

## Rural Non-Farm Employment in Odisha : Trends and Determinants

KAMAL SINGH

Department of Economics, Central University of Himachal Pradesh, Dharamshala, Himachal Pradesh - 177 101  
e-Mail : kamaleco84@gmail.com

### AUTHORS CONTRIBUTION

KAMAL SINGH :  
Conceptualization,  
designing, data extraction,  
manuscript preparation.

### Corresponding Author :

KAMAL SINGH  
Department of Economics,  
Central University of  
Himachal Pradesh,  
Dharamshala,  
Himachal Pradesh

Received : September 2022

Accepted : October 2022

### ABSTRACT

In recent years, the rural non-farm sector (RNFS) has emerged as an important sector in the rural landscape of the country. Within the rural economy of the country, the farm sector is plagued with a different set of problems like high land man ratio, fragmented and small landholdings, etc. RNFS is seen as an alternative strategy for generating employment and reducing rural poverty. This paper aims to study the status of rural employment in Odisha along with trends in rural non-farm employment (RNFE) and to examine the factors which influence the rural workforce to participate in non-farm employment. The study is based on Unit level data from NSSO Employment and Unemployment (EUS) survey conducted in 1993-94, 2004-05 and 2011-12. The paper highlights that rural employment has witnessed a declining trend from 2004-05 to 2011-12 and this decline is more pronounced for females. Further, the level of general education, technical education, availability of social security benefits, location of work, and the caste of the worker has a positive effect, while the size of land owned and sex of the worker has a negative impact on the rural worker's participation in RNFS.

*Keywords* : Rural employment, Rural non-farm sector, Workforce, Employment and Unemployment

THE Rural Non-Farm Sector (RNFS) has emerged as a significant sector and its share and contribution are increasing at an increasing rate (Roy & Mukhopadhyay, 2019). A large number of factors have contributed to this diversification in rural areas. The farm sector for long is plagued with several problems like the ever-mounting pressure of unemployment, low productivity etc., which indicate that the agriculture sector no longer holds the key to additional employment and rural growth. Under these circumstances, the rural non-farm sector has emerged as a solution to the various problems faced by the rural sector (Visaria & Basant, 1994; Chadha, 2002 and Lanjouw & Murgai, 2009).

This process of rural diversification is not the same in all the states of India. Some Indian states have witnessed a higher degree of diversification while it is low in some others. Odisha is also one of the states which is witnessing rural diversification. In economic literature, there are few studies related to Odisha

which have examined the trend, nature and determinants of RNFS. The present paper tries to examine the trends and major determinants of Rural Non-Farm Employment (RNFE) in the state. The paper is organised into six major sections. Section 1 explores the definition of RNFS; section 2 gives the methodology and data used in the paper, section 3 highlights the status of rural employment along with trends in the rural non-farm sector, and section 4 presented the distribution of workers in various subsectors of RNFS; major determinants of RNFS are given in section 5; some conclusions are made in section 6.

### RNFE Activities : Definition and Concept

The rural Non-Farm sector exhibits an extremely heterogeneous and complex system which consists of different activities. In literature, different sets of definitions have been proposed. Rural Non-Farm Activities (RNFA) include all other activities except

for agriculture and allied activities (Unni, 1991; Lanjouw & Lanjouw, 1999; Ranjan, 2009 and Abraham, 2011).

### METHODOLOGY

The National Sample Survey Organisation (NSSO) is one of the major sources for obtaining data on employment and unemployment. For this purpose, NSSO used to conduct a survey called the Employment and Unemployment Survey (EUS) every five years. NSSO has conducted eight such surveys to date and the latest one being the 68<sup>th</sup> round. For our paper, we have used unit-level data from three EUS rounds *i.e.*, 50<sup>th</sup>, 61<sup>st</sup> and 68<sup>th</sup> rounds. NSSO has now discontinued this survey and a new annual survey called the Periodic labour force survey (PLFS) provides data on various facets of employment.

To examine the major factors which influence the choice of rural workers to participate in the RNFS,

the logit model is applied. When the dependent variable is binary the simple regression will not yield valid results. To overcome this problem logit and probit models can be used which are a special case of the General Linear Model (Gujarati, 2004). The functional form of the logistic regression equation is given below :

$$L_i = \ln \left( \frac{P_i}{1 - P_i} \right) = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \dots + \beta_k x_k$$

$P_i$  and  $1 - P_i$  refers to the probability of being employed in RNFS or not. One indicates that the worker is employed in RNFS and Zero means he is not employed in this sector.  $\alpha_1, \dots, \beta_k$  are the regression coefficients. A positive coefficient means the probability of a worker being employed in the non-farm sector is higher. A list of all the independent variables used in logit regression is given below.

