



Level and Distribution of Income among Farm Households in Punjab

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ABSTRACT

The present study is based on the data collected from 225 farm households comprising of 36 marginal, 50 small, 69 semi-medium, 31 medium and 39 large farm holdings selected under the scheme 'Economics of farming and the pattern of income and expenditure distribution in the Punjab agriculture' for the year 2012-13. The study analysed the sources of family income among farm household, share of farm income (crops and dairy) in family income, income distribution and households living below the poverty line in Punjab. The analysis of the study brought out that farm income constituted major share in family income among all the size categories of farm. The share of farm income was directly related with the farm size. However, the share of income from crops varied directly with the farm size and income from dairy varied inversely with the farm size indicating dairy enterprise as a savior for marginal and small farmers. Higher income and income inequality was observed in Zone-III. Overall, about 8 per cent farm households, 31 per cent marginal and 16 per cent small households were unable to meet their two square meals in Punjab and were below the minimum level of living i.e. poverty line.

Key words: Farm income, Income inequality, Gini ratio, Poverty line.

JEL Classification: O15, Q12, R12

INTRODUCTION

One of the major objectives of Indian planning has always been to promote equality in the distribution of income and wealth and progressive reduction of concentration of economic power so as to achieve the goal of socialistic clearly pattern of society. The third five-year plan states, 'Economic activities must be so organized that objectives of production and growth and those of equitable

distribution are equally met'. In spite of various development activities tailored to uplift the weaker and poor sections of society, the gulf between the rich and the poor still remains a sizeable one and an important subject of analysis, more particularly in the developing world. However, the analysis of income distribution has remained an area of intense research since the publication of the seminal works of Kuznets (1996) and Chennery *et al.* (1974).

The issue of inequality has acquired a good deal of prominence in academic research as

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well as in international forums and in the economic and political policies and agendas of governments, international organizations and NGOs. There is a growing realization around the world that inequality poses a formidable challenge to both developed and developing nations, that it continues to persist in the large parts of the world and is in fact rising in some countries. And that it is not only a drag on economic growth but involves multiple social, psychological and health costs.

With the introduction of the high yielding varieties of wheat during sixties and rice during seventies coupled with increased use of fertilizers, irrigation and mechanization, the Punjab agriculture witnessed very rapid and spectacular growth, popularly known as the green revolution.

During this period of rapid growth though all the sections of rural population benefited in absolute terms yet the gains were not equally shared by different categories of rural population. Its impact on the different regions was also different. It favoured the promising and developing regions where the necessary infrastructure for steady growth had already been built up. The programme not only led to unbalanced growth among different regions, but also created and widened the income disparity among farming population in the region of its adoption. (Kaur and Sekhon, 2005). The Punjab peasantry especially the small farmers could not afford farm investment from their own savings to transform traditional agriculture into scientific farming (Singh and Toor, 2005).

Many researchers have already raised concerns over growing inequality in Punjab owing to heavy expenses involved in using

advanced production methods in farming that the smaller and typically poorer farmers struggle with. Rising costs has led to the growth of landless agricultural labourers. The income disparity between farm households is greater than nonfarm households which in turn is greater than labour households (Taneja, 1988). The scale and magnitude of inequality in Punjab is truly staggering. The present study concentrates on sources of income, distribution of income of farm households among different agro-climatic regions and the households living below the poverty line in the Punjab state.

METHODOLOGY

The primary data from the scheme 'Economics of farming and the pattern of income and expenditure distribution in the Punjab agriculture' was used for this study. This scheme caters to various aspects of Punjab agriculture and collects data with the cost accounting method. For the selection of sample households, the state was divided into three agro-climatic zones depending upon cropping pattern, soil type physiography and water availability. Three stage random sampling technique was used, development blocks at first stage, village at second stage and operational holding was at third stage of sampling unit for selection of sample farm households. Sampling design consisted of selection of 9 blocks comprising 2 from the zone I, 4 from the zone II and 3 from the zone III. One village was selected from each selected block and 25 farm holdings were selected from each village. Thus, 225 holdings were selected for the study; 50 from zone I, 100 each from zone II and 75 from zone III. The data relates to the agricultural year 2012-

13. The classification of the size categories of farms adopted for this study was on the pattern adopted for conducting All India Agricultural Census which includes marginal (<1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-6 ha) and large (>6 ha) farms. On the whole, the sample size consisted of 36 marginal, 50 small, 69 semi-medium, 31 medium and 39 large farm holdings.

