

WHO TAKES PART IN THE MGNREGA PROGRAM? EVIDENCES FROM INDIAN HUMAN DEVELOPMENT SURVEY

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ABSTRACT

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), enacted in the year 2005, is one of the flagship programmes of the Government of India to improve rural livelihood in the country and bridge the gap between the rich and the poor. Though it is a right based universal programme, it has a strong underlying targeting mechanism as the entry into the programme is through self-selection. Self-selection could have significant effects on the MGNREGA programme participation. Hence the aim of this paper is to explore the determinants of participation in the MGNREGA program and further to examine if the women headed households and households consisting of the marginalised sections of the society like SC/STs and backward communities are attracted by the MGNREGA program. Probit model is used to address the objectives of this paper. The results point out that socio-economic-demographic variables such as household head's gender, education level and age along with the caste and poverty status and household size have an effect on the program participation. Economic variable such as livestock and land owned by household plays a very important role in program participation. Further the results from probit regression point out that the likeliness of participation is more for male headed household compared to that of female headed households. Households belonging to marginalized communities have more probability of participating in the MGNREGA program compared to households belonging to the so called other forward social communities.

Keywords: MGNREGA, Program Participation, Labour market, Poverty, Probit Model

JEL Classification: O38, O40, P25, P27, J62 & J68

I. INTRODUCTION

Worldwide, public work programs are very common but vary in nature and characteristics from country to country. The main objective of most of these public work programs is the welfare of

the society through uplifting their standard of living and providing means of livelihood. These programs are mainly associated with the generation of employment opportunities and helps in reduction of poverty. The target of the programs is mainly to embrace those sections of the society that lacks the basic requirements of life like food, education, shelter, etc. The necessity for the public work programs arises when the circumstances in the economy worsens with the slow growth rate or jobless growth and rising poverty and unemployment.

During 1990's, the period just after the economic liberalization India went through a phenomenon of growth without proportionate employment. Because of opening up of the Indian economy during 90's, the services sector boomed in India leading to high growth rate but it could not absorb as much labour as the industrial sector or agricultural sector. Hence, jobs were not created in proportion of growth leading to jobless growth. Hence the Govt. of India planned for a huge public works program and executed the same in the form of MNREGA in the year 2006.

A similar situation was faced by many other economies. South Africa faced similar kind of scenario which lead its government to start an employment/skill development program called 'Expanded Public Work Program' (EPWP) in the year 2004 to create a million of jobs over a period of time. The programme focuses on provision of education, skill development to people especially youth and unemployed, etc. (Subbaro, 2003). According to World Bank (2005), Government of Ethiopia also launched a public works program in 2004 named as 'Productive Safety Net Program' (PSNP) and is highly evaluated program in the world. This program was implemented with an objective of ensuring provision of food and preventing asset depletion, improves access to natural resources and to rehabilitates and enhance the natural environment.

Likewise, many economies such as Cambodia, Indonesia and Thailand also launched public works programs such as 'National Program for Rehabilitation and Development', Labor Creation Program' 'Cash for Work Program' respectively during various time periods.

II. THE ISSUE

Similar to the programs introduced by various countries, Since Independence in India too so many public programs have been launched during various time periods. The Indian government after independence started Community Development Program in 1952. It was a multi project programme with the aim of overall development of rural people. Over the years, understanding the circumstances of the poor and taking into consideration the time to time needs of the poor, programs such as Integrated Rural Development program (IRDP, 1980), Pradhan Mantri Rojgar Yojna (PMRY, 1993), Swarnajayanti Gram Swarozgar Yojana (SGSY, 1999), Sampoorna

Grameen Rozgar Yojna (SGRY, 2001) National food for Work (2004) and many more such programs were introduced to generate employment and alleviate poverty.

Despite of all these programs Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA, 2005) which was initiated in 2006 by the Government of India has become very prominent and is one of the largest public work programs in the world. This program started on the large scale with the focus on rural wage employment. The Act seeks to create durable assets and strengthen the livelihood resource base of the rural poor, Entitle eligible persons to get employment up to 100 days in a year, Employment to be provided within 5kms radius; else they need to be given the transport allowances. The wages pertaining to the work is directly transferred to the individual's bank account. If the eligible person is not given employment within 15 days of his/her application for employment, then the person is entitled to unemployment allowance. Some of the critical aims of the MGNREGA program are that (i) atleast one-third of the participants should be women; (ii) It should address the livelihood security of the most vulnerable people living in the rural areas, and further (iii) the program should help in empowering the marginalized communities such as Scheduled Castes (SCs) and Scheduled Tribes (STs) in the rural areas.

