Analysis of Income Distribution among Marginal and Small Farmers in Rural Punjab

Sukhvir Kaur[1], Gian Singh[2]

Abstract: *The objective of the present paper is to analyze the income pattern of the marginal and small farmers in rural Punjab. For this analysis, the state of Punjab has been divided into three regions on the basis of levels of agricultural productivity, i.e. low, medium and high productivity regions. On the basis of this criterion, it is deemed fit to select, Ludhiana district from the high productivity region, Faridkot district from the medium productivity region and Hoshiarpur district from the low productivity region. The study has concluded that average household income and per capita income is directly related with the agricultural productivity and farm-size. Since there is positive relationship between farm-size and farm business income, this makes a strong case for land reforms in favour of the marginal and small farmers apart from other measures helpful in increasing their income.*

Keywords: Marginal and Small Farmer, Agricultural Productivity

1. Introduction

The new agricultural technology was introduced during the mid-sixties as it relates to the package of high-yielding varieties seeds, assured irrigation, use of chemical fertilizers, insecticides, pesticides, herbicides, machinery and modern agricultural practices. The success of the new agricultural technology was termed as green revolution. It has helped in increasing the income levels as well as total food grain production. The introduction of the new technology would, therefore, result in a growing polarization between large-scale and small-scale cultivators (Wilson, 2002). This process of transformation of Indian agriculture from a traditional to a modern state has brought in its wake new opportunities for investment in agriculture because of the high rate of return to such investment. While ushering in rapid agricultural growth the green revolution has given rise to problems arising out of the distribution of its benefits. One of its consequences is reckoned in the form of growing disparities in farm incomes over time (Saini, 1976).

In its initial phase, the significant increments in productivity and production led to higher and higher income benefited to the farming community (Aggarwal, 1971). All categories of cultivators have been able to record substantial increase in their output and income through the adoption of new technology. The bigger farmers gained more than the small farmers, an upward shift in their incomes (Johl, 1975) even the small farmers were unable to earn adequate per capita income from crop production because of their small land base (Bhalla and Chadha, 1982 and Singh et al, 1975). Due to many reasons like lack of finance, the small farmers were unable to use the improved seeds, fertilizers and new techniques. It was realised that the small farmers was lagging behind the medium and large farmers in adopting modern innovations in their farming (Rao, 1975), through the adoption of the new technology by the small cultivators, often in areas where the green revolution's impact has been assumed to be very limited (Shah and Ballabh, 1997 and Thakur et al, 2000). The new agricultural technology widens the income inequality among the different sections of farming population and provides proportionately large benefits to the big farmers as compared to the small farmers, because the small farmers are slow to accept the new technology (Chowdhary, 1970). 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).

Agriculture is now a business and has to run so. It can't be viable for marginal and small farmers, who cannot cut their costs, can't afford the latest technology. The green revolution had made impressive strides in Punjab agriculture and achieved many landmarks of enhance the income of the farmers. Nevertheless success still eludes the marginal and small farmers. These resource poor farmers have been unable to get their fair share in the cake. With the onset of development crisis in agriculture, the marginal and small farmers are finding it difficult to survive (Sekhon et al, 2009). The potentials of new technology began to be exhausted in the 1980s generating pressure of economic stress among the poor strata of peasantry (Gill, 2005) and have started declining since the 1990s (Singh, 2000). The new economic policy advocates withdrawal of the state from the economic sphere by leaving it to the logic of market forces. Leaving the agricultural sector to the vagaries of free market could prove disastrous (Jodhka, 2006). The subordination of cultivators to market and capital forces without safety net to support them in times of crop loss, accounts for the devastation of rural communities (Vasavi, 1998). As a consequence, the per hectare net return is declining and this is the real crisis of Punjab agriculture. The annual trend growth rate of per hectare return, over variable costs, from wheat and paddy (combined) was -2.18 per cent during the 1990s. In case of cotton, it was -14.24 per cent per annum during the same period (Ghuman, 2001).

2. Methodology

For the analysis of income pattern of the marginal and small farmers, the whole Punjab state on the basis of levels of agricultural productivity has been divided into three regions, viz. low, medium and high productivity regions. Agricultural productivity is estimated by aggregation of the output of ten major crops of the state for the year 2005-06 (GoP, 2006). On the basis of this criterion, it was decided to select Ludhiana district from the high productivity region, Faridkot district from the medium productivity region and Hoshiarpur district from the low productivity region. On the basis of random sampling method one village from each

development block of the selected districts has been selected. Thus, in all, twenty-four villages were selected for the survey. These include twelve villages from Ludhiana district, two villages from Faridkot district and ten villages from Hoshiarpur district. As many as 20 per cent farm households consisting of marginal and small farmers formed the sample for the survey. Out of 24 villages, 650 households in all, 250 households from Hoshiarpur district, 112 from Faridkot district and 288 from Ludhiana district were selected. Of the total households, 340 households were from the marginal farm-size category and 310 households from the small farm-size category. The present study relates to the agricultural year 2007-08.

