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REVIEW OF DEVELOPMENT AND CHANGE

Madras Institute of Development Studies

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Committed to examining diverse aspects of the changes taking place in our society, *Review of Development and Change* aims to encourage scholarship that perceives problems of development and social change in depth, documents them with care, interprets them with rigour and communicates the findings in a way that is accessible to readers from different backgrounds.

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A Note From the Editor

Review of Development and Change, a half-yearly journal from Madras Institute of Development Studies (MIDS), invites articles on problems of development and social change. The journal seeks to encourage multi-disciplinary scholarship in particular because development crosses disciplinary bounds. Multi-disciplinary engagement may achieve a more holistic understanding of how development works. Issues of focus include rural and urban development, environment and sustainable development, social sectors and human development, and poverty, inequality and development.

We have now reconstituted our Editorial Board of the journal keeping in mind our aim to make it more global in its coverage, while retaining the multi-disciplinary feature of the journal.

We acknowledge with gratitude contributions of the members of the previous Editorial Board comprising Professors Barbara Harriss-White, Chandan Mukherjee, G. Haragopal, M.V.Nadkarni, Rajan Gurukkul, U. Sankar and C.P.Chandrasekhar for nurturing the journal so far.

We look forward to the guidance and support from the reconstituted Board of Editors, whose members are listed on inside cover page.

Who Participates in MGNREGA? Analyses from Longitudinal Data

**Omkar Joshi, Sonalde Desai,
Reeve Vanneman and Amaresh Dubey**

ABSTRACT

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was enacted in 2005 and has completed a little over a decade in India. It is the largest public employment programme in the world and has promoted a wider participation from rural households across the country. This paper examines the issue of programme participation in MGNREGA holistically by looking at household and individual-level participation and controlling for regional heterogeneity, using a unique panel data from the nationally representative India Human Development Survey. Using a binary logistic model and fixed effects models at the state and village level, the paper finds that poor households with a low asset base and those belonging to the Scheduled Caste (SC)/Scheduled Tribe (ST) categories are more likely to participate in the programme, but the support base of MGNREGA is not just limited to these groups and is rather broad-based. It also shows that as compared to other types of work, women suffer less disadvantage than men, thereby providing empowerment opportunities to women.

Keywords: MGNREGA; programme participation; public works programme; social safety net

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1. INTRODUCTION

In modern welfare states, provision of employment is often one of the important mandates of the government. But the government has often played two roles – as a provider of employment through public works as well as a guarantor of employment rights. Although government-provided employment is not meant to substitute for market employment, public works programmes can provide a strong social safety net for the unemployed and underemployed. In this paper, we examine the issue of participation in the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA),¹ the largest employment programme in the world (World Bank 2015), which guarantees right to employment in India. The MGNREGA, enacted in 2005, promises not less than 100 days of wage employment in a financial year to every rural household whose adult members are willing to engage in unskilled manual work. Initially, the Act was intended to cover 200 backward districts in India, but subsequently its scope was extended to all rural areas. Two critical objectives of the Act and subsequent implementation guidelines are (a) ensuring livelihood security for the *most vulnerable people* living in rural areas,² through providing employment opportunities for unskilled manual work and (b) aiding in the empowerment of *marginalised communities*, especially women, Scheduled Castes (SCs) and Scheduled Tribes (STs).

MGNREGA is a universal public works programme, but it has a strong underlying targeting mechanism because entry into the programme is by self-selection. Self-selection could affect the take-up of the programme and in turn influence labour market dynamics. The Government of India has made a massive financial commitment to this programme. In 2016–17, Rs 38,500 crore (0.32 per cent of GDP as per the revised estimates) was allocated to MGNREGA, and a total of 2.35 billion person-days of employment were created (CBGA 2017; Sarkar and Islary 2017). However, despite the promise of 100 days of employment, the average number of days of employment provided under MGNREGA peaked at 54 days in 2009–10 and has been declining since. It has been hovering below the 50 days mark for the most part (Desai et al. 2015). An analysis of programme participation into MGNREGA can provide both theoretical insights into how employment guarantee programmes work in general, as well as wider policy lessons. Specifically, we ask two questions: (a) which

households are more likely to participate in this programme and what are their prior characteristics? (b) what are the intra-household dynamics of participation, especially with respect to gender and age? Answers to these two questions provides an assessment of the success of the objectives of MGNREGA mentioned previously. Our analysis offers new insights by using a nationally representative longitudinal data set, the India Human Development Survey (IHDS), with information from both the pre- and post-MGNREGA periods for the same households.

