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Rural Non-Farm Employment, Income Distribution and Poverty: Micro Level Evidence from Punjab

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I

INTRODUCTION

The non-farm sector is fast emerging as an important component of developing rural economies, with an increasing number of rural workers seeking their livelihoods in this sector. The arguments for paying attention to this sector are gaining ground due to its perceived potential for absorbing a growing rural labour force, slowing down of rural-urban migration contributing to national income growth and promoting a more equitable distribution of income (Lanjouw and Lanjouw, 2001). There is increasing evidence that majority of the rural households rely on multiple economic activities with almost 60 per cent of the rural household income in South Asia coming from non-farm sources (Ellis, 1999). The rural households benefit even from low non-farm earnings during the distress situations of low or fluctuating seasonal as well as long-term unemployment in agriculture. The rural non-farm (RNF) sector can interact favourably to alleviate rural poverty with a greater likelihood of the poor households employed in this sector (Lanjouw, 1999; Lanjouw and Shariff, 2004). This sector also offers some means of economic security to women who are otherwise not able to participate in the agricultural wage labour market (Adams, 2000). Non-farm income, in a broader sense tends to decrease rural income inequality as compared to agricultural income, which usually induces income inequality due to the skewed distribution of agricultural land amongst the rural households (Adams and He, 1995). RNF sector provides a backstop source of income to the poor whose options in agriculture have been exhausted and provides them with a safety net to escape from sliding deeper into poverty (Lanjouw, 2001). A decline in profitability as well as in the labour absorption capacity of agriculture also forces one to look into other options of rural development than in agriculture.

The farm sector in Punjab witnessed a stupendous growth of more than five per cent per annum till the early 1990s, after which, a significant slowdown in agricultural productivity, a rise in the cost of cultivation and a decline in farm profitability was witnessed. While farm income could only grow marginally by 1.21

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per cent per annum during 1991 to 2001, the employment elasticity of the agricultural sector fell significantly from 0.54 during the 1970s to the current levels of even less than 0.20 (Joshi, 2004; Sidhu, 2002). The agricultural sector lost more than 50 million man-days of annual employment during 1983-84 to 2000-01, reflecting its inability to absorb the growing rural labour force and rendering the livelihoods of the rural landless even more vulnerable (Sidhu and Singh, 2004). The benefits of growth in the farm sector in Punjab were unevenly appropriated, widening the farm income gap between the small vis-à-vis medium and large farms (Joshi, 2004). Currently, the farm income of a large farm household is almost sixteen times the farm earnings of a small farm household (Vatta *et al.,* 2008). Farm incomes declined sharply at the rate of 8.5 per cent per annum (at 1993-94 prices) during 1999-2000 to 2004-05, causing a simultaneous increase in rural poverty from 6.2 per cent to 8.4 per during this period (Joshi *et al.*, 2007).

The current scenario reveals serious limitations of the farm sector in pushing the rural economy of Punjab on a higher growth trajectory. The non-farm sector may prove to be an important driver of future growth in the rural economy of Punjab. An increasing number of rural workers in Punjab seek their livelihood in the non-farm sector. While the proportion of rural male workers engaged in the non-farm sector increased from 22.3 per cent during 1983 to 45.3 per cent during 2004-05, the proportion of rural females seeking employment in this sector went up from 13.5 per cent to 16.7 per cent during this period (Government of India, 2006). More than one-fourth of the rural households belonging to the scheduled and backward castes, which are largely resource-poor, supplement their incomes from non-farm sources (Government of India, 2001).

The present structure of the rural economy of Punjab calls for an in-depth analysis of the potential of the non-farm sector to become an important driver of its future growth. The RNF sector may not only enhance household incomes, thereby alleviating the extent of household poverty, but may also reduce the income gap between the poor and the rich to pave the way for a more equitable growth. This paper makes an attempt to analyse (i) the pattern and composition of the rural household income in Punjab, (ii) the significance of the RNF sector in the household income, (iii) the contribution of different sources of the RNF income towards equitable income distribution, and (iv) important determinants of rural poverty with special reference to RNF income. The study hypothesises that the RNF sector, apart from contributing a significant proportion of the rural household incomes, helps in reducing the inequality in rural incomes and alleviating poverty. This is despite the fact that the motivation for seeking non-farm incomes is different for different categories of rural households; the poor opting largely to the 'last resort' activities to minimise their poverty gap while the rich diversify their income portfolio through more remunerative activities.

II

SAMPLE SELECTION AND DATA BASE

A multistage random sampling procedure was used to select a sample of 315 rural households. At the first stage, the state was stratified into three regions based on the intensity of rural non-farm (RNF) employment. A total of 10 out of 17 districts in the state were randomly selected from three regions of low, medium and high employment intensity.[1] Later, one block from each of the selected district and then two villages from each block were selected randomly, making a total sample of 20 villages. The list of randomly selected districts, blocks, villages and number of households selected from each village is given in Table 1.

