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An Economic Analysis of Farm and Non-Farm Employment: A Case Study of Sirsa District, Haryana, India

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Abstract:

Agriculture sector is the crucial sector for the overall development of the economy of the country. In India, major portion of population depends upon agriculture sector but with rising pressure of population on the considering sector, the non - farm sector also has greater importance due to extra labour absorption capacity and it provides job opportunities and income as a secondary source during the slack agricultural season. The issues related to farm and non-farm employment have been taken up by conducting a primary based study in Sirsa district of Haryana state. Data have been collected from a sample of 100 households of four villages of Nathusari Chopta and Sirsa blocks of district Sirsa during the year of 2011-12 with the help of a well structured questionnaire. The study has evaluated the nature, magnitude and composition of farm and non-farm employment and the efforts have also made to identify the main determinants of the non-farm employment. The study has highlights that the working population of district Sirsa has adopted the agriculture as their main occupation. It has also revealed that the employment in the non-farm sector has been increasing significantly and self-employment and government sector has emerged as the main sector of the employment. The significant determinants of rural non-farm employment have been identified in the forms of the number of persons in farm employment per household, total workers per household and farm size. The paper suggested for the diversification in agriculture sector and raising the level of literacy rate in rural area, Concessional loans etc. The growth of the Agra based industries has been recognized as the key sector of employment for the rural population. The study provides the means and suggestions for policy makers to solve the problem of unemployment by increasing the non-farm activities. The results of the study may be helpful in policy decision on job opportunities in rural areas in the context of farm and non-farm employment.

Keywords: Farm, non-farm, employment, agriculture

1. Introduction

Agriculture sector occupies a prominent position in the Indian economy as major part of the population depends upon it for their livelihood. But, the labour absorption capacity of this sector is reduced due to stabilization of agricultural growth rate, fast growing population, farm mechanization, declining land man ratio and large fluctuations in agricultural output. In this situation, rural non-farm sector has become an important sector as it generates employment opportunities for farm and non-farm workers. It provides employment to the disguised unemployment and income to the farmers during large fluctuations in agricultural output and during slack agricultural season. The development of rural non-farm sector may prevent many workers migrating to commercial and urban centers and solve problems related to urbanization as urban slums, poverty, and urban unemployment. Due to these reasons, there is need to give more attention to this sector for policy makers and researchers by studying different aspects of this emerging sector. The present study entitled "An Economic Analysis of Farm and Non-Farm Employment: A case Study of Sirsa District" is carried out to analyse the important aspects of farm and non-farm sector. The specific objectives taken for the present study are as follows:

- (i) To examine the nature, magnitude and composition of farm and non-farm employment.
- (ii) To identify and estimate the main determinants of non-farm employment.

2. Methodology

To fulfill the specific objectives, a primary data based study has been conducted in Sirsa district of Haryana and multi-stage purposively sampling technique has been used. There are seven blocks in Sirsa district. At the first stage, out of seven, two blocks have been selected, purposively. At the second stage, two villages from each of the blocks have been selected, namely Narayan Khera and Mochiwali from Nathusary Chopta Block and Bajekan and Moriwala from Sirsa Block. The selection of the villages has been made on the basis of distance. From two selected villages of each block, one was situated near the city (Mandi) and the other one was

at far distance from the city. At the next stage, a sample of 25 households was selected randomly from each village. Thus, a sample of 100 households has been selected from the four villages of Nathusary Chopta and Sirsa Blocks. The primary data have been collected for the pertaining year 2011-12, through personal interview method with the help of a well structured questionnaire. Analytical tools and techniques have been discussed as given as below:

- (i) To examine the various socio-economic characteristics of the sample population, simple statistical percentage method has been used. The dependency ratio of non-earners has also been calculated by adopting the following formula:

$$\text{Dependency ratio} = \text{Non-earners/Earners}$$

- (ii) The functional analysis has been used in order to know the factors influencing the rural non-farm employment by using the multiple linear regression equations. It has assumed that there is a linear relationship exists between rural non-farm employment Y and the explanatory variables, X_1, X_2, \dots, D_1 . Ordinary Least Square (OLS) method has carried out to the linear regression model of the following form.

