OCCUPATIONAL STRUCTURE IN RURAL UTTAR PRADESH: WHAT CHANGES THE RECENT NSSO SHOW?

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ABSTRACT

The rural economy had undergone major restructuring which led to an increase in the share of casual labour in the non-farm sector accompanied by continuous decline in the share of self-employment and regular wage workers. This paper tries to explore determinants of workforce structure with respect to status and sector. On the basis of multinominal regression model it tries to comprehend NSSO's household survey data to analyse factors which impede upon the choice of employment of workers in rural Uttar Pradesh. The model incorporates variables such as total assets (landholding size), social groups, religion, educational level, age (which reflects upon the experience in the labour market) and other regional factors like backwardness which influence the workers. Various earlier studies have pointed at the existing structure of employment in rural areas like the choice of type of employment depends on factors like caste and religion rather than human capital and physical capital of households (Reddy and Kumar, 2006). However other studies lay focus on the fact that even rural labour market has been vibrant in response to human capital levels i.e. better educated workers specialise in knowledge-intensive non-agriculture sector with high levels of income, while the illiterate depends on agriculture sector. Keeping these perspectives in mind this paper tries to explore relative influence of educational levels, physical capital and socio-economic background of workers on their choice of employment types.

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Introduction

The National Sample Survey Office as part of its 66th round survey programme during the period July 2009- June 2010 carried out an all India household survey vide its schedule of enquiry (Schedule 10) on the subject of employment and unemployment in India. This enquiry was conducted as a routine gesture to generate estimates of various characteristics pertaining to employment and unemployment and labour force characteristics at the national and State levels. These statistical indicators on labour market are required for proper planning, and policy decision-making at various levels, both within the government and outside (NSSO Report, 537(66/10/1)). The critical issues in the context of labour force enquiries pertain to defining the labour force and measuring participation of labour force in varied economic activities. The varied participation of people is not only dynamic but it is also multi-dimensional: as it varies with region, age, educational level, gender, standard of living, industry and occupational categories and so forth. The indicators of structural aspects of the workforce such as status of employment, industrial distribution and occupational distribution are derived from these surveys.

The significance of rural non-agriculture sector can hardly be denied when seen in relation to the increasing saturation in the growth of agricultural employment and the growing rural-urban divide after the reforms. The generation of employment in the non-farm sector is important not only in the context of alleviation of poverty, economic growth and rural development but is also known to enhance sustainability of use of natural resources and food security in rural areas (Bhalla, 2002; Chadha, 2002; Davis, 2003; Ellis, 1998). Structure of workforce with respect to status of work i.e. in proportion of self- employment, regular and casual workers and underemployment in total workforce with respect to sector i.e. agriculture, industry and services are considered to be of important characteristics of any labour market which impacts the level of development achieved and the standard of living of the populace in any economy. The occupational status and of sector in which they are employed is no doubt governed by many socio-economic factors such as possession of physical capital, human capital (education) and experience and the social background (religion, social group/caste, region, etc.).

Various earlier studies have pointed out that the existing structure of employment in rural areas has been stagnated with no reward for educational level of household in both agriculture and non-agriculture sectors. The choice of type of employment depends on factors like caste and religion rather than human capital and physical capital of households (Reddy and Kumar, 2006). However, other studies lay focus on the fact that even rural labour market has been vibrant in response to human capital levels i.e. better educated workers specialise in knowledge-intensive non-agriculture sector with high levels of income, while the illiterate depends

on agriculture sector. Keeping these perspectives in mind this paper tries to explore relative influence of educational levels, physical capital and socio-economic background of workers on their choice of employment types.

Review of Literature

Dev (2000) stated that in India the unemployment rate is 5 per cent but poverty is more than 30 per cent. Understanding the context we can state that employment is not productive or remunerative (Dev, 2000) which helps us to understand that access to different types of employment almost determines the 25 per cent of the poverty in India. The recent NSS 66th round household employment data show that there is greater variation in incomes from different types of employment. A view (Sundaram, 2001) is seen concluding that the average wage incomes of regular wage/ salaried workers would be higher than those received by the casual labourers (agricultural and non-agricultural) and also higher than incomes of self-employed with asset base.

A complex web of socio-economic characteristics determine access to different sources of income and types of employment (Reddy and Kumar, 2006). The importance of incorporating household composition in the analysis of type of employment has long been recognised (Buhmann et. al, 1988, as cited in Reddy and Kumar, 2006). Clear evidence could be cited about determinants like education, skill and assets capturing most part of variation in types of employment of workers. Ghose (1999) noted that where the educational and skill levels are similar, gender, kinship, caste, etc., remain important determinants of access to different types of employment. Dreze and Srinivasan's study (1997) is an exceptional example of an empirical work utilising disaggregated data on household size and composition to analyse the type of employment of female-headed households in India. Workers belonging to SC/ST categories and employed as agricultural labour or other labour generally experience lower standards of living as compared to others in rural India (Ray, 2000).

