 1993-94.
- Chadha, G. K., (1986) *The State and Rural Economic Transformation: the Case of Punjab, 1950-85*, Sage Publications, New Delhi.
- Chaudhri, D.P. and A.K. Dasgupta, (1985) *Agriculture and Development Process, A Study of Punjab*, Croom Helm, New Hampshire.
- Dadibhavi, R.V., (1988) 'Dimensions of Regional Disparities Institutional Credit to Agriculture,' *Indian Journal of Agricultural Economics*, vol. 43 (3).
- Day, R.H. and I. Singh, (1977) *Economic Development As An Adaptive Process, the Green Revolution in the Indian Punjab*, Cambridge University Press, Cambridge, England.
- Evenson, R., (1974) 'Education and Rural Development,' in *World Year Book of Education 1974*, eds. P. Foster and J.R. Sheffield, Evan Brothers, London.
- Feder, G., R. Just and D. Zilberman, (1985) 'Adoption of Agricultural Innovations in Developing Countries: A Survey', *Economic Development and Cultural Change*, v. 33, 255-298.
- Feder, G. and G.T. O'Mara, (1981) 'Farm size and the Diffusion of Green Revolution Technology', *Economic Development and Cultural Change*, v. 30, 59-76.
- Feder G., and G.T. O'Mara, (1982) 'On Information and Innovation Diffusion: A Bayesian Approach', *American Journal of Agricultural Economics*, v. 64, 145-147.
- Feder, G. and R. Slade, (1984) *Aspects of the Training and Visit System of Agricultural Extension in India*, The World Bank, Washington, DC., USA.
- Feder, G. and R. Slade, (1984a) 'The Acquisition of Information and the Adoption of New Technology', *American Journal of Agricultural Economics*, v. 66, 312-320.
- Feder, G., Slade, R.H., and A.K. Sundaram, (1985) *The Training and Visit System An Analysis of Operations and Effects*, The World Bank, Washington, DC., USA.

-
- Fleigel, F.C., Kivlin, J.E., Roy, P., and L.K. Sen, (1968) *Agricultural Innovations in Indian Villages*, National Institute of Community Development, Hyderabad.
- Frankel, F.R., (1971) *India's Green Revolution: Economic Gains and Political Costs*, Princeton University Press, Princeton.
- Hamid, N., (1981) *Process of Agricultural Development- A Case Study of The Punjab*, University Microfilms International.
- Herd, R.W., (1983) *Adoption, Spread, and Production Impact of Modern Rice Varieties in Asia*, International Rice Research Institute, Manila, Philippines.
- Kohli, D.S., (1996) 'Using Informational Cascades to Stimulate the Diffusion of Technology', processed, National Council of Applied Economic Research, New Delhi, India.
- Leaf, M.J., (1984) *Song of Hope: The Green Revolution in a Panjab Village*, Rutgers University Press, New Jersey.
- McGuirk, A.M. and Y. Mundlak, (1991) *Incentives and Constraints in the Transformation of Punjab Agriculture*, IFPRI Research Paper No. 87, Washington, D.C.
- McGuirk, A.M. and Y. Mundlak (1992), 'The Transition of Punjab Agriculture: A Choice of Technique Approach', *American Journal of Agricultural Economics*, 74, 1, 132-143.
- Parthasarthy, G. and D.S. Prasad, (1978) *Response to the Impact of the New Rice Technology by Farm Size and Tenure: Andhra Pradesh, India*, International Rice Research Institute.
- Randhawa, M.S., (1974) *Green Revolution: A Case Study of Punjab*, Vikas Publishing House, Delhi.
- Rath, N., (1989) 'Agriculture Growth and Investment in India,' *Journal of the Indian School of Political Economy*, vol. I, no.1.
- Rogers, E.M., (1983) *Diffusion of Innovations*, 3rd ed. Macmillan, New York, New York.
- Rosenzweig, M.R., (1978) 'Schooling, Allocative Ability, and the Green Revolution,' *Eastern Economic Association*, Washington, D.C.
- Sharma, A.K., (1993) 'Sources of Differences in Input Use: The Case of Fertilisers in India,' *Journal of the Indian School of Political Economy*, vol. V, no. 2.
- Sharma, R. and T.T. Poleman, (1993) *The New Economics of India's Green Revolution: Income and Employment Diffusion in Uttar Pradesh*, Cornell University Press, Ithaca, New York.
- Sidhu, S.S., (1972) *Economics of Technical Change in Wheat Production in Punjab (India)*, University of Minnesota, Ph.D. dissertation, University Microfilms, Ann Arbor, Michigan.
- Sims, H., (1988) *Political Regimes, Public Policy and Economic Development: Agricultural Performance and Rural Change in the Two Punjabs*, Sage Publications, New Delhi.
- Singh, G., (1991) *Environmental Deterioration in India: Causes and Control: with special reference to Punjab*, New Delhi, Agricole Pub. Academy.
- Singh, H., (2001) *Green Revolutions Reconsidered: The Rural World of Contemporary Punjab*, Oxford University Press, New Delhi.

-
- Singh, N., (1994) 'Some Aspects of Innovation and Technological Change in Agriculture', in *Agrarian Questions*, ed. K. Basu, Oxford University Press, New Delhi.
- Thirtle, C.G. and V.W. Ruttan, (1987) *The Role of Demand and Supply in the Generation and Diffusion of Technical Change*, Fundamentals of Pure and Applied Economics, v.21, Harwood Academic Publishers, Chur, Switzerland.
- Vyas, V.S., (1979) 'Some Aspects of Structural Change in Indian Agriculture,' *Indian Journal of Agricultural Economics*, vol. 34, no. 1.
- Zarkovic, M., (1987) *Issues in Indian Agricultural Development*, Westview Press, Boulder, Colorado.

Book Reviews

Contents of Vol. 12 No. 2

Harjeet Singh Gill, *Heer Ranjha and Other Legends of the Punjab* by **Christopher Shackle**

K. Moti Gokulsing, *Soft Soaping India: The World of Indian Televised Soap Operas* by **Michelle Peters**

Kirpal Dhillon, *Police and Politics in India: Colonial Concepts, Democratic Compulsions: Indian Police 1947-2002* by **Birinder-Pal Singh**

Krishan Chand, *Migrant Labour and the Trade Union Movement in Punjab: A Case Study of the Sugar Industry* by **Shinder Thandi**

Satwant Kaur Rait, *Sikh Women in England: Their Religious and Cultural Beliefs and Social Practices* by **Randy L. Clary**

Shonali Bose, *Amu* by **Pritam Singh**

Rosy Singh, *Rilke, Kafka, Manto: The Semiotics of Love, Life and Death* by **Amiya Dev**

Jane Stevenson, *London Bridges* by **Gauravjit Singh**

Harjeet Singh Gill: *Heer Ranjha and Other Legends of the Punjab* (New Delhi: Harnam Publishing House, 2003), 157 pp., 5 plates. (hb) Rs.600. ISBN 81-8662-60-8.

Through a complex process of appropriation and reworking extending over several centuries, the Hir-Ranjha story and the other great romantic legends of the Punjab have come to lie at the heart of the region's cultural landscape. As defining myths with a continuing wide and special appeal on both sides of the international frontier, they keep proving themselves as enduringly capable of intellectual analysis and artistic depiction as they have been of repeated renewal through reiteration and retelling in words, not only in Punjabi but also formerly often in Persian and today in English.

This book by the distinguished Punjabi semiotician Professor Harjeet Singh Gill is itself an example of several aspects of this complex process of cultural reaffirmation, since it combines retellings of the stories with analyses of their meaning and illustrations of their key scenes in a vividly neo-ethnic style by Eric Vikramjeet Singh Gill. Indeed, the process is still more complex in this case, since it is in part a re-presentation of treatments published alongside essays on Flaubert and Abelard in H.S. Gill's earlier collection *Structures of Narrative in East and West* (New Delhi: Bahri Publications, 1989), which was itself dedicated to Eric Gill.

Although that more academically presented book is not referred to here, it is the source of the two long essays which frame the present volume. The first is 'The Cosmology of Heer', which combines a summary prose narration of the famous story as told by Varis Shah, here further illustrated by extended quotations of the original Punjabi in roman transcription, with stimulating analysis of some of the main tensions in that uniquely complex text, what Gill at one point calls its 'conceptual framework that mediates between the two planes of anthropological and cosmological spatial translocation'. The concluding essay on 'The Human Condition in Puran Bhagat' similarly combines a prose narrative summary, here expanded by some quotations from the Punjabi original of Qadir Yar's classic nineteenth century treatment, with a semiotic analysis of key aspects of this very atypical hero, the yogi Puran Bhagat whose story, as Gill concludes, is a prelude to the breaking of 'the last thread of the umbilical cord that still bound him with the world around.'

Within these two essays, the central part of the book is given to retellings of the three great romantic legends which, along with the Hir story, have inspired so many Punjabi poets, film-makers and artists. These are the story of Sassi and Punnu, long naturalized from its Sindhi origins, the tale of Sohni the potter's daughter of Gujrat and her lover Mahinwal, and the tragic ballad of Mirza and his Sahiban. These are all presented directly, without notes or analysis, in a rather effective sort of prose poetry which uses very short lines. While very loosely based on the classic poetic versions, like Hasham Shah's treatment of the Sassi story, Gill's versions are clearly designed not as translations of these

but as fresh reworkings intended to capture the spirit of the legends in a recognizably modern conceptual language, e.g. ‘Sohni had to make a choice / an existential choice / to be / or not to be / to live to the highest ideals / of love and faith / to dissolve in the / absolute mist / of ideas and imagination! / / she resolved to / follow her heart / her ideals / her sublimity / her sincerity / of absolute fraternity!’ While this sort of treatment may not be to everyone’s taste, it is certainly an admirable corrective to the bland and cosy simplifications of these essentially complex and tragic myths which are too often encountered in many twentieth century anthologies and histories of Punjabi literature.

