RURAL NON-FARM ECONOMY IN INDIA: A STUDY OF UTTAR PRADESH

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Abstract: *Leap frog strategy adopted by India has not relieved the burden of agriculture in absorbing the labor force in state like Uttar Pradesh (highest populated state of India) and residually a larger part of the workforce are still employed in agriculture sector and it is creating problems of over dependency of workforce on agriculture and unplanned migration to big cities in India. In search of solving the problem discussed above and generating employment opportunities for rural people in rural areas, rural Nonfarm sector is gaining serious policy discussions in India. The interesting fact is that the size of non-farm sector is not similar in different states of India or different district of Uttar Pradesh. To provide satisfactory insight to the problem the study has selected Uttar Pradesh for the deep study. To promote rural Nonfarm economy in a state like Uttar Pradesh the present work discusses the scenario of rural non-farm economy in Uttar Pradesh. The study finds that the extent of rural non farm employment is not similar in different districts of the state. To identify the determinants of rural non-farm employment in districts of Uttar Pradesh a multiple regression analysis has been done. The study concludes that infrastructure facility, agriculture productivity and agriculture commercialization significantly explain the variation in rural non-farm employment across the district of Uttar Pradesh. Finally, present study also concludes significant role of rural non-farm employment in reducing rural poverty in Uttar Pradesh.*

Keywords: *Agriculture, Employment, Poverty, Rural Non Farm Economy, Uttar Pradesh.*

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1. Introduction

Leap frog strategy adopted by India has not relieved the burden of agriculture in absorbing the labor force in state like Uttar Pradesh (highest populated state of India) and residually a larger part of the workforce are still employed in agriculture sector and it is creating problems of over dependency of workforce on agriculture and unplanned migration to big cities in India. In search of solving the problem discussed above and generating employment opportunities for rural people in rural areas, rural Nonfarm sector is gaining serious policy discussions in India.

The occupational structure in the Indian economy remained practically unchanged during 1950s and 1960s but it, started changing in 1970s and the share of rural workers employed in the non-farm sector has steadily increased since then, from 16.5 percent in 1972-73 to 22.5 percent in 1983 and again from 25.9 percent in 1993-94 to 31.9 percent in 2009-2010. The important fact is that the process of diversification towards non-farm employment is not similar in all part of country and some states have been much slower as compared to other states (Mitra & Mitra, 2005, pp. 121-136). One likely reason could be that the factors affecting RNFE are not similar across the states of India. But the important issue is that the effect of various factors in rural non-farm employment is not universal[1]. In this work an attempt has been made to analyse the growth of rural non-farm sector (RNFS) in the state of Uttar Pradesh (UP) (highest rural populated state of India). Overall, according to Census data the extent of rural non-farm employment is not similar across various districts in Uttar Pradesh. There is need of explanation about the role of factors in explaining the growth of rural non-farm employment across the districts. This work also discusses the overall growth phenomena and in which way growth of non-farm employment in Uttar Pradesh supports the modern growth pattern.

In the thrust of above discussed research questions present work discusses the size, nature and growth of rural non-farm employment in Uttar Pradesh. The discussion is divided into six parts. Section II provides a detail of composition of the rural workforce in recent years at India and Uttar Pradesh level. A detail of Rural Enterprise and Employment by Occupation in Non-agriculture Sector for the state of Uttar Pradesh, 1990, 1998 &2005 has been given in section III. The determinant of rural non-farm employment across the districts of Uttar Pradesh has been discussed in section IV. Effect of rural non-farm employment on poverty has been discussed in section V. Finally, section VI gives policy suggestion for promoting the growth of RNFE in Uttar Pradesh.

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[1] Like in some regions rural non-farm employment is positively linked with prosperous agricultural situation while there are some regions where non-farm employment is affected by distress arising out of agriculture stagnation.

2. Composition of the Rural Workforce

2.1. Workforce Participation Rates

Overall agriculture has a strong base in the Uttar Pradesh, and has the potential to feed a major population of the country. At the national level and Uttar Pradesh, the share of industry and services during 1980-81 to 2005-06, has gone up. But still the share of agriculture in total domestic product is high in Uttar Pradesh compare to all India level. It suggests that, at the national level, the dominance of agriculture has reduced significantly but the dependency on agriculture in Uttar Pradesh is high[1]. The trends of sectors suggest that Uttar Pradesh economy is an agrarian economy in terms of sectoral share of agriculture in total State Domestic Product (SDP) comparison to all India average. In the background of the above trend it is imperative to find out the share of these sectors in rural economy; because the share of agriculture of total SDP is decreasing in Uttar Pradesh, so is the decreasing pattern resulting in the occupational pattern.

