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Trends of Labour Force Participation Rate in Rajasthan and its Major Determinant Factors

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ABSTRACT

This study is analysing trends in the Labour force participation rate (LFPR) in Rajasthan from 1991 to 2020-21 finds out major factors determining labour force participation for a person residing in Rajasthan. For this NSSO data of different rounds is used to understand the LFPR trends in rural and urban Rajasthan. This paper uses a parametric logistic regression to identify the main factors associated with the probability of participating in the labour force. The regression has been applied to extracted unit-level household data of PLFS 2020-21 of Rajasthan. The results indicate that belonging to a large family size, being a female, and belonging to a middle level of income earning family are all factors that negatively impact the probability of being in the labour market. However, years in education, being married and belonging to a family with more jobs positively impact the probability of being in the labour market. Based on these empirical results, the paper suggests policy options to overcome the labour market's main challenges. These policies focus on developing a sustainable strategy for increasing the labour force participation rate in rural and urban Rajasthan, empowering females in rural and urban Rajasthan, improving working conditions particularly for females and improving education quality and encouraging enrolment in higher education.

Keywords**: Logit Model, Labourforce ,Odd Ratio, Rajasthan, LFPR, Working Age.**

INTRODUCTION

Rajasthan is a state located in the northwest region of India. It is the largest state in the country by area and has a population of over 68 million people. The state is known for its rich cultural heritage, with several important historical and cultural sites located within its borders.

The economy of Rajasthan is diverse, with agriculture, manufacturing, and service sectors all contributing to its overall GDP. The main crops grown in the state include wheat, maize, rice, and sugarcane. Rajasthan is also home to a number of important industries, including textiles, cement, and chemicals.

The labour market in Rajasthan is diverse, with a mix of skilled and unskilled workers. The state has a large informal sector, with many workers employed in small-scale industries, agriculture, and the informal service sector. The formal sector, which includes government and private sector employment, is also an important source of employment in the state. The state government has implemented various policies and schemes to promote employment and skill development in the state, including the Rajasthan Skill and Livelihoods Development Corporation and the Rajasthan Skill and Employment Promotion Scheme. However, challenges such as limited access to education and training, limited job opportunities, and low wages continue to impact the labour market in the state.

Employment is a key factor in determining an individual's economic well-being and quality of life. In the state of Rajasthan, there are several factors that can influence an individual's employability and their ability to secure and maintain employment.

Overall, social, cultural, and educational factors can have a significant impact on labour force participation in Rajasthan. These factors can shape the experiences and opportunities of individuals in the job market and can influence their decisions about work and employment.

So this is very important to understand the situation of Labour Force Participation Rate (LFPR) of rural and urban Rajasthan intensively. Such study can help understand the changing trends of LFPR and major factors affecting labour force.

LITERATURE REVIEW

A review of the literature on determinants of labour force participation in India reveals that education level is a key predictor of participation. Studies have consistently found that individuals with higher levels of education are more likely to participate in the labour force, particularly in high-skilled

occupations (Krishnan and Selvaraj, 2013; Mishra and Singh, 2016). The relationship between education and labour force participation may be due to the fact that education enhances an individual's human capital, making them more competitive in the job market (Mincer, 1958).

Another important determinant of labour force participation in India is gender. Research has consistently found that men are more likely to participate in the labour force compared to women (Singh and Bedi ,2022; Bhagat and Sharma, 2014; Gaiha and Kulkarni, 2017). This gender gap in labour force participation may be due to a number of factors, including cultural and societal norms that discourage women's participation in the labour market, as well as the availability of childcare and other support systems for working women (Mukhopadhyay, 2015).

The economic conditions in a given region can also influence labour force participation in India. During times of economic growth, labour force participation tends to increase as job opportunities become more plentiful (Mukhopadhyay, 2015). Conversely, during times of economic downturn, labour force participation may decrease as individuals become discouraged and exit the labour market (Santos and Mohapatra, 2012). Additionally, the availability of certain types of welfare programs, such as the Mahatma Gandhi National Rural Employment Guarantee Act, has been found to increase labour force participation in rural areas of India (Dreze and Khera, 2010).