Christopher Shackle

SOAS, University of London

K. Moti Gokulsing, *Soft Soaping India: The World of Indian Televised Soap Operas* (Oakhill: Trentham Books, 2004). vii and 133 pp. £17.99 (pb). ISBN 1 85856 321 6.

In the last two decades there has been a strong and visible growth of the media and communication industry in India. As influential aspects of Indian media, television soap operas have become objects of interest for media studies, social science researchers and feminists alike. In *Soft-Soaping India* the author K. Moti Gokulsing attempts an understanding of these soap operas and their impact on social life and identity in India.

Gokulsing argues for the inclusion of soap operas in the study of Indian popular culture. He points out both the impact of these programmes on Indian society and the rising popularity of Indian television in post-liberalized India. While he does not offer a direct critique of soap operas, he uses them to study wider implications of the clash between tradition and modernity on Indian audiences. The book also provides an insight into the way in which processes of globalization and economic liberalization have shaped the new Indian middle class. Some of the key questions raised in this book are also based on the methodological issues around constructing an Indian audience.

The book begins by tracing the history of the genre and offers a general overview of some Indian audience studies of soap operas. It moves on to provide a comprehensive history of the Indian terrestrial channel Doordarshan and the growth of cable and satellite television in India, especially transnational media corporations - for instance, Rupert Murdoch’s STAR Network. Questions are also raised about the position of Indian consumers within the processes of globalization, and the way in which traditional gender roles are being reframed. Gokulsing’s analysis of the soap opera *Humraahi*, for instance, based on the study conducted by Population Communications International (PCI), is an exhaustive and informative analysis of the issues that the viewers of the programme raised, from issues concerning health and birth control to the role of

women in Indian society. He uses the epic soaps, Ramayana and Mahabharata, to underscore issues of national identity, patriotism and religion that were part of the broadcasting agenda of Doordarshan. While discussing soap operas broadcast on satellite television, Gokulsing analyzes two soaps, *Aashirwad* and *Amaanat*, both broadcast on Zee Television in the late nineteen nineties. These soap operas had significant viewership and also presumed a new audience, upwardly mobile, yet traditional. Gokulsing interrogates the roles and representations of women within these soaps, and especially audience responses to the new Indian woman and her urban lifestyle. Gokulsing draws on the work of Purnima Mankekar (1999) and Malhotra and Rogers (1999) in deconstructing traditional categorizations of Indian womanhood, the mother, the daughter and the daughter-in-law. He looks at the theoretical construction of the new Indian woman, as a viewer, a consumer of culture and tradition and as a category for advertisers and corporate market forces (Mankekar 1999, Malhotra & Rogers 1999, McMillin 2002, Chaudhuri 2001). He points out the failure of Western feminism in understanding the lives of Indian woman, and that feminism as an ideology has failed to mobilize Indian women (2004: 93), but he does not take this argument any further. In his analysis of the public service ethos of Doordarshan, Gokulsing develops insights from the work of Divya McMillin (2002) in locating Indian consumers in an increasingly globalized world. He uses audience research conducted by the PCI in different parts of India, tracing the work of Doordarshan in promoting higher education, popularizing science and environmental issues and raising awareness about issues like poverty and health. Gokulsing then profiles the Indian middle class and provides a narrative of the increasing role of advertising and consumerism in their lives, as catered for by satellite and transnational television.

Gokulsing argues that soap operas in India reflect the evolution of a new consumer oriented, economically liberalized and upwardly mobile Indian society. He revisits Doordarshan's contributions to creating a sustained Indian identity based on a nationalist and patriotic ideology through the use of stereotypical notions of Indian culture and traditional values. The section in which he assesses the validity of the different studies that have been undertaken by people like Sevanti Ninan (1995), Purnima Mankekar (1999) and A. Rajgopal (2001) is informative and interesting. He also points out the responsibility of the Indian government and media in addressing the social problems and issues that are raised by soap operas and the need to provide educative and entertaining programmes for the viewing public.

Although *Soft-Soaping India* is a dense book in terms of the sheer facts and figures that it contains, it does not try to delve deeply into the issues that it raises. It is text-book in its presentation, at times superficial in its approach to its theme. It is a very useful book if one wants a quick overview of issues to do with television, soap operas and Indian audiences. However, it fails to deal adequately with the complexities of Indian media as well as issues around nationalism, identity and gender politics, the construction of tradition and

womanhood and the later effects of a consumer driven ideology on viewing audiences. The conclusion was rather disappointing, as Gokulsing chooses not to take a position on contentious issues such as, for instance, communalism and the growing influence of right-wing ideologies on representations of women in soap operas. The increasing role of Indian media as a turbulent space of gender differentiation and gender politics could have also been explored further. The changes in the structure of Indian soap operas, and the influence of producers and other agencies and the increasing concern about media ownership and powerful multinational media corporations in India are some of the other topics that could have been addressed in greater detail. However, the book still serves as a valuable resource for people who are interested in the history and development of Indian soap operas and their role in creating a new Indian society. In tracing this, it fulfills its role admirably.

Michelle Peters

Brunel University

Kirpal Dhillon, *Police and Politics in India: Colonial Concepts, Democratic Compulsions: Indian Police 1947-2002* (Delhi: Manohar, 2005) 619pp. (hb) Rs. 1095.

In urban India, unlike Western society, the police in their *khakhi* or white uniform are significantly visible. And, in contrast to the people-friendly Japanese police, they are a symbol of fear and terror, of greed and corruption. With the passage of time since 1947, this image of an ordinary policeman has only become worse. In a developing society like ours, the police force constitutes an important component of the state apparatus that has the responsibility of ushering the hitherto backward society on the road to modernization. Unfortunately, that has not happened, but rather the police force itself became a subject of reform and modernization. Though numerous commissions and committees have been constituted from time to time for this purpose nothing could be realized under the given socio-political conditions prevailing in the country.

The present book provides a descriptive presentation of the Indian police in independent India covering almost all facets of it as is clear from the size of this volume. Dhillon had the privilege of being the Director General of Police in two states, Madhya Pradesh and Punjab, besides being the Vice-Chancellor of a university at Bhopal. As a Fellow of the Indian Institute of Advanced Study, Shimla he worked on a project, later published as *Defenders of the Establishment: Ruler-supportive Police Forces of South Asia* (Shimla, 1998). The present volume is a companion to the previous one and extends the argument of the colonial era into the free country.

As is clear from the title of the previous book, Dhillon consistently hammers

this character of the Indian/South Asian police through out the length and breadth of this fat volume by referring to it as 'ruler-supportive and oppressive' or, more strongly, as a 'colonialist-oppressive ruler-supportive force that has little commitment or no accountability to the community' (366). He calls this police force 'ruler-oriented' as opposed to the 'community-oriented' police of the developed societies of the world. He frequently mentions that the character of this force is servility to the ruler and oppression of the ruled.

The author traces the origin of these characteristics of the police to its colonial legacy and the framing of the Indian Police Act of 1861 following the catastrophic events of the 1857 War of Independence. The imperialists ignored the model provided by the London police to frame this Act, and instead cast it in the frame of the Royal Irish Constabulary. It was very fair on their part to frame the constitution in a way that suited them most, but the problem lies in the intactness and continuity of the same in a democratic society. The author laments time and again that there is lack of political will to change the said Act as its perpetuity suits both the politicians and the bureaucrats. He does not seem optimistic at all as he writes: 'Whether Indian police will ever come of age as a self-respecting, dignified, well-reputed, efficient, honest, responsive, modern law-enforcement organization, remains open to question' (584). In contrast to the Indian scenario, the British home office is always on the look out for new ideas and concepts to improve the quality of the police service.

Dhillon advocates the genuineness and commitment of the National Police Commission (1978-1981) under the chairmanship of a former ICS, Dharam Vir. A very comprehensive report was prepared to cast the colonial police into its democratic mould following the findings of the Shah Commission regarding the excesses committed during the Emergency Rule of 1975-1977 when Indira Gandhi was the Prime Minister of the country. This Report too became a victim of Indian politics like its two successor reports submitted by Julio Rebeiro in 1997 and by Padmanabhaiah in 2000.

There is surely an absence of commitment and sincerity on the part of powers that be, whether Congress or BJP or any other national or regional party, for realizing such a change/reform or modernisation of the police. The author suggests that it did not happen since it did not suit the powers that be. However, he does not go further in identifying or elucidating the structural and functional limitations of the police system as an aspect of the larger Indian socio-economic and political system. One of the author's limitations is that he is not a professional academic. But this does not mar the worth of this contribution that lies in compiling, arranging or systematizing the whole corpus of data that deals with the changing role of the police and its involvement at social and political levels in the consistently degenerating character of the Indian political and administrative system. This has been done not only at the personal level of having first hand information on such phenomena but also by citing reports from numerous sources - specially *The Times of India*, an established all India newspaper doing responsible journalism.

One more thing that I would like to mention is that no doubt Dhillon is critical of the police, the politicians and the bureaucrats etc. yet he has not highlighted those practices of the police that are 'routine and normal' with them but never come to light. For instance, his discussion on Punjab (chapter 12) does not bring out those aspects of the problem that are known only to the top police and political bosses that controlled the destiny of both the field police and the people. In other words, what was it that happened behind the iron veil of 'secrecy'? Dhillon had the advantage of engaging with the social rebels or dacoits of the notorious Chambal valley at the beginning of his career and with the religiously charged militants or terrorists of Punjab at its fag end. It would have been very interesting to have the first hand account of an insider to these phenomena, so helping us understand the complexity and diversity of Indian society.

Birinder-Pal Singh

Punjabi University, Patiala

Krishan Chand, *Migrant Labour and the Trade Union Movement in Punjab: A Case Study of the Sugar Industry*, (Chandigarh: CRRID, 2002) xv + 177pp, Rs. 295, (hb). ISBN 81-85835- 42-X.