The worker-population ratios provide an idea about the participation of population in economic activity.[2] Table 2.2 provides an idea about the participation of population ratios for the period of 1993-94 to 2009-10. The table shows that at all India level rural work participation (ps & all workers) has decreased in 2005-10. At all India level rural male work participation has increased in 2005-10. On the other hand rural female work participation has decreased during 2005-10 after a significant increase during 1994-2005. The pattern of change in work participation rates during 1993-2010 in rural Uttar Pradesh is also similar to India. Male Work participation (ps & all workers) has it has increased during 2005-10 after a decline during 1994-2005 in Uttar Pradesh. On the other hand Female work participation has decreased during 2005-10 in Uttar Pradesh. Above trend shows that during 2005-10 employment opportunities has decreased for females and they have to suffer more in comparison to male in Uttar Pradesh and India, both.

Census data suggest that Uttar Pradesh has highest share of rural population across the states of India. Employment in agriculture has decreased and employment in

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[1] The share of agricultural gross domestic product (AGDP) in total domestic product is higher in Uttar Pradesh comparison to all India average.

[2] In order to capture the complexities of the employment situation in predominantly agrarian and unorganized economy like India, the estimates of employment and unemployment by NSSO are derived on the basis of three concepts, the Usual Status (US): Current Weekly status (CWS) and Current daily Status (CDS). The three concepts are based on three different references periods for ascertaining the activity status of a person. A deficiency of the present time criteria-based estimates is that one gets to know little about how well employed (income, etc.) are the person who are seen as employed. They also do not provide the multiple activities by person/households.

non-farm sector has increased in rural Uttar Pradesh. On the other hand decreased work participation ratio suggests that growth of non-farm employment in rural areas of Uttar Pradesh is not sufficient. It has been widely recognized that agriculture has lees capacity to provide jobs to growing labour force and non-farm employment is only solution to provide jobs to the rural people, so it imperative to know the growth phenomena of rural non-farm employment in depth for the state like Uttar Pradesh.

Table: 2.1
Rural Work Force Participation Rates Uttar Pradesh and India

Uttar Pradesh/ India	Year	Males		Females		Persons	
		ps workers	all workers	ps workers	all workers	ps workers	all workers
Uttar Pradesh	1993-94	50.6	52.2	13.1	21.9	32.8	37.8
All-India	1993-94	53.8	55.3	23.4	32.8	39	44.4
Uttar Pradesh	2004-05	47.7	49.6	12.3	24	30.4	37.1
All-India	2004-05	53.5	54.6	24.2	32.7	39.1	43.9
Uttar Pradesh	2009-10	48.1	50.4	9	17.4	29.2	34.4
All-India	2009-10	53.7	54.7	20.2	26.1	37.4	40.8

Ps = Principal Status and All = Principal + Marginal workers.

Source: NSS Various rounds NSS

2.2. Growth of Rural Non-farm Employment

Diversification of employment is a significant component of modern growth. In Uttar Pradesh, population is diversifying their activities in non-farm sector to ensure their minimum livelihoods.[1] In recent decades diversification of activities towards non-farm activity is a common phenomenon in Uttar Pradesh. The Growing recognition to the sector needs a comprehensive study that how rural non farm sector is growing in Uttar Pradesh; whether it is growth push related phenomena or distress push related phenomena, nature of jobs in rural non-farm sector etc.

The size, nature and growth of occupational diversification can be analysed with the help of secondary data source like census. Analysis of the data on employment supports the argument that the pace of diversification of rural employment in U.P. is slow in comparison to other states (Singh, 1997, pp.346-64). According to Census data the share of non-agriculture workers in total number of rural workers has

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[1] As population increases availability of per capita land decreases and marginalization of rural land has increased in Uttar Pradesh during the decades. It is therefore insufficient to sustain the livelihood of the rural people employing only in farm sector.
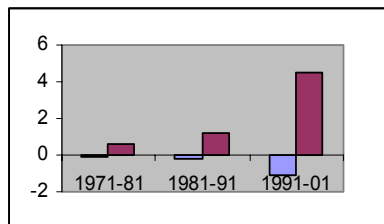
increased only moderately during the last three decades- from 12.9 per cent in 1971 to 15.5 per cent in 1991 to 24 percent in 2001 (Singh, 2005).

Chart 2.1

Sector-wise Growth of Rural Main Workers in Uttar Pradesh, 1971-2001

A. Workforce in Agriculture and Non- Agriculture Employment
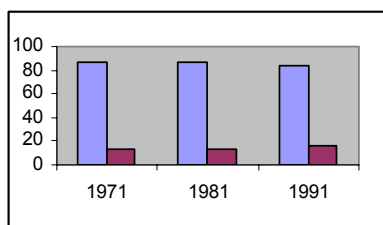
B. Growth in Agriculture and Non- Agriculture Employment

Notes: 1. Figures for before 1981 has been taken from Singh (2005) and after 1981 figures have been calculated from Census report. Growth rate has calculated in exponential term. Sources: Singh (2005), Census Reports.