III. PROBLEM OF THE STUDY

The MGNREGA is a law, which is legal right based program as well as demand driven. Though it is a right based universal public works programme, it has a strong underlying targeting mechanism as the entry into the programme is by self-selection. Self-selection could have an effect on the participation in the programme. With this background it is essential to examine if the programs aims are addressed. When the entry into the program is through self selection have the program attracted more economically backward people in the society? Women understood to be vulnerable gender in the society, are they getting their share of employment through MGNREGA program? Has the program attracted the marginalized sections of the society such as Scheduled Castes (SCs) and Scheduled Tribes (STs)? What is the social and economic background of the MGNREGA participants? This study makes a modest attempt to address the above questions with the help of India Human Development Survey (IHDS), 2011-12.

According to earlier studies such as Mehrotra (2008) and Dhanya (2016) MGNREGA is providing more days of work than other previous programs which had been implemented since independence i.e. at national level, MGNREGA provided an average of 43 days of work which is more than previous program such as SGRY which only provided on an average average 26 days of work. Dutta et al. (2012) in their study show that the participation by small farmer and women in MGNREGA is encouraging and those who are having large lands and livestock are less interested in participating in MGNREGA. The study made by Jha et al. (2008) reveal that in

Andhra Pradesh there is a positive relation between MGNREGA and land holding i.e., those who are having more lands are also participating in MGNREGA. This indicates the program is experiencing a capture by non-poor in Andhra Pradesh. Kareemullah et al. (2013) and Kumar et al.(2013) in their study show that after implementation of MGNREGA the consumption expenditure by household has increased. Though there are plenty of studies that have examined the impact of MGNREGA on various outcomes, there are only very few studies that have addressed the determinants of participation in MGNEGA program. These studies have used primary survey data covering smaller area with comparatively very small sample size which is not representative and may lead to biased conclusions. Hence in this study we use Indian Human Development Survey (IHDS) data and explore the determinants of MGNREGA program participation.

IV. OBJECTIVES OF THE STUDY

- (i) To explore the determinants of the participation in MGNREGA program in rural India
- (ii) To examine if the Women and marginalized communities of the rural society is being attracted by MGNREGA program

V. DATA SOURCES AND METHODOLOGY

The present study is based on second round of the India Human Development Survey (IHDS, 2011-12). IHDS is conducted by the collaborative efforts of researchers from the University of Maryland and the National Council of Applied Economics Research (NCEAR). The IHDS is said to be a nationally representative, multi topic panel survey of households in 1503 villages and 971 urban neighborhoods across India. Since the survey is a multi topic survey, the variables of interest (MGNREGA participation, demographic and socio-economic variables corresponding to the households) are very much found in the survey. While the first round of interviews were completed in 2004-05, the second round of IHDS re-interviewed most of these households in 2011-12. It is said that 83% households have been re-interviewed. This means 2011-12 survey contains 83% of households which were earlier interviewed in 2004-05. Household is the unit of analysis in this study. The total no. of sample households considered for this study from the second round of IHDS is 26,645. Only households pertaining to rural background are considered. The break-up of the sample observations from IHDS dataset used in this study is given in table 1.

Table 1: Sample IHDS Data Set Used in the Study – Sample Household Classified by MGNREGA Program Participation and Poverty Status

IHDS Survey Round	Survey Round II – (2011-12)		
	Poor	Non-Poor	Total
Poverty Status of the Sample Households			
Household's Participating in the MGNREGA Program	2,883	8,194	11,078
Household's Not-Participating in the MGNREGA Program	2,353	13,203	15,567
Total No. of Sample Household Observations	5,236	21,397	26,645

Source: Tabulated from IHDS unit level data

Note: Only those observations pertaining to rural households which were re-interviewed in the IHDS second round (2011-12) have been considered for the current study

IHDS dataset is similar to NSSO data set. However for our study we regarded IHDS to be more appropriate as IHDS has more number of socio-economic and demographic variables of the households than that of NSSO and further IHDS has the properties of panel data. As far as the methodology is concerned for examining the determinants of household participation in MGNREGA program a probit model is being used, as the outcome variable (Participation in MGNREGA Program) in this study is a dummy dependant variable which is takes the value of 0 and 1 only where value of 1 indicate that the household is participating in the MGNREGA program and 0 indicates otherwise. When the dependent variable is a dummy variable it is appropriate to use a probit model to estimate the parameters of the model. The independent variables in the model are the individual and household characteristics that apparently influence in MGNREGA participation such as age of the head of the household, education level of the head of the household, Occupation of the Head of the household, caste to which the household belong, land owned by the household, number of livestock held by the household etc.

