

Working Paper 223

**Waning Participation of Women in
Uttar Pradesh's Labour Market:
Some Proximate Determinants**

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August, 2020

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ABSTRACT

One of the most significant features of the Indian labour market has been falling labour force participation rates especially for women whose participation had always been hovering around half of the corresponding male figures. In the present context plethora of studies have focused on the declining income growth in agriculture sector and stagnation of employment with declining FLFPR. The paper looks at the trends in employment of women in Uttar Pradesh from 1971 to 2011 using data from different census rounds. Given the controversial results from NSSO's employment and unemployment surveys we rely on Census outcomes. In the context of the prevailing debate this paper seeks to answer the two major questions. i.e. which are the major economic activities/ sector in which women are employed, and what have been the trends in levels of employment of women in Uttar Pradesh? And what are the proximate factors that can provide explanation for low and declining levels of women's employment in Uttar Pradesh?

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1. Introduction

One of the most significant features of the Indian labour market has been falling labour force participation rates especially for women whose participation had always been hovering around half of the corresponding male figures. This phenomenon has its roots in the patriarchal nature of developing societies where women's role as a homemaker is not a conscious choice but a compulsory duty, thrust on her by society, family and spouse (Majumdar, 2011). Academician noted that the ratio of women in total population who either have a job or are actively looking for one- has been steadily falling since the 43rd round of the National Sample Survey Office (NSSO) survey, only registering a rise during the period 1999-2000 to 2004-05, before falling again in 2011-12. The FLFPR in India fell from 31.2 percent in 2011-12 to yet again spectacular fall to 23.3 percent in 2017-18 (EPW, 2019). Further it is documented that FLFPR for rural areas declined by more than 11 percentage points in 2017-18. Abraham (2009) and Himanshu (2011) argued that greater proportion of women took to employment on their own farms to make up for the losses in household incomes in agriculture due to agrarian crisis after the economic reforms. Some of these results have been counter intuitive and have garnered much controversy around the issue of female employment scenario. Although there has been a decrease in the labour force participation of rural males, the rate of decline was much sharper for rural women. This is quite baffling in a nation with huge demographic dividend of working population. Studies analyses this trend of low and declining female labour force participation and have attributed it to education and income effects (Rangarajan, Kaul and Seema, 2011; Abraham, 2013).

In the present context plethora of studies have focused on the declining income growth in agriculture sector and stagnation of employment with declining FLFPR. Due to agrarian distress men move out of agriculture (distress migration) sector leaving behind women to manage fields either as helpers or managers – is it feminization of agriculture or feminization of distress? Itishree et.al (2017) stated that this feminization has been taking place in context of a complex interplay of

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shrinking land holdings; degraded soils and water resources; declining accessibility agricultural inputs; distorted market incentives for choice of crop and technology; growing labour shortages and mechanization. The story differs here in Uttar Pradesh as Census 2011 very pertinently exemplify the waning female participation rates in the economy and rural sector.

The paper looks at the trends in employment of women in Uttar Pradesh from 1971 to 2011 using data from different census rounds. Given the controversial results from NSSO's employment and unemployment surveys we rely on Census outcomes. In the context of the prevailing debate this paper seeks to answer the following questions:

- a. Which are the major economic activities/ sector in which women are employed, and what have been the trends in levels of employment of women in Uttar Pradesh?
- b. What are the proximate factors that can provide explanation for low and declining levels of women's employment in Uttar Pradesh?

2. Data and Methodology

Our study analysed data from Primary Census Abstract (PCA) for decadal periods i.e. 1971, 1981, 1991, 2001 and 2011 with an intention to assess the trend and pattern of gendered workforce participation in both agriculture and non-agricultural activities. Dichotomy is made in the Census between 'cultivators' and 'agricultural labourers'. Cultivators are understood as those providing 'effective supervision or direction in cultivation' on land either owned or accessed via sharecropping or leasing arrangements and agricultural labourers are those who receive payments in terms of wage or in-kind payment for conducting labouring activities. These total number of cultivators and agricultural labourers when combined are agricultural workers or the total population engaged in farming. With the help of census data (district-level), we have tried to investigate the plausible factors that influence worker's participation in agriculture and non-agricultural activities. For our study, we have collated set of socio-economic and agricultural indicators for all the districts. Data set was arranged for Uttar Pradesh as districts of Uttarakhand were removed to make it comparable over the previous decades.

A panel data set for the period 2001-2011 was constructed by considering district-wise (70) variables such as Log of Net District domestic product, per capita income, percent rapes (crimes) to total rapes in UP, child women ratio, average size of land holding in each district, and area covered under food-grains, gross value of agricultural produce, percent SC population, percent hindus, percent muslims, female literacy rates, cropping intensity, electricity consumption in agriculture, electric pumpsets, availability of gross area sown per tractor, percent share of agricultural NDDP, percent of NDDP in non-agriculture, number of small scale industries per lakh of population and total length of pucca road. These variables were chosen based on the available literature reviewed and the district-level data available. Data sets for 70 districts of Uttar Pradesh

were collected from the Statistical Abstract of Uttar Pradesh and Department of Agriculture, respectively. The correlation thus obtained within the explanatory variables was checked and the variance inflation factor thus estimated show 1.20 which imply absence of multicollinearity in the data set

Factors presumed to influence women's work participation rates whether in both agriculture and non-agricultural activities has been dependent variables. Therefore, two separate models were formulated and the panel data in hand, a pooled (OLS) and Panel (fixed effect) regression model has been used for the current analysis. The equation used for the regression model thus is:

$$Y_{it} = \alpha + \beta_i X_{it} + \delta_i T_{it} + u_{it}$$

Where, Y_{it} is the dependent variable (female worker participation rates in agriculture and non-agriculture)

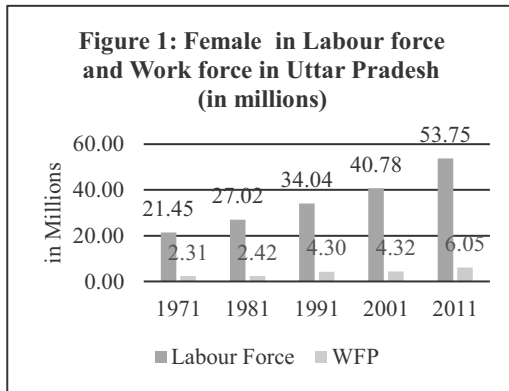
X_{it} spells all the independent variables, as explained above

T_{it} is the variable- time, fixed effect to capture time invariant.