Table 2.3

Rural Workers (Usual Principal Status+ Subsidiary Status)
In Non-Farm workers in Uttar Pradesh (%)

Year	UP	India	Year	UP	India	Year	UP	India
Male workers			**Female workers**			**Total workers**		
1972-73	18.1	16.7	1972-73	15		1972-73	NA	14.3
1977-78	19.8	19.5	1977-78	10.9		1977-78	NA	16.5
1983	22.1	23.2	1983	11.3		1983	18	18.4
1987-88	21.7	25.5	1987-88	8.7	15.3	1987-88	17.8	21.7
1993-94	23.7	26	1993-94	10.7	13.8	1993-94	20	21.6
1999-00	28.2	28.6	1999-00	12.5	14.6	1999-00	23.5	23.8
2004-05	33.4	32.9	2004-05	13.3	11.4	2004-05	27.0	26.8
2009-10	38.7	36.4	2009-10	13.8	20.4	2009-10	32.8	31.4

Sources: Singh (2005), Ranjan (2009), Bhaumik, 2002, NSS quinquennial, reports.

The trend of employment in Uttar Pradesh during the above four decades shows that the growth in non agricultural employment has been substituted agricultural sector employment very slowly in Uttar Pradesh. Due to the limitation of census data it cannot possible to analyse the sectoral trend of employment observed on the basis of census data[1].According to National Sample Survey(NSS) data, non-agricultural rural employment has increased at an annual compound growth rate of 0.63 percent during 1983-94 against a growth rate of 1.04 percent observed at all India level. During the period 1994-2010, non-agricultural rural employment increased at 3.11 percent in UP, though it increased to 2.12 percent in country as whole (Table 2.5). Disaggregated data suggest that after economic reform, diversification of rural workforce towards RNFE has increased sharply in Uttar Pradesh and India during 1994-2010 and it was higher comparison to all India. But the pace of diversification has decreased after 2004-05

Table: 2.4
*Annual Compound Growth Rate of Rural Non-farm Employment
in Uttar Pradesh and India*

State Country/Period	1983 -1994	1994-05	2005-10	1994-2010
Uttar Pradesh	0.63	3.16	2.98	3.11
India	1.04	2.16	2.04	2.12

Source: Calculated from table number 2.4

Disaggregated trend of sectoral employment shows that rural employment level in primary sector has declined between 1988 and 2010. While rural employment level in Secondary sector has increased significantly during 1994 to 2010. In mining & quarrying sector employment has decreased during 1994-2000 but it has increased during 2000-10. Employment in Electricity, gas & water was overall stagnant during the period. Employment in tertiary sector has been increased slowly during 1994-2010. Overall rural non-farm employment grew from 2 to 3 percent during 1994-2010 in Uttar Pradesh.

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[1] Census provides data of employment by sector till 1991. But 2001 census provides data for cultivator, agricultural labour, and other manufactures only. That is why sectoral distribution of workforce in 2001

Table: 2.5
Sectoral Distribution of Workforce in Rural Uttar Pradesh

Sectors	1993-94			1999-2000			2004-05			2009-10		
	M	F	P	M	F	P	M	F	P	M	F	P
Primary sector	76.2	89.9	79.9	71.8	87.5	76.2	66.3	86.5	72.8	60.9	85.4	66.9
Secondary sector	10	5	8.7	13.1	6.9	11.4	17.3	8.2	14.5	23.7	8.3	19.9
Mining and quarrying	0.2	0	0.2	0.2	0	0.1	0.2	0.2	0.2	0.4	0	0.3
Manufacturing	7	4.8	6.4	8.3	6.4	7.7	9.6	7.4	8.9	7.7	6.3	7.3
Electricity, gas and water	0.2	0	0.1	0.2	0	0.1	0.1	0	0.1	0	0	0
Construction	2.6	0.2	2	4.4	0.5	3.5	7.4	0.6	5.3	15.6	2	12.3
Tertiary sector	13.8	5.1	11.4	15.1	5.6	12.4	16.3	5.1	12.8	15.2	6.3	13.2
Trade, hotels and restaurants	5.1	2.1	4.3	6.7	1.8	5.4	8.2	1.8	6.2	8	2.6	6.7
Transport and communication	2.1	0	1.5	2.9	0	2.1	3	0.1	2.1	3.2	0.1	2.5
Other services	6.6	3	5.6	6.9	3.7	4.9	5.1	3.2	4.5	4	3.6	4
Total non-farm	23.8	10.1	20.1	28.2	12.5	23.5	33.6	13.3	27.3	38.9	14.6	33.1

Source: same as Table 2.3.