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_7D_1 + u$$

Where, Y = non-farm employment per household

a = intercept

b_1, b_2, \dots = slope coefficients for X_1, X_2, \dots, D_1 , respectively.

X_1 = number of persons engaged in farm employment per household

X_2 = total workers per household

X_3 = average education of workers per household (in schooling years)

X_4 = family size (in number)

X_5 = Farm size (in acres)

X_6 = herd size (in number)

D_1 = caste of the household (used as a dummy variable)

(Dummy: Value '1' for SC/BC caste and '0' for others)

u = error or random term, is assumed normally distributed with zero mean and constant variance.

3. Results and Discussion

The findings of the study related to the nature, magnitude and composition of farm and non-farm employment are presented and discussed as below:

3.1. Nature, Magnitude and Composition of Farm and Non-Farm Employment

The furnished results related to the nature, magnitude and composition of farm and non-farm employment in district Sirsa are presented as below:

3.1.1. Economic Status

Table 1 provides the information regarding the economic status of the sampled population in district Sirsa. A comparative analysis revealed the fact that the percentage of earners has been recorded higher in Block-1 as compared to Block-2 and the reverse has been observed has been true automatically in case of non-earners as the percentage of non-earners have been found low in Block-1. An overall scenario presents that out of total sampled population, 55.25 per cent population has observed as earners and the remaining chunk of the sampled population (44.75 per cent) are non-earners. Further, the dependency ratio has remained highest in Block-2 with 0.89 per cent. The dependency ratio has remained highest in case of females in both of the blocks. It has also been found highest in case of females of Block-2 (1.04 per cent). This ratio has been calculated as 0.82 per cent in Block-1. Overall, the dependency ratios for males, females and overall have been noticed as 0.70, 0.94 and 0.80 per cent respectively. Singh (2003) in his study also observed higher dependency ratio in case of females than males.

Economics Status	Block-1			Block-2			Overall		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Earners	78 (57.35)	58 (42.65)	136 (58.12)	81 (54.73)	67 (45.27)	148 (52.86)	159 (55.99)	125 (44.01)	284 (55.25)
Non-earners	50 (51.02)	48 (48.98)	98 (41.88)	62 (46.97)	70 (53.03)	132 (47.14)	112 (48.70)	118 (51.30)	230 (44.75)
Total	128 (54.70)	106 (45.30)	234 (100)	143 (51.07)	137 (48.93)	280 (100)	271 (52.72)	243 (47.28)	514 (100)
Dependency ratio(NE/E)	0.64	0.82	0.72	0.76	1.04	0.89	0.70	0.94	0.80

Table 1: Economic status of sample population in district Sirsa

Source: Field survey

Figures in parentheses are percentages to the total

3.1.2. Occupation of Working Population

Table 2 presents the occupational wise classification of earning population in rural district Sirsa. It is found from this classification that more percentage of sampled population has been working in the farm sector as 66.20 per cent population has been involved in farm activities, out of which, 54.58 per cent has found job opportunity in agriculture and the remaining proportion (11.62 per cent) of the total farm sector involved themselves as agricultural labor. So, the sampled population has involved more people working in agriculture and low proportion working as agricultural labour. A similar pattern of results was found in the studies of Vaidya et al. (1995) and Bhaumik (2007).

Occupation	Block-1	Block-2	Overall
Farm-Sector			
Agriculture	75 (55.14)	80 (54.05)	155 (54.58)
Agricultural labour	18 (13.24)	15 (10.14)	33 (11.62)
Sub-Total	93 (68.38)	95 (64.19)	188 (66.20)
Non-Farm Sector			
Self-employed	18 (13.24)	17 (11.49)	35 (12.32)
Government sector	11 (8.09)	18 (12.16)	29 (10.21)
Private sector	6 (4.41)	7 (4.73)	13 (4.58)
Wage earners	8 (5.88)	11 (7.43)	19 (6.69)
Sub-Total	43 (31.62)	53 (35.81)	96 (33.80)
Total	136 (100)	148 (100)	284(100)