One of the most enduring impacts of the rapid economic transformation of Punjab, starting with the green revolution in the mid 1960s, has been the influx of migrant workers into Punjab from the less developed Indian states such as UP, Bihar, Madhya Pradesh Rajasthan and Himachal Pradesh. Bihari migrants are perhaps the most numerous of the nearly 2.5 million migrants in Punjab today and the reasons for that are not difficult to fathom. For example, in 1965, per capita income in Punjab was only about one and a half times that of Bihar but now it is almost five times. Punjab's growth in the 1970s and 1980s was above the national average but Bihar's was below the national average, so turning Punjab into a major magnet for attracting both agricultural and industrial labour. Earlier migrants were predominantly concentrated in the rural areas, working mainly on agricultural operations, which either local labour was unable or unwilling to undertake, whereas over time migrants also entered and worked in the urban areas and nowadays, major industrial and urban areas such as Ludhiana and Rajpura are dominated by settled migrant labour, eclipsing local labour in most organised and unorganised sectors.

At the political and cultural level there has been a growing backlash against the 'bhaiyas' as one would expect in any country or locality where new migrants enter and are perceived as a threat. This is as true for Phagwara as it is for Southall. Thus in Punjab today the negative discourse on the effects of the influx of bhaiyas blames them for displacement and unemployment among local labour, rising crime, the growing problem of drug addiction and rising caste and

linguistic tensions in the state. Civic leaders and politicians of all shades often call for a halt to the influx, for them to be disenfranchised, and for laws to be enacted that would stop the transfer of property to non-Punjabis as happens in some other states such as neighbouring Himachal. Very few studies have attempted to assess the contribution of migrant labour to Punjab's agricultural and industrial prosperity but even fewer have looked at the effects of this migration on the workplace - on relations between migrants and local labour and on management and trade union perceptions of migrant labour. It is especially in the latter context that Krishan Chand's book under review marks a major departure.

Chand's book, published by the Chandigarh based Centre for Research in Rural and Industrial Development, is divided into seven sections, the last ending with a summary of the main findings and some recommendations. The focus of the book is on the sugar industry, an important agro-processing industry in Punjab that directly employs 15,000 workers but indirectly perhaps up to 100,000 in the twenty-two sugar mills in the state. The author however restricts himself to concentrate only on the fifteen co-operative sector mills. Most of these sugar mills have come up in the post-green revolution period and over time have increased their dependency on unskilled migrant labour, usually hired through licensed contractors at low wages. As most of these sugar mills make an operating loss and survive on government subsidies, the hiring of seasonal and cheap migrant labour keeps wage costs down and contributes to their continuing viability. Chapter 2 provides a historical overview of the dual processes of the growth of the sugar industry in both India and Punjab and of growth in trade unionism. Whilst much of this is useful background information on the growth of the sugar industry in India and Punjab and India's labour history and would merit discussion in a doctoral thesis, it could have been further edited away on conversion to a book as it distracts from the book's main focus.

Chapter 3 provides a socio-economic profile of the migrants and local labour. Most of the migrants in the industry hail from eastern UP and the north-western region of Bihar, the two poorest regions of the respective states. Most of the skilled migrants tend to have permanent employment contracts whereas the unskilled are taken on a temporary basis as seasonal demand for labour picks up.

Gaining access to both types of employment is primarily through personal contacts and through other informal channels. The majority of them come from rural backgrounds and maintain regular contact with their home regions and regularly send remittances to their families. Whilst the majority of the migrant workers are Hindu (most of local labour is Sikh) it is interesting that the majority of them - 46 per cent - are from upper caste backgrounds, raising possibilities of potential tension between local lower caste labour (Dalits) and upper-caste migrants. Chapters 4, 5 and 6 covers the perceptions and attitudes of labour towards trade unionism, trade union leaders and management, migrant-local labour relations and management perceptions of migrant and local

labour. Much of the material in these two chapters is drawn from the author's 300 personal interviews with people from the local and migrant labour, trade union leaders and those in managerial positions and provides the most in-depth understanding of the nature of industrial relations in Punjab's industrial sector. The author draws some interesting, although sometimes predictable, conclusions on the migrants' participation in trade union activity (i.e. low compared to local labour), and their relations with union leaders and management. It is not wholly surprising to learn that both migrant and local labour should be dissatisfied by the performance of trade union leaders and of management in terms of securing higher wages, bonuses or better working conditions. The author argues that, given that the perceptions and attitudes of local and migrant labour are largely identical and there is no evidence of any animosity, this rules out the possibility or desirability of development of separate trade unions and this in fact could form the basis for a more mass based and a more effective labour movement. However, currently a number of factors militate against this including the continuing lack of social interaction between them outside the unavoidable minimum in the workplace. Nevertheless, despite the caste dynamics, this possibility cannot be ruled out completely.

Whilst academic studies on agricultural migrant labour were conducted extensively in the 1980s, there are very few corresponding in-depth studies on industrial migrant labour. In this context, the book under review makes a significant contribution to our understanding of recent industrial labour history and industrial relations in Punjab. The book also provides a necessary correction to the more popular negative discourse on migrant labour by highlighting and acknowledging their positive contribution to Punjab's prosperity, not least through sustaining a low wage. This book is essential reading for scholars interested in understanding recent labour and trade union issues in Punjab.

Shinder S. Thandi
Coventry University

Satwant Kaur Rait, *Sikh Women in England: Their Religious and Cultural Beliefs and Social Practices*, (Stoke on Trent, UK: Trentham Books, 2005) xxiii + 187 pp. ISBN 1-85856-353-4 (pb) £17.99.

Satwant Kaur Rait's *Sikh Women in England* is published as part of the Community Religions Project in the Department of Theology and Religious Studies at the University of Leeds, which aims to explore how religious communities function in particular areas. The author, having grown up in the Punjab, migrated to England in 1968 after she finished her Master's degree. Her own experience has led her to conduct a study of the changing experiences and values of Sikh women in England, exploring the complex themes of inter-

generational conflict, double identities, racism, sexism, and the need to reconcile these issues to the norms of Sikhism. She is also writing to counteract 'the biases and stereotypes often projected by the British media on issues such as arranged marriage, dowry and joint families' by giving the insiders' perspective on these issues (xix). In addition to informing non-Sikhs who may be influenced by the British media, she is also addressing Sikhs by claiming that they often confuse Punjabi culture with Sikh values. She intends to set the record straight for both parties about what 'really' constitutes Sikh practices.

Rait's study is conducted via individual and group interviews in both Punjabi and English with women from an impressive spread of ages, backgrounds, and places of origin. To balance out her interviews and get a more objective view of practices, she also participated in social functions and ceremonies and visited *gurdwaras*. She analyzes her findings in seven chapters. The first chapter gives background information about the Punjab, migration patterns, caste, and sects within the Sikh fold. The second chapter goes into more depth about Sikh religious values, beginning with a brief history of the Gurus and their teachings. Chapter three is devoted to describing the role of women in the Sikh faith and society, giving a history of the Gurus' egalitarian views on women as recorded in the *Guru Granth Sahib* and the *Rahit Maryada*. The author laments that her findings show that these values have not been put into practice, mostly due to the influence of patriarchal Punjabi cultural values. Chapter four looks at women's social life - their occupations, education, and general lifestyle, and how they have changed throughout the years.

The fifth chapter describes cultural values, beginning with attitudes toward marriage. Rait is careful to point out that although Sikhs follow the Indian tradition of arranged marriage, this does not mean the marriages are forced, as the British media often suggest. Instead, children add their input to their parents' search for suitable partners for them. Chapter six is a touching collection of life stories of seven women, told from their own perspectives, bringing to light all the issues raised in the rest of the book in an expressive and powerful manner. Her concluding chapter wraps up the book nicely. She concludes that Sikh women have adapted well to life in England, while holding on to much of their own culture. Sikh women, though they have come far in terms of education and occupations, still face racism in the workplace and have difficulties balancing their dual identities - British at work and Indian at home.

Rait's experience as a migrant in England gives her the sensitivity and intuition to make her the ideal person to conduct this study. Her exposure of the weakest links in the Sikh community in England - persistent gender inequality and ineffective management of *gurdwara* - is the biggest strength of the book, and proves useful for many audiences. Particularly poignant is her discussion of the pressure put on young women to conform to traditional beliefs, at the cost of losing their families' support. On their behalf, she calls for 'more support for women who do not fit readily into the expectations of their community and for increased tolerance and understanding of those who are striving to combine

their personal development with the love they have for their community and culture' (167).

I have some concerns about the author's sources and methodology. She cites a range of sources on diaspora studies, such as Parminder Bhachu's *Twice Migrants: East African Sikh Settlers in Britain* and several lesser-known studies based in Leeds, but could have included Kathleen D. Hall's *Lives in Translation: Sikh Youth as British Citizens*, also based in Leeds. Her most notable sources on Sikhism are Harjot Oberoi's *The Construction of Religious Boundaries* and W.H. McLeod's *Sikhism*. The inclusion of more recent work would have made her book more academically robust. Another problem is that she neither took notes nor recorded her informants' responses during interviews, instead recording the information immediately after them. This method raises questions about how much of her informants' own voices come through in her analysis, since she is paraphrasing their responses in her own words.

Although expanding her range of sources would have made her study more suitable for an academic audience, Rait's book is valuable for making the reader aware of the wide range of issues surrounding Sikh women in England. She should be commended for making sense of cultural practices and experiences that span more than fifty years and three continents.

Randi L. Clary

University of California, Santa Barbara

Shonali Bose, *Amu* (New Delhi: Penguin, 2004), x+142 pp. Rs. 200 (pb), ISBN 0-14-303232-1.