TABLE 1. DETAILS OF THE SAMPLING PROCEDURE AND SAMPLE SIZE FOR THE STUDY

RNFE intensity region	District	Block	Village	Sample size
(1)	(2)	(3)	(4)	(5)
A. Low	Ferozepur	Zira	1. Pheroke	18
			2. Kassouana	15
	Mansa	Budhlada	1. Bachuana	15
			2. Biroke Kalan	15
	Faridkot	Faridkot	1. Pakka	15
			2. Chand Baja	17
B. Medium	Amritsar	Majitha	1. Kotla Sultan Singh	15
			2. Budha Theh	15
	Sangrur	Dhuri	1. Pedni Kalan	18
			2. Punnawal	16
	Kapurthala	Kapurthala	1. Dhaliwal Dona	18
			2. Ibban	14
	Hoshiarpur	Dasuya	1. Randhawa	15
			2. Sansarpur	17
C. High	Gurdaspur	Kalanaur	1. Bhangwan	16
			2. Amipur	15
	Ludhiana	Khanna	1. Harion Kalan	16
			2. Panj Rukha	14
	Ropar	Kharar	1. Laandran	16
			2. Padiala	15
Total				315

To render the sample more representative, the rural households were first classified into landless and cultivator households and the cultivating households were further divided into four categories namely, marginal (up to 2.5 acre), small (2.5 to 5 acre), medium (5 to 15 acre) and large (above 15 acre) cultivators on the basis of operational area. Different households in each village were selected in the sample by using probability proportional to the size criterion. The detailed classification of the sample across different categories of rural households is given in Table 2.

The data from the sample households were collected by the personal interview method conducted during the year 2005-06 and the data pertained to the agricultural year 2004-05. The information was obtained on different sources of income,[2] asset position, skill, education and other important variables supposed to influence household income, its distribution and poverty.

TABLE 2. DETAILS OF THE STUDY SAMPLE ACROSS DIFFERENT RURAL HOUSEHOLD CATEGORIES

Household category (1)	Sample size (2)
1. Landless	142
2. Marginal cultivators	41
3. Small cultivators	44
4. Medium cultivators	57
5. Large cultivators	31
Total	315

III

INCOME DISTRIBUTION AND NON-FARM SECTOR

This section highlights the pattern of income distribution and the importance of different income sources, especially the non-farm sources, in rural household incomes. The per capita average annual income for the poorest quintile group was Rs. 4659; the second, third and fourth quintile groups earned almost twice, thrice and more than five times the income of the poorest quintile group (Table 3). The richest quintile group earned almost 16 times the average per capita income of the poorest rural quintile group. There was a strong positive relationship between the size of operational holding and the income distribution among rural households. The size of operational holdings were 0.44, 1.02, 2.93, 6.08 and 12.65 acre for the respective income quintiles, showing a highly skewed distribution of land in favour of the richest households operating more than 25 times larger sized farms than their poorest counterparts. The two poorest income quintiles were largely dominated by the landless and marginal cultivator households with their proportion exceeding 90 per cent and 80 per cent of the total households in the poorest and second income quintile group, respectively. This proportion declined significantly with a further increase in the per capita income. Lack of access to land which is the most important income generating asset in rural areas, severely curtails the capabilities of relatively poorer households to enhance their incomes.

TABLE 3. IMPORTANT CHARACTERISTICS OF THE RURAL HOUSEHOLDS IN DIFFERENT INCOME QUINTILES

Per capita income quintile (1)	Average per capita income (Rs./household)* (2)	Average size of operational holding (acre) (3)	Per cent of total households which are		
			Landless (4)	Marginal cultivators (5)	Landless and marginal cultivators (6)
Poorest (I)	4659	0.44	77.8	12.7	90.5
II	8919	1.02	66.7	14.3	81.0
III	14659	2.93	42.9	7.9	50.8
IV	25749	6.08	15.9	20.6	36.5
Richest (V)	74497	12.65	22.2	9.5	31.7
Overall	23757	4.62	45.1	13.0	58.1

*The figures have been rounded off to the nearest integer.

The non-farm sector was seen to be another important alternative for household income enhancement. The proportion of RNF income in total household income was the highest for the first two quintiles (43.7 per cent and 47.3 per cent, respectively). Though the share of RNF income declined gradually in higher income groups, it still remained an important source of income for all the groups. Even for the richest quintile group, RNF income accounted for 25.0 per cent of the total income (Table 4). The share of income from crop farming rose continuously with quintile groups from as low as 8.9 per cent for the poorest quintile to as high as 46.0 per cent for the richest quintile, due to simultaneous increase in the average size of landholding. The share of income from agricultural labour declined sharply with an increase in the household income; its share was 21.3 per cent for the poorest quintile and it declined sharply for higher income groups. Majority of the households in the first quintile, being landless or operating very small areas, usually resorted to agricultural wage labour, though such dependence declined significantly with an increase in the operational area. The share of income from livestock, which is an integral part of the farming system in the state, hovered around 20 per cent, except for the richest quintile, where it was 8.8 per cent. The share of transfer income ranged between 5 and 15 per cent and that of rental income from less than one per cent to almost 5 per cent. The share of income from all the sources, except non-farm income and income from agricultural wage labour, followed a significant and positive relationship with the income quintiles.