Table 2: Occupational classification of earning population in district Sirsa

Source: Field survey

Figures in parentheses are percentages to the total

The same conclusion can be inferred from the block-wise classification of the earning population. As far as the classification of non-farm sector is considered, the share of self-employed has been recorded to be higher at Block-1 and overall level. However, in case of Block-2, government sector provides more employment opportunities to the sampled population. 13.24 per cent earning population has observed in self-employed in Block-1 whereas same profession has been adopted by 11.49 per cent earning population in Block-2. The government sector became the source of employment for 8.09 per cent proportion of the earners in Block-1 but in Block-2, the percentage has been noticed as 12.16 regarding the same sector of job opportunity. Government sector has been followed by wage-earners in respect of the involvement of the percentage of the population as an employed. So, the main conclusion which can be drawn that the major part of the sampled working population has been working in the farm sector and the major chunk of the farm sector has been found involved in agriculture. As far as the non-farm sector is considered, the self-employed and government sector has emerged as the main sector of the employment of the sampled population.

3.1.3. Farm Size and Occupation of Non-Farm Earners

Table 3 depicts the classification of non-farm earners by occupation and farm size in rural Sirsa. The classification shows that a large proportion of the population has been working as a self-employed occupation in Block-2 as in case of large farmers. Sixty per cent have reported to have adopted self employment followed by the government sector in which 40 percent large farmers have been observed to be involved in that occupation and almost same results have been obtained for Block-2 in respect of large farmers, but there has been noticed significant difference regarding medium farmers as once again the percentage of medium farmers working as self employed has been recorded as 60 per cent while the government sector has succeeded to absorb only 20 per cent of medium farmers of the sampled population in Block-1 but for the same size farmers, the results show that 40 per cent of farmers have adopted the self-employed and also the same percentage of involvement have been observed in government sector of the medium size farmers in Block-1. 20 per cent farmers have been observed to be working with private sector in Block-1. The major chunk of the small farmers have been found to be involved with self-employed and government sector in case of Block-2. But the percentage of the farmers for Block-2 has been observed minimal in the same two occupations because in Block-2, the farmers have shifted to other category like wage earners and private sector. A comparison for both of the blocks in case of landless farmers reveal that 23.08% of landless farmers have found to be involved with self employed in Block-1 while the percentage of the same category farmers under the same occupation has been recorded as 28.57 per cent in block-2, but the major difference has been found in case of wage earners and other in which 53.85 per cent of the landless farmers have been found to be involved in Block-1 while the percentage for the same category farmers in Block-2 has remained only 28.57 per cent regarding the wage earners and others, overall results revealed that major part of medium and large farmers of district Sirsa has been noticed working as self-employed and in government sector but in case of landless farmers, the number of farmers have increased in favour of wage earners and others. The reason may be given for it that due to lack of financial support, the landless farmers cannot start their own business, but the medium and large farmers are sufficiently able to start their own business in respect of financial term.

Particulars	Block-1				Block-2				Overall			
	Landless	Small	Medium	Large	Landless	Small	Medium	Large	Landless	Small	Medium	Large
Self-employed	3 (23.08)	6 (40)	6 (60)	3 (60)	2 (28.57)	8 (24.24)	2 (40)	5 (62.5)	5 (25)	14 (29.17)	8 (53.33)	8 (61.54)
Government sector	2 (15.38)	6 (40)	2 (20)	2 (40)	2 (28.57)	11 (33.34)	2 (40)	3 (37.5)	4 (20)	17 (35.42)	4 (26.67)	5 (38.46)
Private sector	1 (7.69)	2 (13.33)	2 (20)	0 (0)	1 (14.29)	5 (15.15)	1 (20)	0 (0)	2 (10)	7 (14.58)	3 (20)	0 (0)
Wage earners and others	7 (53.85)	1 (6.67)	0 (0)	0 (0)	2 (28.57)	9 (27.27)	0 (0)	0 (0)	9 (45)	10 (20.83)	0 (0)	0 (0)
Total	13 (30.23)	15 (34.88)	10 (23.26)	5 (11.63)	7 (13.21)	33 (62.27)	5 (9.43)	8 (15.09)	20 (20.83)	48 (50)	15 (15.63)	13 (13.54)

Table 3: Classification of non-farm earners by occupation and farm size in district Sirsa

Source: Field survey

Figures in parentheses are percentages to the total

3.1.4. Various Combinations of Occupations

A perusal of Table 4 shows that the major proportion of the sampled population has adopted agriculture as principal with no subsidiary followed by non agriculture as principal with agriculture as subsidiary as 39 per cent population found to be involved in agriculture, considering its main occupation without having any subsidiary occupation and 32 per cent were from the non agricultural group who have adopted non-agriculture as principal having agriculture as subsidiary.