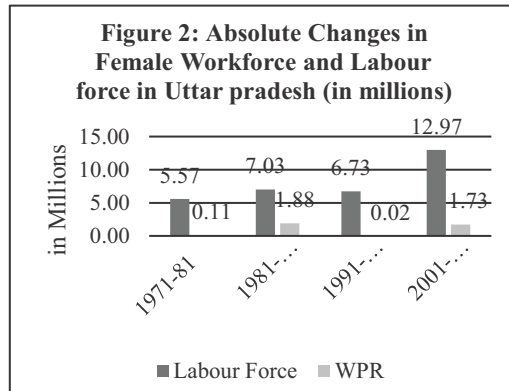
3. Changing Structure of Female Employment in Uttar Pradesh

a. Trends in Female in Labour force and Work force in Uttar Pradesh

Figure 1 shows a comparative picture of labour force and work force in Uttar Pradesh in absolute terms. Thus, analyzing the proportion of those in working age, that is LFP, we find that in 1971-81, 1981-91, 1991-2000 and 2001-2011, the absolute increase in female labour force was higher as compared to absolute increase in female WFP (Figure 3). The total labour force increased from 11.70 million in 1971-81 to 15.42 million in 1981-91, but the addition in labour force reduced in the decade 1991-2001 to 13.37 million which means that family planning efforts of the government have curtailed growth in population. But in the decade 2001-11 the labour force almost doubled the 2001 figures and simultaneously the work force also increased to 1.73 million.

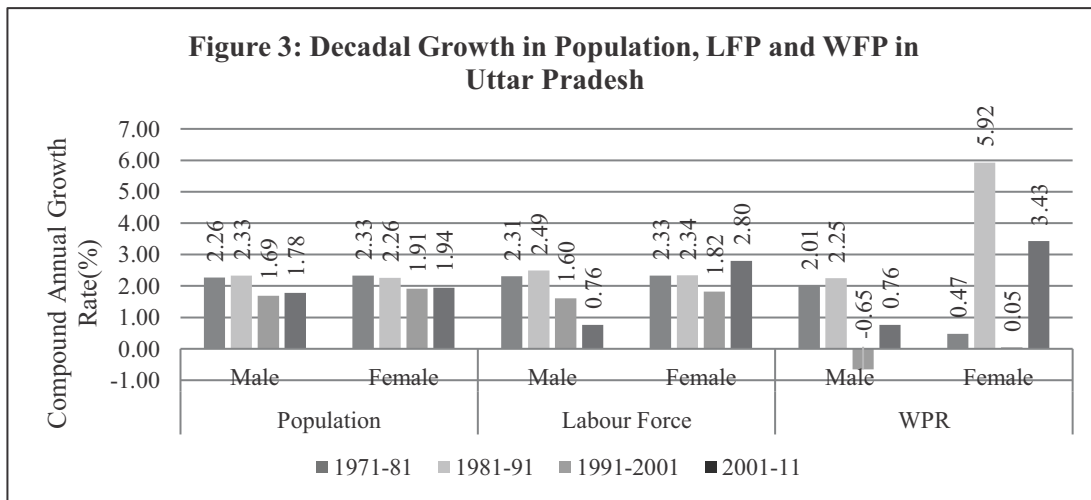


Source: Census of India different issues



Source: Census of India different issues

Now, looking at the proportion of those in working age (15-59) i.e. in LFP, we get that in 1971-81, 1981-91, 1991-2001 and 2001-2011, the absolute change in female labour force was higher than the corresponding data for work force (WFP).



Source: Census of India different issues

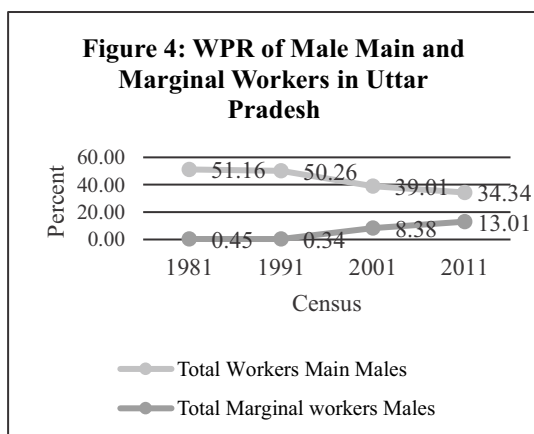
Our Census data set shows that over the selected decades from 1961 to 2011, the population growth was higher and faster as compared to growth of the workforce (Figure 3) thus indicating towards dearth of jobs in the State. Although population growth slowed in the period 2001-11 but increase in workforce could be observed i.e. in general the growth rate in WFP was still less when compared to the population growth - which is not a positive sign. Thus, in the state as a whole, while the population is projected to have grown at a little over 2.26 per cent per annum between 1981 and 1991, over the same period, the total workforce has increased at a rate of 2.31 per cent per annum and in the period 1991-2001 population growth was 1.69 percent whereas workforce grew at 1.60 percent - thus depicting negative trend strengthening the apprehension of reforms taking away employment opportunities. As can be noted, the estimates for female workers in 1991-2001 show virtually growth for women workers in total and rural Uttar Pradesh. But in 2001-2011, the situation is that growth rate is being doubled for women workforce in Uttar Pradesh.