TABLE 4. SOURCES OF RURAL HOUSEHOLD INCOME AND THEIR SIGNIFICANCE ACROSS VARIOUS INCOME GROUPS

Per capita income quintile	Per cent share in average household income					
	Non-farm income	Income from crop farming	Income from livestock	Income from agril. labour	Transfer income	Rental income
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Poorest (I)	43.7	8.9	18.9	21.3	6.9	0.3
II	47.3	16.9	17.5	9.1	5.6	3.6
III	37.6	31.2	20.0	3.4	6.2	1.6
IV	25.6	40.0	20.3	0.6	10.3	3.2
Richest (V)	25.0	46.0	8.8	-	15.5	4.7
Overall	29.1	38.8	13.8	2.1	12.1	3.7

Despite the dominance of agriculture in rural livelihoods, three out of five income groups derived a major share of their incomes from non-farm sources. The share of the non-farm sector was quite high (almost one-fourth and was next only to agricultural income) even in high agricultural income groups. The reasons for such trends vary across different income groups. Lack of access to land in the case of landless and marginal cultivator households appears to have compelled many of them to diversify their livelihoods heavily towards non-farm employment and hence a much higher share in the household incomes. On the other hand, the relatively rich households had a capacity to stay away from the labour force either for better

education and skill acquisition or to start a much more remunerative self-employment activity in future. This was due to their better asset position.

Table 5 highlights the per capita non-farm income and the share of different sources of non-farm income for different quintile groups. Rural non-farm earnings of the upper three quintile groups were even higher than the total earnings of the poorest quintile group (compare with Table 3). The average annual per capita RNF income for the respective income quintile groups were Rs. 2036, Rs. 4218, Rs. 5519, Rs.6592 and Rs. 18624, respectively. While the non-farm earnings of other income groups were two to three times that of the poorest quintile, the richest households earned more than eight times the non-farm income of the poorest households. Though there was a gradual decline in the proportion of rural non-farm workers from the poorest to richest income quintile, still a significantly high proportion of 38.7 per cent of the workers from the richest rural households were employed in the non-farm sector.

TABLE 5. INDUSTRIAL DISTRIBUTION OF RURAL NON FARM WORKERS AND PER CAPITA PRODUCTIVITY ACROSS DIFFERENT INCOME QUINTILES

Per capita income quintile (1)	Per capita non farm income (Rs./ household) (2)	Distribution of workers (per cent)		Distribution of non-farm workers (per cent)						
		Farm sector (3)	Non-farm sector (4)	Manu (5)	Utilities (6)	Const. (7)	THR (8)	TSC (9)	FIRE (10)	CSPS (11)
Poorest (I)	2036	46.9	53.1	13.7	-	31.4	13.7	7.9	3.9	29.4
II	4218	40.8	59.2	33.8	-	20.3	10.8	9.4	-	25.7
III	5519	48.0	52.0	28.2	-	17.9	12.8	10.4	3.8	26.9
IV	6592	56.8	43.2	18.8	2.1	8.3	20.8	12.5	6.3	31.2
Richest (V)	18624	61.3	38.7	4.7	7.0	2.3	23.3	14.0	4.6	44.1
Overall	8327	50.4	49.6	22.1	1.4	17.0	15.3	10.5	3.4	30.3

Note: Manu: manufacturing; Const: construction; THR: trade, hotels and restaurants; TSC: transport, storage and communication; FIRE: finance, insurance and real estate; CSPS: community, social and personal services.

The employment pattern is based on the principal status of the worker. The activity on which a person spent relatively longer time (i.e., major time criterion) during the reference period of 365 days preceding the date of survey was considered as the principal status of the person.

In order to further strengthen the argument of dual motives for employment diversification, it is pertinent to throw light on the pattern of employment across different income groups and per worker productivity[3] of such employment activities. In general, there was an inverse relationship between the income levels and proportion of rural workers in manufacturing and construction sectors. However, a positive relationship existed for trade-hotel-restaurants (THR) and transport-storage-communication (TSC) sectors, implying that relatively richer households were having more access to employment in these sectors. There was no such clear trend in finance-insurance-real estate (FIRE) sector. A small proportion of relatively richer household workers were also employed in utilities. A large proportion of rural non-farm workers ranging between 25 and 44 per cent across different income groups

were also engaged in community, social and personal services (CSPS), though without any clear relationship with income levels.

