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Income and Expenditure of Farm Households: A Micro Perspective

K. R. Hamsa[1*] and K. B. Umesh[1]

[1]Department of Agricultural Economics, UAS, GKVK, Bengaluru, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This micro level study, conducted in the Southern Karnataka to examine the sources of income and pattern of household expenditure, revealed that farm activities are the main sources of income in both progressive and less progressive areas and non-farm and off-farm activity (mainly agricultural labour) contributes only a negligible portion. The smallholders as well as rainfed households during the slack agricultural season depend on rural non-farm activities through non-agricultural labour as the source of earning in progressive area where as in less progressive area, all the categories of farmers had their non-farm income earned majorly from house rent. Percentage of spending on various items varied with category of farmers. With the increase in income, there was increase in expenditure on non-food items, which was observed in both areas. Inequality in income distribution was less than consumption expenditure due to unequal non-food consumption expenditures in both areas. There was a relatively higher income and expenditure inequality has observed in less progressive area compared to progressive area. Overall, it was evident from the results that, even though farm income contribution was more in both areas, still improving off and non-farm employment opportunities that adds to income and helps for further savings.

**Corresponding author: Email: hmmshamsa@gmail.com;*

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JEL Code: *Q, Q1, Q12*

1. INTRODUCTION

Over the past three periods, agriculture in Indian has grown at an annual rate of around 3%. This has helped improve farm incomes and reduce rural poverty [1]. However, of late, the farm sector has come under stress [2]. In India, still agriculture sector continues to be the major and important source of employment for about more than 50% of India's population. However, its share in GDP has declined from more than 30% in 1991 to nearly 13% [3]. This is primarily because of India's progression from agrarian economy to industry and service based economy. In developing countries like India, agricultural growth is pre condition for agricultural or economic development. Thus, most important pre-requisite in the farming sector is the need to encourage farmers to make long-term investment to improve the productivity of farm because of expansion of cultivated area is constrained. Therefore, alternative is intensive use of land through capital infusion. Further, the Indian agriculture is dominated by small landholdings, and the average size of landholding has shrunk to 1.16 ha in 2010-11 from 1.84 ha in 1980-81. Their meagre land is not sufficient to earn adequate income to maintain their family. Also in another angle, farming in India has become non-viable, specifically for rainfed and small farmers. This is because of the fact that, majority of Indian agriculturists being poor subsistence farmers for whom farming is not a business enterprise but a mode of living [4]. Given these, there arises a basic question: how far farm households would survive on such tiny pieces of land? In a study, reported that if agriculture were to the sole source of income for small landholders, the majority of them would have remained Poor [5] Therefore, number of studies from developing countries have suggested that diversification of rural economy towards non-farm activities has considerable potential to augment farmers' income and reduce rural poverty [6,7,8]. An increase in the income of the farmers would increase their saving potentialities, which will ultimately add the capital formation in agriculture (Hamsa & Umesh 2019). But another constraint was family consumption expenditure of a household is mainly influenced by the level of income Hamsa & Umesh 2019; [9,10,11,12]. In the present context of the Indian economy there is a interlink between the income and consumption expenditures.

Nevertheless, in the land-scarce and labour-surplus the importance of non-farm income sources to the poor cannot be undermined and non-farm diversification and off–farm were important for the rainfed and small landholders and reduces rural poverty. Against this backdrop, the present study emphasise on access to different sources of income, income distribution and pattern of consumption expenditure of farm households at the micro level across farm size wise viz., small and large farmers as well as based on irrigation facility viz., rainfed and irrigated in progressive area and less progressive area of Southern Karnataka.

2. REVIEW OF LITERATURE

A review of past research helps in identifying the conceptual and methodological issues relevant to the study and helps to identify the gap that exists in research area. This will enable the researcher to collect relevant data and subject them to sound reasoning and meaningful interpretation.