Particulars	Block-1	Block-2	Overall
Agriculture as principal with non-agriculture as subsidiary	11 (22)	11 (22)	22 (22)
Agriculture as principal with no subsidiary	22 (44)	17 (34)	39 (39)
Non agriculture as principal with agriculture as subsidiary	14 (28)	18 (36)	32 (32)
Non-agriculture as principal with no subsidiary	3 (6)	4 (8)	7 (7)
Total households	50 (100)	50 (100)	100 (100)

Table 4: Classification of sample households by various combinations of occupations in district Sirsa

Source: Field survey

Figures in parentheses are percentages to the total

A comparison between both of the blocks revealed that in Block-1, the percentage of the population, agriculture as principal with no subsidiary has been recorded as 44 Whereas in Block-2, the number of population of non-agriculture as principal with agriculture as subsidiary has been found to be 36 per cent. The minimum portion of the sampled population had the non-agriculture principal with no-subsidiary.

3.2. Determinants of Rural Non-Farm Employment

This section identifies and analyses the determinants of rural non-farm employment on the basis of primary data collected from sample households in district Sirsa.

3.2.1. Determinants of Rural Non-Farm Employment in Block-1

The results related to the determinants of rural non-farm employment in Block-1 of Sirsa district are presented in Table 5.

Variables	Estimates	P value
Constant	0.9214	0.596
Number of persons in farm employment per household (X_1)	-0.806*	0.000
Total workers per household (X_2)	0.784*	0.000
Average education of workers per household (X_3)	0.1571	0.399
Family size (X_4)	0.4333	0.921
Farm size (X_5)	-0.0203**	0.032
Herd size (X_6)	0.1282	0.675
Caste of the household (D_1)	0.6244	0.669
R^2	0.870	
F value	40.240*	
Standard error of estimate	0.3688	

Table 5: Results of Linear Multiple Regression Equations estimating the main determinants of rural non-farm employment in Block-1

*and** represent at significant and 5 per cent level, respectively

Table 5 shows that the value of the coefficient of multiple regressions (R^2) has been 0.87 in Block-1 which suggests that 87 per cent variation in rural non-farm employment has been jointly explained by variation in the seven explanatory variables. The explanatory variables, the number of persons in farm employment (X_1) and total workers per household (X_2) has been found significant statistically at one per cent level. The coefficient estimated for explanatory variable farm size (X_5) has been found significant at the five per cent level. The coefficient estimated for the number of persons in farm employment (X_1) has been observed as -0.806 which has been found to be negatively associated with rural non-farm employment. This implied that with a one percent increase in the number of persons in farm employment, the number of persons in non-farm employment decreases by -0.806 per cent. The coefficient of total workers per household (X_2) has been remained as 0.784, which found positively associated with non-farm employment. This indicates that with one per cent increase in the number of total workers per household, the number of persons in non-farm employment increases by 0.784 per cent. The coefficient estimated for farm size has been recorded as -.0203 which has negatively been associated with non-farm employment indicated that with the increase in the farm size, there would have been a decrease in the non-farm employment. The coefficients estimated for the explanatory variables, average education of worker (X_3), Family size (X_4), herd size (X_6), caste of the household (D_1) have been recorded as 0.1571, 0.4333, 0.1282 and 0.6244 respectively. These variables have not been found statistically significant and estimated positively associated with non-farm employment. The standard error of the estimate has accounted for 0.3688. The value of F has been observed as 40.240 which have been found statistically significant at one per cent level of significance. Therefore, the overall effect of various variables on rural non-farm employment has been observed significant.

3.2.2. Determinants of Rural Non-Farm Employment in Block-2

The results of the determinants of rural non-farm employment in Block-2 in district Sirsa are presented in Table 2.