This is a novel about the 1984 massacre of the Sikhs in Delhi after Indira Gandhi's assassination and is based on the feature film, also titled 'Amu', directed by Shonali Bose, a film maker based in Los Angeles. The 1984 massacre has been the largest killing of civilians in a politically organised violence in post-independent India. No political leader or state functionary has been prosecuted and sentenced. The latest report on the violence, the Nanawati Commission Report, is also disappointing though it generated enough media debate that it forced the Prime Minister to make a statement of apology in the parliament. On the whole, it appears that there has been an attempt on the part of the Indian political establishment to make people forget this carnage. Therefore, the making of the film *Amu* and the writing of this novel should be considered as acts of political intervention against the establishment. Though there has been excellent documentation of the 1984 violence by concerned academics and human rights activists, there has been very little in the form of artistic work such as films, plays and novels. In this sense, as a piece of artistic depiction of the carnage, this novel fills a historic lacuna by countering the

politics of forgetting the carnage.

The story starts in Los Angeles and concludes in Delhi. Keya, a woman of Indian Bengali origin, lives in Los Angeles where she works as a radical lawyer and political activist, defending the immigrants who are especially under attack after 9/11. Her adopted daughter Kaju decides to visit India after completing her degree at UCLA, thus shifting the story to Delhi.

During her stay in Delhi, Kaju is keen to find out about the identity of her biological parents. She had been told by Keya that she was adopted after her parents had died in a malaria epidemic, in a village near Delhi. But as Kaju begins her painful journey of self-discovery, she learns that her parents were Sikhs and that her father and younger brother were killed in 1984; her mother, unable to bear the grief, had committed suicide. Her real name was Amrit (Amu is her nickname). Kaju is devastated by this painful revelation. Her grief and mourning for her dead parents and brother are magnified by the feelings of betrayal by her adoptive mother who had hidden this truth from her.

The strength of this novel is its brilliant synthesis of the personal and the political. Uncovering the tragedy of Kaju/Amu's life leads to uncovering the tragedy of Operation Blue Star and the 1984 massacre of the Sikhs in Delhi and of the denial of justice to the victims of the 1984 carnage. References to 9/11 and Ayodhya 1992 at appropriate moments provide the global and national context to the 1984 tragedy, which had totally engulfed the personal lives of Keya and Kaju. References to September 2001 highlight the commonality in the politics of the Democrats and the Republicans in USA. Both parties, under the name of anti-terrorism policies, facilitated the victimisation of non-white immigrant communities and the rise of Islamophobia. Similarly, the references to 1984 and 1992 highlight the commonality in the politics of the Congress party and the Hindutva organisations. The Congress whipped up anti-Sikh propaganda in 1984 for electoral gains, the Hindutva organisations whipped up anti-Muslim sentiments in 1992 for Hindu political mobilisation.

The enmeshing of the personal and political is shown by Bose by describing the domestic chores of the Roy household [Keya's parents' household in Delhi] and the interpolation of the external world into it. Into the daily singing practice sessions, the dinner and the conversations are brought the TV news bulletins and the newspaper stories.

The novel also leads to an unfolding of many other dimensions of the 1984 tragedy and its aftermath. Kaju's boyfriend Kabir is shocked to find out that his father Arun Sehgal, a top civil servant in Delhi, was complicit in the 1984 massacre, having not exercised his official power – whether intentionally or under pressure from 'above' – to stop the killings of the Sikhs. The younger generation of Delhi Hindus is shown to be sceptical of their parents' explanation of their role in the 1984 Delhi massacre and of their perceptions of Operation Blue Star. Shonali Bose captures this generational difference through a conversation at a social get-together. Rohit, a friend of Kabir's father, comments on the 1984 Delhi violence: 'That's long buried history. It makes a

lot of people uncomfortable. We've learnt to move on'. Kajju, still not aware of her personal link with the carnage, retorts: 'Well, I suppose I've only just heard about it so I can't yet move on! Anyway, 5,000 killed in three days in one city...that's just so unbelievable. I don't even know if that many people died in 9/11.' (p. 74). Rohit then describes the Blue Star Operation as an attack on the 'terrorists'. This infuriates Vivek, his son:

Vivek could rein himself in no longer. 'Terrorists?' he said. 'There were more pilgrims, women and children killed. Had it been simply an issue of terrorists, the army would not have done a frontal assault but would have gone in from behind and captured them. The gurdwara was attacked in such a way so as to make a point. Otherwise, why would it have been nationally televised? Vivek asked. 'It was done to humiliate the Sikhs, to put them in their place, so that they wouldn't dare to stand up to the Centre' (p 75).

The novel also manages to convey the regional and ethnic diversity of views and feelings about the political events of 1984 in Punjab and Delhi. The stance of the Bengali and Tamilian characters in the novel is shown to be distinctly different from that of the North Indian upper caste Hindu characters.

The novel ends in a heart-rending climax in its depiction of the shattered life of Kajju and her final emotional reunion with her adoptive mother. Their story is not only that of two women who are intensely related to each other, but also that of two *strong* women, thrown together by destiny, who struggle to fight against racial, religious, and class injustice. In this, the novel has a strong and finely constructed feminist stance.

In this novel Shonali Bose has created a piece of work which has the quality of a classic. In the process of constructing Kajju's voyage of self-discovery, Bose has woven together, on the one hand, the micro themes of love and betrayal and, on the other, macro themes of globalisation, migration, diasporic identity, ethnic conflict, class oppression and national power structures. Reading this novel is a political act. It is an act of political defiance of the Indian establishment that has tried to encourage forgetfulness about the 1984 carnage. I recommend readers of this journal not only to read this novel but also to buy multiple copies to give to family and friends. The novel deserves to be read as widely as possible. This novel should encourage more creative work on the 1984 massacre. This novel is not enough. There are more stories to be told, novels to be written and films to be made.

Pritam Singh

Oxford Brookes University

Rosy Singh, *Rilke, Kafka, Manto: The Semiotics of Love, Life and Death*, (New Delhi: Harman Publishing House, 2001), xxv + 280pp. Rs 560.00. ISBN 81-86622-38-1.

These are three essays bound between two covers. What brings them together is their author's single-mindedness: she has studied Rainer Maria Rilke, Franz Kafka and Saa'dat Hasan Manto's works semiotically - not their corpuses as a whole but representative writing. The three themes of the title are better not taken as flush specifics, though 'love' and 'death' are avowed preserves of the first master. In fact the author's individual titles for the three essays are much more to the point: 1. 'Rilke: Dialectics of Love and Death', 2. 'Predicament and Tribulations in Kafka's Universe', and 3. 'Human Dignity in Manto's Writing: a. Hattak b. Thanda Gosht'. The reader would do better to take the 'life' of the titular triad a bit generally, or to altogether ignore the triad and focus on the semiotics of the reading. For that is what is offered. That is what is offered against much motivated reading, whether biographically bent or hermeneutically propelled towards the reader's own predilections or those of the time. A certain authority of the written text is presupposed in discourse analysis, even in the face of once celebrated reader response (who would forget the punning à la Wolfgang Iser of Konstanz fame and Stanley Fish of 'interpretive communities?'), leading perhaps to a unity of meaning. The syntactic, the paradigmatic and the pragmatic of that analysis are laid out in each case with a fervour that is exemplary but that may also be the hallmark of a convert.

The Rilke text dealing with the 'dialectics of love and death' is the *Notebook of Malte Laurids Brigge*. It is with rapt attention that one reads the author's excursion into this novel, especially its sensitive cataloguing of death (perhaps no less aware of Baudelaire and suffused with a sense of *Dinge* than were the contemporary *New Poems*, though our author's method may not stress such 'history'), and its equally sensitive portraiture of lovers that suffer by loving but rise far above their objects of love. Those of us that have been only interested in Rilke's poetry and have relegated *Malte* to supplementary reading, may take a lesson from our author. She has done worthily by giving it its canonical due. But where she seems to be speaking more of Rilke in general and not of *Malte* alone, is the metaphysic of death. She does not name Wera Knoop of the *Orpheus* antecedent, but she is not far from there. Syntagma seems to have overtaken the paradigm. That apart, our author has done a commendable documentation of the lovers à la Rilke, in particular of Heloïse and Bettina Brentano (von Arnim) highlighting the absolute nature of their love. In full appreciation of Rilke's perception that it is women who know how to love (and to love is the issue and not, to be loved), she reads an early feminist in him.

Our author is a Germanist and her handling of Rilke carries that confidence. Yet it cannot be denied that she feels more at home with Kafka. Of course she has taken the more universally known text, *The Trial*, and surely the more exciting to deal with; still her grasp of the canon is unmistakable. And by canon

is not merely meant the Kafka manuscript and its problems, but also the critical canon. True she does not mention Walter Benjamin who could be better pitted against Lukacs, but her mention of Milan Kundera and, even if for the purpose of refutation, Elias Canetti does her credit. As to her discourse analysis, it is a perfect job that she does and the reader has little more to ask from her. However, her use of the word 'existential' is perhaps a trifle excessive. I, for one, do not straightaway see an existential crisis in the very opening sentence of *The Trial*. What is more obvious is rationality, if you want legal rationality, for one cannot be arrested without having done a wrong. Joseph K. has not done a wrong, so he must have been framed, that is, someone must have been telling lies about him. The most that can be said about his arrest is that it is absurd, absurd in the common English sense, without any metaphysical overtones. That would be hindsight. Anyway, our author only rarely trips. On the other hand, her gloss of the details is most comprehensive. In fact, she hardly misses out on any. One can name one or two, bits about Fraulein Burstner for instance, early and late, but perhaps none about the law courts and their precincts and the people around. Indeed it is a pleasure being ushered into the text by her. Reading her run-through to land a discourse, one relives it. And one would like to relive it again and again rather than being peremptorily told what it is all about. Surely our author does not do any such telling. That way she does a better job with Kafka than with Rilke. One may have liked her to add more aphorisms at the outset, especially the one about the crows and the heavens, but that is neither here nor there. One may also have liked her to talk about that story, 'The Judgement', where a successful young man named Georg Bendemann about to be married to one Frieda Brandenfeld and estranged from his boyhood friend, a failure by worldly standards, and from his widower father, a virtual recluse after his wife's death, is sentenced to death by drowning by him - that judgement thrusting him out on the road, on to a bridge and eventually into the water under. But perhaps that too is neither here nor there.

