Pattern and Distribution of Domestic Expenditure of Farm Households in Rural Punjab

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Abstract

The present study deals with the pattern and distribution of domestic expenditure among different farm size categories in rural Punjab. Primary-level information was collected from a sample of 160 farmers selected from eight districts in the state using a three-stage stratified random sampling technique. A positive relationship between farm size and household domestic expenditure was found. The distribution of per household and per capita domestic expenditure was relatively equal as revealed by the Gini coefficient values of 0.28 and 0.29, respectively. The multiple regression analysis revealed that household size and operational holding are the significant factors that affect the per capita domestic expenditure in the study area. There is a need for social security measures for the benefit of farmers and the distribution of essential goods particularly cereals and pulses may be undertaken more effectively for the advantage of deprived households.

Introduction

Indian agriculture has undergone a substantial transformation in the post-green revolution period. The use of improved technology along with beneficial government policies has brought about a considerable increase in agricultural productivity, employment, and income of various farm-size groups. The mechanization of farms ensured the timeliness of agricultural operations, increased labour work output per unit time, and improved land productivity and farm operations quality (Raina *et al.* 2021). The 'Green Revolution' which started in Punjab during mid-1960s played a crucial role in achieving much-needed food security and successfully transformed India into a net exporter of food crops. This also resulted in significant changes in the level and pattern of income and expenditure among different farm size categories. The Government of India introduced economic reforms in various sectors of the economy in 1991, which were expected to influence the national income and the standard of living of the people. The domestic expenditure was also expected to change after the reform. Although the post-reform period witnessed increased employment opportunities, improved competitiveness in the international market along with the better provision of education, health, and dwelling facilities; some eminent scholars have pointed

out that the inequality expressed in terms of poverty has gone up (Sinha 2022). In the pre-reform period, income inequality seemed to decline slightly within rural areas from the late 1950s to the early 1990s; then, in the post-reform period, it rose considerably in both rural and urban areas for regular workers (Kumar *et al.* 2021).

As the income of rural households grows, the household's budget composition also changes. The increase in total expenditure in recent decades can be accounted for the increase in non-food items compared to food expenditures that were stagnant in rural and urban areas. The living standard of a household can be understood from its income and expenditure on food items, non-food items, and various services. The household's expenditure on food items is an important barometer of individual welfare and well-being. Singh *et al.* (2018) stated that qualitative and quantitative domestic expenditure is the correct scale to judge the livelihood standard of a household. The Indian state of Punjab which is the forerunner of the 'Green Revolution' has presented a model of agricultural modernization to the world. The state's rural economy has been significantly strengthened because of the agricultural sector's growth (Jain and Subramanian, 1999), and this has impacted the thought, perspective, culture, and economic life of the people living in Punjab (Guleria *et al.* 2022). The introduction of new technology has certainly helped in increasing the income level of the farmers, but it

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has resulted in growing polarization between large-scale, and small-scale farmers (Wilson 2002). Saikia and Bora (1975) revealed that the per day per capita food consumption of large farmers has become considerably higher as compared to the medium and small farm households. Singh *et al.* (2019) using the data for the agricultural year 2014-15 reported that per annum consumption expenditure of large farmers is highest as compared to other farm size categories' farmers. It is against this background, the present study seeks to examine the pattern and distribution of domestic expenditure of rural households in Punjab. The examination of domestic expenditure of different farm size categories becomes very important as it provides an idea of the consumption pattern, the levels of living of the farming population, and the degree of inequalities prevailing in society.