V. ASSOCIATION BETWEEN INDIVIDUAL HOUSEHOLD CHARACTERISTICS AND HOUSEHOLD PARTICIPATION STATUS IN MGNREGA.

For examining the determinants of MGNREGA participation first chi-square test is used to see if there exist an association between the individual household characteristics and corresponding household's participation status. Those variables that are having a significant association is

considered in the probit model later. Accordingly table 2 shows the association between household’s participation and its household head’s age.

Table 2: Association between Household’s MGNREGA Participation and Age of Household Head

Age Group of Household Head	MGNREGA Participation		
	Non participants	Participants	Total
Between 18-24	259 (65.90) [1.66]	134 (34.10) [1.21]	393 (100.00) [1.48]
Between 25-54	9090 (55.71) [58.42]	7226 (44.29) [65.26]	16316 (100.00) [61.26]
Above 55	6211 (62.58) [39.92]	3714 (37.42) [33.54]	9925 (100.00) [37.26]
Total in all age group	15560 (58.42) [100.00]	11074 (41.58) [100.00]	26634 (100.00) [100.00]
Pearson Chi ² (p-Vlaue)	128.99 (0.00)		

Source: Computed from IHDS dataset 2011-12

Note: (i) Figures in parenthesis shows row percentage and figures in the square bracket shows the column percentage.

(ii) Age group classification is done as per the official website of MGNREGA

It indicates that the participants are mainly from households where its household head is aged between 25 and 54. The corresponding chi² test indicates that there is high degree of association between age of the household head and the household’s participation in MGNREGA program.

Table 3: Association between Household’s Participation and Gender of the Household Head

Gender	MGNREGA Participation		
	Non Participants	Participants	Total
Female	2492 (65.01) [16.01]	134 (34.99) [12.11]	3833 (100.00) [14.39]
Male	13075 (57.32) [83.99]	9737 (42.68) [87.89]	22812 (100.00) [85.61]
Total	15567 (58.42) [100.00]	11078 (41.58) [100.00]	26645 (100.00) [100.00]
Pearson chi ² (p value)	80.05 (0.000)		

Note: (i) Figures in parenthesis shows row percentage and figures in the square bracket shows the column percentage.

Table 4: Association between Households Participation and Household size

Family Size	MGNREGA Participation		
	Non participants	Participants	Total
Small Family	7676 (59.82) [49.31]	5155 (40.18) [46.53]	12831(100.00) [48.16]
Medium Family	6,733 (56.36) [43.25]	5,214 (43.64) [47.07]	11,947 (100.00) [44.84]
Large Family	1,158 (62.02) [7.44]	709 (37.98) [6.40]	1,867 (100.00) [7.01]
Total	15,567 (58.42) [100.00]	11,078 (41.58) [100.00]	26,645 (100.00) [100.00]
Pearson chi ² (p-Value)	41.32 (0.000)		

Note: (i) Figures in parenthesis shows row percentage and figures in the square bracket shows the column percentage.

(ii) Small Family refers to a family with less than four members in the house, Medium Family refers to family with 5 to 8 members and Large Family refers to family who having more than 8 members in the house

Table 3 shows the association between household’s participation and household head’s gender. It indicates that only 14% of the total sample households is having a female as its head. Within female headed households only around 35% of households participates in the program, where as the table shows that around 43% of male headed household participate in the program. The chi

square test suggests that there is a high degree of association between household head’s gender and its participation in the program.

Table 5: Association between Households Participation and Education of the Household Head

Education Level of Household Head	MGNREGA Participation		
	Non Participants	Participants	Total
Illiterate	5,552 (52.79) [35.69]	4,965 (47.21) [44.84]	10,517 (100.00) [39.49]
Primary Education	8,255 (60.18) [53.06]	5,463 (39.82) [49.34]	13,718 (100.00) [51.51]
Higher Secondary and above	1,751 (73.08) [11.25]	645 (26.92) [5.82]	2,396 (100.00) [9.00]
Total	15,558 (58.42) [100.00]	11,073 (41.58) [100.00]	26,631 (100.00) [100.00]
Pearson chi ² (P-Value)	366.6134 (0.000)		

Note: (i) Figures in parenthesis shows row percentage and figures in the square bracket shows the column percentage.