2. BACKGROUND AND REVIEW OF LITERATURE

Since MGNREGA was passed, there has been a voluminous literature on its features, design and impact on several outcomes of economic importance. Both quantitative and qualitative studies have examined the performance of MGNREGA in various geographic regions, ranging from a single state to three or four states to an all-India level. Thematically these studies have covered programme features and challenges (Dreze and Khera 2011; Roy 2015), rationing (Dutta et al. 2012, 2014; Das 2015), its impact on employment and wages (Azam 2012; Berg et al. 2012; Desai et al. 2015; Imbert and Paap 2015; Zimmerman 2015), incomes (Jha et al. 2009), welfare (Deininger and Liu 2013; Imbert and Paap 2015), migration (Liu and Barret 2012; Novotny et al. 2013; Imbert and Paap 2014), agriculture (Bhargava 2014; Varshney et al. 2014), children's education (Afridi et al. 2016) and women's empowerment (Khera and Nayak 2009; Sudarshan 2011; Desai et al. 2015).

We engage with those studies in this burgeoning literature on MGNREGA that are linked closely to research questions regarding programme participation. There is well-documented evidence that welfare programmes suffer from the phenomenon of 'elite capture' (von Barun 1995; Barrett and Clay 2003) and that elite capture can have negative consequences (Besley et al. 2004). At the same time, studies that examine the issue of targeting in welfare programmes suggest that programmes that have self-selection and demand-driven features work well, avoiding the problems associated with targeting (Besley and Coate 1992; Ravallion 2003).

In case of MGNREGA, evidence of elite capture in the allocation of work has been documented. Jha et al. (2009), using primary data of 900 households from Andhra Pradesh and Rajasthan, show the capture of MGNREGA by landed classes in Andhra Pradesh. Niehaus and Sukhtankar (2012) also find evidence of political clientelism at work. However, other studies have argued that MGNREGA has been quite successful in targeting marginalised sections of society. Ghosh (2009) argues that MGNREGA involves more women, SCs and STs as workers. Deininger and Liu (2013) offer evidence of pro-poor targeting of the programme. Sudarshan (2011) also finds that in Kerala there has been some shift out of agriculture into MGNREGA mainly for female workers because of the higher wages paid under the programme. The administrative data released by the Ministry of Rural Development (MoRD) and National Sample Survey Office (NSSO) Survey Reports (NSSO 2011) also suggest that MGNREGA is successful as a self-targeting programme, with a high degree of participation from marginalised groups. At the national level, the share of SCs and STs in the work provided under MGNREGA has been high, at 40–50 per cent across each year of the scheme's implementation.³

Not only have the marginalised sections been participating more in the programme, but they have derived more benefits as well. Several studies have investigated the impact of MGNREGA on the welfare of the poor. Berg et al. (2012) find the wage effect of MGNREGA to be positive across different implementation stages even after controlling for district and time-fixed effects, rainfall and the implementation phase. Klonner and Oldiges (2014) find large, season-specific effects among a traditionally deprived sub-group of the rural population, whose incomes are particularly dependent on agricultural wage labour. Ghosh (2009), Dreze and Khera (2011), Sudarshan (2011) and Dutta et al. (2012) examine the welfare gains of marginalised communities. They argue that since a majority of the world's poor live in rural areas and the poorest of the poor are agricultural wage workers, a rural public work programme like MGNREGA in India constitutes an important anti-poverty tool for all rural labour via both its direct employment effects and its indirect wage effects.

The other important issue linked to participation is that of the extent of participation and regional variation. The edited volume by Khera (2011) and Dreze and Khera (2011) document several qualitative

case studies, highlighting the positive impact of MGNREGA as well as the challenges faced in implementing the Act. Two issues emerging from this review are particularly noteworthy. First, MGNREGA has become an important component of employment for rural Indians, although it remains as a supplement to other work, with only 3.45 per cent of the households engaging in the full 100 days of work per year (Ministry of Rural Development 2014). Second, the distribution of MGNREGA participation is highly uneven across states. As far as this uneven variation in MGNREGA participation across states is concerned, Roy (2015) suggests a variety of factors – commitment of local elites, geographical variations and political economy of programme implementation – that are responsible for this. Chopra (2015) analyses the puzzle of differing performance across states using a qualitative study of the programme implementation in four Indian states (Bihar, Andhra Pradesh, Chhattisgarh and Assam) and links varying performance to differing political commitment in each state. Reddy et al. (2010) too, in their study, find that commitment, capacity and preparedness of local governance structures impact the effectiveness of the programme.

Some studies point at corruption as the reason for lacklustre implementation of MGNREGA and low participation. Kapur (2010) and Niehaus and Sukhatankar (2012) report instances of underpayment of wages on account of over-reporting and wage skimming by administrators. Muralidharan et al. (2016) show the positive impact of biometrically authenticated payment infrastructure on wage payments in MGNREGA.