RESULTS AND DISCUSSION

The results of the study are presented in two sections. Section-I includes the estimates of the magnitude of family income and share of farm income and other sources in family income of selected farmers. Section-II includes income distribution among farm households in different zones and number of households living below the poverty line among different farm households in Punjab.

Section-I

Sources of family income, share of gross farm income, net income from crops and dairy, per farm, per ha and per capita net farm income has been detailed in this section.

Gross Farm Family Income

Gross farm family income which includes income from crops, dairy, off farm income and other sources of income had been worked out for the sampled households and

presented in Table 1. The table shows that an average farm in the state was found to earn gross farm family income to the tune of ₹554736 during the period under study. It was further seen that the highest gross farm family income on an average farm was ₹691344 in zone III followed by ₹650683 in zone II and ₹157928 in zone I during the year 2012-2013. The study found that the magnitude of gross farm family income increased with the increase in farm size in different zones. This magnitude varied between ₹172924 on an average marginal farm to ₹1201332 on large farm in the state.

Source of Gross Farm Family Income

Table 2 constitutes the contribution of different sources towards gross farm family income among different size categories of farms in different zones for the year 2012-2013. The study found that an average farm in the state received 76.00 per cent of gross farm family income from crops. The zone-wise analysis revealed that a major share of gross farm family income was contributed by crops in all the zones of the state. On an average farm, the share of crops in the gross farm family income was 59.44 per cent in zone I followed by 72.00 per cent in zone II and 84.10 per cent in zone III. The size-wise analysis indicated that the contribution

TABLE 1: CATEGORY WISE AND ZONE WISE ANNUAL GROSS FARM FAMILY INCOME IN PUNJAB

Zone	(₹/farm)					
	Marginal	Small	Semi-Medium	Medium	Large	Average
I	69889	140343	169709	242914	366160	157928
II	231766	366418	544586	869400	1231044	650683
III	215784	356487	554598	884832	1374841	691344
State	172924	291293	471861	794039	1201332	554736

of crops was 37.70 per cent, 56.44 per cent, 73.28 per cent, 81.40 per cent and 87.00 per cent on marginal, small, semi medium, medium and large farms respectively in the state of Punjab. The results further showed a positive relationship between the contribution of crops towards gross farm family income and the farm size indicating thereby that large farms depend more on crop income in comparison to small farms who supplement their meager crop income from other sources. The share of dairying in gross farm family income was 19.06 per cent in the state. The highest share of dairy farming was recorded 26.71 per cent in zone I followed by 21.49 per cent in zone II and 14.81 per cent in zone III.

The farm size-wise study of this aspect revealed that the share of dairying varied between 12.27 per cent on large farms to 34.61 per cent on marginal farms in the state. Thus, the per cent contribution of income from dairying was found to decline with the increase in farm size showing an inverse relationship. At the same time, it served as an important source of income for the lower

TABLE 2: CONTRIBUTION OF DIFFERENT SOURCES TOWARDS GROSS FARM FAMILY INCOME IN PUNJAB

Zone	(Per cent)				Total
	Crops	Dairying	Non-farm income	Misc. income	
Zone-I	59.44	26.71	9.85	4.00	100
Zone-II	72.00	21.49	3.72	2.79	100
Zone-III	84.10	14.81	0.64	0.45	100
Marginal	37.70	34.61	18.24	9.45	100
Small	56.44	34.18	8.93	0.45	100
Semi-medium	73.28	22.16	1.86	2.70	100
Medium	81.40	15.61	0.78	2.21	100
Large	87.00	12.27	0.50	0.23	100
State Average	76.00	19.06	3.27	1.67	100

categories of farms in the state.

The share of non-farm sources in the gross farm family income was also observed to be the decreasing function of the farm size for each of the individual zones as well as for the state as a whole. The size-wise analysis pertaining to the share of non-farm sources found contributing to the tune of 18.24 per cent, 8.93 per cent, 1.86 per cent, 0.78 per cent and 0.50 per cent on marginal, small, semi-medium, medium and large farms respectively. This trend shows that the smaller farms had greater share of this source towards farm family income in comparison to large farms of the state. The reason for such a phenomenon is that the land man ratio on small farms is very low. The family labour is often surplus on small farms necessitating them to supplement their income by doing other jobs outside the farms. As far as income from miscellaneous source was concerned, it contributed 1.67 per cent towards gross farm family income on an average farm family in the state during the period under study. The zonal picture with this aspect revealed that the contribution of this source was 4 per cent in zone I, 2.79 per cent in zone II and 0.45 per cent in zone III. The size-wise scenario clearly depicted inverse relationship between farm size and income from miscellaneous sources in the state.