Sex wise sectoral distribution of employment suggest that over the period 1993 to 2010 employment in primary sector declined for both male and female. And the share of secondary sector has been increased, but it has been increased more for male comparison to female. The growth in tertiary sector employment was slow for both male and female comparison to secondary sector during 1994-2005. But the share of rural female in service sector employment has increased during 1994-2000 and 2005-10. In secondary sector the share of worker in manufacturing sector has been high during the 1994-2005 for both male and female except during 2005-10 male workers share was high in construction sector. The share of worker in construction increased for male, while for female it was near stagnant during 1994-2005 but it has increased during 2005-10. In tertiary sector share of workforce employed in trade, hotels and restaurants has been increased for male but for female, its share has been declined during 1993-2000 and then it has been become stagnant during 2000-2005, but it has increased during 2005-10. Employment in other service has been decreased for both male and female during 2000-2005. Overall employment growth trend suggest that diversification of workforce in rural areas was high among males comparative to females in Uttar Pradesh.

3. Rural Non-farm Income

Rural Non-farm Income in India and Uttar Pradesh

Estimation of rural non farm income (RNFI) is very critical issue. There is very limited work which explores the contribution of rural non-farm sector in terms of Income for a particular state or region of an economy. For the state of Uttar Pradesh limited information about rural non farm income is available. According to the NCAER data, non-farm income in rural India contributed, on average, about one-third (34 per cent) of total household income in 1993-94 (Table3.1). When compared to about 55 percent from cultivation and 8 percent from agricultural wage labour. It is clear that the non-farm sector is an important source of income, even at this highly aggregated national level. Examining the contribution of non-farm sources to total income across different per capita income quintiles indicates that, among them middle three quintiles, the contribution from non-farm sources are nearer to two-fifths than a third, while for the lowest and highest quintile the share is around 31 per cent. Taking all non-farm income sources together, therefore, the evidence in Table 3.1 suggests that the importance of non-farm income is fairly evenly spread across quintiles. This is in contrast with agricultural wage labour income, which contributes only a negligible amount to total income among the top quintile, but is fairly high for the lower quintiles. For the poorest quintile in rural India, agricultural wage labour income contributes as much as 28 per cent of total income. Cultivation income shares, on the other hand, rise with per capita total income quintiles.

Table 3.1

Non-farm Income Shares in Rural India by India and Uttar Pradesh   (Income Shares by (Real) Per Capita Income Quintile)

Quantile	Cultivation	Agri-culture wage labour	Nonfarm labour	Nonfarm self employ-ment	Nonfarm regular employ-ment	Total non-farm source	Other sources	Real per capita Income
India								
Lowest	38.2	28.2	15.8	11.4	4.4	31.6	2	1146
Q2	38	21.3	14.7	16.8	7	38.5	2.3	2113
Q3	45.2	13.4	10.1	16.3	11.7	38.1	3.2	3141
Q4	50.1	7.5	6.1	14.6	18.6	39.3	3.2	4712
Highest	64.5	2.1	2	7.9	21.1	30.9	2.5	11226
Total	54.9	8	5.9	11.5	17.1	34.4	2.7	4468
Uttar Pradesh								
Lowest	48.4	14.2	16.3	14.2	5.1	35.7	1.7	995
Q2	44.2	9.7	15.9	19.9	9	44.8	1.4	2008
Q3	46.8	4.7	9.2	17.6	19.1	45.9	2.6	3047
Q4	50.7	1.9	5.1	15.1	24.7	44.8	2.5	4553
Highest	61.2	0.3	2	8.5	26	36.5	2	10317
Total	54.6	2.9	5.7	12.6	22.1	40.4	2.1	4185

Note: All India quintiles defined at national level. Source: Lanjouw & Shariff ,2004, pp. 4429-4446

Table 3.2
Non-farm Income Shares in Rural India by States

State	Total nonfarm source	Real per capita Income	State	Total nonfarm source	Real per capita Income
Andhra Pradesh	23.4	5046	Madhya Pradesh	21.4	4159
Bihar	38.9	3690	Orissa	39	3027
Gujarat	24.2	5272	Punjab	36.2	6380
Haryana	33.3	6368	Rajasthan	39.2	4227
Himachal Pradesh	51.7	4168	Tamil Nadu	46.4	4867
Karnataka	20.1	4767	Uttar Pradesh	40.4	4185
Kerala	34.7	5768	West Bengal	49.7	3158
Maharashtra	19.6	5524	North-east States	56.5	5071