Per worker productivity revealed the remunerative character of all the non-farm employment activities in the case of richer households. The overall average per worker productivity in the manufacturing and construction sector was Rs. 23872 and Rs. 20007 per annum, respectively, reflecting the large scale distress in employment prevailing in these two sectors (Table 6). The richer households were reluctant to join these less productive activities, and hence, a significant decline in the proportion of the workers engaged in such activities. The respective productivity for utilities was Rs. 1,23,000 per annum, for trade-hotel-restaurants was Rs. 35792 per annum, for transport-storage-communication was Rs. 82897 per annum, for finance-insurance-real estate was Rs. 53745 per annum and for community, social and personal services was Rs. 51517 per annum. Productivity in trade-hotel-restaurants showed an increase from the poorest to the richest quintile groups. Most of the activities in this sector are of self-employment nature and the income from such activities is directly related to the amount of capital investments. An increase in per worker productivity in this sector reflects that the richer households gain more from this sector due to their better asset and capital position, which the poor usually lack. The most remunerative RNF sector was utilities, which was accessible only by the two richest income groups. There were huge variations in the productivity of community, social and personal services across different income quintiles. While the poorest quintile group could achieve only one-fifth of the average productivity level in this sector, productivity of the richest quintile was almost 2.5 times the overall average. Despite the employment of large proportion of workers from all the income groups in this sector, huge differences in productivity levels exhibit its dualistic character.

TABLE 6. PER CAPITA PRODUCTIVITY OF VARIOUS INDUSTRIAL ACTIVITIES ACROSS DIFFERENT INCOME QUINTILES

Per capita income quintile (1)	Per worker productivity of non-farm workers (Rs./annum)							
	Manu. (2)	Utilities (3)	Const. (4)	THR (5)	TSC (6)	FIRE (7)	CSPS (8)	Overall non-farm (9)
Poorest (I)	11337	-	15194	11793	20500	27000	9747	13475
II	20858	-	19745	18600	32857	-	16021	20282
III	24345	-	21950	26940	29100	18750	38877	28691
IV	27471	180000	24938	47670	55500	66400	60480	50988
Richest (V)	84000	104000	54000	63320	282000	114000	126884	127860
Overall	23872	123000	20007	35792	82897	53745	51517	42080

Note: Same as in Table 5.

Another important observation is that the richest households earned almost their entire RNF income from self-employment or regular salaried employment. The proportion of casual income declined and that of self-employment and regular private income increased from third to fifth quintile groups (Table 7). There were large

differences in per worker productivity in self-employment activities in the non-farm sector. The productivity for the richest quintile was almost ten times that of the poorest quintile. In a similar manner, there was a strong positive relationship between the income level and productivity of the workers in the regular employment activities. The casual employment showed no such clear relationship. These results strengthen our argument that the richest/better-off households had access to more remunerative RNF employment activities. Hence, while the purpose of employment diversification for the poorest rural households was to have access to some backstop source of income for sustenance; for the richer, it was further enhancing of their incomes through RNF activities which required better human and/or financial capital which only they could afford.

TABLE 7. IMPORTANCE OF VARIOUS NON-FARM INCOME SOURCES FOR DIFFERENT RURAL INCOME GROUPS

Per capita income quintile (1)	Per cent share in total non-farm income				Productivity per worker (Rs./annum)*			
	Self-employed (2)	Regular government (3)	Regular private (4)	Casual (5)	Self-employed (6)	Regular government (7)	Regular private (8)	Casual (9)
Poorest (I)	19.1	53.1	18.2	9.6	12428	16800	11892	14396
II	42.6	23.0	11.6	22.8	23746	59600	14261	17185
III	16.2	29.7	27.7	26.4	23040	70933	23553	22736
IV	33.3	8.0	45.3	13.4	44449	87138	32727	21750
Richest (V)	44.4	-	47.9	7.7	137075	166094	48120	-
Overall	36.6	11.4	38.6	13.4	23919	48144	18252	18367

*Figures have been rounded off to their nearest integer.

Income Sources and Income Inequality

The overall objective of economic development is not merely the income growth but an evenly distributed growth over different regions and household categories. Of the total rural household income, merely 3.7 per cent was appropriated by the poorest quintile while the share of the richest quintile was 54.4 per cent (Figure 1). The distribution of farm as well as non-farm incomes was skewed against poor quintiles, though the non-farm income was relatively less skewed than farm income. The poorest quintile accounted for 3.3 per cent of the rural farm income and 5.6 per cent of the RNF income as compared to the richest quintile, which appropriated 54.2 per cent and 46.7 per cent of the respective incomes. It was a clear case of widespread rural income inequality both in farm and non-farm incomes.