3. Results and Discussion

3.1 Household Income

The mean values of income earned from various sources by the marginal and small farm-size categories are given in Table 1. The table shows that an average sampled farm household earns Rs. 63,372.87 per annum in the rural areas of Punjab.

Table 1: Levels of Income of Marginal and Small Farmers
(Mean Values, in Rs., Per Annum)

S.No.	Sources of Income	Marginal Farmers	Small Farmers	All Sampled Farmers
1.	Farm business income	28729.41	49835.15	38795.23
2. (i)	Milk and milk products*	8103.09	16301.57	12013.13
(ii)	Poultry*	846.83	1204.81	1017.55
(iii)	Hiring out agricultural equipment	319.87	858.26	576.64
(iv)	Hiring out labour in agriculture	1933.80	841.29	1412.78
(v)	Leased out land	194.89	932.09	546.49
(vi)	Salaries	3366.90	4098.97	3716.03
(vii)	Pensions	2143.89	2564.70	2344.59
(viii)	Remittances	1376.08	1880.68	1616.73
(ix)	Other sources**	1080.14	1611.80	1333.70
	Sub-total	19365.49	30294.17	24577.64
	Total	48094.90	80129.32	63372.87

Source: Field Survey, 2007-08.
Note: *Net income is taken
**It includes income from hiring out labour in non-agricultural sector and income from small businesses like shop keeping.

There are considerable variations in the levels of income earned by the marginal and small farm-size categories. It is Rs. 48,094.90 and Rs. 80,129.32 for the marginal and small farm-size categories respectively. A positive relationship between farm-size and levels of income can be observed from the table. It is evident that as the farm-size increases, the average income of the farm households also increases. The annual income of an average small farm household is found to be 1.66 times the annual income of the marginal farm household.

Farm business income is the most important component of household income followed by income from milk and milk products, salaries and pensions. The average income from these three sources is found to be Rs.12, 013.13, Rs. 3,716.03 and Rs. 2,344.59 respectively. The table clearly shows that in absolute terms the sources of income show a

similar pattern across the marginal and small farm-size categories except income from hiring out labour in agriculture. The field survey highlighted the fact that the farm households generally hesitate to hire out labour in agriculture. The socio-cultural factors are responsible for this phenomenon. The marginal farm-size category earns an income of Rs. 1,933.80 from this source and the small farm-size category earns only Rs.841.29. This phenomenon indicates the fact that farm business income of the marginal and small farm-size categories is not sufficient to meet their requirements and farmers of these categories earn some income from hiring out labour in agriculture. However, income from hiring out labour in agriculture has a negative relationship with farm-size.

3.2 Pattern of Income

The relative shares of income of various sources of farm households are given in Table 2. The table shows that by virtue of being farmers the main source of income in the case of an average sampled farm household is the farm business income. On an average, 61.21 per cent of the total income consists of farm business income. This proportional share is directly related with farm-size. The marginal and small farm-size categories received 59.73 per cent and 62.19 per cent of their average annual household income from farm business income respectively. The second important source of income in the case of an average sampled farm household is income from milk and milk products. Slightly less than 19 per cent of the total income consists of income from this source. The percentage share of income from this source stands at 16.84 for the marginal farmers and 20.34 for the small farmers. The relative share of income from this source shows a positive relationship with farm-size.

Income from salaries ranks third in the case of an average sampled farm household. Income from this source is 5.88 per cent of the total income of an average sampled farm household. From this source of income, the marginal and small farm-size categories earn 7.00 and 5.11 per cent respectively. The fourth place in the income pattern of all farm-size categories goes to the income from pensions. An average sampled farm household earns 3.69 per cent of the total income from this source. The relative share of this source in the total household income is 4.46 per cent and 3.20 per cent for the marginal and small farmers respectively. The relative share of income from salaries and pensions shows a negative relationship with farm-size.