Source: Lanjouw & Shariff (2004)

The picture is somewhat altered when one breaks non-farm incomes into three alternative sources: casual non-farm wage income; regular non-farm wage income; and self-employment/ own-enterprise income. For the poorest quintile, casual non-farm wage income accounts for about 16 per cent of total income. This drops to 15 per cent for the second quintile and continues to fall monotonically across quintiles, to only 2 per cent for the top quintiles. In contrast, regular non-farm wage income shares rise sharply with the income quintiles - from only 4 per cent among the poorest quintile to as much as 21 per cent for the richest. At the all-India level casual wage income accounts for about 6 per cent of income and regular wage income contributes 17 per cent to total income. Own enterprise income shares are highest for the 2nd and 3rd quintiles (around 16 per cent) and lowest for the top quintile.

4. Rural Enterprise and Employment by Occupation in Non-agriculture Sector, 1990, 1998 &2005

Rural Enterprises in Uttar Pradesh

The extent of rural non farm employment has also been analysed in terms of the rural industrialisation in India. Economic Census provides data about enterprises in India. According Economic Census, in 1990 12.92 lakh enterprises was located in rural areas of UP, it was increased up to 14.79 in 1998 and recently data shows that U.P. have 22.05 lakh enterprises in rural areas in 2005. It was increased by 14 percent during 1900 to 1998 and it has increased by 49 percent during 1998 to 2005. Growth of agricultural and non-agricultural enterprises has been higher in second period comparison to first period.

Table 4.1
Number and Growth of Rural Enterprises in Uttar Pradesh

Types of enterprise	Number of enterprises (in lakhs)					Number of workers (in lakhs)				
	1990	1998	2005	% increase 1990-1998	% increase 1998-2005	1990	1998	2005	% increase 1990-1998	% increase 1998-2005
Agricultural	0.67	1.16	2.32	73.13	100.00	1.19	1.95	4.68	63.87	140.00
Non-agricultural	12.24	13.63	19.73	11.36	44.75	28.30	30.37	36.14	7.31	19.00
Self-employed	10.45	12.17	17.04	16.46	40.02	NA	17.56	23.45	NA	33.54
Establishment	2.46	2.62	5.01	6.50	91.22	NA	14.76	17.37	NA	17.68
Total	12.92	14.79	22.05	14.47	49.09	29.49	32.32	40.82	9.60	26.30

Source: Economic Census, UP, 1990, 1998 & 2005

The self employed enterprises constitute 81 percent in 1990 and its share has decreased during 1990 to 2005 and it was 77 percent in 2005. On the other hand share of establishment in total enterprises has increased during the whole period. The number of workers has increased in both agriculture and non agriculture enterprises but it has increased higher in agricultural enterprise in comparison to non-agricultural enterprises. Overall growth of employment in both enterprises has been high in both periods. Percentage of self employed workers in total rural enterprise has increased during 1998 to 2005; it shows the informal nature of growth of rural enterprises in Uttar Pradesh (Table 4.1). In rural non-agricultural enterprise and rural non-agricultural enterprise worker, both are dominated by two sectors: manufacturing & retail trade. They respectively employ 23.67 per cent and 53.98 per cent of total enterprise in these enterprise and 33 per cent and 40.67 per cent of total workers in these enterprises (Table 4.2). But these two sectors provide low income in comparison to organized sectors.

Table 4.2
Nature of Rural Enterprises and Employment by Occupation in Non-Agriculture Sector, 2005

Type of occupation	Number of enterprises		Number of employees	
	Nos.	Percent	Nos.	Percent
Mining & quarrying	5717	0.29	10961	0.30
Manufacturing	467188	23.67	1195018	33.06
Electricity, gas & water	2364	0.12	5838	0.16
Construction	8033	0.41	10651	0.29
Sale, maint.& repair m/v & m/c	24240	1.23	43152	1.19
Wholesale trade	23711	1.20	40909	1.13

Type of occupation	Number of enterprises		Number of employees	
	Nos.	Percent	Nos.	Percent
Retail trade	1065243	53.98	1469907	40.67
Restaurants & hotels	67692	3.43	109413	3.03
Transport & storage	27087	1.37	44289	1.22
Posts & telecommunications	31567	1.60	43411	1.20
Financial intermediation	3769	0.19	15275	0.42
Real estate banking & service	27902	1.41	49755	1.37
Public admin defense social sec	15912	0.81	59379	1.64
Education	85206	4.32	338488	9.36
Health & social work	35093	1.78	60623	1.67
Other community personal service	82556	4.18	116727	3.22
Other activities	83	0.00	160	0.004
Non-agricultural activities	1973363	100.00	3613956	100