Our author's third essay is her best. One reason may be Saa'dat Hasan Manto's language that is much nearer home. Another reason may be Saa'dat Hasan Manto's world that too is much nearer home. And a third reason may be a sense of commitment to something that is so near home. Not that there is no Manto scholarship to draw on. But she feels so freshly and so urgently about him that she can claim to have carved out a niche there for herself - after reading her essay one will have to reckon with her as a Manto scholar. It is two of his stories that she deals with, 'Hattak' and 'Thanda Gosht'. Both she unravels, doing a thorough discourse grammarian's job and fending ideologies from above - first the presentation, then the analysis. 'Hattak' is the story of a confirmed prostitute who hangs framed pictures of her regular customers on the wall above her bed. Her earnings are not bad. She had just had a visit and was asleep with the naked filament light on. Manto does not spare details. A knock from her pimp wakes her up. She must go out with a rich customer who is waiting in a car outside. She must put on something attractive. From the dark inside of the car the *seth*

flashes torchlight on her face and shoos her away as if she were not the right *gosht* for him. The car leaves. This is the *hattak*, the hurt, insult, humiliation - all three in an ascending order. Our author takes issue with Manto's English translator who does not get the full significance of that word. The story is less about that shooing event as such than about how her hurt cum insult cum humiliation seeps into her psyche - how in other words she gradually wakes up to assert what our author calls her 'human dignity'. That takes the form of her pulling down those pictures above her bed, frames and all, and flinging them out into the street, including that of her just arrived 'lover' customer, the surrogate 'husband' who never pays but takes, the all-powerful *havaladar* from Puna. And then with that vestige of authority thrown out, she goes back to sleep with her dog with scabies now beside her from its usual place on her slippers under the bed.

Not an easy story spelling doom on the flesh trade. Our author quotes two other stories by Manto to highlight the issue of *hattak*, 'Khushia' and 'Nara'. 'Khushia' is about a pimp who is hurt by the nonchalance of a young prostitute who opens her door to his knock nearly naked. No sense of shame, no recognition of his manhood, as if she were no *gosht* to him but only to the buyers he brings. 'Nara' is about the insult a groundnut-seller suffers in the form of a foul abuse from his landlord when he came to beg a little time to pay his overdue rent - the insult that stupefies him at the outset but eventually drives him into letting out a loud and enormous but indeterminate cry. To make her point home, our author also compares 'Hattak' with three western 'flesh' stories, Brecht's *Good Woman of Setzuan*, Sartre's *Respectful Prostitute* ('respecteuse' is literally 'respectful'), and Maupassant's *Boule de Suif*. I am not sure about the first comparison, for the issue in Brecht is not the flesh trade as such but goodness (though the irony is not missed that the only good person found in Setzuan is a prostitute). Can a 'good' person stay good in this society? Is not Shui Ta the necessary other of Shen Te? The second comparison too is not really to the point, for the crisis there is built around the issue of respectability (white preserve and Lizzie too is white) used as bait against truth (the Penguin translation's 'respectable' may thus have a point). However, the third comparison is perfectly valid, though the double-edged humiliation in the case of Maupassant's *gosht* or *boule de suif* is primarily charged with pathos.

Our author has taken good note of Manto's concern with *gosht* or flesh and offered its semiosis from a number of stories. She reads 'Thanda Gosht' not just as a Partition story, as a study of communal violence, but as a story built around the heat and the cold of flesh. The situation at hand is hot. Here is Ishar Singh come back after eight days to his flesh-mate, Kulwant Kaur, brandishing a sword, obviously reminiscent of the violence he has perpetrated. But where has he been these eight days? Kulwant has every reason to ask. An embrace is not the true answer. Was there another embrace around? Kulwant has violence mounting inside along with her desire. The cut she gives him with his sword - the cut that is going to be fatal - does not infuriate him. Why? Besides his lately

earned impotence too does not seem to bother him. He seems to be at peace. Finally he confesses. Yes, there was another embrace or rather, attempted embrace, for the young flesh of his victim was found out to be cold. She had died during his escapade with her body on his shoulder. His errant days have been an aftermath to that discovery. So is his loss of virility. On his encounter with *thanda gosht* he too has gone cold. (The English translator of the story may have a point thus in calling it 'Colder than Ice', though our author is right that 'Cold Flesh' would have carried that semiosis.) Kulwant is his steady love, he has come back to her with his sense of peace, his newly discovered human dignity beyond the mere pull to *gosht*. And he has no regrets dying at her hand and on her bed. If one wishes one may call it a case of love and death, though not a la Rilke.

Our author's semiotic orientation is also borne out by her detailed analysis of Manto's English translation passage by passage. She locates all the deletion and deviation, all the softening of the language. 'Thanda Gosht' is Manto's masterpiece, but it did not go well with the public - it landed him in an obscenity suit the vicissitudes of which have been recounted by our author. Her essays on Rilke and Kafka - more Kafka than Rilke - vindicate her involvement with German studies. But it is her two-part essay on Saa'dat Hasan Manto that proves her métier. Those were her atelier, this is her product. Congratulations, Rosy Singh.

A last word on a couple of lapses. I am not marking the printer's devils, though there may not be many. But she often writes 'looses' for 'loses': oversight or mistake? Besides, she seems to think that the French *imaginaire* is more potent than the English 'imagination'. But can we say that after Coleridge? The front and back covers of the book are pretty. But it could have done well with an index.

Amiya Dev

Formerly Jadavpur University and Vidyasagar, West Bengal

Jane Stevenson, *London Bridges* (London: Mariner Books, 2002), 304 pp. (pb). £8.99. ISBN 061825773X.

Social mobility is an important aspect of the global milieu: communities from developing countries have been migrating to developed ones. This tradition of migrations is very prominent in the fabric of third world societies. Acceptability of any migrant community anywhere in the world depends upon the perspective of the native population. The Indian community, and particularly Punjabis, have a long history of migration especially to the UK and North America. British society is also traditionally considered to be conservative, racist and to some extent xenophobic. As literature is the mirror of society any variations and fluctuations in the temperament of a society are uniquely depicted in its

contemporary literature. Jane Stevenson's *London Bridges* sheds light on the changing norms and values regarding migrant acceptability in contemporary British society.

London Bridges celebrates the success of Asians in contemporary British society. Dilip Dhesi, the protagonist, represents the successful Asian who is logical, rational and ethical. Dilip's balanced personality represents an average Asian in his most compatible form in contemporary British society. Dilip Dhesi, an Asian hailing from Southall, symbolizes the perfect union of two entirely different worlds. He is a character who is aware of his traditional roots, and he nourishes and cherishes them. He lives away from his parents, his brothers and sisters but just to have 'a bit of peace'. Though he lives away from his parents, he is aware of their feelings and respects them too. His promise to his mother, 'If I give you an English daughter-in-law, I'll send written notification in advance' (p.105), shows his concern about her emotions, her feelings. Although he has strong traditional roots he is very much embedded in mainstream British society. Dilip may represent average Asians but he does not represent their dilemma, the excruciating ordeal which they sometimes undergo while creating a balance between two different cultures. He represents a character who has successfully struck a balance between his personal and social life.

New aspects of Dilip's character demand our attention when we analyse the character of Edward Lupset, the antagonist of the novel. An 'insider born and bred' he finds it difficult to adjust within the professional establishment, mainly because of his unethical personality. Whereas Dilip, an 'outsider', is well at ease and is having edge over Edward the 'insider' within the professional establishment. Dil appeared to be springing with effortless competence across the chasms that open in the way of an outsider who seeks to penetrate the establishment (p. 14).

The most striking, the most forthcoming aspect of Dilip's personality is his de-colonised mind. He has faced the attitude of 'coloniser mind' in university establishment but he is free from any kind of imperial hangover. He confesses the fact that at one point of time 'I was so impressed by the whole High Table bit, I actually believed they had the right to judge me as a person' (p. 108). He gives the reader a glimpse of his balanced and confident personality as he accepts, 'I don't worry about them accepting me any more.' The character of Dilip proves the multi-racial, multi-cultural aspect of contemporary British society and negates any charge of its being a xenophobic society in any way.

Dilip's views on various aspects of British society make 'London Bridges' a socio-detective piece of fiction. He reckons, 'social justice and self interest coincide if you think about it' (p.107). His social commentary is what makes him stand apart from other characters in the novel.

London Bridges brings forth the character of London city in a unique manner. The ecclesiastical Anglo-Greek relationship is well researched and convincing. The multi-cultural, multi-racial aspect of London is presented through characters like Dilip Dhesi, Jeanene Malone, Eugenides. The novel is

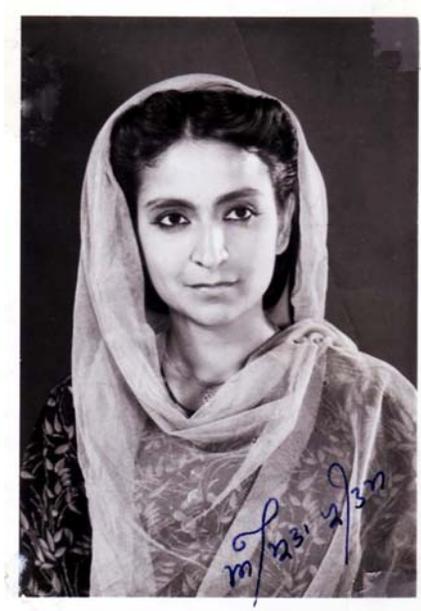
full of intrigue. The tension builds gradually but consistently. *London Bridges* is all about building bridges that link us to others. The novel introduces the reader to the different and exciting worlds of 'Alexiad', Mount Athos Lavra, university establishments and a bombsite garden at Southwark. Jane Stevenson gradually builds 'bridges' from one world to another and everything falls in place in the end. All the worlds are completely synchronized with each other till the end of the novel. As a whole the novel provides the reader with a thrilling experience while realistically portraying the condition of the Asian community, and Punjabis especially, in Great Britain.