Education impacts of productivity is a well-recognised fact and various studies indicate that literacy scores as a direct measure of human capital perform better in growth regressions than other indicators of schooling. A study on cross country comparison of 14 OECD countries by Coulombe et.al (2004) revealed that a country that is able to attain literacy scores of 1 per cent higher than the international average will achieve levels of labour productivity and GDP per capita that are 2.5 per cent and 1.5 per cent higher, respectively, than other countries. The results using other measures of average education at the regional level indicate similar results. For example, Shira Klein (2002) found that an increase of 1 percentage point in the percentage of graduates in total population generates external returns of 24 per cent in urban India.

Livingstone et al (1999) showed that in industrialised economies university graduates earned significantly more than high school graduates since 1970, especially in non-agricultural sector and in urban areas. But this is not true for rural areas in India as the knowledge increases the absorption capacity of the labour market has not kept pace and the notion of knowledge based economy remains largely illusionary for most of the rural workforce (Reddy and Kumar, 2006). The problem reflects on the declining and non-improving quality of schooling in terms of relevance of education for employment creation which is a big issue to be focused upon. Livingstone (2002) states that acquiring higher and higher levels of education becomes a less and less viable option in rural areas. On the other hand, a widely cited survey by Lockheed et al (1980) concludes that education has a positive effect on incomes of agricultural workers. Phillips (1987) argues that these outcomes vary substantially with geographic regions. Scholars such as Madhusudan and Narayanamoorthy (2003) and Surabhi and Kumar (2000) also highlighted the significance of education in productivity growth in agriculture in India.

The fact that perpetuates our mind is that better educated workers earn higher wages in the modern sector but the issue that needs attention is whether education raises incomes in agriculture remains a contentious issue. Fafchamps and Agnes (1998) have shown, while studying Pakistani labour market, that households with better educated workers earn higher off-farm incomes and divert labour resources away from farm activities toward non-farm activities. Education has no significant effect on income from agricultural sector and effect of human capital on household incomes can be best realised through the reallocation of labour from low productive work to more remunerative non-farm work. These studies present before us various issues whether education and other socio-economic factors allocate labour in favour of non-agricultural activities and if yes, what sectors attract educated people and whether differences in wages could be observed between agricultural and non-agricultural sectors due to variation in educational attainments. This paper tries to explore some of these issues in the context of rural Uttar Pradesh.

Methodology

Analysis and results in this paper are based on unit level data available from NSSO 61st and 66th round survey programme during the period July 2004 – June 2005 and July 2009- June 2010, carried out on all-India household survey vide its schedule of enquiry (Schedule 10) on the subject of employment and unemployment in India. The geographical coverage in rural Uttar Pradesh is 739 villages covering 5903 households and 33264 persons in 66th round. For easy classification sector and status of employment are combined together and reclassified into types of employment with nine categories viz. self-employed in agriculture, self-employed in industry, self-employed in services, regular employed in

agriculture, regular employed in industry, regular employed in services, casual labour in agriculture, casual labour in industry and finally casual labour in services. The analysis is restricted to the rural workers usually employed taking into account the principal status activity. The primary objective of the paper is to identify the drivers of occupational choice in rural Uttar Pradesh. This has been attempted by multinominal regression model to comprehend factors which impede upon the choice of employment of workers with the help of variables such as total assets (land holding size), social groups, religion, educational level, age (which reflects on the experience) and other regional factors. The explanatory variables as well as the dependent variable have been calculated from 66th round, derived from the household level data of schedule 10.

Distribution of Workers by Type of Employment

Distribution of Workers by Type of Employment and Physical Capital of Households: Table 1 reveals that the proportion of very poor is high amongst the casual working class. Concentration of the very poor is high among casual labourers in services followed by self-employed in industry whereas the proportion of non-poor is high among the regular employed in services and agriculture in Uttar Pradesh. The situation of self-employed is proportionally distributed amongst all income groups and not much difference could be observed between agricultural and non-agricultural occupations. On the whole not much difference could be observed amongst the cross section of workers in different income groups in Uttar Pradesh.

Table 1: Distribution of Workers by Type of Employment and Income Quintiles

Employment Status	Very Poor	Poor	Medium	Non-Poor Low	Non-Poor High	Total	Sample
Self-employed in Agriculture	27.54	17.4	21.17	16.35	17.55	100.0	7,699.49
Self-employed in Industry	32.89	15.09	20.55	15.59	15.88	100.0	600.09
Self-employed in Services	24.12	18.38	21.74	17.8	17.96	100.0	2,108.42
Total	27.15	17.46	21.25	16.6	17.54	100.0	10,408.00
Regular wage in Agriculture	18.55	17.66	19.71	22.08	21.99	100.0	549.75
Regular wage in Industry	20.18	19.63	22.8	19.04	18.36	100.0	137.19
Regular wage in Services	18.23	18.31	22.71	19.31	21.44	100.0	560.06
Total	18.59	18.17	21.4	20.5	21.34	100.0	1,247.00

(Contd...)

Table 1 *(Cond...)*

Employment Status	Very Poor	Poor	Medium	Non-Poor Low	Non-Poor High	Total	Sample
Casual labour in Agriculture	30.86	18.34	19.38	14.47	16.96	100.0	1,605.16
Casual labour in Industry	30.35	15.98	18.39	15.4	19.87	100.0	356.73
Casual labour in Services	36.66	19.97	16.78	11.38	15.21	100.0	1,983.12
Total	33.73	18.95	17.98	13	16.34	100.0	3,945.00

Source: NSSO Unit Level Data of 61st and 66th Rounds.