Source: Economic census, UP, 2005

5. Factors Influencing Variations in the share of Rural Non-Agricultural Employment across the district of Uttar Pradesh

The process of the diversification in occupational structure has raised a serious debate and several hypotheses have been developed and tested to identify its casual perspective. The main hypothesis put forth in the literatures has been "inferior goods hypothesis", "demand and supply inter-linkages hypothesis" and "residual sector hypothesis". Several studies have tested these hypotheses and identified a large number of factors explaining the magnitude of growth and development of various kinds of non-agriculture activities in the region. These includes patterns of agriculture growth, yield rates, extent of commercialization of agriculture, distribution and size of operational holdings, growth of literacy, urbanisation, government policies, internal and external demand conditions (Vaidyanathan, 1986, pp. 130-146 ; Unni, 1991, pp. 109-22; Dev, 1990, pp. 1526-1536). Many studies found weak inter-linkage relationship and a "strong residual sector hypothesis" in explaining high growth of non-agricultural sector in the region. Going with these studies the study seeks to explore the inter-districts variation in Uttar Pradesh in the share of rural non-agricultural employment for persons for the year 2000-2001 and 2004-05. The data on rural non agriculture employment, number of total main workers, total rural population have been calculated from publication of Census for 2001 and Economic Census 2005. Because data of rural non agriculture employment for the recent years is not available at the district level, we have confirmed our analysis for the two point of time; 2000-01, 2004-05. For the analysis based on the data of 2000-01,

percentage of non-agricultural workers[1] to total main workers(NAW/MW) has considered as a function of different explanatory variables explained below for the model for the study. To find out the determinant of employment in rural non agriculture enterprise; percentage of workers involve in non-agricultural-enterprise[2] to total rural population[3] has taken as explanatory variable.

Dependent Variables

1. RNFE: Rural non-agriculture employment as a percentage of the total employment in 2000-   01. Data source is published Census data of 2001 (data is given in annexure).

2. RNAE: percentage of workers involve in non-agricultural-enterprise to total rural population in 2004-05. Data source is published Economic Census report of 2004-05 (data is given in annexure).

Independent variables

1. AGPHEC: Gross value of output per hectare of gross sown area 2000-01 and 2004-05, Statistical abstract Uttar Pradesh

2. AGRPOPERRU: Gross value of output per rural population 2000-01 and 2004-05, Statistical abstract Uttar Pradesh and Census 2001

3. COMMINDEX: commercialization agriculture index has prepared using factor analysis and the variables; uses of fertilizers per hectare of land, uses of electricity per hectare of land, percentages of land used for commercialized crops, have taken. These indicators with their relative weight in parentheses are .68, .48 and .47, Statistical Abstract Uttar Pradesh 2000-01, 2004-05.

4. IFI: Infrastructure index has prepared using ratio of Gross irrigated area to gross cultivated area (.49), Numbers of agriculture mandis on per lakh net cultivated area (.41), road length per square km(.71), number of commercial bank per lakh population(.49). Statistical abstract Uttar Pradesh 2000-01, 2004-05.

5. POPDEN: Number of population per square km, Census 2001.

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[1] Non agricultural workers calculated with the help of Census data.
[2] Those enterprises which engaged in economic activities other than agricultural activities (excluding activities pertaining to agricultural production and plantation) are termed as non-agricultural enterprises.
[3] Projected rural population.

Table 5.1
Detail of Variables Used in the Study as Explanatory Variables

SN	Variable name	Proxy for
1	AGPHEC & AGRPOPERRU	Production linkages
2	COMMINDEX	Production linkages
3	IFI	Infrastructure induced growth
4	POPDEN	Pressure on resources -Push F

The ordinary least square estimates of first two equations are presented in table 5.2. In all the adjusted R-square is good. The present study attempts to test the hypothesis – "Distress push/ Demand Pull Diversification" about the growth of rural non-farm employment for the state of Uttar Pradesh. The sign of coefficient in table 5.2 are along the expected line. The estimated coefficients of variables other than infrastructure and agriculture productivity are robust (significant at 1 per cent level of significance).

It is interesting to note that the relationship between agriculture productivity and RNFE is positive not significant. On the other hand relationship between agriculture commercialization and RNFE indicates the presence of inter-linkages between two sectors and hence, refutes the residual sector hypothesis. This suggests that large commercialization in agriculture increases opportunity for non-farm growth. On the other hand linkages between RNFE and Population density and relationship between agriculture productivity and RNFE suggest that due to low income in agriculture sector and limited capacity of land to provide jobs to rural people, they are diversifying their activities and hence high growth in RNFE. Overall linkages between agriculture productivity and population density suggest that distress push factor is determinant of RNFE in Uttar Pradesh.