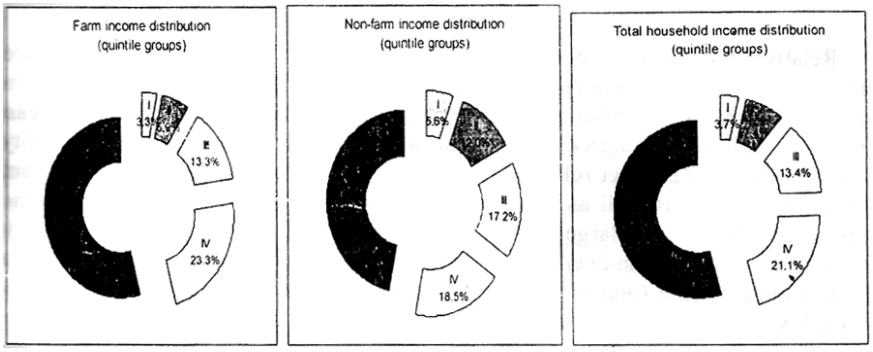

Figure 1: Distribution of Household Income Among Different Income Groups

Further, it becomes important to identify whether an income source contributes to an increase/decrease in income inequality for devising the policy action aimed at promoting equitable income distribution. Relative concentration coefficient[4] (g_i) was estimated to ascertain whether a particular source of income was increasing or decreasing inequality. The measure is an extension of the Gini coefficient[5] and can be calculated in the following manner:

$$g_i = Ri * \frac{Gi}{G}$$

Where

g_i = Relative concentration coefficient,
G_i = Gini coefficient for the i-th income source, and
G = Gini coefficient for the total income

$$Ri = \frac{cov(yi,r)}{cov(yi,ri)} = \frac{\text{covariance between source income amount and total income rank}}{\text{covariance between source income amount and source income rank}}$$

Factor inequality weight of a particular income source gives the proportional contribution of that source to the overall income inequality. The sum of factor inequality weights from all the sources is unity.

$$FIW = wi * gi$$

Where

FIW = Factor Inequality Weight, and

$$wi = \frac{\mu i}{\mu}$$

μi = Average income of the rural households from i-th source,
μ = Overall average income of the rural households.

Relative concentration coefficient (g_i) showed that farm income and transfer income contributed to an increase in income inequality (Table 8). Within the farm income, income from self-employment (crops and livestock) was seen to increase income inequality and agricultural labour was found to reduce income inequality. This was due to the direct relationship between self-employment in agriculture and ownership of land as well as between the ownership of land and level of income. Agricultural labour was largely dominated by the relatively poor, which helped to improve their incomes and hence promoted income parity. It was more satisfying that the non-farm income (pooled) and rental income was found to reduce rural income inequality.

TABLE 8. INCOME INEQUALITY BY FACTOR COMPONENTS AMONG RURAL HOUSEHOLDS

Income source	Relative concentration coefficient (gi)	Contribution[6] to overall income inequality (per cent)
(1)	(2)	(3)
A. Farm income	1.06	58.05
1. Self-employment	1.07	56.57
2. Agricultural labour	0.72	1.48
B. Non-farm income	0.82	23.93
1. Self-employment	0.95	8.97
2. Regular government	1.24	11.82
3. Regular private	0.49	1.87
4. Casual wage labour	0.42	1.27
C. Transfer income	1.20	14.55
D. Rental income	0.93	3.47

Barring non-farm income from regular government employment, which was relatively high-paid and based on a higher level of education, income from all other rural non-farm sources reduced income inequality. It therefore strengthens the case that RNF employment in diverse forms needs to be promoted in the state. The 11th Five Year Plan aims at a six per cent annual growth rate in non-agricultural employment by generating 65 million additional employment opportunities during the plan period (including a shift of 10 million workers from farm to non-farm sector) at all India level (Government of India, 2008). As most of the employment opportunities are expected to be created in the unorganised sector (almost 50 million) and private organised sector (about 10 million), the evidence that all such sources promote rural income parity, is quite encouraging. The table further reveals information on the contribution of various income sources to overall income inequality. Farm income contributed the highest to overall income inequality in rural Punjab with a share of 58.05 per cent followed by non-farm income with a share of 23.93 per cent. The highest contribution of farm income to rural income inequality can be explained in the context of the skewed distribution of cultivable land in the state. The farm income which accrued largely to the cultivating households would obviously contribute to income inequality as the poor significantly lacked access to land.

IV

NON-FARM EMPLOYMENT AND HOUSEHOLD POVERTY

To relate household poverty with income sources, it was pertinent to investigate the incidence of rural household poverty with respect to major sources of household income. To identify the poverty line, all the rural households were arranged in the order of increasing per capita income and those belonging to the poorest quintile were identified as the poor households. Per capita income of households at the bottom of the second income quintile was taken as the poverty line which came out to be Rs.6600 per capita per annum. The poverty line based on the consumption expenditure as given by the Planning Commission of India was Rs. 410.38 per capita per month (pcpm) for rural Punjab during 2004-05 amounting to Rs. 4925 per capita per annum. The difference in the two estimates is admissible on the grounds that the present study takes into account relative poverty as against absolute poverty being estimated by consumption expenditure. The poverty gap was estimated as a per cent difference between the poverty line and per capita income of a poor household.