The next important source of income is remittances. The proportional share from this source is 2.56 per cent for an average sampled farm household. The marginal and small farm-size categories earn 2.87 and 2.35 per cent from this source of income. Income from hiring out labour in agriculture appears at the sixth rank. An average sampled farm household earns 2.22 per cent of the total income from this source. The relative share of this source in the total household income is 4.02 per cent and 1.04 per cent for the marginal and small farmers respectively. As already pointed out under the impact of socio-cultural factors the farmers generally hesitate to hire out in agriculture.

Table 2: Income Pattern of Marginal and Small Farmers
(Percentage of Total Income)

Sl. No.	Sources of Income	Marginal Farmers	Small Farmers	All Sampled Farmers
1.	Farm business income	59.73	62.19	61.21
2. (i)	Milk and milk products	16.84	20.34	18.96
(ii)	Poultry	1.77	1.50	1.60
(iii)	Hiring out agricultural equipment	0.67	1.08	0.90
(iv)	Hiring out labour in agriculture	4.02	1.04	2.22
(v)	Leased out land	0.40	1.17	0.88
(vi)	Salaries	7.00	5.11	5.88
(vii)	Pensions	4.46	3.20	3.69
(viii)	Remittances	2.87	2.35	2.56
(ix)	Other sources	2.24	2.02	2.10
	Sub-total	40.27	37.81	38.79
	Total	100.00	100.00	100.00

Source: *Calculated from Table 1.*

The proportionate share of household income from this source has an inverse relationship with farm-size. The farmers are hiring out labour in agriculture because of their compulsions arising out of low levels of household income. Income from other sources ranks seventh in the case of an average sampled farm household. Income from this source is 2.10 per cent of the total income of an average sampled farm household. From this source of income, the marginal and small farm-size categories earn 2.24 and 2.02 per cent respectively. Income from poultry ranks eighth in the case of an average sampled farm household. The proportional share from this source is 1.60 per cent for an average sampled farm household. From this source of income, the marginal and small farm-size categories earn 1.77 and 1.50 per cent respectively. At present, this fact shows very limited possibilities on the part of farmers to go for agricultural sidelines to enhance their income levels. The relative shares of income from remittances, hiring out labour in agriculture, other sources and poultry show a negative relationship with farm-size.

The next important source of income is income from hiring out agricultural equipment. The proportional share from this source is only 0.90 per cent for an average sampled farm household. From this source of income, the marginal and small farm-size categories earn 0.67 and 1.08 per cent respectively. The field survey revealed the fact that the marginal and small farmers do not own machinery according to their own requirements. Generally they lease in machinery for different agricultural operations. However, they try to enhance their household income by leasing out agricultural equipment. The last rank goes to income from leased out land. An average sampled farm household earns merely 0.88 per cent of the total income from this source. The relative share of this source in the total household income is 0.40 per cent and 1.17 per cent for the marginal and small farmers respectively. The field survey revealed the fact that the marginal and small farmers sometimes hire out some part of their small holdings because of many reasons such as lack of irrigational facilities, immediate need for cash etc. The relative shares of income from hiring out agricultural equipment and leased out land show a positive relationship with farm-size.

3.3 Per Capita Income

In the foregoing discussion, the income levels and pattern of the marginal and small farm-size categories in the rural Punjab have been analysed. The average family size of the sampled households is 5.41. The average family size of the marginal and small farm-size categories is 5.48 and 5.34 respectively. Since the family size across the marginal and small farm-size categories varies, it becomes relevant to look into the per capita income levels across the different farm-size categories. The data pertaining to the per capita income earned by the marginal and small farm-size categories in the rural areas of Punjab is given in Table 3. An average sampled farm household earns per capita income of Rs. 11,695.72 annually. However, there are differences in the per capita income levels of the two farm-size categories. For example, per capita income of the marginal farm-size category is Rs. 8772.67 and it is Rs.14981.96 annually for the small farm-size category. The per capita income of the small farm-size category is 1.70 times the per capita income of the small farm-size category.

3.4 Distribution of Income

The pattern of distribution of income among families and population of the marginal and small farm-size categories as well as both the categories taken together as a whole have been worked out by taking cumulative percentages of per household and per capita income for each docile group after arranging the same in the ascending order. Gini ratios have also been calculated to justify the pattern of distribution. Gini ratio conveys better distribution if it is nearer to zero and worse distribution if it is nearer to unity.