Data Sources and Methodology

The study has been carried out during the agricultural year 2019-20 in the state of Punjab, which lies between 29°33` - 32°3`N and 73°53` - 76°55`E in Northern India. The farm households were selected using a three-stage stratified random sampling technique. The whole state of Punjab has been divided into three regions based on agro-climatic conditions, viz., sub-mountainous zone, central zone, and south-western zone. In the first stage of sampling, eight blocks comprising two from the sub-mountainous zone (Zone-I), four from the central zone (Zone-II), and two from the south-western zone (Zone-III) were selected based on proportion to the cultivated area of the respective zone. Further, one village from each block in the second stage and 20 farmers from each village in the third stage were selected randomly to constitute a sample size of 160 farmers in total. Out of these 160 farm households, 24 belonged to the marginal landholding category, 32 to small farmers, 48 to semi-medium, 48 to medium, and 8 to large farmers. Primary data was collected from the farmers using a well-designed survey schedule. The level and pattern of the domestic expenditure were worked out using descriptive statistics. The inequalities in the distribution of domestic expenditure among different farm size categories were also worked out using the Lorenz curve and Gini coefficient. Further, a multiple linear regression model has been used

to analyze the relationship between per capita domestic expenditure and socio-economic characteristics of the farmers in the study area as given below:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$$

Where, Y is per capita domestic expenditure (Rs. / annum); X_1 is the household size (No.); X_2 is per cent dependent population (household size minus earners); X_3 is literacy rate (%); X_4 is operational holding (ha) and X_5 is cropping intensity (%).

Results and Discussion

The results have been broadly classified into five sections viz., socio-economic characteristics of the sampled households in the first section; farm category wise domestic expenditure of sampled households in the second section; per capita domestic expenditure in the third section; distribution of household and per capita domestic expenditure in the fourth section and last section deals with the impact of socio-economic characteristics of households on per capita domestic expenditure.

Socio-economic characteristics of the sampled households

Family size, literacy status and dependents population are important parameters to determine the economic well-being of the any farm household. When it comes to making decisions on the adoption of modern farm technology and associated farm enterprises on the farm, one's educational status is expected to be directly related with identification and embracing new technologies as well as making logical judgements. A summary of the socio-economic characteristics of the sampled households (Table 1) shows that out of 5.51 average household size in the study area, 36.60 per cent were dependents. The large farm households were having the highest dependent members (40.75%) followed by semi-medium (40.22%), marginal (38.66%), small (33.39%) and medium (33.38) farm households, respectively. Further, the farmers under medium size farm category were more educated having literacy rate of about 86 per cent followed by small, marginal, large and semi-medium farmers with literacy rate of 83.97 per cent, 83.47 per cent, 81.82 per cent

Table 1. Socio-economic characteristics of the sampled households

Particulars	Farm size category					
	Marginal	**Small**	**Semi-medium**	**Medium**	**Large**	**Overall**
No. of Households	24	32	48	48	8	160
Household size (No.)	5.04	4.88	5.73	5.71	6.88	5.51
Dependent members (%)	38.66	33.39	40.22	33.38	40.75	36.60
Literacy rate (%)	83.47	83.97	80.36	86.13	81.82	83.31
Operational holding (ha)	0.85	1.64	3.26	6.36	11.39	3.91
Cropping intensity (%)	204.41	204.15	200.12	200.58	200.84	200.93

Table 2. Farm category wise domestic expenditure of sampled households

(Rs. /annum/hh)