Note: (The workers have been classified into 5 quintiles based on monthly per capita expenditure 1st=very poor, 2nd=Poor, 3rd=medium, 4th non-poor low, 5th non-poor high).

We can make out that the proportion of workers in self-employed category was highest i.e. 75.76 per cent in 2004-05 (61st round) which declined to 68.13 per cent during 2009-10 (66th round). Regular wage workers comprise 8.11 per cent of the total usual status workers in 61st round and increased only to 8.22 per cent in 66th round which is just a marginal increase in Uttar Pradesh. Proportion of casual labour was observed to be 16.13 per cent in 2004-05 and registered a sharp increase to 23.65 per cent in 2009-10 pointing towards large scale casualisation in the rural labour market.

By classifying workers' employment according to different categories of land ownership we find in Table 2 that the share of self-employed in agriculture is very high (77.51 per cent in 61st round) among large landholders (with farm size more than 4 hectares) and even among small landholders (with land size between 0.4 to 1 hectares). The share of self-employed in agriculture was 77.51 per cent from large landholders and increased to 87.66 per cent in 2009-10. However, among the marginal land holders i.e. in the category of less than 0.4 hectares, the share of self-employed decreased to 33.88 per cent in 61st round and further to 29.9 per cent in 66th round. The share of self-employed in industry and services or rather we may say in non-agricultural activities is high among landless and marginal land holders in 2004-05 and further declined in 66th round, may be because of introduction of diversification. The above analysis indicates that a minimum level of land is a prerequisite for workers to be self-employed in agriculture. The regular employed workers constitute a small proportion in rural Uttar Pradesh and need further analysis. The regular wage workers are about 12 to 13 per cent from landless category, for both the periods. About 11.95 per cent casual workers were landless in 61st round and this category has registered a steep increase of 82.11 per cent in 66th round. About 11.15 per cent of landless, 17.78 per cent of marginal and 3.15 per cent of small farmers are casual labourers in agriculture in 2004-05. These figures are seen to be increasing to 29.56 per cent from landless and 4.92 per cent from small farmers' category of casual labourers in 2009-10. Casual workers in marginal category have declined to 14.8 per cent in the current round.

Table 2: Distribution of Workers Among Type of Employment by Asset Ownership

Employment Status	Round	Landless	Marginal	Small 0.4 to 1 hac	Medium 1 to 2 hac	Semi-large 2 to 4 hac	Large 4 hac and above	Total
Self-employed in Agriculture	61st Round	54.19	33.88	77.46	84.95	85.22	77.51	57.59
	66th Round	2.07	29.91	76.11	81.55	90.67	87.66	52.07
Self-employed in Industry	61st Round	5.01	9.42	2.38	2.94	1.00	0.80	5.79
	66th Round	0.22	8.32	2.17	1.55	0.55	0.68	5.01
Self-employed in Services	61st Round	8.84	18.81	7.46	3.33	5.30	10.15	12.38
	66th Round	0.42	17.23	6.07	4.75	2.10	3.54	11.05
Total Self-employed	61st Round	68.05	62.11	87.30	91.22	91.52	88.46	75.76
	66th Round	2.71	55.46	84.35	87.85	93.32	91.88	68.13
Regular wage workers in Agriculture	61st Round	1.18	0.33	0.32	0.22	1.83	0.55	0.43
	66th Round	0.39	0.33	0.22	0.97	0.00	0.21	0.36
Regular wage workers in Industry	61st Round	6.51	2.77	1.69	0.71	0.51	0.88	1.98
	66th Round	1.48	2.37	1.07	0.39	0.29	0.00	1.58
Regular wage workers in Services	61st Round	12.31	5.86	5.32	5.24	5.52	8.87	5.70
	66th Round	13.30	6.24	5.35	6.27	5.85	7.65	6.27
Total regular wage workers	61st Round	20.00	8.97	7.33	6.17	7.87	10.29	8.11
	66th Round	15.17	8.95	6.63	7.63	6.13	7.86	8.22
Casual labour in Agriculture	61st Round	11.15	17.78	3.15	1.22	0.30	0.90	9.83
	66th Round	29.56	14.80	4.92	3.28	0.03	0.25	10.13
Casual labour in Industry	61st Round	0.80	3.01	0.73	0.42	0.25	0.02	1.75
	66th Round	5.17	2.85	0.23	0.05	0.00	0.00	1.68

(Contd...)

Table 2 (Conted...)

Employment Status	Round	Landless	Marginal	Small 0.4 to 1 hac	Medium 1 to 2 hac	Semi-large 2 to 4 hac	Large 4 hac and above	Total
Casual labour in Services	61st Round	0.00	8.13	1.48	0.97	0.06	0.32	4.55
	66th Round	47.38	17.94	3.86	1.19	0.52	0.00	11.84
Total casual labourers	61st Round	11.95	28.92	5.36	2.61	0.62	1.24	16.13
	66th Round	82.11	35.59	9.02	4.52	0.55	0.25	23.65
Total	61st Round	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	66th Round	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: NSSO Unit Level Data of 61st and 66th Rounds.