b. Broad Trends in Work Participation Rates with Increase in Marginal Share

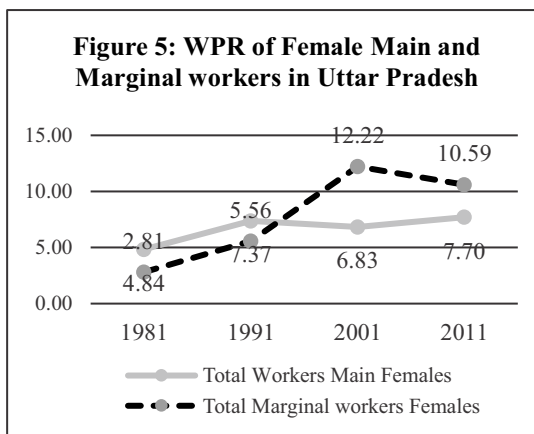
In this section we try to assess the trend of employment in the States' labour market based on the data collated from the Census. The Census of India defines a person who is employed for a major part of the year as being “Main workers”. If gainfully employed only for a part of the year, are described as being employed in the “Marginal workers”. One point to be noted is that males account for about 2/3rds or more of the workforce and the similarity in growth rates reflects that the females are not making big inroads into the labour market.

The anatomy of changes in work force participation, provided in Figure 4 and 5, mirror the changes in work force participation for male and female workers for Uttar Pradesh. The biggest change here was for main male workers who showed a continuous decline over the period. The work participation rate of male main workers has registered a decline over the period- some of which could be corroborated with a rise into educational participation especially amongst the 15-19 years age groups, which could obviously to be welcomed. But this is not enough for the explanation and it could be truly due to the absence of productive employment opportunities in the labour market. Thus, the decline in the growth of male main workers thus was countered by the increase in the share of male marginal workers, which is a definite pointer to fewer jobs being available over the years. It pertinently suggests that secure forms of employment are being replaced by less secure employment forms, a possibility which is also reiterated by the Census data.

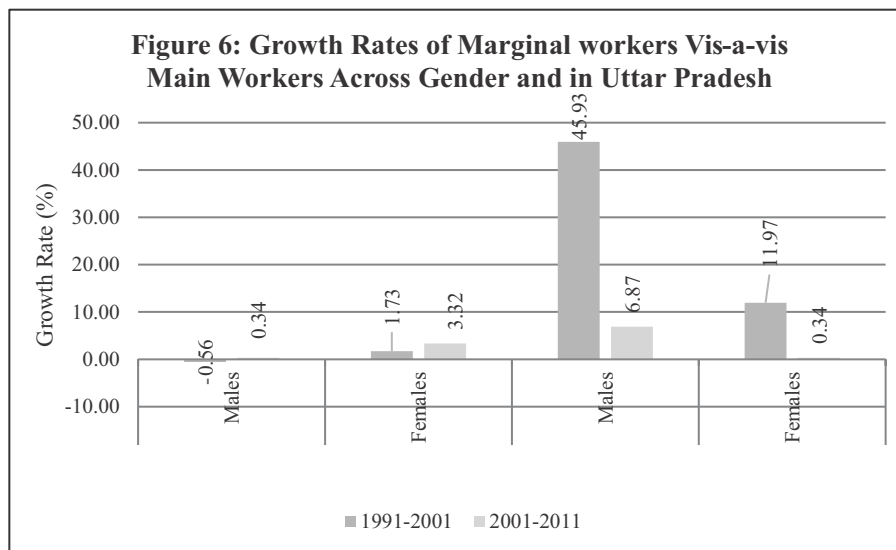
Further on the other hand, female work participation could be perceived to have increased from 2.81 percent in 1981 to 5.56 percent in 1991 to yet another increase in 2001 to 6.83 percent and to 7.70 percent in 2011. Women absorbed in marginal activities have registered an increase from 4.84 percent in 1981 to 12.22 percent in 2001 but declined to 10.59 percent in 2011- thus following the national trend.



Source: Census of India different issues



Source: Census of India different issues



Workers are dichotomized into main or marginal workers. Proportion of male main workers have declined giving space for marginal male workers. In contrast women main workers, have increased percentage wise but actual numbers have come down a little due to the increased proportion of marginal workers unless offset by population growth. Female participation in marginal work has also declined.

c. Declining Participation of Females in Agriculture

To begin with, it is useful to appreciate the variation in FWFP across Uttar Pradesh in agriculture and non-agricultural activities. Table 4 shows the labour force and work force trends in Uttar Pradesh for both male and female.