The type of work available in a given region can also influence labour force participation. Studies have found that the availability of agricultural work is positively related to labour force participation in rural areas of India (Dreze and Khera, 2010). In urban areas, the availability of manufacturing and service sector jobs has been found to be positively related to labour force participation (Mukhopadhyay, 2015).

Finally, social and demographic factors, such as caste and religion, can influence labour force participation in India. Research has found that individuals belonging to certain caste groups, such as the Scheduled Castes and Scheduled Tribes, are less likely to participate in the labour force compared to other groups (Bhagat and Sharma, 2014). Similarly, certain religious groups, such as Muslims, have been found to have lower labour force participation rates compared to other groups (Gaiha and Kulkarni, 2017). Understanding the role of these social and demographic factors in shaping labour force participation in India can be important for policymakers seeking to increase participation rates.

The literature survey shows that many socio-economic factors determine the labour force participation. On different location, culture and socio-economic conditions at different time period these factors changes. As we know that Rajasthan has a unique socio, economic and cultural characteristics. Doing this study will enhance our knowledge to understand labour market.

Objectives of the paper

1. To analyse the trends of LFPR in rural and urban Rajasthan after economic reform in 1991.
2. To find out the important factors for determining LFP in Rajasthan during 2020-21

Hypothesis of the Paper

- We predict that education level will have a negative effect on labour force participation, such that individuals with higher levels of education will be less likely to participate in the labour force. The null hypothesis is that education level has no effect on labour force participation, while the alternative hypothesis is that education level has a negative effect on labour force participation.
- We expect that the number of jobs in a household will positively influence labour force participation, with households having more jobs being more likely to have members in the labour force. The null hypothesis is that the number of jobs in a household has no effect on labour force participation, while the alternative hypothesis is that the number of jobs in a household has a positive effect on labour force participation.
- Based on previous research, we hypothesize that marital status will be positively related to labour force participation, with married individuals being more likely to participate in the labour force compared to unmarried individuals. The null hypothesis is that marital status has no effect on labour force participation, while the alternative hypothesis is that marital status has a positive effect on labour force participation.
- We predict that gender will be significantly related to labour force participation, such that men will be more likely to participate in the labour force compared to women. The null hypothesis is that gender has no effect on labour force participation, while the alternative hypothesis is that men are more likely to participate in the labour force compared to women.
- We expect that location (rural vs. urban) will have an effect on labour force participation, such that individuals living in urban areas will be less likely to participate in the labour force compared to those living in rural areas. The null hypothesis is that location has no effect on labour force participation, while the alternative hypothesis is that location has an effect on labour force participation, with urban residents being less likely to participate in the labour force compared to rural residents.

Research methodology and data

This analysis is based on secondary data provided by MOSPI .Te extraction of this data is done using appropriate software. To understand the trends in LFPR per thousand, The NSSO data starting from 50th round to latest by the Periodic Labour Force Survey (PLFS) 2020-21 on Employment and Unemployment is used.

To understand the determinant of LFPR, latest PLFS annual data of the year 2020-21 is used This paper uses the logit model in order to analyze the factors determining labour force participation for the working-age group in Rajasthan. The logit model has been run separately for rural and urban area also. The factors influencing the labour force participation include the size of the family, years spent in education, number of jobs, gender, social catagory etc.

Basic Description of the Variables and Mathematical form used for Logit Model are:

Labour force participation is a qualitative characteristic. An observation consists of noting whether the characteristic is present. Thus, the dependent variable, designated as Y, is dichotomous and takes a value of 1 if the family member among age of 15-64 year had a job or was looking for work and a value of 0 if not in the labour force.