Distribution of Workers by Type of Employment and Human Capital of Household (education and age): Educational attainment determines the quality of a population and one's employment prospect. Thus, it is important to study the distribution of population by educational attainment before a comprehensive discussion is attempted on employment scenario in rural Uttar Pradesh. There is also a need to chart the changes in the literacy rates over time.

The share of illiterates is highest among casual workers in agriculture (63 per cent) followed by casual workers in industry (58 per cent) and casual workers in services (45 per cent). Middle and secondary educated workers are to be seen across all the sectors. The proportion of literate but below primary category have major share amongst casual labourers in services. The proportion of higher secondary educated are highest amongst regular employed in industry and regular employed in services (14 per cent and 15 per cent, respectively). The share of graduate and above is higher among regular employed in services (34.35 per cent).

Table 3 throws light on the issue that in human capital hierarchy the class of self-employed in agriculture are at the lower rung of the ladder followed by industrial workers and workers in the service sector. The Table also shows that the proportion of illiterates and primary educated is highest amongst casual labourers, be it in agriculture, industry or services sector. Surprisingly higher proportion of illiterates are also concentrated in regular wage employed in agriculture reflecting that education is not required for agriculture sector. However, here also workers in the services and industrial sectors skew towards better educational levels compared to casual labourers in agriculture (Table 3). The proportion of better educated are concentrated more amongst regular wage workers in services.

The self-employed in sectors away from agriculture i.e. in non-agriculture are widely distributed in all educational and income classes as the self-employed in non-agricultural sector constitute a heterogeneous group- it ranges from traditional handicrafts (which are under distress condition due to lack of demand in the market, low productivity, low technology and less capital) to newly emerging sectors in rural areas like trade and transport.

Table 3: Distribution of Workers among Type of Employment by Educational Level

Employment Status	Round	Illiterate	Below Primary	Primary	Middle and Secondary	Higher Secondary	Graduate and Above	Total
Self-employed in Agriculture	61st Round	52.98	16.06	11.16	14.95	3.25	1.60	100.00
	66th Round	39.00	5.90	12.31	30.37	7.12	5.30	100.00
Self-employed in Industry	61st Round	56.81	15.77	11.62	13.19	1.97	0.64	100.00
	66th Round	38.85	9.15	20.63	26.83	3.32	1.23	100.00
Self-employed in Services	61st Round	53.54	15.63	11.83	13.53	3.03	2.45	100.00
	66th Round	30.27	8.20	13.34	33.84	7.82	6.54	100.00
Total Self-employed	61st Round	53.37	15.97	11.31	14.58	3.11	1.66	100.00
	66th Round	37.56	6.52	13.09	30.67	6.95	5.20	100.00
Regular wage workers in Agriculture	61st Round	52.50	6.89	13.64	11.14	5.45	10.38	100.00
	66th Round	66.57	0.90	0.00	31.22	0.15	1.16	100.00
Regular wage workers in Industry	61st Round	47.91	15.31	12.33	18.49	4.16	1.80	100.00
	66th Round	12.10	3.71	26.87	40.59	13.76	2.97	100.00
Regular wage workers in Services	61st Round	41.79	13.27	10.19	19.78	7.19	7.79	100.00
	66th Round	10.23	2.32	9.75	27.92	14.64	35.14	100.00
Total regular wage workers	61st Round	43.97	13.45	10.94	18.97	6.30	6.37	100.00
	66th Round	12.96	2.53	12.66	30.52	13.86	27.47	100.00

(Contd...)

Table 3 (Contd...)

Employment Status	Round	Illiterate	Below Primary	Primary	Middle and Secondary	Higher Secondary	Graduate and Above	Total
Casual labour in Agriculture	61st Round	65.90	15.54	10.01	7.53	0.77	0.25	100.00
	66th Round	62.85	7.32	11.68	15.30	2.34	0.51	100.00
Casual labour in Industry	61st Round	66.06	14.80	8.96	9.04	0.86	0.29	100.00
	66th Round	58.02	9.21	9.22	21.85	1.69	0.01	100.00
Casual labour in Services	61st Round	62.19	17.18	9.06	9.70	1.35	0.52	100.00
	66th Round	44.90	10.69	17.92	24.24	1.90	0.36	100.00
Total casual labouers	61st Round	64.86	15.93	9.63	8.31	0.94	0.33	100.00
	66th Round	53.50	9.15	14.62	20.27	2.07	0.40	100.00

Source: Calculated from NSSO Unit Level Data of 61st and 66th Rounds.

Studies by Reddy and Kumar (2006) have recorded that in case of rural Andhra Pradesh the labour market is highly segmented in respect of educational standards, that is the illiterate and primary educated are concentrated in agricultural sector, mostly as casual workers whereas the better educated are mostly engaged in regular employment, particularly in services sector. Similar picture can be seen in rural Uttar Pradesh's present scenario.

Regarding the age structure of workforce we come across the fact that the share of children (5-14 years) were disproportionately high in self-employed category in 2004-05 be it agriculture, industry or services. But the self-employed children have registered a decline in the present round in Uttar Pradesh may be due to imposition of child labour protection laws. Children are absent from the workforce as regular wage workers and also as casual labourers.