Table 5.2
Determinants of Rural Non-Farm Employment in Uttar Pradesh

Particulars	Coefficient	t	Coefficient	t
AGRPOPERRU	0.00054	1.11		
AGPHEC			0.000188	1.53
IFI	0.002935	0.46	0.002748	0.44
COMMINDEX	0.011584*	3.15	0.010581*	2.82
POPDEN	0.015733*	3.36	0.013789*	3.04
_CONS	4.441711	1.4	4.537117	1.67
Adjusted R-square	0.54		0.54	

The ordinary least square estimates of third equations has done for analyzing the determinants of variation in employment in rural non agriculture enterprise and it is presented in table 5.3. In all adjusted R-square is not very high, intercept in all the specifications are significant, and thus suggest that variation in RNAE in the sample requires more explanatory variables in the model. The sign of coefficient in table 5.3 are along with the expected lines. It is interesting to note that variables related to agriculture are strong determinants of RNAE. In a linear form of relationship, the infrastructure index is most important determinant of non RNAE in Uttar Pradesh. On the other hand linkages between commercialization of agriculture and population density suggest that RNAE is supporting "push factor induced hypothesis".

Table 5.3
Factors Determining Rural Non-agriculture enterprise Employment: Multiple Regression Results

Particulars	Coefficient	t	Coefficient	t
AGRPOPERRU	0.0001121*	2.73		
AGPHEC			0.0000264*	2.5
IFI	0.0009841***	1.84	0.0010619**	1.98
COMMINDEX	-0.0001922	-0.62	-0.000297	-0.92
POPDEN	0.0006036	1.53	0.0002458	0.63
_cons	1.13912*	4.26	1.319724*	5.66
Adjusted R-square	0.31		0.30	

*Note: *, **, *** are significant at 1, 5 and 10 percent level of significance*

Overall, the relationship between growth in rural non-farm employment and agricultural productivity suggests that agricultural prosperity has played a limited role in the promotion of non-farm employment in Uttar Pradesh. One can find out several other causal reasons to explain the growth of rural non-farm employment in Uttar Pradesh. Distribution of extent of RNFE is not similar across the districts of Uttar Pradesh. In explaining the causal reason behind the dissimilar extent of RNFE, the analysis based on regression method shows that it is not easy to give conclusion that "push" or "pull" factor is explaining the growth of RNFE in U.P. Push factor and pull factor both are playing significant role in determining rural non-farm employment in Uttar Pradesh. Linkages between Infrastructure and RNAE suggest that infrastructure is playing a major role in the growth of rural non-agricultural enterprise and thus rural non-farm employment.

6. Rural Diversification and Poverty

The above discussions suggest that in rural area people are shifting towards non-farm sector and the employment in agriculture sector is declining. This may have affected the extent of welfare in rural area. Percentage of population below poverty line could represent the welfare change in districts of Uttar Pradesh due to the growth of RNFE. The Nature of rural non-farm employment at the present time is interesting for any studies in developing countries. There is little chance decreasing poverty in that section of population who are marginalized and mostly based only on agriculture production because of their diversification in various non-farm activities. That is why the association between poverty ratio and rural non-farm employment is negative in most part of the developing world. Rural poverty depends mostly upon agricultural performance, concentration of non agricultural employment, quality of human capital and quality of resources. To identify role of different variables disused above we have done a multiple regression analysis, using percentage of rural population below poverty line, as explanatory variable and Gross value of output per hectare of gross sown area 2000-01 (AGPHEC, proxy for agricultural performance), Rural non-agriculture employment as a percentage of the total employment in 2000-01 (proxy for non-farm employment), Rural literacy ratio, 2001 (proxy for human capital) and percentage of marginal land, 2004-05 (proxy for quality of resources) as a explanatory variables. High ratio of marginality represents land is less productive than average productivity.

Table 6.1
Poverty and Agriculture Productivity and Rural Non-Farm Employment

Particulars	Linear estimates	t
MARGI	0.8*	3.16
RNFE	-0.48*	-2.51
AGPHEC	-0.0009*	-4.31
LIT	0.21	0.98
_cons	-11.83	-0.45
Adjusted R- square	0.43	

*Note: * is 1 percent level of significance*

In Uttar Pradesh effectiveness of RNFS on rural poverty level is really interesting and similar to above justifications. There is significant negative relationship between non-farm employment and rural poverty across the districts of Uttar Pradesh, while there is significant and negative relationship between poverty and agriculture productivity

and the effect of rural non- farm employment on poverty is becoming much higher than the agriculture. Above result indicates that rural non-farm employment is much effective in decreasing poverty in not only those districts where agriculture productivity is high but also in those districts where agriculture productivity is not so high. On the other hand relationship between percentage of marginal land and poverty suggest that quality of land is a major hurdle in eradicating poverty in rural Uttar Pradesh.