Dependent Variable:

- Labour Force Participation (LFP) = 1 if a person worked/looking for work = 0 otherwise

The factors influencing the labour force participation include (Independent Variables):

- Family Size
- Number of Jobs in the family
- Income Group (dummy variable) 0-40, 40-80 and Top 20 Percentile based on per capita consumption level.
- Age Group (dummy variable) 15-29, 30-44 and 45-64 age groups
- Marital status (dummy variable) Unmarried, Currently Married and Widow/Divorcee
- Social Group (dummy variable) SCST, OBC and General Catagories
- Sector (dummy variable) Rural/Urban
- Gender (dummy variable) Male/Female

Logit Model for Labour Force Participation of persons in Rajasthan:

$$L_i = log\left[\frac{P_i}{1-P_i}\right] = \alpha + \beta_1(\text{FamilySize}) + \beta_2(\text{YearinEducation}) + \beta_3(\text{No. ofJobs}) + \beta_4(40-80/0-40\text{Percentile}) + \beta_5(\text{Top}20/0-40\text{Percentile}) + \beta_6(30-44/15-29\text{Age}) + \beta_7(45-64/15-29\text{Age}) + \beta_8(\text{Married/Unmarried}) + \beta_9(\text{Widow/Unmarried}) + \beta_{10}(\text{OBC/SCST}) + \beta_{11}(\text{General/SCST}) + \beta_{12}(\text{Female/Male}) + \beta_{13}(\text{Urban/Rural})$$

The main analysis undertaken in this paper is based on the marginal effect at mean. It is important to emphasize here that the marginal effect at mean is estimated in such cases when the magnitude is important to be observed.

Result Analysis

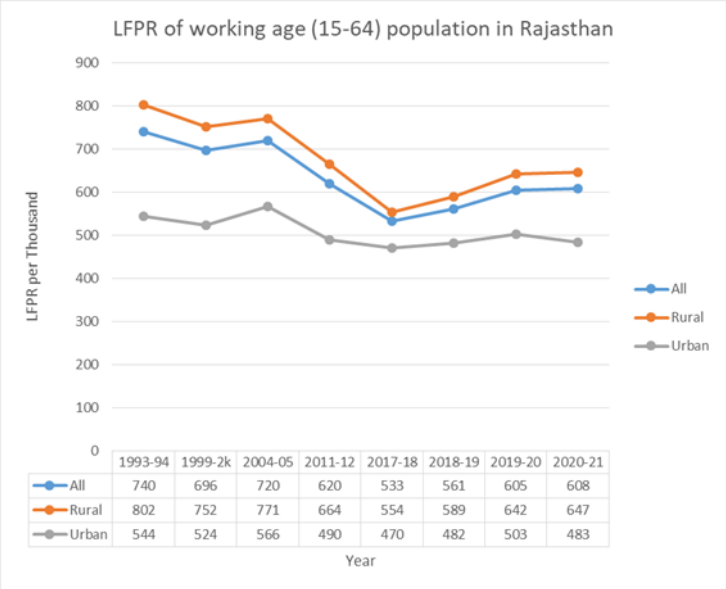
Trends of LFPR in Rajasthan

The graph 1 shows the data on the labour force participation rate (LFPR) in Rajasthan for various years. The LFPR is a measure of the percentage of the working-age population that is actively participating in the labour force, either by working or actively seeking work. The table shows data for the state of Rajasthan as a whole, as well as data for the rural and urban areas within the state.

The graph shows that the LFPR in Rajasthan has generally been decreasing over time. In 1993-94, the LFPR for the state as a whole was 740 per 1000 population. This dropped to 696 in 1999-2000 and then increased slightly to 720 in 2004-05. However, it then declined to 620 in 2011-12 and further to 533 in 2017-18. In the following years, there was a slight increase in the LFPR, with it reaching 605 in 2019-20 and 608 in 2020-21.

The graph also shows that the LFPR tends to be higher in rural areas compared to urban areas. For example, in 1993-94, the LFPR in rural areas was 802 per 1000 population, while in urban areas it was 544 per 1000 population. This trend has generally held true over time, with the LFPR in rural areas generally being higher than in urban areas..

Graph 1



Determinant of LFPR

Table:1 is the results of a logistic regression analysis examining the factors that influence labour force participation in Rajasthan. The analysis has been conducted separately for rural and urban areas, and the overall results for Rajasthan are also presented. The detailed result of rural, urban and all of Rajasthan presented in the appendix.