The households which derived their major share of income from agriculture (land) showed the least incidence of household poverty with only 8.8 per cent of them falling below the poverty line (Table 9). Similarly, the incidence of poverty was very low amongst either the self-employed or regular employed households in the non-farm sector. On the other hand, the agricultural labour households or those rural households which derived their major share of income from casual non-farm labour were most likely to be the victims of poverty. In other words, deriving most of the household income through wage labour either in the farm or non-farm sector makes a household largely vulnerable to poverty. Almost 75 per cent of the agricultural labour households and 43.9 per cent of the non-farm wage labour households were estimated to be the poor. The reason for the higher incidence of poverty amongst casual workers was not the poor wages but extreme under-employment as reflected by the number of days of work. On an average, a casual worker got employment for just 123 days in a year. The poverty gap ranged from 22 to 35 per cent in various households, while such gap was relatively small in case of the regular salaried non-farm households.

TABLE 9. INCIDENCE OF POVERTY AND POVERTY GAP AMONG DIFFERENT HOUSHOLD TYPES

(per cent)

Household type	Incidence of poverty	Poverty gap
(1)	(2)	(3)
Self employed in agriculture	8.8	34.9
Agricultural labour	75.0	32.8
Self employed in RNF sector	19.4	34.9
RNF regular salaried	17.8	22.4
RNF casual	43.9	27.8
Transfer income	11.1	34.6
Rental income	-	-

Note: Type of the household is based on the major source of their income, i.e., activity providing the highest proportion of income in the total household income.

There was a weak relationship between the number of income sources and household poverty (Table 10). The poverty largely depended upon the type of employment. While the incidence of household poverty was just 15.2 per cent for the households with one source of income, it varied from 7.6 per cent in the farming households to 100 per cent in agricultural labour households. The poverty was estimated at 22.7 per cent and 26.4 per cent, respectively, for the households with two and three sources of income. Even the three sources of income from agriculture, agricultural labour and non-farm employment could not take out around one-fourth of the households from poverty trap. This was so because these households' access to land was less. For the households with more than three sources of income, there was no incidence of poverty. Those with non-farm income as the only income source experienced a 28.6 per cent incidence of poverty. The incidence of poverty declined among agricultural labour households when their access increased to two or three sources of income. It was 42.9 per cent for those receiving income from agricultural labour and non-farm sources.

TABLE 10. NUMBER OF INCOME SOURCES AND THEIR RELATIONSHIP WITH INCIDENCE OF POVERTY AND POVERTY GAP

(per cent)

Number/Type of income sources	Incidence of poverty	Poverty gap
(1)	(2)	(3)
(A.) Only one source of income	15.2	33.4
Self-employed in agriculture (SEA)	7.6	42.3
Agricultural labour (AL) income	100.0	38.2
Non-farm income (NF)	28.6	26.6
(B.) Two sources of income	22.7	32.4
SEA and AL	70.0	27.2
SEA and NF	12.3	24.8
AL and NF	42.9	48.8
(C.) Three sources of income out of which one is	26.4	26.4
Self-employment in agriculture	30.6	27.5
Agricultural labour	51.7	30.1
Non-farm employment	28.0	23.0
(D.) More than three sources	-	-

The combination of farm and non-farm sources of income were more effective in poverty alleviation than the combination of agricultural labour and the non-farm sources as the former category had access to land, even though the cultivated area was small, while the latter involved the dominance of casual wage labour activities not yielding sufficient incomes. Amazingly, all the households having agricultural labour as the only source of income were poor. Their diversifying to even three sources of income was a distress measure; an effort to acquire some backstop source of income in order to prevent them from falling deeper into poverty and was not helpful in their complete escape from poverty. The livelihood diversification efforts usually failed to lift these households out of poverty due to a lack of access to land, financial capital for more productive employment or some regular source of non-farm

income, and hence, cannot be viewed as a potent alternative for poverty alleviation. Likewise, no clear relationship emerged between the poverty gap and the number of income sources.

The above results support our argument that non-farm incomes, mainly driven by limited or no access to land, do not help much in lifting the poor households out of poverty, which is, land emerges as the main driver for alleviating poverty, which is evident from Table 11. The incidence of poverty and the extent of the poverty gap declined with an increase in the size of land holding. An increase in the size of land holding translated into a larger household income and then into a lesser incidence of poverty. It is worth noting that the boundary of poor households restricted not only to the landless households, but also stretched to the marginal and small cultivator households, due to non-viability of their small holdings apart from the lack of a sufficient number of more productive non-farm employment opportunities.