Gross Farm Income

The gross farm income includes income from crops and dairying. Income from crops constituted the imputed value of the main product from all crops except fodder crops grown on the farm. The value of by-product had also been accounted for while calculating

the income. The income from dairying means the imputed value of total milk produced on the farm including both the cash and non-cash income from the enterprise. It was estimated category wise among different zones and presented in Table 3. The perusal of the table showed that an average farm in the state earned ₹552706 as gross farm income from crops and dairy during the year under study. The zone-wise analysis showed that the highest average gross farm income was ₹670660 in zone III followed by ₹610789 in zone II and ₹124610 in zone I.

The farm size-wise analysis revealed that an average marginal, small, semi- medium, medium and large farms earned ₹141241, ₹247644, ₹442710, ₹756539 and ₹1183112 per farm in the state respectively. Thus the large farms earned about nine times the gross farm income as compared to marginal farms from crops and dairy. The comparison of gross farm income over different farm size

categories in different zones of the state highlighted a positive relationship between gross farm income and the size of the farm

Per Hectare Gross Farm Income

In order to ignore the farm size impact, per farm gross farm income was converted to per hectare basis and the same has been given in Table 4. It was found that an average farm family received ₹146416 per hectare as gross farm income in the state during the year 2012-2013. The zone-wise analysis showed the highest income of ₹171964 in zone III followed by ₹157827 in zone II and ₹50861 in zone I.

So far as size-wise analysis was concerned, almost inverse relationship was recorded between the gross farm income per hectare and the size of farm. The intra-zonal picture with this respect also revealed, by and large, the same trend.

Net Farm Income

Net farm income was computed by

TABLE 3: CATEGORY WISE AND ZONE WISE PER FARM GROSS FARM INCOME IN PUNJAB

Zone	(₹/farm)					
	Marginal	Small	Semi-medium	Medium	Large	Overall
I	47978	85483	145277	221346	341947	124610
II	195951	323355	502664	812008	1209847	610789
III	178324	324885	540343	870472	1361656	670660
State	141241	247664	442710	756539	1183112	522706

TABLE 4: CATEGORY WISE AND ZONE WISE PER HECTARE GROSS FARM INCOME IN PUNJAB

Zone	(₹/ha)					
	Marginal	Small	Semi-medium	Medium	Large	Overall
I	68540	58954	47632	46995	46271	50861
II	244938	195960	163196	166055	137953	157827
III	198138	203053	166259	167398	169994	171964
State	176551	157748	141481	151915	142202	146416

deducting the costs incurred on seed, fertilizer, insecticides/pesticides, hired human labour/bullock labour, farm machinery and implements, taxes, cess, water charge, interest on working capital and cost of purchased feed and fodder along with depreciation of owned farm machinery and farm buildings and livestock from gross farm income estimated on per farm basis and per capital basis had been presented in Table 5 and 6.

The net farm income thus obtained represented returns to land, farm family labour and capital on the farm. The results of the study showed a positive relationship of net farm income with the size of the farm in each of the three zones as well as for the state as a whole. An average farm in the state earned net farm income of ₹316053 during the year under study. In case of zones, the average amount of net farm income turned out to be ₹98083, ₹368729 and

₹391131 in zone I, II and III, respectively. The size-wise analysis shows that marginal, small, semi-medium, medium and large farms recorded ₹104848, ₹161866, ₹293259, ₹483448 and ₹615955 respectively as net farm income.

The inter-zonal comparison with respect to size-wise analysis of this aspect showed the highest amount of net farm income on all the size categories, except marginal and small farms, of zone III and the lowest in zone I of the state. This scenario may probably be due to higher productivity of paddy and cotton crop in zone III.

Per Hectare Net Farm Income

In order to make the results of net farm income more comparable, the farm size effect was removed by working out per hectare net farm income and the same is presented in Table 6. Per hectare net farm income on an average farm in the state was ₹88530 during the year 2012-2013. The zone

TABLE 5: CATEGORY WISE AND ZONE WISE PER FARM NET FARM INCOME IN PUNJAB

Zone	Marginal	Small	Semi-Medium	Medium	Large	Average
I	34966	62132	125263	152237	281958	98083
II	146123	231230	329252	523508	601919	368729
III	132304	176757	345441	545618	716123	391131
State	104848	161866	293259	483448	615955	316053