Table:1 Odds Ratio for a Person for Labour Force Participation in Rajasthan

	(1)	(2)	(3)
VARIABLES	Rural	Urban	Rural+Urban
LFPR	.	.	.
Family Size	0.681***	0.708***	0.702***
Year in Education	0.966***	1.048***	0.985***
No. of Jobs	3.699***	3.552***	3.401***
40-80/0-40 Percentile	0.911	0.944	0.924
Top 20/0-40 Percentile	1.122	1.013	1.130
30-44/15-29 Age	6.181***	4.535***	4.855***
45-64/15-29 Age	2.306***	1.590***	1.875***
Married/Unmarried	14.467***	5.536***	9.925***
Widow/Unmarried	8.230***	10.581***	8.636***
OBC/SCST	0.828***	0.652***	0.770***
General/SCST	0.681***	0.538***	0.648***
Female/Male	0.055***	0.023***	0.040***
Urban/Rural			0.754***
Constant	0.435***	0.627***	0.709***

Observations	8,329	5,478	13,807

*** p<0.01, ** p<0.05, * p<0.1

Note: Logit results are estimated from unit level Household data of PLFS 2020-21

The result in the above Table 1 of determining factors of LFP has very interesting findings. Here is the detail of each explanatory variables which is effecting positively or negatively LFP for an individual in Rajasthan.

"Family Size" is a continuous variable measuring the number of people in the household. The logit odd ratio of 0.702 for this variable indicates that having a larger family size is associated with a lower likelihood of participating in the labour force in Rajasthan ($p < 0.01$). The joint family concept is very popular in rural Rajasthan and most take pride in being a part of such families. But our results clearly highlight that the LFPRis negatively and significantly adversely affected by the number of family members in the household (Table 1). The odd ratio in both the rural and the urban area also confirm the same conclusion of Family Size on labour force participation.

"Years in Education" is a continuous variable measuring the number of years of education an individual has completed. The logit odd ratio of 0.966 for this variable indicates that having more years of education is associated with a lower likelihood of participating in the labour force in rural Rajasthan ($p < 0.01$). However in Urban area, The logit odd ratio of 1.048 for this variable indicates that having more years of education is associated with a higher likelihood of participating in the labour force. Here years of Education have different effect in rural area and in urban Rajasthan.

"No.of Jobs in HH" is a continuous variable measuring the number of jobs in the household. The logit odd ratio of 3.699 for this variable indicates that having more jobs in the household is strongly associated with a higher likelihood of participating in the labour force in rural Rajasthan ($p < 0.01$) as well as in Urban Rajasthan. The logit ratio in Urban area is 3.552.

"Poorest40", **"Medium"**, and **"Top20"** are dummy variables indicating which income percentile an individual belongs to. The logit odd ratios of 1, 0.911, and 1.122 for these variables, respectively, indicate that individuals in the top 20 percentile have a higher likelihood of participating in the labour force in rural Rajasthan compared to those in the poorest 40 percentile, while those in the medium percentile have a lower likelihood of participating in the labour force compared to those in the poorest 40 percentile ($p > 0.1$ for both comparisons). All most same conclusion applies in urban Rajasthan.

"**15 to 29** age", "**30 to 44** age", and "**44 and above** age" are dummy variables indicating which age group an individual belongs to. The logit odd ratios of 1, 6.181, and 2.306 for these variables, respectively, indicate that individuals in the 30-44 age group have a higher likelihood of participating in the labour force in rural Rajasthan compared to those in the 15-29 age group, while those in the 45-64 age group have a lower likelihood of participating in the labour force compared to those in the 15-29 age group ($p < 0.01$ for both comparisons). Urban Rajasthan and over all Rajasthan coefficient also explain the conclusion about age group.

"**Unmarried**", "**Married**", and "**Others(Widow or Divorcee)**" are dummy variables indicating the marital status of an individual. The logit odd ratios of 1, 14.467, and 8.23 for these variables, respectively, indicate that being married is strongly associated with a higher likelihood of participating in the labour force in rural Rajasthan compared to being unmarried, while being widowed or divorced is associated with a lower likelihood of participating in the labour force compared to being unmarried ($p < 0.01$ for both comparisons). In urban Rajasthan,The logit odd ratios of 1, 5.536, and 10.581 for these variables. It indicate compared to being unmarried, while being widowed or divorced is associated with a higher likelihood of participating in the labour force compared to being unmarried ($p < 0.01$ for both comparisons). This may be because that widows or divorcee being a valunerablegroup cannot afford to without participate in the labour force in urban area.