Variables	Estimates	P value
Constant	-0.215	0.259
Number of persons in farm employment per household (X_1)	-0.897*	0.000
Total workers per household (X_2)	0.934*	0.000
Average education of workers per household (X_3)	0.2127	0.181
Family size (X_4)	-0.0114	0.721
Farm size (X_5)	-0.0158	0.806
Herd size (X_6)	0.1634	0.538
Caste of the household (D_1)	0.0367	0.795
R^2	0.927	
F value	76.176*	
Standard error of estimate	0.2853	

Table 6: Results of Linear Multiple Regression equations estimating the main determinants of rural non-farm employment in Block-2
*and** represent significant at 1 and 5 per cent level, respectively

Table 6 reveals that the coefficient of Multiple determination (R^2) has been remained as 0.927 in Block-2 which shows that the explanatory variables have been explained 92.00 per cent variation in rural non-farm employment. The coefficients estimated for explanatory variables like the number of persons in farm employment (X_1), and total workers (X_2) have been found significant at one per cent level. Explanatory variables like average education of worker (X_3), family size (X_4), farm size (X_5), herd size (X_6) and caste of the household (D_1) have been found non-significant at five percent level and the corresponding value of these variables have been recorded as 0.2127, -0.0114, -0.0158, 0.1634 and 0.0367 respectively. Out of these variables, average education of workers, herd size, and dummy variable caste have been found positively associated with non-farm employment. However, the variables like family size and farm size have been negatively correlated with non-farm employment. The standard error of estimate has been estimated as 0.2853 and F value has been observed as 76.176 which shows that model has been observed as statistically significant.

3.2.3. Determinants of Rural Non-Farm Employment in District Sirsa

Variables	Estimates	P value
Constant	-0.0705	0.571
Number of persons in farm employment per household (X_1)	-0.836*	0.000
Total workers per household (X_2)	0.828*	0.000
Average education of workers per household (X_3)	0.1685	0.152
Family size (X_4)	0.9565	0.706
Farm size (X_5)	-0.0116**	0.034
Herd size (X_6)	0.1915	0.329
Caste of the household (D_1)	0.6923	0.444
R^2	0.891	
F value	107.06*	
Standard error of estimate	0.3304	

Table 7: Results of Linear Multiple Regressions Equations estimating the main determinants of rural non-farm employment in district Sirsa
*and** represent significant at 1 and 5 per cent level, respectively

The results related to the determinants of rural non-farm employment in district Sirsa are presented in Table 7. At the overall analysis, the value of the coefficient of Multiple Determination has been observed as 0.891 which shows that explanatory variables explained 89.00 per cent variation in non-farm employment. The coefficients estimated for the explanatory variables like the number of persons in farm employment (X_1) and total workers per household (X_2) have been found statistically significant at one per cent level whereas the estimated coefficient of explanatory variable i.e. farm size has been found significant at the five per cent level. (satnam) The estimated coefficients of the number of persons in farm employment (X_1) and Farm size (X_5) has been observed as -0.836 and -0.0116 respectively, which shows that the number of persons in farm employment and farm size have a negative relation to the non-farm employment.

4. Conclusions and Policy Implications

The main conclusion of the study is that agriculture has been remained as the main occupation of working population. But the employment in the non-farm sector is increasing significantly and self employed and government sector has emerged as the main sector of the employment. The number of persons in farm employment per household, total workers per households, and farm size, are identified as significant determinants of rural non-farm employment. The number of total workers per household has a positive relation whereas the number of persons in farm employment and farm size has negative relation to the non-farm employment. Thus, on the basis of the results of the present study, it can be suggested that to enhance employment opportunities in rural area special attention should be given to enhancing literacy rate among rural women to increase their participation in the non-farm sector. Concessional loans should be given by commercial and cooperative banks to the rural population for the generation of employment in the rural area. Further, the milk-processed industries may be proved crucial for the employment generation in rural sector due to the availability of the milk in the enough quantity. More Emphasis should be given to establish the industries in the rural area in order to increase the job-opportunity for the rural non-farm population. The emphasis should be given to the growth of those industries which are using the agricultural products as a raw material so as the maximum experience of the rural labour with the raw products can be exploited fully. There should be some diversification in the agriculture sector from traditional crops to the horticulture and floricultures to enhance the job opportunity in rural area.

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