Phuke et al. [13] conducted study on consumption pattern of the farm families under Nirgudi Minor Irrigation Command Area in the year 1988-89. The size groups of holdings were treated as income groups. Per family income at overall level was Rs. 12160 for an average family having 6.73 members. It was noticed that, as income increased the percentage expenditure on food decreased. This has confirmed the operation of Engle's law of family expenditure. The percentage expenditure on recreation, travelling, festival and social function were observed to be increasing with increase in income. This is also in conformity with the Engel's Law whereas the observations regarding lighting and housing were not in conformity with the law.

The average MPCE for farmer households at all India level during the year 2003 was ` 502.83 (less by 9.3 per cent) compared to Rs. 554.15 for all rural households. The corresponding break-ups for food and non-food groups were Rs. 278.74 and Rs. 224.09 for farmer households (less by 6.6 percent and 12.3 per cent respectively) in comparison with Rs. 298.57 and

Rs. 255.59 for all rural households. At all India level, about four per cent of farmer households had MPCE less than Rs. 225, 8 per cent had MPCE less than Rs. 300 and 15 per cent had MPCE less than Rs. 380. On the other hand, 7.5 per cent of the farmer households had MPCE more than Rs. 950 and 26 per cent had MPCE more than ` 615. The average MPCE during 2003 was highest for the farmers of Kerala (Rs. 900.59) followed by Nagaland (Rs. 882.93) and Punjab (Rs. 828.01). For the farmer households average MPCE during 2003 was lowest for Orissa (Rs. 341.75), followed by Jharkhand (Rs. 352.85), Chattishgarh (Rs. 378.89) and Bihar (Rs. 403.60). Of the average monthly expenditure incurred by farmer households in purchase and maintenance of productive assets, 81 percent went for farm related assets, 13 percent for residential building and 6 percent for non-farm business.

Using the India Human Development Survey 2004-05 data, relationship between per capita cereal consumption and per capita income in India was examined by Christian [14]. The per capita cereal consumption remains much the same at different levels of per capita income, though it does vary substantially with education levels, household size, occupation patterns and urbanization. There is a positive and monotonic relationship between Monthly per capita expenditure (MPCE) and Per capita cereal consumption (PCCC) across households; in other words, better-off households (in terms of MPCE) consume more cereals than poorer households. Cereal expenditure rises with per capita income, even though cereal consumption (in quantity terms) does not. This is because higher-income households tend to purchase cereals that are more expensive.

Oluwakemi [15] studied saving behaviour of rural households in Kwara State of Nigeria. The sample of 120 rural households were interviewed. The Tobit regression analysis was used to determine the saving rate. The results showed that, about 81 per cent of rural entrepreneurs were male-headed and 73.5 per cent of the household heads that combine farming with other non-farm activities had higher income level and savings compare to household heads with only one source of livelihood income. In addition, most household heads spent their income on food and majority (88.7%) save for investment purposes but their average monthly savings was less than five thousand naira. The result further showed age squared ($p<0.10$), farming experience ($p<0.10$) and diversification into non-farm activities ($p<0.05$) positively influence rural saving rate. Thus, an increase in food share of total expenditure and household size would reduce saving rate. Further, diversification into non-farming activities was found to increase saving rate of the rural household heads.

The study by Ting et al. [16], reported that in the vegetable expenditure equation, six out of the nine socio-demographic characteristics are statistically significant in affecting the household weekly fresh vegetable expenditure. The socio-demographic factors such as the farm and nonfarm income, education, household composition, age, and gender of the household head significantly affect the fresh vegetable expenditure in the rural households. The households having nonfarm income are found to spend 1.16 New Cedi more on weekly fresh vegetable purchasing than their counterparts. The households where the respondent received any formal education are found to spend 2.17 New Cedi more on weekly fresh vegetable expenditure than households of respondents not having any formal education. A household with a male head is found to spend 1.19 New Cedi less per week on fresh vegetables than a household with a female household head.