The unevenness in programme participation would be a cause for concern if richer households or richer villages were able to disproportionately capture MGNREGA work, thereby leaving out the poor. Dutta et al. (2012) examine the unmet demand for MGNREGA work using the National Sample Survey (NSS) 66th Round data. They too find that MGNREGA participation rates vary across states, as observed by Dreze and Khera (2011). They suggest that this variation is on account of two effects: the first is an indirect effect of greater poverty via higher demand for MGNREGA work and the second is the direct effect of having greater unmet demand for work on the programme. They show that rationing of work takes place on the ground. However, they conclude that despite the unmet demand of poor families and rationing, the self-targeting mechanism

of the Act works well, enabling it to reach relatively poor and backward families. Narayanan et al. (2016) also highlight administrative rationing, leading to ‘discouraging worker effect’ and variation in participation rates.

Public works programmes involve huge commitments of financial resources. This gives rise to the possibility of uneven distribution, namely either richer households or richer villages disproportionately capturing MGNREGA work, leaving out the poor. This poses serious challenges to the programme design.

One problem encountered while examining the effectiveness of the programme with regard to participation, in general, and that of SCs/STs or women, in particular, is that programme participation is often affected by factors correlated with caste and gender. For example, seasonal work available through MGNREGA may be more attractive to marginal farmers who do not have year-round work, but may hold little attraction for people who have a steady job in a nearby town. However, both landownership as well as farm productivity are correlated with caste (Desai et al. 2010). Adivasis living in remote areas may have few other job opportunities, while people belonging to forward castes living in the more developed regions may have little need to rely on MGNREGA. In this case, the higher participation of STs in MGNREGA should also be examined in comparison to that of their forward-caste counterparts living in similar areas in order to examine programme targeting at the local level.

Another important issue is that of the income status of the participant households. Since MGNREGA provides employment and thereby income generation for poor households, their current poverty and employment status is endogenous to the issue of programme participation. Hence in examining programme participation issues, it is necessary to look at the income of the households *before* their participation in the MGNREGA programme.

Also, even when a marginalised household participates in the MGNREGA programme, we do not know who participates within the household and whether their gender and age have any bearing on participation, since the 100-day limit is operative at the household level. Existing literature does not tell us anything about this intra-household dynamics of participation.

This paper fills the gap in the existing literature by addressing all the above-mentioned issues related to participation by utilising a unique panel data set from IHDS. We look at the issue of programme participation holistically and compare participation of marginalised SC/ST households to that of forward and other caste households. We also look at the pro-poor targeting aspect of the programme by including the previous income of the participating households, thereby avoiding the conflation of current income and current participation. Since there is evidence of regional variation in programme participation, we also control for unobserved state- and village-level heterogeneity. Lastly, we examine the choice of intra-household participation by individuals, by looking at the gender and age of individuals of the participating households. Thus, our results provide a more robust picture of participation as compared to previous studies.

3. DATA

The data for this study was taken from the nationally representative multi-topic IHDS. This panel survey was conducted during two rounds: IHDS-I in 2004–05 and IHDS-II in 2011–12. IHDS-I and IHDS-II are part of a collaborative research programme between the National Council of Applied Economic Research (NCAER) and the University of Maryland with the goal of documenting changes in the daily lives of Indian households in the context of a society undergoing rapid transition. The surveys were conducted in all the states and union territories (UTs) in India except the UTs of Andaman and Nicobar Islands and Lakshadweep. IHDS thus gathered detailed village-, household- and individual-level information about a range of socio-economic and demographic variables, viz. income, employment, consumption expenditure, education, gender relations, social networks, marriage, youth, health and fertility.

The unique feature of the IHDS data set is that the same households were visited during both rounds of the survey. This paper utilises the household panel from both rounds of IHDS data covering about 42,000 households, of which about two-thirds are rural. We have included only rural households for our analysis as MGNREGA is operational only in rural areas. The aggregate re-contact rate of IHDS for the rural areas between the two rounds is 90 per cent. There was a loss of 2,754 households due

to attrition in rural areas, but attrition does not significantly affect the representativeness of our sample.

Analyses of IHDS-I (Desai et al. 2010) and IHDS-II reveal that on most major parameters like poverty, literacy and work participation, the national rates derived by IHDS are comparable to those of NSS and the Census. In the context of this paper, it would suffice to note that the MGNREGA participation rate obtained by using the IHDS panel is comparable to the participation rate obtained from NSS data (NSSO 2011; Dutta et al. 2012). Dutta et al. (2012) calculated the MGNREGA participation rate to be 24.9 per cent during 2009–10 while the IHDS finds it to be 24.4 per cent during the preceding year, 2011–12 (Table 1).