List of independent variables along with their explanation

Variable	Definition	Value / Score
Age	Age of the worker	Years
Age Square	Square of the age of the worker	Years
Sex	Sex of the worker	Male= 1; Female =2
Caste	Caste of the household	ST=1; SC=2 ; Others=3
Level of General Education	Completed level of education of each individual	1= illiterate; 2= up to primary; 3= middle; 4=secondary and higher secondary; 5=graduate and above
Level of Technical Education	Technical education/training of individual	1= have any type of technical education; 2= no technical education
Marital Status	Marital status of the individual	Unmarried = 1; married =2; widowed = 3; divorced=4
Land Owned	Landholdings per household (ha.)	Landless =1; marginal=2; small= 3; medium=4; large =5
Household Size	Number of members in the household	In numbers
Religion	The religion of the household	Hindu=1; Muslim =2; Christian = 3; Sikh =4; others=5
Social Security	Availability of any kind of social security benefit like pension, health care, maternity benefit etc	Available Social security benefit =1; no social security benefit =2
Location of work	Location of work whether rural, urban or not fixed	Rural = 1; urban =2; not fixed=3

## RESULTS AND DISCUSSION

## Status of Employment in Odisha

Table 1 presents the gender-wise Labour Force Participation Rate (LFPR) in the rural sector for rural persons in the age group of 15-59 years. As may be seen that the figures for LFPR in Odisha are either close to that of the All India level or slightly higher than for rural males and persons during 1993-94 to 2011-12. Further, during 1993-94 to 2004-05, LFPR

TABLE 1

Gender-wise labour force participation rate (LFPR) in rural sector by usual status (ps+ss) in Odisha 1993-94 to 2011-12 (%)

Years	Gender	All India	Odisha
1993-94	M	89.8	89.5
	F	52.1	49.7
	P	71.2	69.3
2004-05	M	88.6	92.0
	F	52.5	52.9
	P	70.6	71.9
2011-12	M	83.6	90.4
	F	37.8	36.9
	P	60.9	62.9

Note : M, F and P refers to males, females and persons respectively

Source : Computed using NSS unit-level data on EUS pertaining to 50<sup>th</sup>, 61<sup>st</sup> and 68<sup>th</sup> Rounds

for both males and females witnessed an increasing trend but it declined steeply especially for females during 2004-05 to 2011-12. The LFPR for females has declined by 16 percentage points in Odisha and this decline was higher than the all-India level (15 percentage points). Overall from 1993-94 to 2011-12, barring for males, LFPR has declined for both females and rural persons by 9 and 6 percentage points respectively. The reasons for the decline in LFPR in the literature are increased education enrolment (Mehrotra *et al.*, 2012), and withdrawal by some of the workforce, especially women (Hirway, 2012 and Kannan & Raveendran, 2012).

Trends in WPR in Odisha are given in Table 2, a fluctuation is observed for males, females and rural

TABLE 2

Work force participation rate (WPR) in rural sector by usual status (ps+ss) in Odisha 1993-94 to 2011-12 (%)

Years	Gender	All India	Odisha
1993-94	M	88.4	87.8
	F	51.6	49.3
	P	70.3	68.2
2004-05	M	87.1	88.9
	F	51.5	48.4
	P	69.4	68.1
2011-12	M	82.0	88.2
	F	37.2	36.1
	P	59.8	61.4

Note: M, F and P refers to males, females and persons respectively

Source: Computed using NSS unit-level data on EUS pertaining to 50<sup>th</sup>, 61<sup>st</sup> and 68<sup>th</sup> Rounds

workers in Odisha from 1993-94 to 2004-05 and 2004-05 to 2011-12. In contrast to All India, WPR for male workers in Odisha increased during 1993-94 to 2004-05 and then declined. Over nearly two decades, WPR has declined sharply by 7 percentage points for both females and rural persons. An increase in school enrolment, a rise in family income and rural wages, and mechanisation in agriculture are some of the plausible reasons for the fall in female employment at all India levels (Himanshu, 2011; World Bank, 2012 and Mishra & Singh, 2015).

## Trends in the rural Non-Farm Sector

Following the all-India level trends, the rural economy of Odisha to has witnessed the process of rural diversification. It is pertinent to see that the rural sector over a period of time has undergone a major change. On the one hand, the share of the farm sector is witnessing a decline but the share of the non-farm sector is increasing as shown in Table 3.