Kostakis (2013) estimated from the sample of 800 consumers of Greece, that on an average, each household consumes around 173.88 Euros per month on food products. In particular, the food expenditures in a household represent approximately 16.82 per cent of total monthly expenditures. The empirical results also suggested that income is a key determinant affecting food expenditures across households. The level of food expenditures is positively affected by educational level and marital status. One more innovative result from the study was the evidence of Engel's law. The expenditures on food are not linear with respect to income. Rich people spend lower percentage of their income on food than poorer people do.

Birthal et al. [2] found that the share of non-farm income sources, viz. wages (including salaries) and non-farm business declined steeply with the increase in landholding-size, but had a positive relationship with total income. The nonfarm income was more important for the households at lower end of land distribution. The poor households diversified more towards low-paid, low-return non-farm activities. Small

landholdings, low agricultural productivity and surplus labour forced the farm households to diversify their income portfolio towards non-farm activities. The non-farm income sources were accessible to a small proportion of farm households and had un-equalizing effect on income distribution. Nevertheless, non-farm sources were positively correlated with the total income. This contrast in income sources between income level and farm size suggests that non-farm sector can serve as potential entry points for land-constrained farm households to enhance their income level.

Chakravorty et al. [17] analysed the consequences of land fragmentation on income generation and inequality in agricultural sector of India and found that rural households derived major portion of their income from cultivation (63.5%) followed by wage / salaried employment (22%), non-agricultural enterprises (4.7%), livestock (3.7%) and other agricultural activity (1%).

Singh [18] in his study on income and employment opportunities of small and marginal farmers in south-western Punjab region found that crop production and dairy farming were the main sources of income of the sample farmers and contributed about 33 and 18 per cent to the total annual net income. Income from off-farm and non-farm sources contributed significantly to the net income of farm households. The share of income earned from non-farming sector was higher among marginal farms (58.36%) as compared to small farms (40.70%). The study brought out that farm size, crop productivity; net income from dairy and off-farm income had significant impact on the income level.

Sarkar [19] assessed the small farm household income from crop production in three villages of West Bengal and reported that there was substantial variation in the annual farm incomes earned by villages due to different agro-ecological regions. The median annual farm income for farm households of Amarsinghi, Kalmandasguri and Panahar villages was Rs. 10,460, Rs. 7,996 and Rs. 1,780, respectively. The lower income in Panahar was due to crash in potato prices. Some households incurred negative crop incomes to an extent of 28 per cent in Panahar and 15 per cent in Kalmandasguri. He recommended diversification towards commercial crops to augment farmers' income and mentioned institutional support was necessary to mitigate high risks of cultivation.

The above studies indicated that, with crop and livestock income, off- farm and non- farm income significantly increased the net returns and the farm income was directly correlated to the size of land holding. The lowest income groups in farming households had highest marginal propensity to consume which leads to lowest marginal propensity to save as compared to the other occupational teams. The expenditures on food are not linear with respect to income. Rich people spend lower percentage of their income on food than poorer people evidence of Engel's law.

3. METHODOLOGY

3.1 Study Area

The study was conducted in Southern Karnataka for the period of 2017-18. Tumakuru and Ramanagara districts were selected based on proportion of agricultural gross domestic product of each district to the total agricultural gross domestic product of the state. As per this, Tumakuru representing progressive and Ramanagara representing less progressive district. Tumakuru and Gubbi taluks of Tumakuru district representing progressive taluks and Ramanagara and Magadi taluks of Ramanagara district are representing less progressive taluks.

Random sampling technique was employed for the selection of sample respondents. A total sample of 120 farmers were collected from each district, comprising 60 from each taluk. Thus, the total sample size was 240. Further, the sample farmers were post classified into small and large based on size of holding. Large farms were those who had their land holding size of above 2 hectares, small farms (2 ha and below). Further, farmers were also post classified into rainfed and irrigated farms based on availability of irrigation facility on the farm. The farms that were solely rainfed or dependent on rainfall for agricultural activities were classified as rainfed farms. The farms that had irrigated area along with or without rainfed area were classified as irrigated farms.