Particulars	Farm size category					
	Marginal	Small	Semi-medium	Medium	Large	Overall
A – Food items						
Cereals	11230	11052	13358	14100	16709	12968
	(7.44)	(6.06)	(5.88)	(4.70)	(5.00)	(5.54)
Pulses	2881	2981	3165	3580	4278	3266
	(1.91)	(1.63)	(1.39)	(1.19)	(1.28)	(1.40)
Vegetables	4349	5754	6487	7115	9068	6337
	(2.88)	(3.15)	(2.86)	(2.37)	(2.71)	(2.71)
Edible oils	10664	11978	13252	14511	18325	13240
	(7.06)	(6.57)	(5.83)	(4.84)	(5.48)	(5.66)
Intoxicants	530	831	1238	2946	3393	1671
	(0.35)	(0.46)	(0.55)	(0.98)	(1.02)	(0.71)
Fish, meat, eggs etc.	244	432	764	988	1503	724
	(0.16)	(0.24)	(0.34)	(0.33)	(0.45)	(0.31)
Sugar and Gur	4553	4989	5766	6183	8058	5668
	(3.02)	(2.73)	(2.54)	(2.06)	(2.41)	(2.42)
Fruits	1258	1258	1528	2128	2931	1683
	(0.83)	(0.69)	(0.67)	(0.71)	(0.88)	(0.72)
Tea and spices	5217	5405	6692	6889	8377	6357
	(3.46)	(2.96)	(2.95)	(2.30)	(2.51)	(2.72)
Milk and milk products	44309	48467	56502	65274	73971	56571
	(29.34)	(26.57)	(24.88)	(21.77)	(22.13)	(24.18)
Others (besan, biscuits, dry fruit etc.)	446	574	830	916	1763	794
	(0.30)	(0.31)	(0.37)	(0.31)	(0.53)	(0.34)
Sub-total (A)	85681	93721	109582	124629	148376	109279
	(56.74)	(51.38)	(48.25)	(41.57)	(44.40)	(46.72)
B – Non-food items						
Clothing and footwear	7796	8196	11284	14921	21595	11750
	(5.16)	(4.49)	(4.97)	(4.98)	(6.46)	(5.02)
Education	17052	15422	19935	74998	50075	36626
	(11.29)	(8.45)	(8.78)	(25.01)	(14.98)	(15.66)
Fuel and lighting	16559	20143	23071	25976	29004	22677
	(10.97)	(11.04)	(10.16)	(8.66)	(8.68)	(9.69)
Conveyance and communication	6213	8400	11415	14526	22373	11513
	(4.11)	(4.60)	(5.03)	(4.85)	(6.69)	(4.92)
Detergents, soaps and toiletry	3424	4038	4333	4583	6186	4305
	(2.27)	(2.21)	(1.91)	(1.53)	(1.85)	(1.84)
Socio-religious ceremonies	5264	19659	28686	25435	38523	22884
	(3.49)	(10.78)	(12.63)	(8.48)	(11.53)	(9.78)
Sub-total (B)	56307	75858	98726	160440	167756	109755
	(37.29)	(41.59)	(43.47)	(53.51)	(50.19)	(46.91)
C –Services						
Health expenditure	4996	8030	12175	7445	7206	8601
	(3.31)	(4.40)	(5.36)	(2.48)	(2.16)	(3.68)
Stitching of clothes	1535	1858	2588	3257	4263	2569
	(1.02)	(1.02)	(1.14)	(1.09)	(1.28)	(1.10)
Litigation	0	0	208	479	625	238
			(0.09)	(0.16)	(0.19)	(0.10)
Miscellaneous expenditure	2486	2938	3847	3564	5981	3483
	(1.65)	(1.61)	(1.69)	(1.19)	(1.79)	(1.49)
Sub-total (C)	9017	12826	18818	14746	18075	14891
	(5.97)	(7.03)	(8.28)	(4.92)	(5.41)	(6.37)
Grand total (A+B+C)	151005	182405	227126	299815	334207	233925
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Source: Field Survey 2019-20;
Figures in parentheses indicate the relative share of expenditure on individual items to the total domestic expenditure

and 80.36 per cent, respectively. Overall, the average size of operational holding in the study area was 3.91 ha with about 201 per cent cropping intensity.

Farm Category wise Domestic Expenditure of Sampled Households

The data in Table 2 shows farm category-wise domestic expenditure of sampled households in the study area. The table explains that the average farm household spent about Rs. 2.34 lakh for domestic needs. Among the various farm size categories, the maximum annual per household domestic expenditure was recorded among large farmers (Rs. 3.34 lakh) and minimum among marginal farmers (Rs. 1.51 lakh). The table highlights that domestic expenditure on food items, non-food items, and services tend to increase from marginal farmers to large farmers. Overall, out of this total expenditure, about 47 per cent was spent on food items followed by non-food items (46.91%) and services (6.37%). It is worth mentioning that over a decade, the expenditure on food items in Punjab has decreased from about 61 per cent to 47 per cent, while on non-food items (including services), it has increased from about 39 per cent to 53 per cent (Singh *et al.* 2011) which reflects the economic well-being of the sampled households, because in general, the share of expenditure on food items is expected to decline with development and economic prosperity.