"**SCST**", "**OBC**", and "**General**" are dummy variables indicating the caste group of an individual. The logit odd ratios of 1, 0.828, and 0.681 for these variables, respectively, indicate that individuals belonging to the OBC caste group have a lower likelihood of participating in the labour force in rural Rajasthan compared to those belonging to the SCST caste group, while those belonging to the general caste group have a lower likelihood of participating in the labour force compared to those belonging to the SCST caste group ($p < 0.01$ for both comparisons). The SCST person belongs to low-earning sources comparative to General and OBC categories and they cannot afford to participate in the labour force

"Male" and **"Female"** are dummy variables indicating the gender of an individual. The logit odd ratios of 1 and 0.055 for these variables. This shows that in rural Rajasthan Female have a very low likelihood of participating in the labour force compared to male. In urban Rajasthan situation for female to participate in labour force is more worst. Here role of government is required to make appropriate policies to enhance female participation in the labour force.

"**Rural**" and "**Urban"** are dummy variables indicating the residence location of an individual. Those living in urban areas have a 24.6% decrease in the odds of being in the labour force compared to those living in rural areas. This relationship is statistically significant (p-value = 0).

Conclusion

The trends of LFPR showing decline in rural and urban Rajasthan among working age population. However decline in LFPR of rural Rajasthan more fast than urban area but still it is higher than urban.

The Logit result shows that several factors are significantly associated with labour force participation in Rajasthan. For example, an increase in the number of jobs is associated with an increase in the probability of labour force participation, while an increase in family size is associated with a decrease in the probability of labour force participation. Other factors that are significantly associated with labour force participation include education level, age, marital status, caste, and gender.

References

1. Singh, Ajad andBedi J. S.. " Gender Disparities In LFPR For Working-Age " International Research Journal of Modernization in Engineering Technology and Science (IRJMETS) vol 04. Issue 05 (2022): 4031-4038.
2. Mincer, Jacob. "Investment in human capital and personal income distribution." Journal of political economy 66, no. 4 (1958): 281-302.
3. Grapragasem, Selvaraj, Anbalagan Krishnan, and AzlinNorhainiMansor. "Current Trends in Malaysian Higher Education and the Effect on Education Policy and Practice: An Overview." International Journal of Higher Education 3, no. 1 (2014): 85-93.
4. Singh, Punam, and R. K. Mishra. "Determinants and impact of performance-related pay perception." Compensation & Benefits Review 48, no. 3-4 (2016): 66-80.
5. Gaiha, R., and V. S. Kulkarni. "Double Burden of Malnutrition." Reexamining the Coexistence of Undernutrition and Overweight Among Women in India. International Journal of Health Services 47, no. 1 (2017): 108-133.
6. Mukhopadhyay, Ujjaini. "Economic liberalization and gender inequality in the labour market: A theoretical approach." Review of Urban & Regional Development Studies 27, no. 1 (2015): 68-87.
7. Mohapatra, Kamala Kanta. "Women workers in informal sector in India: understanding the occupational vulnerability." International Journal of Humanities and Social Science 2, no. 21 (2012): 197-207.
8. Drèze, Jean, and ReetikaKhera. "The BPL census and a possible alternative." Economic and Political Weekly (2010): 54-63.