3.2 Theoretical Framework

The necessary information on sources of income *viz.,* farm income, non-farm income and off- farm income and consumption expenditure of farm households was considered for the period of 2017-18. The sources of income were defined as follows.

I. **Farm Income:** It was estimated as the value of main product and byproducts, after accounting the cost of seeds, payment to hired human labour, draught and machine power, farm yard manure (FYM), chemical fertilizers, pesticides, irrigation charges and fixed cost. It also comprises the net income received from livestock and perennial crops.

II. **Non-farm Income:** Net income generated from non-agricultural activities like, non-agricultural labour, salaried government and private jobs, business, remittances, rental income etc., was considered.

III. **Off-farm Income:** It was analyzed by considering the income generated by the family members working as agriculture labourers in other farmers' fields and income from hired out farm machineries and implements.

Tabular method of presentation was employed to compile the sources of income and consumption expenditure. In order to assist the interpretation of findings, descriptive statistical measures like percentages and averages were worked out wherever necessary.

3.3 Gini Coefficient

Gini coefficient was estimated to measure the inequality in income and consumption expenditure among the farm households. It ranges from 0 to 1, 0 indicates to perfect income equality (i.e. everyone has the same income) and 1 corresponds to perfect income inequality (i.e. one person has all the income, while everyone else has zero income).

Gini coefficient is calculated by using the formula

$$G=1+\frac{1}{n}-\frac{1}{n^2Y}\left[y_1+2y_2+3y_3+\ldots\ldots\ldots\ldots\ldots+ny_n\right]$$

Where,

G = Gini coefficient
n = Sample size
y = Average net total income of farm household

y_1, y_2, y_3 ...y_n are net total income of each sample farmer arranged in the ascending order of magnitude of y_i. The farmer who is having the lowest net farm income is first, and then next and so on.

4. RESULTS AND DISCUSSION

Sources of farm income are categorized into income from field crops, perennial crops and livestock in progressive area. In less progressive area, in addition to above, sericulture income adds to the farm income.

Farm income of farm households in progressive area are shown in the Table 1. The total average income from all farm sources was Rs. 336703 that comprised of income from horticultural crops (57%), livestock (41%) and field crops (2%). Large farmers earned almost four folds more farm income than that of small farmers. Large farmers earned Rs. 338439 from horticultural that is highest for the category; whereas small farmers earned highest income from livestock (Rs. 86029), implying that cultivation of annual crops is not the sole viable source of income that fully ensures livelihood security to farmers with small holdings and dependent on monsoon. Further, the magnitude of income earned from horticultural crops increased with size of land holding and its percentage contribution to the total farm income was directly related to the size of land holding. Similarly, irrigated farmers had highest share of farm income from horticultural crops (Rs. 656632), while rainfed farmers from livestock (Rs. 113409).

Non-farm source of income was the major source of income among all groups compared to off-farm income (Tables 2 and 3). The only off- farm income source in the study area is the agricultural labour which was on an average of Rs. 4980 for pooled farms. Among the farm categories, large farmers earned the highest annual off farm income (Rs. 7316). The large farmers not only worked as agricultural labourers in others field but they had more investment in machineries.

The annual average non-farm income in progressive area was only Rs. 10666, of which income from government job had major share (64%) followed by private job (21%), non-agricultural labourers (6%), remittances (5%) and business (4%). Dependency on non- farm income did not have much variations across the categories expect for rainfed farmers (Rs. 6253). Irrigated farms earned more non-farm income than that of other categories, since the education status of irrigated farmers was relatively better, their income from salaried job had major share in non-farm income. Only the farmers belonging to small and rainfed category earned non-farm

income through non-agricultural labour. Given the insufficiency of farm income to meet household expenditure, the small and rainfed farmers have to plan livelihood strategy from non-farm sources of income for their survival [20]. Similarly, business was the source of income for small farmers and irrigated farmers.