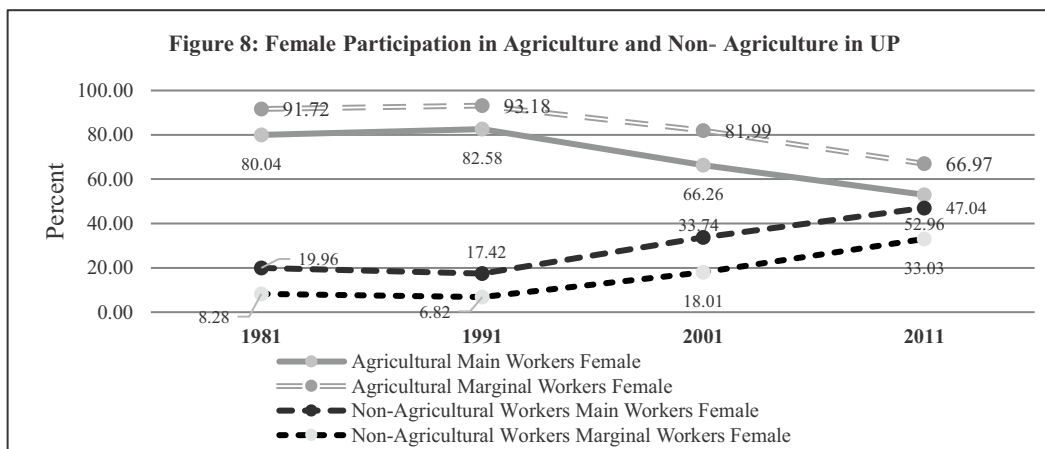
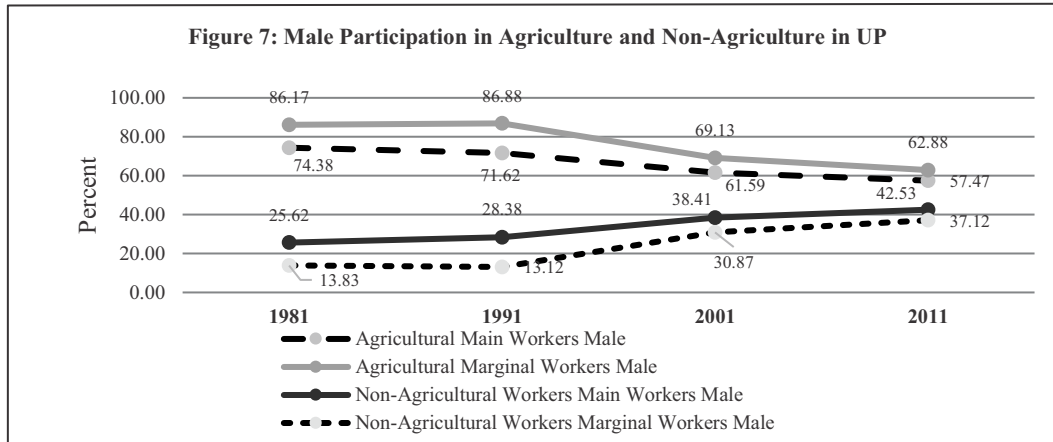
**Table 4: Gendered Work Participation Rates –
Agricultural and Non-Agricultural (%)**

Census	Agricultural Workers			Non-Agricultural Workers		
	Total Agriculture (%)	Male (%)	Female (%)	Total Non-Agriculture (%)	Male (%)	Female (%)
1981	74.80	74.38	80.04	25.20	25.62	19.96
1991	72.78	71.62	82.58	27.22	28.38	17.42
2001	62.18	61.59	66.26	37.82	38.41	33.74
2011	56.74	57.47	52.96	43.26	42.53	47.04

Source: Census of India different issues.

Neetha (2009) noted that the declining work participation rate of women has been the issue which has received much attention in the discussion on globalisation and its gendered implications in the country. In consonance with a declining employment structure, the participation rates in Uttar Pradesh show significant decline for both the sexes in rural areas

and that too as agricultural workers. There has been substantial decline in women's participation rate continuously from 1981 to the present 2011 in agriculture sector but all time high in 2011 could be observed in non-agricultural activities.



Source: Census of India different issues

Figure 7 & 8 shows the work participation rates on males and women in rural areas of Uttar Pradesh. Uttar Pradesh registered one of the lowest female work participation rates in the country. However, unlike the rest of the country, these rates have been observed to be rising, both as main and marginal non-agricultural workers. It could not be gauged as to how much this could be due to better enumeration of women's work, and how much could be the real trend. Even here, by far the more significant increase is in terms of marginal work. Thus, if this is indeed true (which of course requires further examination) then it suggests that inadequate enumeration of women's work in the latest sample round may not be the sufficient reason for the precarious drop, rather, the more pressing question that leaves us pondering - is that why women's work participation rates have been so low and still declining in Uttar Pradesh despite rapid economic growth and various other transformation in society.

d. Shifts Between Agriculture to Non-Agriculture in Rural Uttar Pradesh

Two issues that emerge regarding the female work force participation rates are: firstly, the increased participation of women in rural areas after the post reform period of agricultural crisis could be asserted as opportunity for female employment, though termed as “Distress Driven”. Secondly, an anatomy of the participation rates across main and marginal status highlights that the increased participation of women is basically because of influx of women as workers in the marginal category. This increased number of women in marginal status in rural areas means that they do not have alternative opportunities at their disposal for long term regular employment. However, to understand these changes and its implications one must focus on disaggregate level scenario which could reveal important insights into the dynamics of the labour market processes at work which push more and more rural women to employment in marginal category.

Table 5: Work Participation Rates of Main Workers in Rural UP (%)

Census	Cultivators		Agricultural Labourers		Non-Agricultural		Rural Main Workers to Total Main Workers	
	Male	Female	Male	Female	Male	Female	Male	Female
1981	70.35	40.36	16.13	48.14	13.51	11.50	82.96	88.64
1991	65.07	45.07	19.18	45.43	15.75	9.51	81.58	89.30
2001	59.30	49.96	16.90	26.18	23.80	23.86	78.54	85.38
2011	47.82	31.49	25.91	32.98	26.27	35.52	74.32	79.37

Source: Census of India, Different Years.