Gauravjit Singh

Government College, Chandigarh

In Remembrance

Amrita Pritam: Adored and celebrated daughter of Punjab



Amrita Pritam. c 1950. New Delhi. Photographer unknown.
AMARJIT CHANDAN COLLECTION

With the death of Amrita Pritam, the first ever major female Punjabi poet, at the age of 86 after a prolonged illness, the chapter in the history of twentieth century Punjabi literature named after her has come to an end. Her contribution is unparalleled in Punjabi letters. She will always be remembered for her classic poem on for the suffering of all Punjabi women during the partition of the Punjab in 1947.

Born in 1919 to school teacher parents in Gujranwala, western Punjab, she started writing at a very young age. She got a slap from her father on her face instead of praise for her first ever poem which she had written for her imagined lover who had appeared in her dream. At the age of 16 she obtained *gyani* Punjabi vernacular diploma – her only academic qualification - and published her first collection of poems *Thandian Kiranan* (1935) – Cool Rays – under her maiden name Amrit Kaur. The same year she was married off to a ceramics trader Pritam Singh Kwatra whom she divorced in the late 1960s but she chose not to drop his first name as her surname.

Amrita cut her literary teeth in the politically charged atmosphere of Lahore but it is not imaged in her early rhetoric works which are about evil social customs. Her different creative phases seem to be influenced by her unacknowledged intimate friendships with her contemporaries. The first two were 'pseudo-Marxist' as Khushwant Singh has put it. Mohan Singh = romantic progressivism – formative period 1940-1950; Navtej Singh = 'peace movement' and flirtation with the socialist block, 1950-1960; and Sati Kumar = western poetic themes and idiom, 1960-1970. Sati Kumar tells me: 'Amrita breaks away openly with her past poetics with the publication of *Kagaz te Canvas* (1970) – The Paper and the Canvas. We went through each word and syllable in it on her sofa on the sole principle: no rhymes and no flowery wall-paper.' Amrita trashed all her above-mentioned friends in her autobiography *Rasidi Ticket* (1976), The Revenue Stamp.

Amrita had more than 100 books of poetry, fiction and non-fiction to her credit. The selections were translated into English by Khushwant Singh, Charles Brasch, Man Mohan Singh and Pritish Nandy. Other targeted foreign languages were Albanian, Bulgarian, Czech, Danish, French, Hungarian, Japanese and Russian. *Mehfil*, a quarterly from Michigan State University published an issue on her works. None of her books published in Hindi carried the translator's name nor the name of the source language. Three of her novels - *Kadambri*, *Daku* and *Pinjar* were made into Hindi films.

Khushwant Singh sums up Amrita's range and limitations in his celebrated *A History of the Sikhs*. Vol II (1966, reprinted 2005):

...Although she has given up preaching, the hard lot of Indian women remains the dominant theme in most of her poetry and prose. ...[She] has not achieved the same distinction in her fiction as she has in her poetry. Her characterization is often weak and her plots so contrived as to appear manifestly unreal. The Indian film industry has exercised on her, as it has on many Indian writers of her generation, a most baneful influence. ...Amrita is at her best in *Pinjar* – The Skelton [the story of a woman victim of 1947 upheaval].

Igor Serebryakov, the Russian Indologist, made a similar observation in his book *Punjabi Literature* (Nauka, Moscow, 1968):

[Amrita Pritam's] great merit is her exquisitely poetic language. A somewhat narrow scope of problem matter [of the novels] accounts for her comparatively limited success as a prose writer.

Amrita did not keep live contact with the Punjab after she made Delhi her home in 1947, where she worked with All India Radio producing a daily half-an hour programme in Punjabi till the late 1960s. She never went back to Lahore and rarely visited East Punjab apart from attending official functions.

Nagmani (the mythical gem in a serpent's head) was a quality literary monthly which Amrita had started in 1966. It dominated the Punjabi literary scene for three decades. It was conceived by Sati Kumar a young modernist poet

and designed by Inderjeet, who later changed his name to Imroz. He also deftly designed all her book covers for their own publishing house Nagmani Publishers, as a money-spinning venture.

Through *Nagmani* Amrita became the mentor of the third generation of young Punjabi poets and short story writers who were largely apolitical. With *Nagmani* a new trend of confessional literature in Punjabi started. The young writers coming from small Punjabi towns and villages indulged in do-it-yourself psycho-analysis writing about their repressed sexuality. This was the time when East Punjab was going through the green revolution and mass emigration to the west had just started. *Nagmani's* prime concern was good quality literature. It accommodated all writers from Naxalites to absurdists. From early 1980s Amrita embraced the philosophy of the Bhagwan Rajneesh of Pune, astrology, *tantric* practices and parapsychology, so much so she believed that she and Indira Gandhi had been sisters in a previous incarnation.

Amrita was more of a celebrity in the erstwhile eastern block countries. A Georgian composer Shalva Mahvelidze dedicated his music to her, composed for the poem *Amrita Pritam* written by a Georgian poet Irakali Abashidze. She received the Vaptasarov award, named after the Bulgarian national poet, in 1980.

In life Amrita became a one-person institution. She turned her back to the eastern block when she refused to attend the Soviet-sponsored Afro-Asian Writers Conference held in Delhi in 1971 and thus dealt a big blow to the organisers Mulk Raj Anand and Sajjad Zaheer. Her one-time close friend Sati Kumar tells me now that it was not out of any ideological commitment but out her 'desire to be recognised by the west particularly the USA'. But it never happened.

I quote again Khushwant Singh, her translator and confidant, on her legacy:

All the praise that is now being lavished on her is mainly from people who have not read her. I feel that her only claims to immortality are those ten lines of lament to Waris Shah. Those haunting lines will remain long after the rest of her writing is forgotten.

Amarjit Chandan

Amrita Pritam née Amrit Kaur, Punjabi writer, born Gujranwala 31 August 1919, died New Delhi 31 October 2005

Amrita Pritam: A Restless Cloud

Amrita Pritam, the eminent Punjabi poetess, novelist and short story writer and an outstanding literary figure of South Asia, passed away quietly in her sleep at her residence, 25 Hauz Khas, New Delhi, during the afternoon of October 31, 2005. With her demise, a golden era of Punjabi literature, of which she was the shining light, came to an end.

Before she made her mark on the scene of Punjabi literature, the voice of Punjabi women was either weaved into epic love stories by the classical Punjabi poets who were all male or was hidden behind certain forms of Punjabi folk songs that have anonymously given expression to women feelings for many centuries. Amrita Pritam single handedly changed this forever.

Among her many overlapping identities, the one that truly represents her is her Punjabiati. She got her inspirations from Punjabi folk songs, classical literature and Punjabi culture, and remained true to her Punjabi origins although a few of her later novels and short stories were first published in Hindi. Even after Partition, her creative self remained bonded to the whole Punjab.

It was no coincidence that after witnessing the atrocities and bloodshed caused by Punjab's partition, when she cried out for help she could think of no one else but Waris Shah. The way her famous poem '*ajj aakhan Waris Shah nun, kiton qabran wichon bol,*' resonated with the sufferings of millions of Punjabis is one of the miracles of great poetry.

During her lifetime, she published more than 75 books, including 24 novels, 15 collections of short stories, 23 volumes of poetry, two biographies and a number of other works of prose.

The recognition for her artistic genius poured in from all directions. From the large scale sale of her books to translations in almost all Indian and east European languages, and in English, French, Danish and Japanese. Three Bollywood movies were based on her novels. More recently *Pinjer*, a movie based on her novel by the same name, received high acclaims.

She received the highest civilian awards in India, including Padma Shiri, Padma Vibushan, Sahitya Academy Award, Bharatia Jnanpith Award, as well as honorary doctorate degrees from 5 universities. She was also made a member of Rajaya Sabha, the upper chamber of Indian Parliament, from 1986 to 1992.

That is not how her life was supposed to turn out. For a girl born in 1919 in the then small town of Gujranwala in a deeply religious Sikh household, she was supposed to remain confined in many layers of boundaries within a rigid and traditional social structure. There was no room for either a self-willed personal or creative fulfilment.

She achieved both. Without even making the compromise of permanently keeping the personal and creative aspects of her life in two separate compartments. She eventually melded them into one cohesive expression of her inner beliefs and aspirations. It was a struggle, slow and long and often torturous. It required courage more than anything else, as she had once written, 'What matters is not life, but the courage you bring to it.'

Both her parents, Nand Sadhu (Kirtar Singh Hitkari before he had renounced the world and joined an ashram) and Raj Bibi, were teachers in a school in Gujrawanla at the time of her birth. Her father had by then left the asharam to marry her mother and raise a family. Her mother passed away when she was only 11. She lived a lonely life for the next few years in a house full of books about religion and meditation, following the rituals and prayers with her father who didn't approve of her making any friends.

She did learn the art of rhyme and rhythm and metrical compositions from her father, who wanted her to write about only religious themes, and started writing her own poetry. Perhaps it was also the example of her father that planted the seeds of the guiding principle of her life: to live in peace of her innermost self, without worrying about how the world thought of her.

Her first book of poetry, *Amrit Lehran*, was published when she was barely 17 years old. She got married about the same time. In 1936 she moved to Lahore with her husband, Pritam Singh. She changed her name from Amrita Kaur that had appeared on her first book, to Amrita Pritam, which was destined to become a household name in Punjab.