The total average annual income of the farmers was Rs. 352349. Irrigated farmers earned relatively higher income (Rs. 776204) followed by large, rainfed and small farmers (Table 4). Irrespective of category, farm income had highest share (96%) followed by non-farm and off-farm income out of the total annual income. Amount of farm income earned among the various activities was highest but this was conflicting to the study conducted by Birthal [2], who reported that the non-farm income was more important for the households at lower end of land distribution.

In addition to the progressive area, sources of farm income were categorized into income from field crops, perennial crops, livestock and silkworm rearing in less progressive area. Farm income in less progressive area was to the tune of Rs. 172898 per farm per annum (Table 5) which was only 50% of farm income in progressive area. Livestock was the foremost source of income in less progressive area (Rs. 71194) followed by silkworm rearing (Rs. 60924), horticultural crops (Rs. 34345) and field crops (Rs. 6435). Large farms earned highest farm income of Rs. 228800 per annum followed by irrigated, rainfed and small farms. Major source of income for small, large and rainfed farms was livestock except for irrigated farms who earned their major share of income from sericulture, since sericulture forms a major occupation in less progressive area and irrigation facility adds mulberry cultivation throughout the year and provided year-round income to the irrigated farms.

Similar to progressive area, less progressive area also had only agricultural labour as only source of off- farm income (Table 6) and on an average; the annual off-farm income was Rs. 9801. Large farms had highest off farm income (Rs. 11808) and rainfed farms had least off-farm income among all farm categories. Poor educational status and skills of rainfed farms compared to irrigated farms were one of the reasons to involve themselves more as agricultural laborers. But, large farms in less progressive area also had higher income from off-farm than the progressive area, since renting of assets was highest in large farms, because of better asset position of the farmers in that category.

The total non-farm income irrespective of category of farm was Rs. 33740 per annum per farm and income earned from house rent and through government job were the major sources (Table 7). Large farms were the only category of farmers earning non-farm income greater than the average of the area that was Rs. 53010. All the categories of farmers had their non-farm income earned majorly from house rent since; non-farm investment on construction of house was more in less progressive area.

In less progressive area, total annual income was Rs. 216439 which comprised of farm (80%), non-farm (15%) and off-farm income (5%) (Table 8). The second major source of farm income was sericulture after livestock. Irrespective of the category of farms, large farmers farm income was relatively higher followed by irrigated, rainfed and small farms. This in contradictory with the results of Bhaskar et al. [21], where non-farm activities had generated higher income than the farm activity.

The economic status of the farm households was indicated by farm household expenditure. Expenditure incurred by the farmers on various items in progressive area was indicated that, the total annual household expenditure was found highest in large farms with 95400 and it was found lowest in rainfed farms with Rs. 53633. Percentage of spending on various items varied with category of farmers. Percentage of expenditure on non-food expenditures (expect food) was highest among the expenditure on all items in all cases of farms. Percentage of expenditure on food was highest in rainfed farms (47.42%) among all the categories of farms, since their annual income is low; they preferred to spend on food expenditure than non-food expenditures. It was noticed that, as income increases the percentage expenditure on food decreases, this has confirmed the operation of Engle's law of family expenditure. Expenditure on donations as percentage of total expenditure was very less and almost similar in all categories.