The results in Table 2 further reveals that in the food items, milk and milk products were the most important items on which about 24 per cent of the total annual domestic expenditure has been incurred. Among non-food items, education has the maximum share of about 16 per cent of the total annual domestic expenditure. Overall, only 6.37 percent of the total domestic expenditure was incurred on services. As we can see in Table 1 that health (3.68%) is the major component of total expenditure on services, a lower amount spent by the farmers on services means low expenditure on health by the farmers. The table also describes that the marginal farmers spend the maximum (56.74%) of total domestic expenditure on food items and this proportion decreases as the farm size increases. Among non-food items, the maximum expenditure is by medium farmers (53.51%). Similarly, the expenditure on services was highest by semi-medium farmers (8.28%). Singh *et al.* (2019) also revealed that the proportional share of expenditure on non-durables decreases as the farm size increases.

Per Capita Domestic Expenditure

It becomes relevant to compare the rural households' per capita domestic expenditure due to the varied family size of different farm categories. The results in Table 3 depict that per capita domestic expenditure of sampled households was Rs. 42,483. The table further reveals that as the farm size goes up, there is a considerable increase in per capita domestic expenditure on most of the food items, non-food items, and

services. The per capita domestic expenditure across different farm size categories was highest in the case of medium farmers (Rs. 52,522) followed by large (Rs.48,612), semi-medium (Rs. 39,644), small (Rs. 37,416) and marginal (Rs. 29, 951) farmers. Overall, the highest per capita expenditure among food items, non-food items, and services was on milk and milk products (Rs. 10,274), education (Rs. 6,652), and health (Rs. 1562), respectively. This data indicates that the living condition of marginal farmers is worst among all the farm size categories as their per capita domestic expenditure was lowest on food items, non-food items as well as services. Similar findings have been reported by Singh *et al.* (2019) and Kumar *et al.* (2021).

Distribution of Domestic Expenditure

The category-wise distribution of per household and per capita domestic expenditure has been shown by the Lorenz curve in Figure 1 and Figure 2, respectively with their respective Gini coefficients in Table 4. Among different farm size categories, the distribution of per household domestic expenditure was relatively equal for small, semi-medium, and large farm categories having Gini coefficients of just 0.20, 0.21, and 0.25, respectively. It was followed by a somewhat unfair distribution of domestic expenditure among marginal (0.30) and large farmers (0.31), respectively. Similarly, the distribution of per capita domestic expenditure was relatively equal for marginal (0.17), small (0.20), and semi-medium (0.21) farmers followed by somewhat relatively high inequality among large (0.31) and medium (0.37) farmers, respectively. Overall, the Gini coefficient for per household and per capita domestic expenditure was 0.28 and 0.29, respectively which showed relatively equal distribution of domestic expenditure. These finding are in correspondence with the findings of Singh *et al.* (2019) and Kumar *et al.* (2021).

Determinants of Socio-Economic Characteristics on Per Capita Annual Domestic Expenditure

The relationship between socio-economic characteristics and per capita annual domestic expenditure of sample households was estimated and the results have been given in Table 5. It can be seen in the table that household size and operational holding have a significant relationship with the per capita domestic expenditure. The negative coefficient of household size indicates that one additional family member would lead to around Rs. 5543.11 reductions in the per capita domestic expenditure. Similarly, the significantly positive coefficient of operational holding indicates that one-hectare increase in the operational holding of the household would lead to Rs. 4841 increase in per capita domestic expenditure. The relationship of per cent dependent population, literacy rate and cropping intensity are also positive but non-significant. Heshmati *et al.* (2019) revealed similar results and stated that a household's per capita consumption level is negatively related to household size and positively to

Table 3. Category-wise per capita domestic expenditure of sampled households

(Rs. /annum/per capita)