Lahore in the 1930s and until the mid-40s was a cosmopolitan Punjabi city where Hindu, Sikh and Muslim Punjabis were living in a religious and cultural harmony. Many of the famous pre-partition era's Punjabi writers were settled in Lahore, which was then the center of Punjabi literary activities. Amrita Pritam became a part of the literary circle centered around Gurbux Singh's Punjabi magazine *Preet LaRee*. She took formal training in music and dance, and joined Lahore Radio as a singer of folk songs.

A prolific writer all through her life, Amrita Pritam published 8 books of Punjabi poetry before partition, gradually moving away from her early love poems and folk songs to more progressive themes. Her collection of poems *Loke PeeR*, published in 1944 with poems on the tragedy of the Bengal famine of 1943, signaled a clear departure from her earlier poetry.

After partition, Amrita Pritam settled in Delhi. She wrote a number of poems, short stories and novels stories on the theme of Punjab's partition that were widely recognized as the best articulations of this colossal tragedy. At the same time, she increasingly started picking up themes on women issue in her short stories and novels that brought her wide popularity among Punjabi and Hindi readers.

With *Sunehe* (Messages), another collection of Punjabi poems published in 1955, Amrita Pritam reached the height of her poetic art. This was an anthology of poems that were mostly dedicated to and woven around her deeply emotional feelings of love for Sahir Ludhianvi, a famous Urdu poet. This book won her the Sahitya Academy Award. She was its first women recipient.

Amrita Pritam had never reconciled with her loveless arranged marriage. This also became a prominent theme in her poems and novels. Sahir Ludhianvi was her first true love. She openly talked about it in her biography *Rasidi Ticket* (The Revenue Stamp) that became one of her most popular book and has been translated in many languages. The reconciliation in her personal life finally came when she got divorce from her husband in 1960 and started living with Imroz, an artist and painter, who became her dedicated companion for the rest of her life. It proved to be a blessing for Punjabi Literature.

Amrita Pritam and Imroz started publishing a Punjabi magazine, *Nagmani*, in 1966. *Nagmani*, like *Preet LaRi* before it, played a very important role in opening new vistas for Punjabi literature. *Nagmani* helped in establishing the writing careers of Shiv Kumar Batalvi, Manjit Tiwana, Amitoj, Dalip Kaur Tiwana and a long list of other modern Punjabi writers.

Nagmani was regularly published until 2002 when a minor accident, a fall at home at the ripe age of 83, signalled the beginning of the final and quieter period of Amrita Pritam's life which she had lived with such extraordinary intensity.

Even as her ability to walk became gradually more restrictive and the energy to speak was eventually reduced to no more than a few minutes at a time, the doors of her house remained opened. 25 Hauz Khas had been the gathering place of Punjabi writers for many decades, where hundreds of visitors from India, Pakistan and abroad had been coming each year.

The number of people coming to see her during those last years had trickled down to a few, mostly young writers. She could still inspire them, telling one visitor after the Gujrat riots, 'Why do we humans fight? Can't we learn something from flowers? They are all so beautiful but never become jealous of each other.'

She continued to write an occasional poem. *Main tainu pher milange*, was perhaps her last poem. It was dedicated to Imroz, her companion for the last 41 years:

I will meet you again
Where? How? I don't know
Perhaps as a figure
Of your imagination
I will appear on your canvas
Or perhaps appearing as a mysterious line
On your canvas
Quietly,
I will keep staring at you.

Only for those last three years, her once poetic broodings came true: '*Ve main tiRke ghaRey daa paani – kal assan naheen rehnaan*' (I am like water in a cracked earthen pitcher – It won't last for too long).

For the rest of her life, she soared high as a restless cloud, full of energy and strength, free from limits and boundaries, always gathering precious droplets of moisture from the winds and giving out life sustaining water and shadows, never suspended at one place for long and ever rising to new heights.

We are too close to the extraordinary phenomenon that was Amrita Pritam's life and creative art to fully grasp its significance and achievements, or to pass a final judgment on it. There is no doubt that as the first universally recognized women Punjabi poet and novelist, she has secured a permanent place among the great Punjabi writers.

[Courtesy of **Safir Rammah**: *The Dawn*, November 13, 2005]

Amrita Pritam - a symbol of courage in the face of suffering

On October 31, 2005 the well-known Punjabi female fiction writer and poet, Amrita Pritam, died in New Delhi. She had been ill for several months. She was

one of the last names known and respected on both sides of the Punjab. She was born in a Sikh family in Gali Arainan, Gujranwala. With her departure the old Punjab will begin to fade away as a source of reference for literary imagination and creative work, but as long as there are hearts that beat for the Punjab Amrita will live.

Amrita Pritam was made of a stuff that enabled the women of 1947 to experience indignity and violation and yet survive. Because when men of pride and ambition could not agree to share power in a united Punjab the inevitable was bound to happen. It would be severed into two, bleeding profusely. The women were bound to be a lustful target because men of pride are also men without shame. To carry away or rape a woman of the opposite group is a special type of revenge because it not only symbolises the defeat of her protectors it also declares to the world that they are not men enough.

According to government statistics at least 95,000 women were abducted in the Punjab in 1947: 55,000 of them were Muslim and 40,000 Hindu and Sikh. According to Urvashi Butalia, at least 75,000 of them were raped. Thousands were never found or returned.

Amrita Pritam wrote about the condition of women during the partition but also later in Indian society. She wrote novels, short stories and poems touching on many subjects but always with a feminist perspective imbued with intuitive wisdom. She received ample recognition from her peers and was bestowed many awards.

Her greatest poem remains the one she wrote on partition and dedicated to Waris Shah (1722-1798), the most celebrated author of one of the most famous versions of the greatest love epic, Punjab's *Romeo and Juliet*, the saga of *Heer and Ranjha* signifying unfulfilled love. At the heart of the story is the fact that Heer is denied her rights and married away to someone the family approves of as if she were a commodity rather than a thinking, feeling human being. Thus she symbolises the oppression of women of the Punjab.

The *Heer* of Waris Shah is recited and sung even now. When I was a child, the *Heer* was sung by special bards. In our native Mozang it was Sain Kuthaes (I don't know his real name), who would cast a spell in a melodious, melancholic voice drenched in pathos. Waris Shah is considered a man of encyclopaedic learning in the best tradition of the Sufi-scholar and has written the social history of the Punjab.

Amrita Pritam could have dedicated her poem to some other great master of Punjabi literature or spiritual tradition. In fact some Sikhs felt she should have addressed Baba Guru Nanak (1469-1540), the founder of Sikhism, in her poem. But Amrita, lamenting the humiliation of the Punjabi women, wanted to appeal to the common tragic-romantic traditions of the Punjab rather than her spiritual heritage. She writes in 'Aaj Akhan Waris Shah nun' (Today I call Waris Shah):

*aj aakhan Waris Shah nun, kiton kabraan vichchon bol,
te aj kitab-e-ishq daa koi agla varka phol
ik roi si dhi Punjab di, tun likh likh maare vaen,
aj lakhaan dhian rondian, tainun Waris Shah nun kaehn*

uth dardmandaan dia dardia, uth takk apna Punjab
 aj bele lashaan bichhiaan te lahu di bhari Chenab
 kise panjan panian vichch ditti zehr rala
 te unhaan paniian dharat nun ditta paani laa
 is zarkhez zamin de lun lun phuttia zehr
 gitth gitth charhiaan laalian fut fut charhiala qehr
 veh vallissi vha pher, van van vaggi jaa,
 ohne har ik vans di vanjhali ditti naag banaa
 pehlaa dang madaarian, mantar gaye guaach,
 dooje dang di lagg gayi, jane khane nun lag
 laagaan kile lok munh, bus phir dang hi dang,
 palo pali Punjaab de, neele pae gaye ang
 gale`on tutt`e geet phir, takaleon tuttii tand,
 trinjanon tuttiaan saheliaan, charakhrre ghukar band
 sane sej de beriaan, Luddan dittiaan rohr,
 sane daliaan peengh aj, piplaan ditti tor
 jitthe vajdi si phuuk pyaar di, ve oh vanjhali gayi guaach
 Raanjhe de sab veer aj, bhul gaye uhadi jaach
 dharti te lahoo varsiya, kabraan paiaan choan,
 preet diaan shaahzaadiaan, aaj vichch mazaaraan roan
 aj sabbhe Kaido` ban gaye, husn, ishq de chor
 aj kitthon liaaiye labbh ke Waris Shah ik hor
 aj aakhan Waris Shah nun, kiton kabraan vichchon bol,
 te aj kitaab-e-ishq da, koi aglaa varka phol

Translation:

Today, I call Waris Shah, 'Speak from your grave'
 And turn, today, the book of love's next affectionate page
 Once, a daughter of Punjab cried and you wrote a wailing saga
 Today, a million daughters, cry to you, Waris Shah
 Rise! O' narrator of the grieving; rise! look at your Punjab
 Today, fields are lined with corpses, and blood fills the Chenab
 Someone has mixed poison in the five rivers' flow
 Their deadly water is, now, irrigating our lands galore
 This fertile land is sprouting, venom from every pore
 The sky is turning red from endless cries of gore
 The toxic forest wind, screams from inside its wake
 Turning each flute's bamboo-shoot, into a deadly snake
 With the first snakebite; all charmers lost their spell
 The second bite turned all and sundry, into snakes, as well
 Drinking from this deadly stream, filling the land with bane
 Slowly, Punjab's limbs have turned black and blue, with pain
 The street-songs have been silenced; cotton threads are snapped
 Girls have left their playgroups; the spinning wheels are cracked
 Our wedding beds are boats their logs have cast away

Our hanging swing, the Pipal tree has broken in disarray
 Lost is the flute, which once, blew sounds of the heart
 Ranjha's brothers, today, no longer know this art
 Blood rained on our shrines; drenching them to the core
 Damsels of amour, today, sit crying at their door
 Today everyone is, 'Kaido;' thieves of beauty and ardour
 Where can we find, today, another Warish Shah, once more
 Today, I call Waris Shah, 'Speak from your grave'
 And turn, today, the book of love's next affectionate page

I met Amrita Pritam in 1990 in Delhi. I knew she adored poet Sahir Ludhianvi (1921-1980) and told her I had named my elder son, Sahir, also out of similar feelings. She smiled and said 'My hero has been born again.'