Table 3 present the sectoral share of the farm and non-farm sectors in rural employment in Odisha. The contribution of the farm sector in 1993-94 was as high as nearly 80 percentage points but declined by 12 percentage points in 2004-05 and reached 61 per cent in 2011-12. So, in the period of nearly 20 years, the

TABLE 3  
Share of rural employment in farm and non-farm sectors in Odisha (%)

Years	1993 - 94	2004 - 05	2011 - 12
Farm	80.7	68.3	60.5
Non - Farm	19.3	31.7	39.5

Source: Computed using NSS unit-level data on EUS pertaining to 50<sup>th</sup>, 61<sup>st</sup> and 68<sup>th</sup> Rounds

contribution of the farm sector has declined by 20 percentage points. Further, during 1993-94 to 2004-05, the share of the non-farm sector increased from 19 per cent to 32 per cent and in 2011-12 it jumped to 38 per cent. The table clearly shows that post-2000, the non-farm sector has emerged at the centre stage of the rural landscape and its share has nearly doubled.

Following the increasing trend in non-farm employment in the rural sector, Odisha also witnessed the process of rural diversification. The share of RNFE in Odisha has increased from 19 per cent in 1993-94 to 40 per cent in 2011-12 indicating an increase of nearly 20 percentage points which is even higher than all India levels (*i.e.*, 15 percentage points). The significant effect of this rural diversification is seen in female workers. The share of females in RNFS has increased by nearly 17 percentage points which is higher than the national average (Table 4).

### Major Subsectors within RNFS

Table 5 reveals the relative importance of various subsectors within the non-farm sector. It is important to observe the relative share of various subsectors within the non-farm sector has changed during 1993-94 to 2011-12. During this period the share of construction, electricity, gas & water, transport,

finance and service sector have shown an increasing trend. Out of these sectors, construction has witnessed around a three-fold increase followed by the service sectors. In 1993-94, the leading sectors were manufacturing, trade and community services which constituted around 60-70 per cent share in males, females and rural person employment. During 2004-05, new sectors construction emerged as one of the important sectors. However during the same period the share of the manufacturing sector and community services declined. In 2011-12, the share of the electricity, gas and water sector, followed by the construction sector exhibited an increasing trend.

### Determinants of RNFS

The literature on nonfarm employment has highlighted a diverse range of factors which influences the participation of rural workers in the rural non-farm sector. Two sets of factors namely pull and push factors are highlighted in the literature (Vaidyanathan, 1986; Abraham, 2009 and Kumar, 2009). In our paper, based on literature we have included 11 such factors namely age, age square, caste, general education, technical education, land owned, household size, marital status, religion, location of workplace and availability of social security which are major factors which determine whether the worker will be employed in the RNFS or not. \*\*\*, \*\* and \* represents significance at 1, 5 and 10 per cent level.

Table 6 gives the results which are thrown by logit regression, a perusal of the table highlights that in Odisha age of the worker social group category, general education level, marital status, social security benefits and location of work have a significant and positive effect on the worker being in RNFE. Whereas

TABLE 4  
Gender Wise distribution of workers in RNFS (%)

Year / Gender	1993 - 94		2004 - 05		2011 - 12	
	All India	Odisha	All India	Odisha	All India	Odisha
Males	27.5	22.2	35.2	35.5	42.7	43.0
Females	13.8	14.5	16.8	24.9	25.3	31.4
Person	22.5	19.3	28.4	31.7	37.3	39.5

TABLE 5  
Distribution of workers in the different subsectors of RNFS in Odisha (%)

Subsectors	1993 - 94			2004 - 05			2011 - 12		
	M	F	P	M	F	P	M	F	P
Mining and Quarrying	5.3	6.5	5.7	2.4	2.6	2.5	1.0	2.3	1.3
Manufacturing	27.1	50.6	33.7	25.4	61.6	36.1	18.5	47.3	25.5
Electricity, Gas & Water	0.7	0.0	0.5	0.7	0.0	0.5	10.6	12.6	11.1
Construction	9.9	6.2	8.8	20.0	13.2	18.0	26.1	12.9	22.9
Wholesale & retail Trade, Restaurants & Hotels	24.7	19.4	23.2	24.1	9.8	19.9	21.3	7.4	18.0
Transport, Storage and communication	5.2	0.0	3.7	9.3	0.5	6.7	8.0	1.9	6.5
Financing, Insurance, Real estate and Business services	0.4	0.0	0.3	3.0	1.8	2.6	3.6	1.4	3.1
Community, Social & Personal Services	26.7	17.3	24.1	15.1	10.5	13.8	10.8	14.4	11.7