Table 4: Distribution of Workers by Type of Employment and Age Group

Employment Status	Round	Child	Young	Aged	Old	Total
Self-employed in Agriculture	61st Round	11.90	8.06	0.00	80.04	100.00
	66th Round	1.34	24.02	57.85	16.80	100.00
Self-employed in Industry	61st Round	12.18	5.68	0.00	82.15	100.00
	66th Round	4.95	39.38	48.03	7.65	100.00
Self-employed in Services	61st Round	22.28	2.21	0.00	75.51	100.00
	66th Round	0.78	32.06	60.25	6.90	100.00
Total self-employed	61st Round	13.63	6.91	0.00	79.46	100.00
	66th Round	1.51	26.47	57.52	14.50	100.00
Regular wage workers in Agriculture	61st Round	0.00	0.00	19.12	80.88	100.00
	66th Round	0.00	24.62	69.07	6.31	100.00
Regular wage workers in Industry	61st Round	0.00	0.00	22.18	77.82	100.00
	66th Round	0.06	49.36	50.10	0.49	100.00
Regular wage workers in Services	61st Round	0.00	0.00	20.69	79.31	100.00
	66th Round	1.22	35.63	60.15	3.00	100.00
Total regular wage workers	61st Round	0.00	0.00	21.00	79.00	100.00
	66th Round	0.94	37.83	58.57	2.65	100.00
Casual labour in Agriculture	61st Round	0.00	0.00	20.34	79.66	100.00
	66th Round	1.26	35.30	57.72	5.72	100.00

(Contd...)

Table 4 *(Contd...)*

Employment Status	Round	Child	Young	Aged	Old	Total
Casual labour in Industry	61st Round	0.00	0.00	13.98	86.02	100.00
	66th Round	0.87	33.13	62.05	3.95	100.00
Casual labour in Services	61st Round	0.00	0.00	22.38	77.62	100.00
	66th Round	0.34	39.18	54.92	5.56	100.00
Total casual labour	61st Round	0.00	0.00	20.24	79.76	100.00
	66th Round	0.77	37.08	56.64	5.51	100.00

Source: Calculated from NSSO Unit Level Data of 61st and 66th Rounds.

What is more interesting is that when we classify total workforce according to sex, we find that female participation has declined tremendously in all occupational categories like self-employed, regular wage workers and also casual labourers.

Table 5: Distribution of Workers by Type of Employment and Sex

Employment Status	Round	Male	Female	Total
Self-employed in Agriculture	61st Round	28.40	28.84	100.00
	66th Round	25.17	29.87	100.00
Self-employed in Industry	61st Round	2.88	3.04	100.00
	66th Round	2.21	4.20	100.00
Self-employed in Services	61st Round	6.30	6.11	100.00
	66th Round	6.19	2.02	100.00
Total Self-employed	61st Round	37.57	37.99	100.00
	66th Round	33.57	36.09	100.00
Regular wage workers in Agriculture	61st Round	0.24	0.21	100.00
	66th Round	0.20	0.01	100.00
Regular wage workers in Industry	61st Round	1.16	0.99	100.00
	66th Round	0.94	0.01	100.00
Regular wage workers in Services	61st Round	2.82	2.83	100.00
	66th Round	3.06	3.71	100.00
Total regular wage workers	61st Round	4.22	4.03	100.00
	66th Round	4.21	3.73	100.00

(Contd...)

Table 5 (Contd...)

Employment Status	Round	Male	Female	Total
Casual labour in Agriculture	61st Round	4.98	4.87	100.00
	66th Round	4.54	7.96	100.00
Casual labour in Industry	61st Round	0.89	0.85	100.00
	66th Round	0.96	0.53	100.00
Casual labour in Services	61st Round	2.33	2.27	100.00
	66th Round	6.72	1.69	100.00
Total casual labourers	61st Round	8.21	7.98	100.00
	66th Round	12.22	10.18	100.00
Total number of sample workers	61st Round	100.00	100.00	100.00
	66th Round	100.00	100.00	100.00

Source: Calculated from NSSO Unit Level Data of 61st and 66th Rounds.

Distribution of Workers by Type of Employment and Social Group and Religion of Households: About 62 per cent of STs/SCs were self-employed in 61st round and their employment declined to 47.1 per cent in 66th round. Out of the total STs/SCs, largest proportion are concentrated as self-employed in agriculture during both the survey periods. Their presence could be also seen in large numbers in casual labourers' category with about 30 per cent in 2004-05 which increased to 45.93 per cent in 2009-10. The toll of casualisation on ST/SC workers could be perceived very clearly in Uttar Pradesh. Whereas the share of casual labourers in agriculture is high (16.7 to 18.44 per cent during the two survey periods) among the STs/ SCs and it is low among the upper castes (others). In the OBC category, the self-employment was 79.55 per cent in 2004-05 and declined to 75.13 per cent in 2009-10. About 6.9 per cent of workers are regular wage employed in rural Uttar Pradesh in the OBC category. The casualisation is low for other castes in rural Uttar Pradesh. Table 6 sheds light on the social angle of segmentation in the labour market. The upper castes are conspicuous by their presence in regular wage categories and that too in service sector with 9.34 per cent in 2004-05 and 12.30 per cent in 2009-10.