Census of India records workforce participation under four main categories viz; cultivators, agricultural labourers, household industry and other workers over the period thus showing us the changing profile of authoritative and autonomy of women engaged in agriculture. We know that agricultural labourers are the weaker lot as compared to cultivators. Table 5 and 6 below show that the both male and females are seen moving out as cultivators to other non-agricultural fields as workers. The numbers absorbed as agricultural labourers increased both for male and females whereas numbers of cultivators are seen to decline. Over the period this decline in cultivator's category is found in both main and marginal worker's category but male agricultural labourers have registered an increase both as main and marginal workers and on the other hand the females agricultural labourers have declined as main workers (i.e. from 48.14 percent in 1961 to 32.98 percent in 2011) but increased as female agricultural

labourers in marginal workers category (i.e. from 33.62 percent in 1961 to 51.63 percent in 2011) in Uttar Pradesh.

Table 6: Work Participation Rates of Marginal Workers in Rural UP (%)

Census	Cultivators		Agricultural Labourers		Non-Agricultural		Rural Marginal Workers to Total Marginal Workers	
	Male	Female	Male	Female	Male	Female	Male	Female
1981	68.42	59.81	21.88	33.62	9.70	6.57	93.24	96.90
1991	62.54	59.78	27.73	35.02	9.73	5.20	90.23	95.85
2001	19.64	32.93	57.24	51.79	23.12	15.28	87.31	95.51
2011	16.42	21.18	54.59	51.63	28.98	27.19	84.83	89.94

Source: Census of India, Different Years.

e. Sectoral Shifts of Rural Work force in Uttar Pradesh

Table 7 compares the capacity of labour absorption in key sectors of the economy over the selected period. The occupational distribution of women in the rural workforce in Uttar Pradesh shows that women as main workers have remained concentrated in primary sector since 1971 to 2011. 91.1 percent women workers were in primary sector in 1971, which reduced to 88.8 percent in 1981, increased again to 90.9 percent in 1991 but then declining trend was observed since 2001 i.e. 81.68 percent in 2001 and yet again all-time low to 67.15 percent in 2011. The declining trend since 2001 is really worrying and gives food for thoughts to academicians and policy formulators.

Table 7: Occupational Distribution of Rural Workforce (Female) in Uttar Pradesh (%)

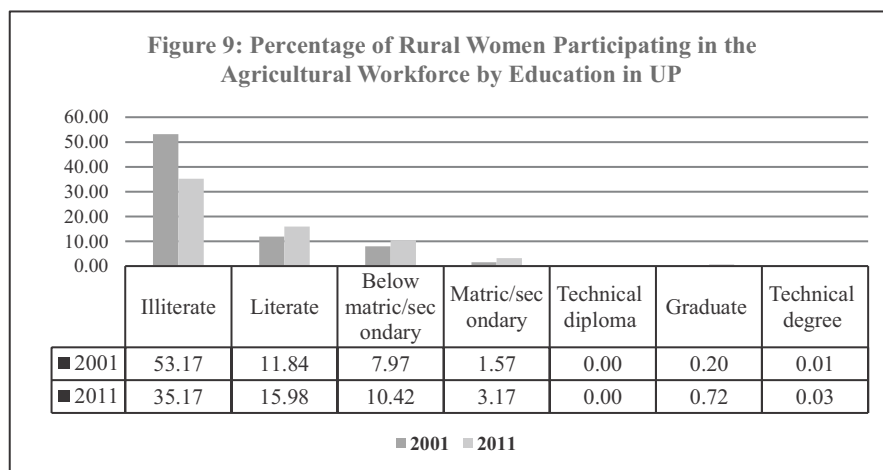
Sectors	1971	1981	1991	2001	2011
A. Primary Sector	91.11	88.85	90.98	81.68	67.15
Cultivators	30.89	40.36	45.06	49.96	31.49
Agricultural Labourers	59.71	48.13	45.42	26.17	32.98
Livestock & Mining and Quarrying	0.51	0.36	0.5	5.55	2.68
B. Secondary Sector	4.7	6.67	4.81	10.41	7.3
Manufacturing (HHs.)	3.79	4.65	2.78	7.65	4.3
Non-HHs Manufacturing	0.83	1.81	1.8	2.37	2.2
Construction	0.08	0.21	0.23	0.39	0.8
C. Tertiary Sector	4.2	4.49	3.21	7.86	25.55
Trade and Commerce	0.62	0.72	0.88	1.56	1.39
Transport Storage and Communication	0.09	0.05	0.06	0.13	0.17
Other Services	3.49	3.72	2.27	6.17	23.99
Total	100.0	100.0	100.0	100.0	100.0

Source: Census of India different issues

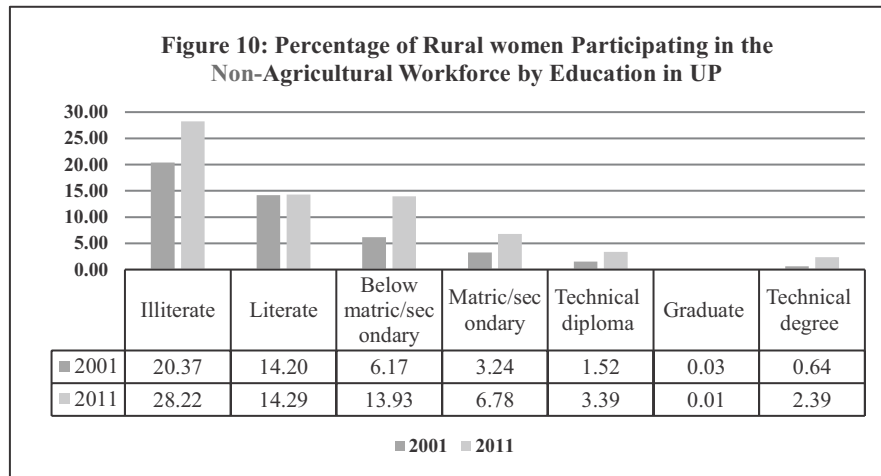
There is increased marginalization of the workforce and that too amongst men as compared to women. Absorption capacity of primary sector is seen to decline both for men and women, but the rate of decline observed is faster among the men as compared to women. There is yet another way of looking at the employment debacle in Uttar Pradesh by focusing on the fact that majority of rural persons are still engaged in agriculture and the shift of the male workers deserted agriculture and moved to non-agricultural sector being propelled due to agricultural crisis, whereas there was no significant and major shift of women from one sector to another. We find people abandoning agriculture in large numbers due to push and there was inadequate absorption in non-agriculture sector – thus turning aggregate employment to be negative. Major employment of women could be seen in agriculture as cultivators and agricultural labourers i.e. around 65 per cent in 2011 which has declined from around 90 per cent in 1991. This overall decline stems from the drop in women cultivators as the number of women as agricultural labourers has remained stagnant.