Small, large and pooled category had second highest percentage of their household expenditure towards social ceremonies (17.90, 25.07 and 21.58%, respectively). The percentage expenditure on education was relatively higher in

Table 1. Source wise farm income of farm households in progressive area (mean values in Rs. /annum/farm)

Sources	Small farms (n=88)	%	Large farms (n=32)	%	Rainfed farms (n= 30)	%	Irrigated farms (n=90)	%	Pooled farms (n=120)	%
Field crops	2387	02	7571	02	2560	02	10407	01	6172	02
Horticultural crops	23648	21	338439	75	6650	05	656632	86	192867	57
Livestock	86029	77	103269	23	113409	92	95854	13	137664	41
Total farm income	112064	100	449278	100	122618	100	762894	100	336703	100

Source: Estimated by authors

Table 2. Source wise off-farm income of farm households in progressive area (mean values in Rs. /annum/farm)

Sources	Small farms (n=88)	%	Large farms (n=32)	%	Rainfed farms (n= 30)	%	Irrigated farms (n=90)	%	Pooled farms (n=120)	%
Agricultural labour and income from hired out farm machineries	2645	100	7316	100	3300	100	2027	100	4980	100
Total off- farm income	2645	100	7316	100	3300	100	2027	100	4980	100

Source: Estimated by authors

Table 3. Source wise non-farm income of farm households in progressive area (mean values in Rs./annum/farm)

Sources	Small farms (n=88)	%	Large farms (n=32)	%	Rainfed farms (n= 30)	%	Irrigated farms (n=90)	%	Pooled farms (n=120)	%
Non-agricultural labour	1277	12	0	0	1767	28	0	0	638	06
Business	766	07	0	0	0	0	400	04	383	04
Government job	5957	57	7753	72	2000	32	7289	65	6855	64
Private job	2362	23	2137	20	1200	19	1844	16	2249	21
Petty shop	0	0	0	0	0	0	0	0	0	0
Remittances	128	01	952	09	1287	21	83	01	540	05
Rental income	0	0	0	0	0	0	1667	15	0	0
Total non-farm income	10489	100	10842	100	6253	100	11283	100	10666	100

Source: Estimated by authors

Table 4. Sources wise total annual income of farm households in progressive area (mean values in Rs./annum/farm)

Sources	Small farms (n=88)	Percent	Large farms (n=32)	Percent	Rainfed farms (n= 30)	Percent	Irrigated farms (n=90)	Percent	Pooled farms (n=120)	Percent
Farm income	112064	90	449278	96	122618	93	762894	98	336703	96
Off-farm income	2645	02	7316	02	3300	02	2027	01	4980	01
Non-farm income	10489	08	10842	02	6253	05	11283	01	10666	03
Total	125198	100	467436	100	132172	100	776204	100	352349	100

Source: Estimated by authors

Table 5. Sources wise farm income of farm households in less progressive area (mean values in Rs./annum/farm)

Sources	Small farms (n=91)	%	Large farms (n=29)	%	Rainfed farms (n= 53)	%	Irrigated farms (n=67)	%	Pooled farms (n=120)	%
Field crops	3974	03	8895	04	3949	03	8613	04	6435	04
Horticultural crops	4328	04	64363	28	9327	08	44909	22	34345	20
Livestock	57246	49	85141	37	62794	51	74230	36	71194	41
Silkworm rearing	51449	44	70400	31	47092	38	78506	38	60924	35
Total farm income	116996	100	228800	100	123163	100	206258	100	172898	100

Source: Estimated by authors

Table 6. Source wise off-farm income of farm households in less progressive area (mean values in Rs. /annum/farm)

Sources	Small farms (n=91)	%	Large farms (n=29)	%	Rainfed farms (n= 53)	%	Irrigated farms (n=67)	%	Pooled farms (n=120)	%
Agricultural labour and income from hired out farm machineries	7794	100	11808	100	5537	100	11227	100	9801	100
Total off- farm income	7794	100	11808	100	5537	100	11227	100	9801	100

Source: Estimated by authors

Table 7. Source wise non-farm income of farm households in less progressive area (mean values in Rs./annum/farm)