Table 6: Distribution of Workers by Type of Employment and Social Group

Employment Status	Round	ST/ SC	OBC	Others	Total
Self-employed in Agriculture	61st Round	47.23	59.73	62.78	57.18
	66th Round	33.52	56.99	62.82	51.76
Self-employed in Industry	61st Round	3.92	7.08	5.27	5.92
	66th Round	3.61	6.36	3.33	5.01
Self-employed in Services	61st Round	11.09	12.73	13.28	12.43
	66th Round	9.97	11.78	10.97	11.13
Total self-employed	61st Round	62.25	79.55	81.33	75.53
	66th Round	47.10	75.13	77.12	67.90
Regular wage workers in Agriculture	61st Round	0.40	0.37	0.74	0.45
	66th Round	0.42	0.32	0.34	0.35
Regular wage workers in Industry	61st Round	2.29	1.93	2.61	2.16
	66th Round	1.28	1.47	2.40	1.61
Regular wage workers in Services	61st Round	5.07	4.59	9.31	5.65
	66th Round	5.27	4.64	12.30	6.32
Total regular wage workers	61st Round	7.76	6.90	12.65	8.26
	66th Round	6.97	6.43	15.04	8.28
Casual labour in Agriculture	61st Round	16.70	8.90	3.79	9.86
	66th Round	18.44	8.65	2.54	10.11
Casual labour in Industry	61st Round	3.33	1.52	0.36	1.74
	66th Round	2.66	1.65	0.95	1.79
Casual labour in Services	61st Round	9.97	3.13	1.87	4.61
	66th Round	24.82	8.14	4.35	11.93
Total casual labourers	61st Round	29.99	13.55	6.02	16.21
	66th Round	45.93	18.44	7.84	23.82
Total number of sample workers		100.00	100.00	100.00	100.00
		100.00	100.00	100.00	100.00

Source: Calculated from NSSO Unit Level Data of 61st and 66th Rounds.

The share of the self-employed in industry and casual labourers in industry and services are high among the non-Hindu workers compared to Hindu workers and in contrast to this the self-employed in agriculture and regular employed in agriculture are less among non-Hindu workers.

Table 7: Distribution of Workers by Type of Employment and Religion

Employment Status	Round	Hindus	Non-Hindus	Total
Self-employed in Agriculture	61st Round	60.95	37.03	57.22
	66th Round	54.21	35.37	51.76
Self-employed in Industry	61st Round	4.04	16.06	5.92
	66th Round	4.01	11.75	5.01
Self-employed in Services	61st Round	10.48	22.90	12.42
	66th Round	9.75	20.33	11.13
Total self-employed	61st Round	75.47	75.99	75.55
	66th Round	67.97	67.45	67.90
Regular wage workers in Agriculture	61st Round	0.48	0.29	0.45
	66th Round	0.31	0.63	0.35
Regular wage workers in Industry	61st Round	2.01	2.98	2.16
	66th Round	1.68	1.12	1.61
Regular wage workers in Services	61st Round	6.04	3.50	5.64
	66th Round	6.57	4.66	6.32
Total regular wage workers	61st Round	8.52	6.77	8.25
	66th Round	8.55	6.41	8.28
Casual labour in Agriculture	61st Round	9.56	11.41	9.85
	66th Round	9.64	13.21	10.11
Casual labour in Industry	61st Round	1.75	1.72	1.74
	66th Round	1.65	2.71	1.79
Casual labour in Services	61st Round	4.69	4.11	4.60
	66th Round	12.19	10.22	11.93
Total casual labourers	61st Round	16.00	17.24	16.19
	66th Round	23.48	26.14	23.82
Total	61st Round	100.00	100.00	100.00
	66th Round	100.00	100.00	100.00

Source: Calculated from NSSO Unit Level Data of 61st and 66th Rounds.

Multinominal Regression Analysis

Multinominal regression model is used to generalise the logistic regression by allowing more than two outcomes that are discrete. In other words it is the model to predict the probabilities of different possible outcomes of the categorically distributed dependent variable, given a set of independent variables (which may be real value, binary valued, categorical valued, etc.) The use of the term multinominal in the name arises from the common conflation between the categorical and multinominal distribution with the aim to predict categorical data.

We have used this model to analyse the choice of type of employment. The dependent variable was a categorical variable (type) of employment with more than two categories (in our case six categories) which are regressed on a set of independent variables. A requirement of multinominal model is that a particular category to be designated as the numerate against which all results are compared- hence the parameter estimates for the category is interpreted as indicators of the strength of association of a particular explanatory variable with the respective category, relative to the same explanatory variable with numerate/ comparison category.

The model takes the form—

$$U_{ij} = B_i X_i + u_{ij}$$

Where U_{ij} is the ith individual's utility of the jth choice and X_i is a vector of values of the ith individual on the independent variables. Here the model tries to estimate a set of regression coefficients for each of the alternatives except for the choice option that has been defined as reference category, hence the subscript in B_i (DeCoster, 2004).

Y (Type of employment) = f (Physical Capital of workers, human capital of workers, socio-economic characteristics, work related variables and regional factors). Following are the independent variables.