Note : M, F and P refers to males, females and persons respectively

Source : Computed using NSS unit-level data on EUS pertaining to 50<sup>th</sup>, 61<sup>st</sup> and 68<sup>th</sup> Rounds

age square, caste category, gender, land owned and the size of the household has a negative and significant effect. The marginal effect shows that as the age of the worker increases by one year, the probability of access to RNFE increases by one per cent. However, in the matter of the caste of the worker mixed results are witnessed. If the worker belongs to the ST category, he / she is 4 per cent less likely to get access to RNFE however worker belonging to the SC category he / she is 2 per cent more likely to find employment in the non-farm sector. So, in Odisha workers belonging to the ST category are at disadvantage side vis-à-vis SC and other category workers. It is seen that the rural employment diversification among SC category workers indicates a distress-induced shift towards the non-farm sector. A clear gender divide is visible as females have less chance compared to males in finding jobs in RNFS. However, workers with a larger amount of land owned prefer to work in farm activities. Further increase in general education level, availability of any kind of social benefit and if the location of the workplace is fixed in these cases workers are more likely to work in RNFS than farm sector.

TABLE 6  
Logit Regression results: Determinants Odisha of RNFE in 2011-12

Variables	Odisha	Marginal Effect (dy/dx)
Age of the household (years)	0.067 *** (0.017)	0.012
Age square	-0.001 *** (0.000)	-0.000
Caste_dummy1 (1= ST, 0 = Otherwise)	-0.233 *** (0.082)	-0.042
Caste_dummy2 (1= SC, 0= Otherwise)	0.145 * (0.087)	0.027
Sex_dummy2 (1= females, 0= males)	-0.957 *** (0.079)	-0.174
Education_dummy2 (1 =up to primary, 0 = illiterate)	0.188 ** (0.089)	0.034
Education_dummy3 (1 =middle, 0 = illiterate)	0.152 (0.098)	0.028
Education_dummy4 (1 = secondary & above, 0 = illiterate)	0.675 *** (0.120)	0.123

Variables	Odisha	Marginal Effect (dy/dx)
Education_dummy5 (1 = graduates & above, 0 = illiterate)	1.194 *** (0.177)	0.218
Technical Education_dummy1 (1 = Yes, 0 = No)	0.962 (0.624)	0.175
Landowned_dummy2 (1 = marginal, 0 = otherwise)	-0.470 ** (0.198)	-0.086
Landowned_dummy3 (1 = small, 0 = otherwise)	-1.742 *** (0.216)	-0.317
Landowned_dummy4 (1 = medium, 0 = otherwise)	-2.100 *** (0.231)	-0.383
Landowned_dummy5 (1 = large, 0 = otherwise)	-0.273 (0.876)	-0.050
household size	-0.025 * (0.015)	-0.005
Maritalstatus_dummy2 (1 = married, 0 = otherwise)	-0.035 (0.125)	-0.006
Marital status_dummy3 (1 = widowed, 0 = otherwise)	0.415 ** (0.208)	0.076
Marital status_dummy4 (1 = divorced, 0 = otherwise)	0.882 (0.662)	0.161
Religion_dummy1 (1 = Hindu, 0 = otherwise)	-12.06391 (574.342)	-2.198
Religion_dummy2 (1 = Muslim, 0 = otherwise)	-11.198 (574.342)	-2.040
Religion_dummy3 (1 = Christian, 0 = otherwise)	-11.542 (574.342)	-2.103
Social security benefit_dummy1 (1 = Yes, 0 = no)	2.737 *** (0.465)	0.499
Location of work_dummy1 (1 = rural, 0 = otherwise)	1.445 *** (0.068)	0.263
Location of workdummy2 (1 = urban, 0 = otherwise)	2.867 *** (0.606)	0.522
Constant	11.420 (574.342)	
Log-likelihood	-2905.4067	
Number of observations	5389	
LR chi2(24)	1651.02	
Pseudo R <sup>2</sup>	0.221	

Figures in parenthesis are standard errors;  
\*\*\*, \*\* and \* represents significance at 1, 5 and 10% level

The paper highlights that the rural economy of Odisha is witnessing rural diversification. In rural areas, Both LFPR and WPR have witnessed a declining trend during 2004-05 to 2011-12 and this decline is more pronounced in the case of female workers who possess a serious employment challenge. The share of the farm sector is declining and that of the non-farm sector is witnessing a substantial increase. Within the non-farm sector, the share of subsectors like construction, electricity, gas & water, transport, storage & communication along with service sectors has increased. The growth of these sectors is not the same for male and female workers. For male workers, it is mainly the construction sector which is providing employment whereas for females it is the manufacturing sector. The study highlights that the age of the worker, caste, general education, marital status, social security benefits and location of work are the major determinants of the rural non-farm sector.

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