TABLE 11. RELATIONSHIP BETWEEN LAND SIZE, INCIDENCE OF POVERTY AND POVERTY GAP AMONG RURAL HOUSEHOLDS

(per cent)

Household category (1)	Incidence of poverty (2)	Poverty gap (3)
1. Landless	34.5	31.3
2. Marginal cultivator	19.5	28.4
3. Small cultivator	11.4	23.8
4. Medium and large cultivator	-	-

Determinants of Rural Household Poverty

Examining the determinants of poverty amongst the rural households is important for a better understanding of the phenomenon in order to draw some meaningful policy inferences. These determinants were, therefore, estimated by using the binary logistic regression model (logit model), which is described by the following two equations.

$$Y_i = F(Z_i) \quad ....(1)$$

$$Z_i = b_o + \sum b_i X_{ji} \quad ....(2)$$

Where, Y_i is the observed status of poverty of the i-th household (whether a particular rural household is classified as poor or not) and Z_i is an unobserved index value such that if Z_i exceeds some threshold value Z*, the household falls below poverty line, otherwise not. Using the binary logistic regression equation, X was the set of explanatory variables supposed to influence the incidence of poverty among rural households.

The explanatory variables included in the logit model were the household size (in number), land (operational area in acres), caste[7] (dummy; lower caste-1, others-0), land productivity[8] of the village (Rs./acre), incidence of RNF employment[9] (dummy;

employed in RNF sector-1, not employed-0) and WPR[10] (worker population ratio in per cent), number of household income sources and casual wage labour as a major source[11] of household income (dummy; yes-1, no-0).

The incidence of rural poverty was significantly influenced by the operational land, caste, workers' education, WPR and casual wage labour as the major source of income (Table 12). Increase in the operational area significantly reduced the incidence of household poverty; an addition of one acre to the operational land reduced the likelihood of household poverty by 21.3 per cent. Similarly, a household with a higher worker education by one year was less likely to fall below poverty by 18.9 per cent. The factors like lower caste and casual non-farm work as the major source of income were found to contribute significantly towards rural household poverty. A lower caste household was 6.4 times (638.9 per cent) more vulnerable to poverty as compared to the upper caste households. Likewise, chances of a casual wage labour household to fall below poverty were approximately 2.2 times (222.2 per cent) higher than a usual household. The rural labour markets are unable to provide sufficient number of employment days to such workers making them highly vulnerable to poverty. It also reflects the residual nature of casual wage markets in

TABLE 12. LOGIT ESTIMATES OF THE DETERMINANTS OF RURAL HOUSEHOLD POVERTY

Variable (1)	Coefficient (2)	Marginal effect (per cent) (3)
1. Constant	-0.98^{NS} (0.95)	-
2. Household size	0.10^{NS} (0.08)	-
3. Land size	-0.24** (0.12)	-21.3
4. Lower caste dummy	2.00* (0.62)	638.9
5. Land productivity	-0.25E-4^{NS} (0.49E-4)	-
6. Workers' education	-0.21* (0.06)	-18.9
7. Incidence of RNF employment	-0.51^{NS} (0.52)	-
8. Worker population ratio	-3.43* (1.00)	-96.8
9. Number of income sources	-0.14^{NS} (0.22)	-
10. Casual wage labour as major source of household income	1.17* (0.42)	222.2
Log likelihood function	-95.74	
Restricted log likelihood	-157.40	
Chi-square value (9 d.f.)	122.88*	
Pseudo-R^2	0.39	

* and ** represent the significance at 1 and 5 per cent level of significance, respectively. Figures in parentheses are the standard errors. Marginal effects have been calculated using the formula $(e^x-1)*100$, where x is the coefficient value. Marginal effects have only been calculated for the significant variables. Very small values of estimates have been presented in the exponential form.

rural areas. Higher land productivity was unable to translate into sufficient employment and income opportunities for the rural poor, thus making it difficult for them to escape poverty. These results are in line with a fall in the employment elasticity of agriculture over time and the weak linkages between the farm and non-farm sector due to the monoculture of paddy and wheat crops, offers no major processing opportunities, which may generate more employment. The rural-non farm sector seems to be largely distress driven in the case of the rural poor, providing mostly less-remunerative and low-skilled/unskilled work to them. Despite accounting for a significant proportion of household incomes of the rural poor, the rural non-farm sector failed to shift them out of poverty. The distress nature of the rural labour markets is further evident from number of non-significant income sources in poverty reduction. The multiplicity of income sources was largely a 'last resort activity' under the situation of falling employment opportunities in agriculture, for checking a further fall in the already meagre incomes and was not an income enhancing strategy.