Variables	Rationale for Inclusion
Physical Capital Variables	Indicating standard of living
a. Monthly per capita expenditure	Asset/ status
b. Landholding size	
Human Capital Variables	Experience of work
a. Age of head of family	Human capital of workers
b. General educational level	
Social and Other Factors	Social and historical discrimination
a. Social group	Traditional preference and contacts
b. Religion sex of the head of household	Gender discrimination in society
c. Sex of the workers	
Regional Factors	
a. Developed region	
b. Backward region	

People's occupational choices might be influenced by many factors and here we study the relationship of one's occupation choice with a number of socio-economic variables. The occupational choice is the outcome variable which consists of categories of occupations. Multinominal logit models are multi-equation models. A response variable with k+1 categories, which shall generate k equations, each of which (k equations) is binary logistic regression comparing a group with the reference group. It simultaneously estimates k logits. Further, it only displays coefficients for the k comparisons. Thus, the coefficients B represent the log odds of being in the target groups relative to the reference group. Thus the simplified multinominal logit model takes the form:

$$Pj= \sum exp(Bj'x) \; / \; \text{"}exp(Bj'x)\ldots\ldots\ldots\ldots\ldots\ldots for \; j=1\ldots..k+1$$

Where exp () stands for the exponential function and x is the vector of independent variables.

Bk+1 can be set to 0 (zero vector) as a normalisation and thus

$$Pk+1 = 1 \; / \; \sum exp(Bj'x) \text{ as a result the j logit has the form:}$$

$$Log \; Pj/\,pk+1= Bj'x \;\; for \; j=1\ldots.., k$$

For example, the 1ˢᵗ equation is represented as follows:

Log (probability of being self-employed in agriculture/probability of being casual labour in agriculture) = -0.06 + 2.01(Land holding size hac.) + -0.606 (sex of worker) + -2.45 (St=1;else=0) +-1.58(SC=1;else=0) +-0.58(OBC=1; else=0) +-0.47 (Non-Hindu=1; else=0) +-+0.14 (below primary=1; else=0) + 0.57 (primary=1; else=0) + 0.77 (middle=1; else=0) + 1.24 (Graduate and above=1; else=0) +-0.606 (developed =1;else=0).

Now the results show the slope coefficients (for landholding size) in the above equation representing change in the log odds of being in self-employed in agriculture versus casual labourer in agriculture for a person with an increase of one hectare of land. The significance of the parameter estimates can be assessed through standard errors of the parameters.

However, we follow the most common method of interpretation of logit i.e. through odds ratio. The closer is the odds ratio to 1.0, the more the independent variable's categories are (Example: landholding size does not matter in this case in deciding the choice of occupation for the workers between self-employed in agriculture versus casual labourer in agriculture) independent of the dependent variable, with 1.0 stating full statistical independence. For example, if the logit b1=2.00 as in the case of landholding size in the above equation, then the odds ratio (RRR) is 7.47, and we may put it that when the independent variable increases one unit, the odds that the dependent i.e. self-employed in agriculture increases by a factor of 7.47 compared to casual labourer in agriculture, when other variables are controlled.

Now we shall take independent variable under different groups:

Influence of Physical Capital on Choice of Type of Employment: Except casual labour in non-agriculture, rest of the categories have positive association with the asset ownership i.e. with landholding size. Compared to casual labour in agriculture, the magnitude of the coefficient is large in regular employed in agriculture and non-agriculture and low for the self-employed in non-agriculture. This reflects the fact that most of the self-employed in non- agriculture were not well-off in rural Uttar Pradesh compared to self-employed in agriculture. But it establishes that they are well-off compared to their counterparts as casual labourers in agriculture or non-agriculture.

The probability of self-employment and regular employment in agriculture increases as one possesses more land. On the other hand, probability of self-employment or regular employment in non-agriculture reduces with the increase in the size of landholding.

Influence of Human Capital on Choice of Type of Employment: For the evaluation of effect of human capital we have calculated education level dummies to show that the workers' educational attainments which are demarcated as literate but below primary, primary, middle and secondary, higher secondary and graduate and above and compared them with illiterates.

However, a perusal of the results shows that there is a significant difference in the magnitude of coefficient. As for the regular employed in non-agriculture the magnitude of coefficient is higher followed by the self-employed in non-agriculture, and casual labour in non-agriculture. Lower coefficients are reported in the case of self-employed in agriculture. The importance of having education up to higher secondary level is high in the case of all non-agricultural occupations, compared to agricultural sector. As seen from the Table we find that the magnitude of coefficient increases as one moves up the ladder of educational levels from below primary level. Graduate and above category has a significant positive relationship except casual labourer in non-agriculture. The coefficients are higher in the regular employed in non-agriculture, followed by the self-employed in non-agriculture and the least could be captured in self-employed in agriculture. This definitely points out that pursuit of education definitely increases possibilities of being absorbed into regular employment and self-employment in non-agricultural sector in rural Uttar Pradesh.