Table 3: Per Capita Income of Marginal and Small Farmers
(In Rs., Per Annum)

Sl. No.	Sources of Income	Marginal Farmers	Small Farmers	All sampled Farmers
1.	Farm business income	5240.34	9317.80	7159.82
2. (i)	Milk and milk products	1478.03	3047.94	2217.08
(ii)	Poultry	154.47	225.27	187.80
(iii)	Hiring out agricultural equipment	58.34	160.46	106.42
(iv)	Hiring out labour in agriculture	352.73	157.30	260.73
(v)	Leased out land	35.55	174.28	100.85
(vi)	Salaries	614.13	766.39	685.81
(vii)	Pensions	391.05	479.52	432.70
(viii)	Remittances	251.01	351.63	298.38
(ix)	Other sources	197.02	301.37	246.13
	Sub-total	3532.33	5664.16	4535.90
	Total	8772.67	14981.96	11695.72

Source: *Calculated from Table 1.*

3.4.1 Household Income Distribution
The distribution of income among the sampled farmers in the rural areas of Punjab has been shown in Table 4. The bottom 10 per cent farm households share only 3.68 per cent of the total income earned by all the sampled farm households. On the other hand, the top 10 per cent farm households appropriate 29.04 per cent of the total income of all the sampled farm households. This is about 8 times the income shared by the bottom 10 per cent farm households. A clear contrast is obvious from the fact that the bottom 50 per cent farm households account for 27.34 per cent of the total

income, whereas only 10 per cent top households account for slightly more than 29 per cent to the total income earned by all the sampled farm households.

Table 4: Distribution of Household Income of Marginal and Small Farmers

Cumulative Percentage of Households	Cumulative Percentage of Household Income of		
	Marginal Farmers	Small Farmers	All Sampled Farmers
10	4.88	5.03	3.68
20	10.86	11.82	8.69
30	17.87	19.00	13.92
40	25.70	27.28	20.35
50	34.98	36.72	27.34
60	45.06	47.43	34.45
70	56.04	58.11	43.28
80	67.41	70.60	54.64
90	82.10	84.16	70.96
100	100.00	100.00	100.00
Gini	0.2102	0.1797	0.3454

Source: Field Survey, 2007-08.

The marginal and small farm-size categories also present a similar position. The bottom 10 per cent of the marginal farm households' claim 4.88 per cent of the total household income, the corresponding figure for the small farm households stands at 5.03 per cent. On the other hand, the top 10 per cent households appropriate 17.90 and 15.84 per cent for the marginal and small farm households respectively. This shows the fact that the income concentration among the marginal farm households is slightly greater than that of the small farm households. Gini coefficients also support this evidence. These are 0.2102 and 0.1797 for the marginal and small farmers respectively. Gini coefficient for all the sampled farm households is of the order of 0.3454, indicating a highly skewed distribution of income.

3.4.2 Distribution of Per Capita Income

Distribution of per capita income is shown in Table 5. The table shows that there are large-scale inequalities in the distribution of per capita income in comparison to the inequalities in the household income distribution.

The bottom 10 per cent of all the sampled farm households share only 3.22 per cent of the total income, whereas the top 10 per cent secure as high as 31.62 per cent of the total income. The marginal farm households depict the worst distribution. The bottom 10 per cent of the marginal farmers claim only 4.14 per cent of the total income, while the top 10 per cent appropriate 19.25 per cent of the total income. The bottom 10 per cent of the small farmers claim only 4.89 per cent of the total income, while the top 10 per cent appropriate 17.51 per cent of the total income. There are marginal differences in the share of top 10 per cent and bottom 10 per cent among the marginal and small farm-size categories. The Gini coefficients are also higher than those of per household basis among the marginal and small farm-size categories. On an overall basis, the Gini coefficient is greater for per capita income vis-à-vis per household income. This shows that the concentration of per capita income is higher than the per household income.

Table 5: Distribution of Per Capita Income of Marginal and Small Farmers

Cumulative Percentage of Persons	Cumulative Percentage of Per Capita Income of		
	Marginal Farmers	Small Farmers	All Sampled Farmers
10	4.14	4.89	3.22
20	9.88	11.29	7.25
30	17.34	18.02	12.89
40	24.89	26.75	18.04
50	32.40	33.25	21.05
60	43.95	46.62	28.34
70	54.33	55.96	35.21
80	66.48	65.60	51.78
90	80.75	82.49	68.38
100	100.00	100.00	100.00
Gini coefficient	0.2316	0.2102	0.4076

Source: Field Survey, 2007-08.

4. Conclusions and Policy Implications

It is concluded from the above analysis that an average sampled farm household earns annually Rs. 63,372.87 in the rural Punjab. Farm business income is the most important component of household income. An average sampled farm household earns per capita income of Rs. 11,695.72 annually. The study reveals a positive relationship between farm-size and income levels, i.e., as the farm-size increases, the average income of the sampled farm households also increases.