f. Education and WFPR

Rising educational enrolments do not explain the decline in women's employment (Desai, Deshmukh and Chouhan, 2018). It was understood that increase in enrolment would definitely explain the decline in women's work participation as younger lot would prefer to continue in school instead of joining the workforce or we may say after getting educated women are not willing to do farm jobs or they move to non-agricultural / marginal workers category. It is noted that secondary school enrolment has increased over the years and academicians account this for withdrawal of women from the work force. The participation of women in urban areas WFPR has increased but for rural areas their WFPR have registered a drastic decline and affects women of all ages- suggesting a deeper transformation than would be implied by the tradeoff between the time spent in school and the time spent working.



Source: Census of India different issues

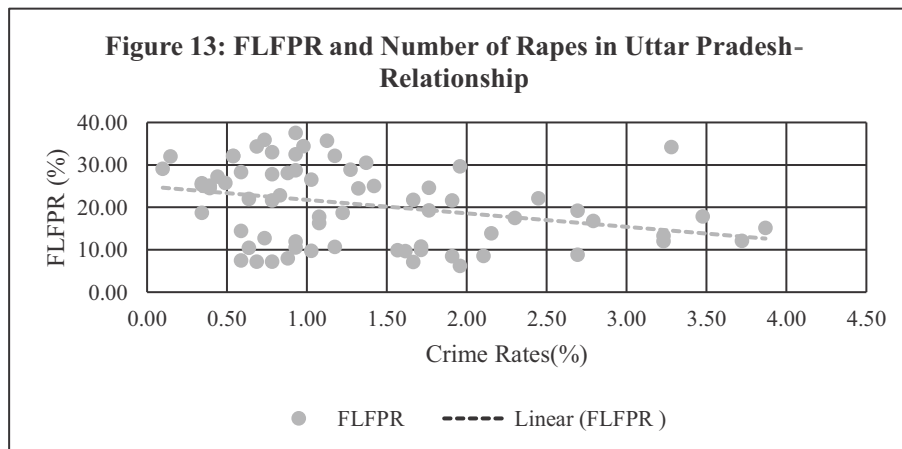


Source: Census of India different issues

h. Crimes and FLFPR in Uttar Pradesh

Often it is understood that the current occurrences of crimes against women discourages women from participating in the labour market in India (Chakraborty, Mukherjee, Rachapalli, and Saha, 2018). Siddique (2019) noted that “A potential contributory factor to low labour force participation may be fear of violence. Working age women in developing country labour markets might be particularly sensitive to media reports on sudden incidents of violence against (such as sexual assault and rape).

Considering this fact, we have taken percent of rapes as social deterrence- as social stigma is said to be attached to such cases. Such deterrence effect of such crimes is much stronger for women from conservative and low wage earner families. Here we estimated the extent to which the decline in FLFPR could be dispensed to increasing instances of crime against women. Our perception is that present increasing occurrences of crimes against women, leaves women with no option but to be less likely to work in regions where the perceived threat of sexual harassment against girls is higher.



Source: Census of Uttar Pradesh.

4. Analytical Framework

Traditionally, academia resounds with surreal talk of women's work participation since every female works within or outside their home, with or without payment, for production or self-consumption and for reproduction. But economic literature fails to accept this and defines 'work' in such a manner to exclude majority of those activities performed by women noted Mazumdar (2011)-following which officially female labour force participation is quite low which is the outcome of patriarchal roots of our society. Theoretical underpinning regarding female labour force participation has been extensively covered in the literature past and present (Mincer, 1962; Cain, 1965; Schultz, 1988; Goldin, 1995 and Mammen and Paxon 2000). According to neoclassical theory with increase in women's education women's labor force participation rate would rise. It is no doubt that more education makes one more productive, so increasing potential earnings, building inroads into the labor market and substituting employment for leisure or home labor. In India, low participation of women in the labour force is attributed to the lack of employment opportunities, rising educational levels and household incomes along with problems associated with measurement i.e. under reporting of women's work. To existing literature this study adds another angle of increasing crimes which deter female from joining the labour force. Studies have generally observed the established U-shaped relationship of women's education with their labor force participation (Reddy 1979; Sathar and Desai 2000; Das and Desai 2003; Kingdon and Unni 2001; Das 2006; Klasen and Pieters 2015), but they usually fail to take the next step of trying to explain it empirically (Chatterjee, Desai and Venneman, 2018). This is especially surprising since the downward sloping chunk of the curve is so counter-theoretical and two sets of explanations offered for these trends which have diametrically opposite policy implications, delineated as follows: firstly, growing household incomes reduces family's dependence on women's income and hence women from households with higher family income focus their attention on rearing their children and tending to the needs of family. Rising income result in voluntarily withdrawal of women from the workforce. Secondly, there has been decline in average size of landholdings with concomitant divisions in families and thus such crowding in agriculture reduces demand for women's labour and slow progression of non-farm activities makes it difficult for women to find jobs. Increase in mechanisation has also led to a decline in the demand for agricultural wage labour – women.