Table 8: Parameter Estimates of Multinominal Regression of Type of Employment Choice Model (Casual Labourer in Agriculture as Comparison Group)

Occupational choice	Self Emp in Agriculture			Self Emp in Non-Agriculture			Regular Wage in Agriculture			Regular Wage in Non-Agriculture			Casual Labourer in Non-Agriculture		
Occupational choice	Coef.	Std.Err.	RRR	Coef.	Std.Err.	RRR	Coef.	Std.Err.	RRR	Coef.	Std.Err.	RRR	Coef.	Std.Err.	RRR
Landholding size	2.011	0.134	7.472	0.706	0.139	2.025	1.522	0.310	4.580	1.411	0.140	4.102	-0.947	0.171	0.388
Sex of a person (male=1, else=0)	0.058	0.115	1.060	0.843	0.129	2.324	1.816	1.060	6.146	-0.139	0.166	0.870	1.985	0.152	7.283
Age of worker (Experience)	0.606	0.075	1.833	0.338	0.076	1.401	0.373	0.368	1.452	0.329	0.095	1.389	-0.004	0.078	0.996
ST =1; else=0	-2.458	0.506	0.086	-1.682	0.493	0.186	1.704	1.305	5.498	-1.116	0.599	0.328	-1.202	0.503	0.301
SC=1;else=0	-1.584	0.182	0.205	-1.504	0.186	0.222	0.255	0.907	1.290	-1.244	0.206	0.288	-0.234	0.198	0.792
OBC=1;else=0	-0.584	0.170	0.558	-0.471	0.171	0.625	0.455	0.800	1.577	-0.753	0.190	0.471	-0.138	0.189	0.871
Non-Hindu =1; else=0	-0.478	0.138	0.620	0.432	0.135	1.540	0.995	0.583	2.705	-0.305	0.190	0.737	-0.390	0.147	0.677
Below primary=1;else=0	0.140	0.169	1.151	0.470	0.170	1.599	-0.678	1.062	0.508	1.181	0.259	3.258	0.134	0.168	1.144
Primary=1;else=0	0.579	0.155	1.784	0.957	0.157	2.604	-2.934	1.530	0.000	1.696	0.225	5.449	0.356	0.156	1.427
Middle=1;else=0	0.777	0.141	2.174	1.063	0.144	2.895	0.353	0.630	1.424	1.991	0.203	7.324	0.294	0.144	1.342
Higher Secondary=1; else=0	1.240	0.239	3.456	1.596	0.242	4.933	0.830	0.839	2.293	2.736	0.285	15.419	0.522	0.252	1.685
Graduate &above=1;else=0	1.133	0.224	3.106	1.793	0.226	6.008	0.710	0.841	2.034	4.010	0.254	55.157	-0.283	0.263	0.753
Developed District=1; else=0	-0.606	0.097	0.546	-0.612	0.100	0.542	-0.033	0.496	0.968	-0.417	0.120	0.659	-0.485	0.101	0.616
_cons	-0.068	0.295		-0.363	0.305		-7.235	1.717		-1.856	0.379		-0.330	0.325	

(Occupation choice==Casual Labour in Agriculture)

Influence of Other Socio-economic Variables on the Choice of Type of Employment: Caste politics is strong in rural areas of Uttar Pradesh which is well-depicted by our data. Persons belonging to ST & SC categories are seen to be engaged as self-employed in agriculture and are less likely to be engaged as self-employed or casual labourers in non-agriculture, also as casual labourers in agriculture. Even OBCs are seen segmented in the labour market. Persons belonging to ST, SC and OBC categories are less likely to be absorbed in all types of employment except as regular employees in agriculture. This reflects the caste politics of the State that SC, ST and OBC persons are employed as casual labourers or regular employed in agriculture compared to all other types of employment. They are unlikely to be found in self-employed in agriculture and self-employed in non-agriculture as the coefficients are negative for both the types.

The probability of females being engaged as self-employed or regular employed in non-agriculture is seen to be more rather than being self-employed and regular employed in agriculture and casual labourers in non-agriculture.

Religion also has a role in labour market which could be seen in rural Uttar Pradesh. The probability of non-Hindu workers being self-employed in non-agriculture is significantly higher compared to being casual labourers in agriculture. Even non-Hindus are seen engaged in regular employed in agriculture compared to Hindus.

Besides this, the status of development of districts also influences the labour market. Workers from the developed regions are seen spread in all the segments of the labour market with significantly negative association. This indicates that workers belonging to underdeveloped region face less probability of being engaged in non-agricultural sector as compared to developed region.

Taking of all independent variables together (landholding size, sex of the worker, age showing experience, social groups, religion, educational pursuits, and backwardness of the region) explains about 27.08 per cent of variation in the occupational choice in the labour market.

Conclusion and Policy Options

This paper tried to shed focus on the interrelationship between choice of workers' employment and other socio-economic and regional factors of the workers in rural Uttar Pradesh. The share of self-employed in agriculture is 50.1 per cent and casual labourers are 29 per cent in rural Uttar Pradesh. Self-employed in non-agriculture is around 16 per cent. Regular employed in agriculture is lower than regular employed in non-agricultural sector. There is an urgent requirement to boost non-agricultural and regular segment of the rural economy so that workers are diversified to much better remunerative occupations and saved from the havoc of less social security and low-paying operations in the labour market. Each State needs revamping of policies to chart

diversification so that fruits of it fall in the lap of those toiling hard which will ultimately help uplift the economy away from the clutches of backwardness. Another angle that needs attention is that educational level has a statistically significant association on the choice of employment especially in non-agriculture and regular employment. The policy required is to spread education at least up to primary level among large sections of poor and casual labourers in rural areas so that they are able to reap the benefits from development. The wages increase with education and hence the casual labourers' drudgery could be dealt with. Table 7 shows that as odds ratio of up to primary educated persons increases to be employed in superior employment like self-employed and regular employed compared to casual labourers.

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