The field survey revealed the fact that in the rural areas of Punjab the marginal and small farmers try to maintain a minimum level of consumption whether they can afford it or not. To overcome this problem, income of the marginal and small farmers needs to be increased through different measures. Since there is positive relationship between farm-size and farm business income, this makes a strong case for land reforms in favour of the marginal and small farmers apart from other measures helpful in increasing their income.

Educating the marginal and small farmers about the subsidiary occupations, providing loans either interest free or at low rates of interest, creating sufficient employment opportunities, fixation of prices of agricultural commodities at reasonable level, assured purchase of agricultural produce, subsidising the agricultural inputs, providing insurance cover in agriculture, establishing agro-based industries to be run through producers' co-operatives in the rural areas, reducing the unproductive expenditure on marriages and other socio-religious ceremonies, intoxicants, drugs and so on and enforcing the already existing special programmers for the rural development in proper perspective taken on priority basis can help in enhancing the income of the marginal and small farmers.

References

[1] Aggarwal, P.C. (1971) "Impact of Green Revolution on Landless Labour". *Economic and Political Weekly,* Vol. VI (47) pp. 2363-2365.
[2] Bhalla, G.S. and Chadha, G.K. (1982) "Green Revolution and Small Peasant- A Study of Income

Distribution in Punjab Agriculture". Economic *and Political Weekly,* Vol. XVII (19) pp. 870-877.

[3] Chowdhary, B. K. (1970) "Disparity in Income in Context of HYV". *Economic and Political Weekly,* Vol. 5(39) pp. A90-96.

[4] Ghuman, R.S. (2001) "WTO and Indian Agriculture: Crisis and Challenges- A Case Study of Punjab". *Man and Development*, Vol. 23 (2) pp. 67-98.

[5] Gill, S.S. (2005) "Economic Distress and Farmer Suicides in Rural Punjab". Journal of Punjab Studies, Vol. 12 (2) pp. 219-238.

[6] Government of Punjab (2006), Statistical Abstract of Punjab.

[7] Jodhka, S. (2006) "Beyond Crisis Rethinking Contemporary Punjab Agriculture". *Economic and Political Weekly,* Vol. 41 (16) pp. A143-148.

[8] Johl, S.S. (1975) "Gains of the Green Revolution: How They Have Been Shared in Punjab". *Journal of Development Studies,* Vol. 11(3) pp. 178-189.

[9] Rao,T.H. (1975) "The Small Farmers and The Asset Structure (A Case Study of Three Villages in Vishakhapatnam district)". *Indian Journal of Agricultural Economics*, Vol. 30 (3) p. 272.

[10] Saini, G.R. (1976) "Green Revolution and Disparities in Farm Incomes-A Comment". *Economic and Political Weekly*, Vol. 11(46) pp.1804-1806.

[11] Sekhon, M.K., Kaur, M., Mahal, A.K. and Sidhu, M.S. (2009) "Efficiency and Viability of Small and Marginal Farmers in Punjab". *Journal of Agricultural Development and Policy,* Vol. 19(2) pp. 192-196.

[12] Shah, T. and Ballabh, V. (1997) "Water Markets in North Bihar: Six Village Studies in Muzaffarpur District". *Economic and Political Weekly*, Vol. 32(52) pp. A183-190.

[13] Singh, S. (2000) "Crisis in Punjab Agriculture". *Economic and Political Weekly*, Vol. 35 (4) pp. 1889-1892.

[14] Singh, S. and Toor, M.S. (2005) "Agrarian Crisis with Special Reference to Indebtedness among Punjab Farmers". *Indian Journal of Agricultural Economics*, Vol. 60 (3) pp. 335-346.

[15] Singh, V.K., Tripathi, S.N. and Singh, R.I. (1975) "Income and Investment Behaviour of Small Farmers in SFDA and Non-SFDA Areas of Fathepur (U.P.) A Case Study". *Indian Journal of Agricultural Economics,* Vol. 30 (3) p. 258.

[16] Thakur, J., Bose, M.L., Hussain, M. and Janaiah, A. (2000) "Rural Income Distribution and Poverty in Bihar". *Economic and Political Weekly,* Vol. 35 (52-53) pp. 4657-4663.

[17] Vasavi, A. R. (1998) "Agrarian Distress in Bidar Market, State and Suicides". *Economic and Political Weekly,* Vol. 33 (12) pp. 2263-2267.

[18] Wilson, K. (2002) "Small Cultivators in Bihar and 'New' Technology Choice or Compulsion?" *Economic and Political Weekly,* Vol. 37 (11) pp. 1229-1238.