Particulars	Farm size category					
	Marginal	**Small**	**Semi-medium**	**Medium**	**Large**	**Overall**
A – Food items						
Cereals	2227	2267	2332	2470	2430	2355
	(7.44)	(6.06)	(5.88)	(4.70)	(5.00)	(5.54)
Pulses	571	611	553	627	622	593
	(1.91)	(1.63)	(1.39)	(1.19)	(1.28)	(1.40)
Vegetables	863	1180	1132	1246	1319	1151
	(2.88)	(3.15)	(2.86)	(2.37)	(2.71)	(2.71)
Edible oils	2115	2457	2313	2542	2665	2405
	(7.06)	(6.57)	(5.83)	(4.84)	(5.48)	(5.66)
Intoxicants	105	171	216	516	493	303
	(0.35)	(0.46)	(0.54)	(0.98)	(1.01)	(0.71)
Fish, meat, eggs etc.	48	89	133	173	219	131
	(0.16)	(0.24)	(0.34)	(0.33)	(0.45)	(0.31)
Sugar and gur	903	1023	1007	1083	1172	1029
	(3.01)	(2.73)	(2.54)	(2.06)	(2.41)	(2.42)
Fruits	249	258	267	373	426	306
	(0.83)	(0.69)	(0.67)	(0.71)	(0.88)	(0.72)
Tea and spices	1035	1109	1168	1207	1219	1154
	(3.46)	(2.96)	(2.95)	(2.30)	(2.51)	(2.72)
Milk and milk products	8789	9942	9862	11435	10759	10274
	(29.34)	(26.57)	(24.88)	(21.77)	(22.13)	(24.18)
Others (besan, biscuits, dry fruit etc.)	89	118	145	160	256	144
	(0.30)	(0.32)	(0.37)	(0.30)	(0.53)	(0.34)
Sub-total (A)	16995	19225	19127	21833	21582	19846
	(56.74)	(51.38)	(48.25)	(41.57)	(44.40)	(46.72)
B – Non-food items						
Clothing and footwear	1546	1681	1969	2614	3141	2134
	(5.16)	(4.49)	(4.97)	(4.98)	(6.46)	(5.02)
Education	3382	3163	3479	13138	7284	6652
	(11.29)	(8.45)	(8.78)	(25.01)	(14.98)	(15.66)
Fuel and lighting	3284	4132	4027	4551	4219	4118
	(10.96)	(11.04)	(10.16)	(8.66)	(8.68)	(9.69)
Conveyance and communication	1232	1723	1993	2545	3254	2091
	(4.11)	(4.60)	(5.03)	(4.85)	(6.69)	(4.92)
Detergents, soaps and toiletry	679	828	756	803	900	782
	(2.27)	(2.21)	(1.91)	(1.53)	(1.85)	(1.84)
Socio-religious ceremonies	1044	4033	5007	4456	5603	4156
	(3.49)	(10.78)	(12.63)	(8.48)	(11.53)	(9.78)
Sub-total (B)	11168	15561	17232	28106	24401	19933
	(37.29)	(41.59)	(43.47)	(53.51)	(50.20)	(46.92)
C – Services						
Health expenditure	991	1647	2125	1304	1048	1562
	(3.31)	(4.40)	(5.36)	(2.48)	(2.16)	(3.68)
Stitching of clothes	305	381	452	571	620	467
	(1.02)	(1.02)	(1.14)	(1.09)	(1.28)	(1.10)
Litigation	-	-	36	84	91	43
			(0.09)	(0.16)	(0.19)	(0.10)
Miscellaneous expenditure	493	603	671	624	870	633
	(1.65)	(1.61)	(1.69)	(1.19)	(1.79)	(1.49)
Sub-total (C)	1788	2631	3285	2583	2629	2704
	(5.97)	(7.03)	(8.29)	(4.92)	(5.41)	(6.36)
Grand total (A+B+C)	29951	37416	39644	52522	48612	42483
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Source: Field Survey 2019-20
Figures in parentheses indicate the relative share of expenditure on individual items to the total domestic expenditure
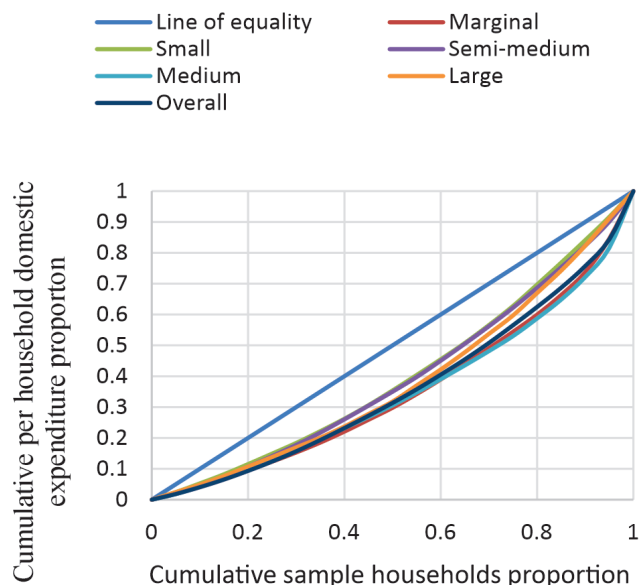
Figure 1. Lorenz curve of per household domestic expenditure of farmers