Sources	Small farms (n=91)	%	Large farms (n=29)	%	Rainfed farms (n= 53)	%	Irrigated farms (n=67)	%	Pooled farms (n=120)	%
Non-agricultural labour	824	06	462	01	333	02	1212	05	643	02
Business	2118	15	1154	02	2815	19	2182	09	1636	05
Government job	6353	44	18404	35	8389	55	9091	39	12378	37
Private job	882	06	288	01	667	04	364	02	585	02
Petty shop	529	04	0	0	1111	07	152	01	265	01
Remittances	176	01	115	0	222	01	2439	11	146	0
Rental income	3588	25	32587	61	1667	11	7788	34	18087	54
Total non-farm income	14471	100	53010	100	15204	100	23227	100	33740	100

Source: Estimated by authors

Table 8. Source wise total annual income of farm households in less progressive area (mean values in Rs./annum/farm)

Sources	Small farms (n=91)	%	Large farms (n=29)	%	Rainfed farms (n= 53)	%	Irrigated farms (n=67)	%	Pooled farms (n=120)	%
Farm income	116996	84	228800	78	123163	86	206258	86	172898	80
Off-farm income	7794	06	11808	04	5537	04	11227	05	9801	05
Non-farm income	14471	10	53010	18	15204	11	23227	10	33740	15
Total	139261	100	293617	100	143904	100	240713	100	216439	100

Source: Estimated by authors

Table 9. Household expenditure pattern of farm households in progressive area (mean values in Rs. /annum/farm)

Particulars	Small farms (n=88)	%	Large farms (n=32)	%	Rainfed farms (n= 30)	%	Irrigated farms (n=90)	%	Pooled farms (n=120)	%
Food	26660	29.42	32356	33.92	25433	47.42	29400	33.05	29508	31.73
Clothing	2085	2.30	3432	3.60	2567	4.79	3017	3.39	2758	2.97
Consumer durables	6991	7.72	4914	5.15	1833	3.42	4753	5.34	5953	6.40
Recreations	160	0.18	0	0.00	0	0.00	0	0.00	80	0.09
Donations	0	0.00	55	0.06	67	0.12	22	0.02	27	0.03
Education	15319	16.90	9260	9.71	9317	17.37	13456	15.13	12290	13.21
Health care	12287	13.56	13219	13.86	6867	12.80	14850	16.69	12753	13.71
Repayment of previous debts	7447	8.22	4795	5.03	2000	3.73	5556	6.25	6121	6.58
Social ceremonies*	16223	17.90	23918	25.07	4883	9.11	14306	16.08	20071	21.58
Other household expenditure	3447	3.80	3452	3.62	667	1.24	3600	4.05	3449	3.71
Total household expenditure	90619	100	95400	100	53633	100	88959	100	93010	100

*Note 1: *includes marriage expenditure, religious celebrations and death ceremony*
Source: Estimated by authors

Table 10. Household expenditure pattern of farm households in less progressive area (mean values in Rs. /annum/farm)

Particulars	Small farms (n=91)	%	Large farms (n=29)	%	Rainfed farms (n= 53)	%	Irrigated farms (n=67)	%	Pooled farms (n=120)	%
Food	43379	35.21	55712	42.78	43333	39.49	50212	33.13	49545	39.10
Clothing	4103	3.33	3673	2.82	1981	1.81	3583	2.36	3888	3.07
Consumer durables	8001	6.49	9731	7.47	3991	3.64	14423	9.52	8866	7.00
Recreations	103	0.08	135	0.10	130	0.12	0	0.00	119	0.09
Donations	441	0.36	38	0.03	185	0.17	303	0.20	240	0.19
Education	28088	22.80	20173	15.49	15148	13.81	32439	21.40	24131	19.04
Health care	22493	18.26	22096	16.97	24194	22.05	20788	13.71	22294	17.59
Repayment of previous debts	3676	2.98	0	0.00	926	0.84	3788	2.50	1838	1.45
Social ceremonies*	3426	2.78	2423	1.86	3944	3.59	2212	1.46	2925	2.31
Other household expenditure	9493	7.70	16250	12.48	15889	14.48	23826	15.72	12871	10.16
Total household expenditure	123204	100.00	130231	100.00	109722	100.00	151574	100.00	126718	100.00