The explanation of low and declining FLPR focus around helix of cultural constraints which bestows higher status to women staying at home and other family income can act as a powerful deterrent to educated women's participation in the labour market. Depending on the viewpoint, the

policy discourse varies i.e. where patriarchal norms are less dominant, the substitution effect should overshadow the income effect (Brinton, Lee, and Parish 1995). While “economic factors largely determine male participation in employment, the factors that influence a woman's participation in work are varied and include reproductive, demographic, social, religious and cultural factors” (Srivastava and Srivastava 2010). The study would revolve around factors behind the declining female employment and focus on problems and constraints that women face with respect to their participation/ non-participation in the labour market. This study shall test some of these factors under broad headings like economic, demographic, and socio-cultural factors.

Demographic variables selected was child-women ratio looking at the impact of children's presence on women's non-domestic work and sex ratio which elaborates about presence of women in society. Socio cultural variables considered are literacy and presence of SC population. However, it is certainly paradoxical that, in a society which is well acknowledged for low participation of the women in the labour force and that too has been precariously declining. Perception of crime against women deters women's work force participation in India (Chakraborty, Mukherjee, Rachapalli, and Saha, 2018). Considering this fact, we have taken percent of rapes as social deterrence as social stigma is said to be attached to such cases.

Growth of agriculture output over the period in rural areas is taken as a proxy for higher income (Income growth). And as women are expected to take work for supplementing household income i.e. with increased agricultural output their participation rates may be affected negatively. Cropping intensity and index of agriculture modernization influence the demand for labour. These factors together increase the labour demand but render the agricultural operations male selective as these new techniques are generally literacy and skill oriented and therefore reduce the scope for female participation. Concentration of holdings is also expected to determine the demand for labour, but its impact is expected to be different for female cultivators and female agricultural labourers.

5. Proximate Determinants for Female Work Participation

This section seeks to identify the determinants of inter-district variations in the shares of female participation rates in agricultural and Non-agricultural operation in rural Uttar Pradesh. The first step here is to test whether pooling of data is necessary or not. The null hypothesis of probability test is OLS model verses the alternative one (fixed effects). The table 8 shows that in the fixed effects model the probability is 0.000, rejecting the null hypothesis of the all the district effects intercepts equal to zero. Thus, the probability test confirms the presence of district specific effects.

Although pooled (OLS) model is preferable for the present analysis, we have also used fixed

effects model because within mean showed much variation in different variables across the districts (Table 8). Hence, we have estimated both pooled and fixed effects equation to observe the effects of socio-economic as well as proximate variables on FLFPR in agriculture and Non-agriculture to compare the value of the regression coefficients. Table 8 depicts the results based on both

Table 8: Regression model: Social and Demographic Variables determining Women's participation in agriculture in Uttar Pradesh

Variables	OLS (Pooled)			(OLS (Fixed Effects Model)		
	Coef.	t	P>t	Coef.	t	P>t
Y1						
Hindu	3.501	3.810	0.000	1.284	0.384	0.880
Muslim	3.296	3.520	0.001	1.900	0.218	1.240
CWR	-0.002	-0.180	0.857	-0.014	0.002	0.002
Girls in HS	0.024	0.040	0.971	-0.572	0.116	0.116
Crimes Rate	-2.779	-3.590	0.000	-0.078	0.816	0.816
Sc	0.105	0.820	0.413	0.050	0.515	0.515
_cons	-321.058	-3.540	0.001	-112.181	0.442	0.442
R-squared	0.359			0.261		
Prob > F	0.000			0.003		

Source: Based on Census Data, 2001 & 2011.

Table 8 (in which pooled analysis is given) shows the result of regression of the socio-economic model. All the regressions have high R-square values. The R-square value is higher in the case of pooled (0.359) than in the fixed effects (0.261). Evaluating results, we find that socio-cultural variables determine female participation in agriculture to the extent of 43.7 percent. Among the six listed variables the presence of Schedule Caste population is the most insignificant and positively associated to female participation in agriculture thus substantiating our underpinning on the issue. Among women caste and religion make real difference to workforce participation rates as we find significant and positive association in both pooled model but not much in fixed effect mode implying that social norms and religious conservatism play a role in women participating in labour force. Crimes against women deter women from participating in the agriculture sector is proved as this variable is significant and negatively associated. Female literacy as thought hamper their participation in agricultural activities hence the coefficient is significant and negatively associated with women in agriculture (FWAPR). The presence of children restricts female in participation in agriculture. These results very distinctly bring out the importance of demographic and socio-cultural

factors in determining participation of females in the economy of Uttar Pradesh to the extent of 43.7 percent. Similar exercise for participation of women in non-agriculture activities show effect of religion and caste similar to the one above.

Table 9: Women in Non-Agriculture- Social factors

Y2	OLS (Pooled)			OLS (Fixed Effects Model)		
	Coef.	t	P>t	Coef.	t	P>t
Hindus	0.889	1.930	0.056	-0.943	-0.540	0.594
Muslim	0.932	1.980	0.050	-1.223	-0.670	0.506
CWR	0.013	1.590	0.114	0.006	0.570	0.572
Crimes Rates	0.024	0.060	0.952	-0.383	-0.940	0.349
SC	-0.080	-1.270	0.206	-0.048	-0.530	0.595
Literacy rate	0.308	6.080	0.000	0.478	8.160	0.000
_cons	-88.374	-1.940	0.055	94.735	0.540	0.589
R-squared	0.321			0.819		
Prob > F	0.000			0.000		

Source: Based on Census Data, 2001 & 2011.