Figure 2. Lorenz curve of per capita domestic expenditure of farmers

education level. Similar findings have been reported by Lipton and Ravallion (1994).

Conclusions and Policy Implications

The present study concludes that there are variations in the domestic expenditure among different farm categories which increase with increase in farm size. The study highlights the positive relationship between per household and per capita domestic expenditure with farm size. Out of the total household expen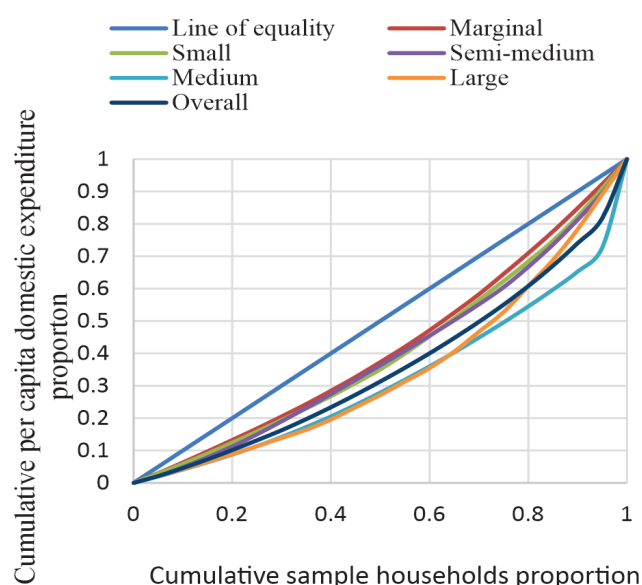diture, an average household spends almost the same on food and non-food items followed by services. The distribution of per-household domestic expenditure was relatively equal for small, semi-medium, and large farm categories, whereas, in the case of per capita domestic expenditure, the distribution was relatively equal for marginal, small, and semi-medium farmers. Overall, considering all farm size categories, the inequality of per household and per capita domestic expenditure was high in the case of medium farmers. Household size and operational holding significantly

Table 4. Category-wise Gini coefficient of per household and per capita domestic expenditure

Particulars	Marginal	Small	Semi-medium	Medium	Large	Overall
Per household domestic expenditure	0.30	0.20	0.21	0.31	0.24	0.28
Per capita domestic expenditure	0.17	0.20	0.21	0.37	0.31	0.29

Table 5. Multiple regression estimates of per capita domestic expenditure

Particulars	Coefficients	Standard Error	t Stat	p-value
Intercept	-160765.238	140866.939	-1.141	0.256
Household size (No.)	-5543.110**	2001.054	-2.770	0.006
Dependent members (%)	130.678	227.803	0.574	0.567
Literacy rate (%)	258.686	249.435	1.037	0.301
Operational holding (ha)	4840.756**	1408.344	3.437	0.001
Cropping intensity (%)	949.459	671.482	1.414	0.159
R^2	0.12		F value 4.01**	
Adjusted R^2	0.08			

*Note: ** indicates significance at 1% level.*

affect the per capita domestic expenditure in the study area. There is a need for social security measures for the benefit of farmers and the distribution of essential goods particularly cereals and pulses may be undertaken more effectively for the advantage of deprived households.

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