[Courtesy **Ishtiaq Ahmed**: *Daily Times*, 9 November 2005]

Nirmal Azad: A radical Punjabi Economist

The death of Professor Nirmal Azad on September 14, 2005 at Patiala has brought a turbulent life to a tragic end. His life can be divided into two phases- an early phase, which was creative and productive, and a later phase which, it appears, was troubled and self-destructive. My association with him was primarily during his early phase and my view of him is more influenced by the memories of that phase. I came to know Nirmal when I was studying for my Honours School in Economics degree at Panjab University, Chandigarh where Nirmal had come to study for his Masters in Economics. Along with some other friends, we both got involved in varying degrees with the Marxist-Maoist movement which had captured the imagination of the idealistic youth all over the world in the late 1960s and the early 1970s. Even at that time Nirmal had an unusually strong individualistic streak in him which did not gel well with the collectivist ethos of the Marxist tradition. Though other friends were very critical of his individualistic streak, I persuaded those friends, though not always successfully, to be more tolerant of him. I treated him with respect and affection and he was more open to suggestions for change when I used to talk to him alone. He confessed to me that he was very influenced by Napoleon's life which propelled him to adopt an attitude of conquest towards life. This Bonapartist influence did not sit comfortably with the Marxist ethos and though this contradiction seems to have pervaded his entire life, the intellectual attraction of Marxism proved more powerful in his early phase.

He passed his MA with first class, taught at Panjab University's post-graduate centre at Rohtak in Haryana (which later became Maharishi Dayanand University) for a few years and then settled at Punjabi University, Patiala. Born in March 1947, he was the first in his family to have studied at the university like many in his generation. He was proud of the transition he had made from a village life in a backward part of Gurdaspur district to a respectable academic life. He helped many younger members of his large family to acquire higher

education and upward social mobility. He showed keen interest in educating his sisters and other girls in the family. He married Balbir, a bold and generous woman with left-wing political orientation, who contributed significantly to sharpening his perspective on gender equality. Nirmal's politics had a deep impact on many younger members of his family. His younger brother Kulwant and sister Devinder joined the Communist Party of India (Marxist) (CPM). Later on after the split in Punjab's CPM, they joined the CPM (Pasla). One of his cousins Gurmeet was once a leading figure in the pro-Maoist Punjab Students Union, the most powerful student organisation in Punjab in the 1960s and the 1970s. Both Gurmeet and Devinder along with most immediate members of Nirmal's family have migrated to America. It is, perhaps, a reflection of the tortured nature of Punjabi society and politics since the 1980s that Gurmeet has turned towards religion and Sikh nationalism. If one were to construct a historical profile of Nirmal's family in the last few decades, it will mirror many trends in Punjabi society concerning rural-urban migration, women's education, landscape of competing political ideologies and migration to the West.

Nirmal's attachment to his social roots led him to do research on the small peasantry in Punjab and he produced an impressive PhD thesis on the subject. Based on the Leninist method of the differentiation of the peasantry, his work shows scholarly reading on the subject but at the same time reluctance to engage critically with Marxist orthodoxy. When I was studying at Jawaharlal Nehru University (JNU) and published my first paper on the Italian Marxist Gramsci's concept of hegemony, he congratulated me but also told me that he did not particularly like my 'drift' towards Trotskyism and European Marxism. He did, however, show more openness when he invited me and a group of my 'Trotskyist' friends from JNU for a seminar on the Left movement in India under the banner of Marxist Study Forum he had organised in Patiala. Through this Forum, Nirmal made a leading contribution towards the radicalisation of intellectual and political culture in Patiala. He organised lectures and discussions on contemporary economic and political issues. The left wing scholars who visited Patiala at the invitation of the Marxist Study Forum included Krishna Bharadwaj, Randhir Singh, Prabhat Patnaik, G.S. Bhalla, Utsa Patnaik, T. Shanin and Bipin Chandra. I had accompanied Krishna Bharadwaj, my MPhil supervisor at JNU, to her lecture at Patiala and I remember that she was highly impressed with the level and quality of intellectual exchange she had experienced at her lecture. Along with these intellectual activities, Nirmal also played a leading role in the trade union work of the Punjabi University Teachers Association.

Nirmal also made an effort to broaden his intellectual horizons by academic visits to some leading institutions abroad. He spent 6 months in Warsaw to acquaint himself with the research on the functioning of centrally planned economies and 9 months in Paris to familiarise himself with the research on the revolutionary potentialities of the peasantry. During his stay in Warsaw and Paris, he was a keen observer of the social and political trends in Poland and France. When he came back from Warsaw, he told me that he was struck by the

problem of alcoholism in Poland which, he thought, was indicative of some malaise in that society but he also praised the humane methods of the police in picking up drunkards from the streets at night and transporting them to their residences. Nirmal also observed the close proximity between the Catholic Church and the Communists in Poland, and wondered whether in the context of Punjab, Akali-Communist alliance based on the progressive potentialities of the egalitarian teachings of the Sikh Gurus was the most desirable political combine. He was in Paris at the time of the Operation Blue Star and he told me that he was amazed by the ordinary Parisians' sympathy with Bhindranwale and his comrades in their resistance to the entry of the Indian army into the Golden Temple complex.

When I came back from JNU to teach at Panjab University, Chandigarh, Nirmal not only asked me but virtually forced me to write a paper in Punjabi on 'Imperialism, Indian Capitalism and Punjab Economy' for a seminar he had organised at Patiala. Later on, he was kind enough to include it as the leading paper in *Punjab di Arthikta*, a book he edited for Punjabi University, Patiala. I remain indebted to him for the opportunity he gave me in writing an economics paper in Punjabi because that is the only paper on Punjab economy I have managed to write in Punjabi. What I admired most in Nirmal was that he wrote extensively on Punjab economy for Punjabi language newspapers. In order to reach as broad and diverse readership as possible, he wrote for newspapers with varying ideological orientations. These included the Punjabi nationalist *Ajit*, the Hindu nationalist *Jag Bani*, the ideologically ambiguous *Punjabi Tribune*, the pro-CPM *Desh Sevak* and the Sikh nationalist *Aj Di Awaz*. Through his writings in these newspapers, he has not only contributed to enhancing the understanding of Punjab economy among the readers of these newspapers, he has also contributed to the enrichment of Punjabi language and its modern scientific vocabulary. It might not be an exaggeration to say that of all Punjabi academics, it was Nirmal whose writings reached the largest number of readers in Punjab through his contributions to the Punjabi newspapers. His contribution to economic journalism in Punjabi will be difficult to surpass in the near future.

My friend Amarjit Chandan, the London based Punjabi poet, has reminded me about Nirmal's interest in Punjabi poetry. Many of Nirmal's poems have been published in Punjabi newspapers and magazines. Chandan also remembers Nirmal's '*jatki*' (peasant) sense of humour. According to Chandan who met Nirmal in Patiala a few years ago, when he saw the photographs of Lenin, Bhagat Singh and Bhindranwale on the walls of his 'rather grand office', he thought that that summed up Nirmal's personality. I guess that the appeal these three different types of historical figures had for Nirmal was that all of them subscribed to some version of the voluntarist conception of historical change. The earlier Bonapartist influence was finding new manifestations.

Nirmal also contributed several articles to *Economic and Political Weekly* (EPW) in the 1970s and the 1980s on the political and economic developments in Punjab. When I met Krishna Raj, the editor of EPW, in Oxford in 1990, he told me that he valued very highly Nirmal Azad's contributions to EPW and that he was sorry that Azad seemed to have stopped writing for EPW. When my first

article was published in EPW in 1983, Nirmal wrote a letter of appreciation from Paris and also conveyed the appreciation of the article by Ashok Rudra, a leading left wing Indian economist, who was also a visiting academic in Paris then. Nirmal was as generous in appreciation as he was harsh in condemnation. He alienated many people, including some of his friends and well wishers, by the harshness with which he sometimes treated them.

After I came to Oxford in the late 1980s, I came to hear very many unpleasant things about him and his life. I felt sad to hear all that but felt helpless to do anything. I thought that if he could be re-connected to scholarly activities that might give a productive orientation to his creative energies. With that objective in mind, I tried to persuade him to participate in a few international conferences. I even arranged some funding for him to contribute a paper to the Political Economy of Punjab panel which Shinder Thandi and I had organised at the International Congress of Asian and North African Studies at Hong Kong in 1993 and the European Conference on Modern South Asian Studies at Edinburgh in 2000. He wrote papers for both the conferences but eventually did not turn up. He probably had gone too far into the dark alleys of depression and self-harm. My friend Prof. Bhupinder Singh from Patiala thinks that one reason for Nirmal's 'disorientation' was the collapse of Soviet Union abroad and the rise of religious fundamentalism at home.

My friend Professor Birinder Pal Singh from Patiala, who informed me about Nirmal's death, also gave me one piece of information about Nirmal which was not previously known. Nirmal had quietly expressed a wish in a letter to the university authorities about six months back that all of his provident fund earnings and the books be donated to the Punjabi University Library. It seems that this letter was later on withdrawn. It looks as if he was grappling with the conflicting pulls of the self and the collective. He seemed to be wanting to have a last shot at dialectics. Perhaps, he wanted to convert his loneliness, alienation and social isolation into social commitment.

Pritam Singh