Another indicator of the model “goodness to fit” is the 'P-value' which is presented in tables 9 & 10 & respectively. We observe that p-value (prob>F/prob chi²) of all the regressions is smaller than α . This means that all the variables included in this model significantly affect the women's participation in non-agriculture in the district of Uttar Pradesh. Female literacy, caste and religion appear as significant predictors of FLFPR in the districts in Model I & II. All these variables determine 0.321 (pooled) and 0.817 (fixed effect) of variation in the Model I & II.

Table 10: Women in Agriculture- Economic factors

y1	OLS (Pooled)			(OLS (Fixed Effects Model)		
	Coef.	t	P>t	Coef.	t	t P>t
Log (NDDP)	-6.304	-3.890	0.000	0.386	0.470	0.638
Pumpsets	-2.694	-3.340	0.001	0.138	0.360	0.717
Fertilizers(kg.)	-0.032	-3.190	0.002	0.000	0.060	0.956
Average size of holdings	-10.157	-4.530	0.000	-3.297	-1.420	0.160
Cropping Intensity	-0.163	-3.530	0.001	-0.011	-0.400	0.693
% share of agri in NDDP	-0.256	-2.860	0.005	-0.007	-0.100	0.918
Roads length per lakh Pop	0.088	3.470	0.001	0.004	0.290	0.771
Per Capita prod_ foodgrains	-0.011	-1.310	0.192	0.026	0.250	0.800
% share of non-agri in NDDP	0.125	1.680	0.095	0.003	0.410	0.687
Prob > F	0.000			0.009	0.280	0.781
R-squared	0.437			0.150		
_cons	119.533	7.180	0.000	18.724	1.770	0.082

Source: Based on Census Data, 2001 & 2011.

In our proximate determinants model the value of R-square of the OLS regression (pooled) is 0.437 (Table 11). Lower R-square have been found in the case of fixed effects models i.e. 0.150. This result confirms the fact that the explanatory variables in the model account for significant variations across districts. P-value is 0.000, proving that these explanatory variables influence the women in agriculture of the districts. In this model log of NDDP, index of mechanization (fertilizer and pumpsets), size of land holding, cropping intensity, road length, and percent of agricultural income in NDDP emerged as significant (at 1percent level) predictor of women participation in agriculture across the districts.

Table 11: Women in Non-Agriculture- Economic factors

y2	OLS (Pooled)			OLS (Fixed Effects Model)		
	Coef.	t	P>t	Coef.	t	P>t
Log NDDP	3.485	3.790	0.000	4.592	4.410	0.000
Log GVAP/NSA	1.976	2.520	0.013	2.456	2.820	0.007
Elec Agr	0.003	0.200	0.846	0.008	0.510	0.613
Pumpsets	-0.203	-0.560	0.577	0.232	0.580	0.566
GAS/ Tractor	-0.005	-1.050	0.296	-0.001	-0.230	0.822
Fertiliser	-0.005	-1.110	0.267	0.002	0.340	0.732
Avg. Holding	-2.265	-2.100	0.037	2.682	1.090	0.280
CI	-0.006	-0.280	0.782	0.036	1.210	0.233
%Agr in NDDP	-0.078	-1.890	0.061	-0.108	-1.420	0.162
Road Length per lakh pop	0.011	0.940	0.350	0.009	0.670	0.506
SSI	-0.256	-6.180	0.000	0.010	0.090	0.932
PC Foodgrain	0.007	1.730	0.086	0.001	0.140	0.892
%Non-Agr NDDP	-0.028	-0.790	0.430	-0.042	-1.250	0.216
_cons	-30.025	-3.270	0.001	-59.796	-4.460	0.000
R-squared	0.5463			0.8627		
Prob > F	0.000			0.000		

Source: Based on Census Data, 2001 & 2011.

It is clear from Regression Table 11 that the district level variation in the women participation in non-agricultural activities can be explained more by economic factors with R² significantly (i.e. 0.546 in Pooled Model and 0.862 in FE Model). It is evident from the above analysis that the change participation of women in non-agriculture has necessarily to occur through the proximate and socio-economic determinants. The findings also show that the variation in socio-economic development between the districts have a significant impact on women's participation in agricultural as well as non-agricultural activities. The statistical

derivations stoutly establish that women's participation has declined with the increase in income per-capita and this negative relationships at the district-level are further substantiated by running a regression model to examine the determinants of women's participation in agricultural and non-agricultural work.

Our model attempts to demonstrate significant relationship between women's work and size of land holdings, per capita income, and the proportion of food grain production. As the average size of land holding increases, women's involvement in agriculture declines. With 1 per cent increase in the average size of land holdings, women's work participation in agriculture would decline by 10.15 per cent but in non-agricultural activities would decline by only -2.6 per cent only. Therefore, we may infer that with increase in the average size of land, there is a tendency that women would withdraw more from agriculture and participate in non-agricultural activities but at a slower pace.

1. Conclusion and Policy Implication:

The paper pleads for revolutionary policy interventions in order to provide work opportunities and better wages to women workers and tries to build the case for improving the education, and skill level of women workers along with a change in the society's mind set. It argues for the strategies to promote women's control over assets and increase her autonomy. Finally, the paper loves to recommend policy initiatives and research to tackle the iniquitous functioning of the labour market in Uttar Pradesh, particularly with respect to valuing women's work, changing social attitudes and curb crimes against women and looking at the needs of women workers from the most disadvantaged social groups. To conclude, the policy formulators and planners should focus on the influential factors or determinants of FLFPR and policies should be modified to address these factors.

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