Conclusion

The NSS data on employment for recent periods (1999-00, 2004-05 and 2009-10) shows a sharp increase in rural non-farm employment in Uttar Pradesh. Manufacturing leads the rural non farm sector more than 8 percent of rural workers. The analysis also reveals that the participation of women in agriculture sector is still high and women in Rural Non Farm Sector in Uttar Pradesh is very low and they are mostly employed in low income activities like the household industry, other services, etc. Information from enterprise survey shows that rural people are employed in manufacturing and retail sector. The enterprise data trend also supports the NSS findings.

The regional dynamics of growth also appears to be different in different parts of the state. In relatively prosperous region of western UP, employment in rural non-farm sector is high but in the poorer region like southern UP, the extent of rural non-farm employment is low. During 1999-2000 to 2004-05 the growth in rural non-farm employment was higher in western region but it was low in southern region. It shows that rural prosperity is important to increase the growth of non-farm employment in rural area. On the other hand analysis also suggests that around 36 percent of non farm state income is coming from rural area. Relationship between rural non-farm employment and poverty suggest that rural non-farm employment is playing significant role in reducing poverty in Uttar Pradesh.

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Table 1
District Wise Variation in Rural Non-farm Employment

DISTRICTS	NAWMW	NAWRP	PERWORNIA	DISTRICTS	NAWMW	NAWRP	PERWORNIA
Bijnor	30.49	6.97	3.14	Pratapgarh	24.68	5.23	2.13
Muradabad	26.98	7.25	2.81	Allahabad	35.24	7.99	2.75
Rampur	16.4	3.87	2.39	Bahraiech	11.86	3.22	1.88
Saharanpur	32.41	7.71	3.32	Sultanpur	26.32	5.55	2.55
Mujjafarnagar	31.36	8.13	2.9	Siddarth nagar	13.32	3.24	1.7
Meruth	41.76	10.6	3.53	Maharajganj	17.87	3.94	2.54
Gaziabad	52.87	12.73	2.81	Basti	18.7	4.36	1.86
Bulandsahar	37.01	10.31	2.02	Grakhpur	31.75	5.68	2.99
Aligarh	31.95	7.61	2.99	Devariya	28.34	4.82	2.65
Mathura	30.62	8.13	2.03	Mau	32.79	6.54	3.07
Agra	33.84	7.65	2.32	Ajamgarh	27.55	5.33	2.28
Firozaqbad	35.52	7.75	2.21	Jaunpur	28.27	5.68	2.94
Eta	15.05	3.61	2.02	Balia	30.9	5.6	2.75
Mainpuri	12.47	2.9	1.39	Gazipur	27.82	5.94	3.08
Badau	11.18	2.88	2.45	Varanasi	57.14	13.65	4.7
Bareli	19.6	4.73	3.35	Mirzapur	35.93	8.49	2.19
Pilibhit	15.82	3.49	2.93	Sonbadra	20.09	4.99	1.77
Shahjahapur	12.56	3.09	2.21	Sant ravidas nagar	61.19	12.07	2.93

Lakhimpur	14.06	3.71	1.61	Kusinagar	19.78	3.92	1.72
Sitapur	14.08	3.65	2.33	Mahoba	16.27	4.92	2.88
Hardoi	12.92	3.48	1.72	Ambedakar nagar	23.93	5.18	2.08
Unnao	17.38	4.5	2.08	Kausambhi	22.3	5.66	1.33
Lucknow	28.49	7.05	3.56	Jyotirba Fula nagar	19.7	4.97	3.01
Raibarali	20.84	4.82	1.85	Gautam budha nagar	46.28	10.87	5.64
Farukhabad	15.81	3.86	1.89	Mahamayanagar	30.83	6.84	2.32
Eawa	18.04	4.03	2.41	Chitrakut	15.14	4.56	2.01
Kanpur dehat	21.6	5.25	3.48	Chaundali	36.42	7.54	2.24
Kanpur nagar	25.14	6.28	2.93	Srawasti	10.71	3.1	1.18
Jalaun	15.26	3.83	2.4	Balrampur	10.51	3.2	1.94
Jhansi	18.51	5.29	2.24	Sant kabir nagar	18.24	3.78	2.5
Lalitpurr	14.63	4.42	2.44	Bagpat	35.81	9.03	3.81
Hamipur	18.76	4.98	2.13	Kannauj	14.83	3.73	1.12
Banda	15.52	4.28	1.79	Auraia	19.87	4.88	2.3
Fatahpur	20.44	5.35	2.89				