TABLE 6: CATEGORY WISE AND ZONE WISE PER HECTARE NET FARM INCOME IN PUNJAB

Zone	Marginal	Small	Semi-Medium	Medium	Large	Average
I	49951	42850	41070	32322	38154	40034
II	182654	140139	106900	107057	68634	95279
III	147004	110473	106290	104927	89404	100290
State	131060	103099	93693	97078	74033	88530

wise analysis brought out that an average farm in zone I, II and III was earning ₹40034, ₹95279 and ₹100290 as net farm income per hectare respectively. This was a result of revival of high yield of cotton crop in zone III. The size-wise analysis recorded per hectare net farm income of ₹131060, ₹103099, ₹93693, ₹97078 and ₹74033 on marginal, small, semi-medium, medium and large farms respectively showing, by and large, an inverse relationship with the farm size. Intra-size comparison of per hectare net farm income between three zones of the state showed that all the size categories of zone II, except semi-medium farms and large farms, realized higher net farm income in comparison to their counterparts in other zones.

Per hectare net farm income was observed to decline with the increase in the size of the farm which established an inverse relationship between per hectare net farm income and the size of the farm. This trend also highlighted that small and marginal farms were relatively more efficient than the large farms in the state.

Per Capita Net Farm Income

The per capita net farm income was obtained by dividing the net farm income with the number of family members of the sampled farm holdings in the study area. It was

observed that (Table 7) an average farm family in the state recorded per capita net farm income of ₹54507 during 2012-2013.

The zone-wise analysis indicated the highest per capita income in zone II i.e. ₹65531, followed by zone III and I with ₹63238 and ₹13869, respectively.

Farm size-wise analysis showed that marginal, small, semi-medium, medium and large farm in the state recorded ₹21793, ₹32309, ₹51984, ₹70621 and ₹87912, respectively as per capita net farm income during the year under study. Thus the analysis showed that the per capita net farm income on large farms in the state was more than six times as compared to marginal farms in the state. So far as the relationship between per capita net farm income and the size of the farm is concerned it bore a positive relationship. This corresponds with the pattern of per farm family net farm income.

Section-II

The section encapsules information regarding zone wise income and estimated inequality in income distribution. The farm households living below poverty line were also estimated category wise and discussed.

Distribution of holdings according to net farm income

The concentration of net farm income over different size of farm holdings had been

TABLE 7: CATEGORY WISE AND ZONE WISE PER CAPITA NET FARM INCOME IN PUNJAB

	(₹/annum)					
Zone	Marginal	Small	Semi-medium	Medium	Large	Average
I	5810	11747	15745	23139	29992	13869
II	31697	43628	62252	85540	89648	65531
III	30985	38149	56352	65976	97965	63238
State	21793	32309	51984	70621	87912	54507

worked out and presented in Table 8. The highest proportion of holdings (81%) fell in the income group of above ₹ one lakh with an average income of ₹417220 in the state during the year 2012-2013.

The zone wise analysis indicated that the higher percentage of holdings falling in the highest income group of above ₹ one lakh in zone II and zone III each with 93 per cent followed by zones I only with 6 per cent of the holdings during the year 2012-2013. Next to the highest income group having the highest share of holdings was up to ₹20000-40000 in zone I, more than ₹60000-80000 in zone II and ₹80000-100000 in zone III.

Thus, on the whole, the income group earning above ₹ one lakh turned out to be the class (except zone I) modal in which the highest proportion of farm holdings fell both for the state as well as of the zones.

Concentration of Per Capita Net Farm Income

Since the concentration of net farm income according to farm families is slightly a crude measure of income distribution, hence the distribution of net farm income on per capita basis (Table 9) was studied. It may

be seen from the table that the bottom ten percent of the farm population in the state obtained only 3.22 per cent of the total net farm income against a share of 25.15 per cent by the top ten per cent of population as their per capita net farm income during the year 2012-2013. So far as the share of lower and upper fifty percent of the population in the state is concerned, it was 27.23 and 72.77 per cent, respectively.