V

CONCLUSIONS AND POLICY IMPLICATIONS

The RNF employment emerged as a protection strategy against sudden income shocks in poor households to save them from falling further deep into poverty. It helped the richer households in augmenting their incomes. Despite the loud rhetoric of the importance of agriculture in rural livelihoods, three income groups such as landless labourers, marginal farmers and small farmers derived a major share of their incomes from non-farm sources. The share of non-farm incomes was quite high in other income groups too. Rural income inequalities were observed in both farm and non-farm incomes but RNF income was more evenly distributed than rural farm income. Barring non-farm income from regular government sources, income from all the other rural non-farm sources was found to reduce rural income inequality. The incidence and depth of poverty had an inverse relationship with the size of operational land holding. All the households having agricultural labour as the only source of income were poor and highly vulnerable to poverty due to lack of access to land and skill formation. Even the multiplicity of the income sources failed to help them in escaping poverty. The income diversification strategy was largely a distress strategy against low incomes rather than a potent alternative of shifting employment against poverty alleviation. There was no significant relationship between multiple income sources and incidence and the depth of poverty. The cultivated area, workers' education and the number of income sources significantly reduced the incidence of poverty among rural households.

The skewed distribution of land resulted into a relative higher dependence of the poor on non-farm income sources, whereas the access to more remunerative sources of non-farm income was limited to relatively richer households due their better education and skill levels. Further, household poverty seemed to be a virtue of not

only the rural landless households; marginal and small farmers were also seen grappling with poverty with their small size holdings losing economic viability in recent times. The extent of poverty tended to decline with an increase in the size of operational holding. The non-farm incomes were associated with alleviating poverty only when coupled with some sort of farm income. The ability of the non-farm sources, to independently alleviate the household poverty, was not visible reflecting the distress nature of rural non-farm sector in the Punjab state. This is largely due to the lowly paid non-regular piece meal type of non-farm employment opportunities emerging in the unorganised sector in the rural areas.

The paper therefore brings out the need for generating rural non-farm employment opportunities in the unorganised or organised private sector, with a focus on promoting self-employment especially among the poorer households through education and skill formation. Otherwise all efforts of creating non-farm employment opportunities will fall flat and fail to significantly reduce poverty in rural areas of Punjab state. There is a need to promote semi skilled labour intensive sub-sectors within the non-farm sector to improve the access of poor households to more remunerative employment opportunities.

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NOTES

1. The districts with low RNF employment intensity (below 43 per cent) were Muktsar, Ferozepur, Mansa, Bathinda, Faridkot and Moga; with medium RNFI (43 to 55 per cent) were Amritsar, Sangrur, Patiala, Kapurthala and Hoshiarpur; with high RNFI (above 55 per cent) were Gurdaspur, Jalandhar, Fatehgarh Sahib, Ludhiana, Ropar and Nawanshahar. Later, Mansa, Ferozepur, Faridkot, Amritsar, Sangrur, Kapurthala, Hoshiarpur, Gurdaspur, Ludhiana and Ropar districts were selected for the study.

2. In this study, the sources of income were broadly classified into five categories; Farming (which included either crop cultivation or rearing of animals or both), Agricultural labour, Non-farm sector, Transfer income and Rental income. The farming income as well as income from self-employment in RNF sector was calculated as the difference between gross revenue and the paid out costs. Agricultural labour income was the total wage income accruing during the year. RNF salaried/wage income was also the total income accruing during the year. Transfer income included pensions (old age pensions, widow pensions and pensions after retiring from a service) as well as internal and external remittances. While the rental income included agricultural land rent (cash/kind), machinery-rent, non-farm rent or irrigation rent etc.

3. Per capita productivity of a worker in a particular employment activity was estimated by dividing the total annual income accruing from the activity with the total number of workers employed in the activity.

4. Value of relative concentration coefficient above unity reflected inequality inducing character of an income source, while the value below unity indicated its inequality reducing character. The unit value, if encountered highlights that the income source is neutral in such character.

5. The inequality in income distribution was measured with the help of gini concentration coefficient as it possessed the desired characteristics of (i) Pigou-Dalton transfer sensitivity, (ii) symmetry, (iii) mean independence, (iv) population homogeneity and (v) decomposability, which are considered important while estimating income inequality (Adams and He, 1995).

6. Contribution to overall income inequality was estimated by calculating the factor inequality weights (FIW). To estimate the contribution in per cent FIW was multiplied with 100.

7. The scheduled castes and backward castes were considered as the lower caste and all the others as upper castes in the study.

8. The land productivity variable was estimated at the village level. To arrive at the estimates, the net returns from crops and other allied activities were estimated for all the cultivator households in the sample. The aggregate income was divided by the total are under cultivation to arrive at the estimates of land productivity per acre (in Rs./acre). These estimates remained the same for all the households in the same village in the regression analysis.

9. The incidence of RNF employment was positive if any of the workers in the household was employed in some non-farm activity. It was immaterial whether the non-farm source was a major source of income for the household or not.

10. WPR was estimated by dividing the number of worker with the total number of household members.

11. Those households which were earning the highest proportion of their income from casual wage labour activities were considered in this category. The variable assumed the unit value when casual wage labour accounted for the highest proportion of household income and zero otherwise.

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