Appendix

Logit Results of Rural Rajasthan

LFPR	Odd ratio	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Family Size	.681	.013	-19.66	0	.655	.707	***
Years in Education	.966	.008	-4.13	0	.951	.982	***
No.of Jobs in HH	3.699	.147	32.82	0	3.421	3.999	***
Poorest40	1	.	.	.	.	.	
Medium	.911	.065	-1.30	.195	.791	1.049	
Top20	1.122	.124	1.03	.301	.902	1.394	
15 to 29 age	1	.	.	.	.	.	
30to44 age	6.181	.623	18.07	0	5.073	7.531	***
44andabove age	2.306	.249	7.74	0	1.866	2.849	***
Unmarried	1	.	.	.	.	.	
Married	14.467	1.506	25.67	0	11.797	17.74	***
Others(Widow or Divercee)	8.23	1.662	10.44	0	5.54	12.225	***
SCST	1	.	.	.	.	.	
OBC	.828	.059	-2.65	.008	.72	.952	***
General	.681	.071	-3.68	0	.556	.836	***
Male	1	.	.	.	.	.	
Female	.055	.005	-31.18	0	.046	.067	***
Constant	.435	.067	-5.42	0	.322	.588	***

Mean dependent var	0.634	SD dependent var	0.482
Pseudo r-squared	0.446	Number of obs	8329
Chi-square	4879.498	Prob > chi2	0.000
Akaike crit. (AIC)	6086.896	Bayesian crit. (BIC)	6178.253

**** p<.01, ** p<.05, * p<.1*

Logit Results of Urban Rajasthan

LFPR	Odd ratio	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Family Size	.708	.016	-15.59	0	.678	.74	***
Years in Education	1.048	.009	5.44	0	1.031	1.066	***

No.of Jobs in HH	3.552	.189	23.77	0	3.199	3.943	***
Poorest40	1	.	.	.	.	.	
Medium	.944	.093	-0.58	.562	.778	1.146	
Top20	1.013	.118	0.11	.909	.806	1.274	
15 to 29 age	1	.	.	.	.	.	
30to44 age	4.535	.575	11.91	0	3.536	5.815	***
44andabove age	1.59	.219	3.36	.001	1.213	2.083	***
Unmarried	1	.	.	.	.	.	
Married	5.536	.73	12.97	0	4.275	7.169	***
Others(Widow or Divercee)	10.581	2.568	9.72	0	6.575	17.027	***
SCST	1	.	.	.	.	.	
OBC	.652	.064	-4.37	0	.538	.79	***
General	.538	.062	-5.34	0	.428	.675	***
Male	1	.	.	.	.	.	
Female	.023	.002	-35.85	0	.019	.028	***
Constant .627		.111	-2.64	.008	.443	.887	***

Mean dependent var	0.476	SD dependent var	0.499
Pseudo r-squared	0.445	Number of obs	5478
Chi-square	3370.553	Prob > chi2	0.000
Akaike crit. (AIC)	4237.412	Bayesian crit. (BIC)	4323.322

**** p<.01, ** p<.05, * p<.1*

Logit Results of All Rajasthan (Rural +Urban)

LFPR	Odd ratio	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Family Size	.702	.01	-25.17	0	.682	.721	***
Years in Education	.985	.006	-2.72	.007	.974	.996	***
No.of Jobs in HH	3.401	.103	40.28	0	3.204	3.609	***
Poorest40	1	.	.	.	.	.	
Medium	.924	.052	-1.40	.162	.828	1.032	
Top20	1.13	.086	1.60	.109	.973	1.312	
15 to 29 age	1	.	.	.	.	.	
30to44 age	4.855	.363	21.12	0	4.193	5.621	***
44andabove age	1.875	.151	7.80	0	1.601	2.196	***
Unmarried	1	.	.	.	.	.	
Married	9.925	.793	28.73	0	8.486	11.607	***
Others(Widow or Divercee)	8.636	1.303	14.29	0	6.425	11.607	***
SCST	1	.	.	.	.	.	
OBC	.77	.043	-4.67	0	.69	.859	***
General	.648	.048	-5.86	0	.561	.749	***
Male	1	.	.	.	.	.	
Female	.04	.003	-47.51	0	.035	.046	***
Rural	1	.	.	.	.	.	
Urban	.754	.041	-5.20	0	.678	.839	***
Constant	.709	.078	-3.14	.002	.572	.879	***

Mean dependent var	0.572	SD dependent var	0.495
Pseudo r-squared	0.429	Number of obs	13807
Chi-square	8090.424	Prob > chi2	0.000
Akaike crit. (AIC)	10794.660	Bayesian crit. (BIC)	10900.121

**** p<.01, ** p<.05, * p<.1*