*Note 1: *includes marriage expenditure, religious celebrations and death ceremony*
Source: Estimated by authors

Table 11. Gini coefficient for income and consumption expenditure in progressive and less progressive area

Progressive area					
Particulars	**Small farms (n=88)**	**Large farms (n=32)**	**Rainfed farms (n= 30)**	**Irrigated farms (n=90)**	**Pooled farms (n=120)**
Income	0.34	0.16	0.37	0.23	0.25
Expenditure	0.29	0.33	0.36	0.28	0.31
Less progressive area					
Particulars	**Small farms (n=91)**	**Large farms (n=29)**	**Rainfed farm (n= 53)**	**Irrigated farms (n=67)**	**Pooled farms (n=120)**
Income	0.26	0.32	0.28	0.31	0.29
Expenditure	0.33	0.34	0.31	0.36	0.33

Source: Estimated by authors

rainfed farms (17.37%) and least in large farms category (9.71%). Since, the percentage expenditure on recreation, travelling, festival and social function were observed to be increasing with increase in income [13]. The percentage expenditure on health care was found to be highest in irrigated farms (16.69%) and least in rainfed farms category (9.71%).

In less progressive area, percentage of spending on various items varied with category of farmers (Table 10). Total annual household expenditure was found highest in irrigated farms with Rs. 151574 and was found lowest in rainfed farms with Rs. 109722. The percentage expenditure on food was highest among expenditure on all items in all cases of farms as similar in progressive area but compared to non-food expenditures it was low in all categories. The percent expenditure on education was the highest in small farms (22.80%) and least in rainfed farms category (13.81%). The percent expenditure on health care was also on higher side in rainfed farms (22.05%) and least in irrigated farms category (13.71%). Unlike in progressive area, the percent expenditure on social ceremonies was found to be less in almost all categories of farmers in less progressive area. With the increase in income, there was increase in expenditure on non-food items that was observed in both areas and these results were in line with the study conducted by Gautam et al. [22] and Srinatha [23].

In order to find out the equity of income distribution among the sample farmers in each farms, gini coefficient was worked out. Though there was not much variation in gini coefficient across the farms, rainfed farms had highest value of gini coefficient (0.37) and large farms had lowest value of gini coefficient (0.16) (Table 11). Rainfed farms (0.37) had slightly more inequality in income distribution than small farms (0.34). Though there was not much variation in gini coefficient among the farms in less progressive area, large farmers category had highest value of gini coefficient (0.32) and small farms had lowest value of gini coefficient (0.26) (Table 11).

Gini coefficient was also considered to study the equity in consumption expenditure. Value of Gini coefficient followed slight different order for consumption expenditure as that of income for all the farms in less progressive area. There was a relatively higher income and expenditure inequality in less progressive area compared to progressive area. Inequality in income distribution was less than consumption expenditure due to unequal non-food consumption expenditures these outcomes were in contradictory to the outcomes of the study conducted by Chakrovarthy et al. [24].

5. CONCLUSION AND POLICY RECOMMENDATIONS

Although agriculture is the dominant source of income for farm households in India, the non-farm sources contribute 3% and 15% in progressive and less progressive area to their household income. The share of non-farm income has a positive relationship with total income. However, there was no diversification in non- farm activities. This suggests that, still there is a scope that the non-farm sector can serve as the potential entry points for small and rainfed farmers to enhance their income levels. Based on the outcomes, there is no much inequality in income between the farms and across the regions, therefore need to diversify small and rainfed farms. Second major source of income is from livestock for rainfed farmers in both the areas. Hence, incentives for purchase and maintenance of livestock, animal health care,

etc., have to be formulated in the form of credit. Even though farm income contribution was more in both areas, there is a scope for improving off and non-farm employment opportunities that adds to income and helps for further savings because of inbuilt risk and uncertainties in crop sector.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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