(ii) Education Levels is classified as per the NSSO survey classification

Table 4 shows the relationship between family size and participation in the MGNREGA program. The table indicates that it is mainly the medium and large families that tend to participate in the program. The chi square test suggests that there is a high degree of association between household’s participation and family size. Table 5 shows that association between household’s participation and household head’s educational level. According to the table households with illiterate heads tend to participate in the program more that educated. As the level of education increase there is a decrease in the participation. The corresponding chi square result suggests that there is a high degree of association between household’s program participation and household head’s education level.

Table 6: Association between Households participation and Caste of Household

Caste	MGNREGA Participation		
	Non Participants	Participants	Total
OBC	6,618 (61.41) [42.56]	4,158 (38.59) [37.56]	10,776 (100.00) [40.48]
SC/ST	4,049 (44.63) [26.04]	5,024 (55.37) [45.38]	9,073 (100.00) [34.08]
Others	4,881 (72.10) [31.39]	1,889 (27.90) [17.06]	6,770 (100.00) [25.43]
Total	15,548 (58.41) [100.00]	11,071 (41.59) [100.00]	26,619 (100.00) [100.00]
Pearson chi ² (p-Value)	133.00 (0.000)		

Note: (i) Figures in parenthesis shows row percentage and figures in the square bracket shows the column percentage.

Table 6 and table 7 show the association between household’s program participation and caste and poverty status respectively. Table 6 shows that almost 56% of the households belong to SC/STs and around 39% of the OBC households participate in the program. Only around 28% of household belonging to the so called upper caste participate in the program. Similarly from table 7 we can see that around 55% of the poor households participate in the program but only around 38% percentage of the non-poor participate in the program. The Chi square test of both table 6 and 7 indicate that the associate is significant between household’s caste and its participation and household’s participation and poverty status.

Individually seen the chi square results from above association tables indicate that there is significant relationship between the participation of household in the program and various socio-economic-demographic variables viz., (i) age of the household head, (ii) caste to which household belong, (iii) gender of the household head, (iv) education level of household head, (v) household size and (vi) household’s poverty status.

Table 7: Association between MGNREGA Participation and Household’s Poverty Status

Household’s Poverty Status	MGNREGA participation		
	Non Participants	Participants	Total
Poor	2,353 (44.94) [15.13]	2,883 (55.06) [26.03]	5,236 (100.00) [19.66]
Non-Poor	13,203 (61.70) [84.87]	8,194 (38.30) [73.97]	21,397 (100.00) [80.34]
Total	15,556 (58.41) [100.00]	11,077 (41.59) [100.00]	26,633 (100.00) [100.00]
Pearson chi ² (p-value)	486.75 (0.000)		

Note: (i) Figures in parenthesis shows row percentage and figures in the square bracket shows the column percentage.
(ii) Poverty status is indicated based on Tendulkar Committee’s Poverty Criteria

Though there seems to an association between participation and various socio-economic-demographic variables individually, it is expected that when they interact with each other their significance in affecting the household’s participation may differ. Hence we make an attempt to estimate the effect of each of these variables on household’s program participation using a probit model.

VI. EMPIRICAL ESTIMATION OF THE PROBIT MODEL AND RESULTS

Probit model is a statistical probability model with two categories in the dependent variable. Probit analysis is based on the cumulative normal probability distribution. The binary dependent variable Y takes on the values of zero and one. In the binary probit model, participation in the MGNREGA program was taken as 1, while non-participation as 0. It is assumed that the household is better off if it participated in the program rather than not participating. The probability Pi of choosing to participate in the program over not participating can be expressed as

$$\begin{aligned}
 P_i &= \text{prob} [Y_i=1|X] = \int_{-\infty}^{x'\beta} (2\pi)^{-1/2} \exp(-t^2/2) dt \\
 &= \Phi(x' \beta)
 \end{aligned}$$

where Φ represents the cumulative distribution of a standard normal random variable.