This trend showed that the distribution of net farm income on per capita basis was highly skewed in the state. The underlying reason for this scenario was the inequality in the land operated by the lower and upper segments of the farm population. The zone-wise analysis of this aspect showed that the bottom ten per cent of the population shared as low as 3.34, 2.72 and 3.67 per cent of the net farm income in zone I, II and III respectively. The share of lower fifty per cent of the farm population in per capita income was only 26.56, 27.16 and 27.75 percent in zones I, II and III respectively. In respect to the upper ten per cent of the farm population, the share was as high as 27.06, 23.51 and 26.66 per cent of the net farm

TABLE 8: DISTRIBUTION OF SAMPLE HOLDINGS BY NET FARM INCOME IN VARIOUS ZONES IN PUNJAB

Net farm income (₹)	Zone I		Zone II		Zone III		State	
	Per cent holdings	Average income	Per cent holdings	Average income	Per cent holdings	Average income	Per cent holdings	Average income
Up to 20,000	2.00	18094	1.33	14894	1.00	12140	1.44	15042
20,000 to 40,000	36.00	33389	1.66	39418	-	-	5.73	32938
40,000 to 60,000	24.00	54524	1.34	57180	-	-	4.00	54852
60,000 to 80,000	20.00	75740	2.67	74290	2.00	69780	5.25	74480
80,000 to 100,000	12.00	96938	-	-	4.00	96720	3.43	96829
Above 100,000	6.00	140219	93.00	380679	93.00	457810	80.15	417220
Total	100	418904	100	566461	100	636450	100	691361

TABLE 9: CONCENTRATION OF NET FARM INCOME ACCORDING TO FARM POPULATION IN DIFFERENT ZONES IN PUNJAB

Deciles group	Zone I	Zone II	Zone III	Overall
10	3.34	2.72	3.67	3.22
20	7.11	7.44	6.11	6.81
30	10.84	11.63	15.46	13.19
40	19.41	22.54	21.34	21.18
50	26.56	27.16	27.75	27.23
60	34.14	40.64	38.61	37.76
70	48.72	47.71	48.72	48.15
80	58.92	61.44	58.65	59.63
90	72.94	76.49	73.34	74.85
100	100	100	100	100
Gini Ratio	0.336	0.3045	0.3127	0.316

income in zones I, II and III respectively in the study area.

The magnitude of Gini ratios was also estimated to confirm the results observed according to deciles group. The lowest magnitude of Gini ratio was 0.3045 in zone II whereas the highest was 0.3360 in zone I of the state. This trend confirms the observations of relatively better distribution in zone II in comparison to zones III and I of the state.

Poverty in Rural Punjab

Poverty is regarded as a matter of low absolute income. Therefore, some standard of minimum income is needed to define the poverty level below which a family is said to

be poor. Such a standard specifies an amount of rupees, based on experts' estimates needed to meet the minimum cost of living. According to Tendulkar Committee's Report on Poverty, the poverty line is ₹543.51 per capita per month for rural Punjab during 2004-05. This poverty line was estimated for the year 2012-2013 by using general Consumer Price Index for Agricultural Labourers (CPIAL). The consumer price index included food and non-food items. The CPIAL for the year 2004-05 was 355 which increased to 611 during the year 2010-2011. Based on this index the poverty line for rural Punjab was estimated as ₹935.45 per capita per month, which comes to be ₹11225 per capita per annum.

The extent of rural poverty have been worked out by estimating the proportion of farm families living below poverty line i.e. getting less than ₹11225 per capita per annum and is given in Table 10. The results of the study showed that 8.44 percent of the farm families were living below the poverty line in the state of Punjab. The size-wise analysis showed that 30.55 per cent of the marginal farmers, 16.00 of small farmers and none of semi-medium, medium and large farmers were living below the poverty line in the state during the year 2012-2013. The situation of marginal and small farmers in zone III was very precarious.

TABLE 10: INCIDENCE OF POVERTY AMONG PUNJAB FARMERS (Percent)

Zone	Marginal	Small	Semi-medium	Medium	Large	Average
I	25.00	12.50	-	-	-	10.00
II	30.00	15.38	-	-	-	6.67
III	35.71	19.05	-	-	-	9.00
State	30.55	16.00	-	-	-	8.44

CONCLUSION

It is clear from the above findings that the farm income constituted major share of family farm income among all the farm size categories in different zones. The per cent share of farm income increased with the increase in farm size. The zone wise analysis brought out that the per farm income was lowest in zone-I i.e. sub-mountainous region followed by central region; zone-II and highest in the south-western region; zone III during the period 2012-13. zone-I having lowest family income had highest inequality in distribution of income. The Gini ratio was 0.3360 in zone-I, followed by zone-III (0.3127) and zone-II (0.3045). The households living below poverty line were among the marginal and small farmers to the tune of 31 per cent and 16 per cent respectively. Region specific development policies particularly for the marginal and small farmers should be framed to uplift the farm households above the poverty line and for more equal distribution of income.

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