The relationship between a specific variable and the outcome of the probability is interpreted by means of the marginal effect, which accounts for the partial change in the probability. The marginal effect associated with continuous explanatory X_k variables on the probability $P [Y_i = 1|X]$, holding the other variables constant, can be derived as follows

$$\frac{\partial P_i}{\partial x_{ik}} = \phi(x_i | \beta) \beta_k$$

where ϕ represents the probability density function of a standard normal variable. The marginal effect on dummy variables should be estimated differently from continuous variables. Discrete changes in the predicted probabilities constitute an alternative to the marginal effect when evaluating the influence of a dummy variable. Such an effect can be derived from the following

$$\Delta = \phi(\bar{x}\beta, d = 1) - \phi(\bar{x}\beta, d = 0)$$

The marginal effects provide insights into how the explanatory variables shift the probability of program participation. The empirical econometric model for examine the determinants of MGNREGA program participation can be express as

$$\text{Prob} (Y_i=1|X) = \phi (\beta_0+ \beta_1(\text{Male Gender}) + \beta_2(\text{OBC}) + \beta_3(\text{SC/ST}) + \beta_4(\text{Primary Education}) + \beta_5(\text{Secondary Education}) + \beta_6(\text{Higher secondary and above}) + \beta_7(\text{Poverty status- Non-Poor}) + \beta_8(\text{Age}) + \beta_9(\text{Livestock1})+ \beta_{10}(\text{Livestock2}) + \beta_{11}(\text{Land owned}) + \beta_{12}(\text{Household size}) + \varepsilon_i$$

Where, Y_i is a dichotomous variable representing program participation with value 1 for program, while 0 otherwise.

Table 8 shows the estimates of the probit model. The result shows that the probability of participation in MGNREGA by male headed households is more by 8.5% when compared to female headed households. Result also shows that a household being in marginalized castes like SC/ST and OBCs has a higher probability (29.5% and 11.3% respectively) in participating in the program when compared to other caste households. Similarly when compared to non-poor households the poor households are more likely (13.9%) to participate in MGNREGA program. However a household head whose education level is higher is less likely to participate in the program when compared to illiterates and less educated. The probit results further indicate that the variables such as age of household head, livestock owned by household and land owned by household are negatively associated to program participation. Higher values of these variables lower the likeliness of the household's participation. However household size is positively

associated to program participation. Bigger the household size more likely is the household to participate in the MGNREGA program.

Table 8: Results of the Probit Model

Variable Name	Marginal Effect	Standard Error	p value
Gender (Reference Category - Female)			
Gender of Household Head (Male)	0.085 ***	0.016	0.000
Caste to which Household Belong (Reference Category – Other Caste)			
OBC	0.113 ***	0.011	0.000
SC/ST	0.295 ***	0.012	0.000
Education of Household Head (Reference Category - Illiterate)			
Primary Education	0.012	0.013	0.343
Secondary Education	- 0.098 ***	0.012	0.000
Higher secondary and Above	- 0.161 ***	0.017	0.000
Poverty Status of the Household (Reference Category - Non Poor)			
Poverty Status (Poor)	0.139 ***	0.013	0.000
Variables measured in Continuous scale			
Age of Household Head	- 0.003 ***	0.0003	0.000
Livestock-1 owned by Household	- 0.010 ***	0.003	0.006
Livestock-2 owned by Household	0.006	0.002	0.110
Land owned by Household (in Acres)	- 0.003 ***	0.00002	0.004
Household Size (in No.)	0.007	0.002	0.000
Pseudo R ²	0.831		

Note: (i) The model include both continuous and categorical variables as explanatory variables. While gender, education level, caste and poverty status are categorical variables (reference categories are given in brackets), variable such as age of household head, livestock 1&2, land owned and household size are continuous variables

(ii) While mlch buffalo and cow are included in Livestock-1, Livestock-2 includes pig, sheep, goat, and poultry etc.

(iii) *** Significance at 1%, ** Significance at 5%, * Significance at 10%

VII. FINDINGS & CONCLUSION

The aim of this paper is to explore the determinants of participation in the MGNREGA program and further to examine if the women headed households and households consisting of the marginalised sections of the society like SC/STs and backward communities are attracted by the MGNREGA program. The results point out that socio-economic-demographic variables such as household head's gender, education level and age along with the caste and poverty status and household size have an effect on the program participation. Economic variable such as livestock and land owned by household plays a very important role in program participation.

Further the results from probit regression point out that the likeliness of participation is more for male headed household compared to that of female headed households. When compared to households belonging to the so called other forward castes the households belonging to OBC and SC/STs have more probability of participating in the MGNREGA program. Similarly the program attracts illiterates and less educated who are known to be unskilled and lack employment opportunities.

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