Table 1: MGNREGA participation and household characteristics

Household characteristics	% of sample households	% Participating in MGNREGA
All India	100.0	24.4
<i>Caste and ethnicity (2011–12)</i>		
Forward castes/others	23.3	17.0
OBCs	42.2	20.7
SCs	24.1	36.0
STs	10.4	28.8
<i>Religion (2011–12)</i>		
Hindu	84.5	25.2
Muslim	9.8	21.1
Others	5.8	17.1
<i>Income quintiles (2004–05)*</i>		
Lowest	20.4	27.7
2nd quintile	21.7	30.5
3rd quintile	21.1	26.8
4th quintile	19.2	22.0
Top	15.4	11.8

* Quintile calculations are based on rural income distribution.

Household characteristics	% of Sample households	% Participating in MGNREGA
<i>Highest education of adult member in the household (2004–05)</i>		
None	28.2	33.0
Primary (1–4 std.)	9.5	29.7
Secondary (5–9 std.)	33.7	23.9
10–11 std.	12.4	17.4
12 std./some college	8.24	15.1
Graduate/diploma	8.0	10.0
<i>Landownership (2004–05)</i>		
No landownership	44.5	25.4
Marginal (0–1 hectare)	32.8	26.5
Small (1–2 hectares)	10.8	21.8
Medium (2–5 hectares)	9.3	18.2
Large (5 and more hectares)	2.7	12.9
<i>Household income source (2004–05) (Based on source of maximum income)</i>		
Non-agricultural wage	19.1	29.1
Agricultural wage	21.6	35.6
Monthly salaried	13.1	16.3
Business	10.7	17.5
Farm cultivation	22.0	22.3
Animal care	5.5	15.5
Remittances/other income	8.1	17.0
<i>Village infrastructure (2004–05)</i>		
More developed villages	46.1	20.4
Less developed villages	54.0	27.8

Contd..

Household characteristics	% of Sample households	% Participating in MGNREGA
States		
Jammu and Kashmir	1.2	16.7
Himachal Pradesh	0.8	39.0
Uttarakhand	1.8	29.6
Punjab	2.0	10.9
Haryana	1.9	5.4
Uttar Pradesh	15.6	20.8
Bihar	8.3	11.4
Jharkhand	4.6	7.7
Rajasthan	5.7	38.7
Chhattisgarh	3.3	60.5
Madhya Pradesh	5.5	25.8
North-east	1.2	34.7
Assam	2.4	19.9
West Bengal	8.6	44.9
Odisha	4.2	11.2
Gujarat	4.0	3.4
Maharashtra and Goa	7.4	2.9
Andhra Pradesh	8.3	47.4
Karnataka	4.7	13.2
Kerala	3.1	16.2
Tamil Nadu	5.4	41.4

Rural sample only. N=28,205.

Source: Indian Human Development Surveys 2005 and 2012.

The IHDS data are well suited for analysis of MGNREGA for several reasons, as listed below:

- Since the initial survey was conducted in 2004–05, just before the initiation of MGNREGA, IHDS could examine the impact of the initial household conditions in shaping programme participation.
- IHDS contains more detailed economic information than is available in the NSS.
 - IHDS collected not only consumption data as is done for the NSS but also detailed income data. For instance, IHDS collected separate data on income from farm and non-farm business activity, enabling us to investigate the role of levels and sources of income on MGNREGA participation.
 - IHDS also collected data on household assets, a predictor of long-term economic status (Filmer and Pritchett 2001), which the analyses presented in later sections show to be the strongest economic predictor of MGNREGA participation.
- The panel structure is particularly useful in avoiding problems of endogeneity for evaluating the targeting of low-income households. Cross-sectional analyses entail an additional risk of confounding the effects of MGNREGA participation with its causes.
- Unlike NSSO surveys, IHDS also contains information on village infrastructure, allowing us to compare the role of MGNREGA in the developed and less developed villages.

4. METHODOLOGY AND EMPIRICAL STRATEGY

This paper examines the issues of programme participation and success of MGNREGA in providing opportunities to groups disadvantaged by caste and religion, viz. SCs, STs; by economic level, viz. households with low incomes and few assets prior to programme initiation; and by gender, viz. women. Although MGNREGA doesn't have specific provisions for Muslims, we know that they too like the SCs and STs suffer from socio-economic disadvantage. Hence, we look at their programme participation as well. We analyse MGNREGA participation at both the household as

well as individual levels, taking into account the initial household income, income composition and initial employment status of various household members, particularly women.

For household-level analyses, we use a binary logit model with the MGNREGA participation status of the household as the dependent variable.⁴ The variables on the right-hand side include a mix of continuous and categorical variables serving as indicators of household characteristics such as assets, total income, educational qualifications, sources of income, caste and religion, among other things.

Targeting of disadvantaged households may occur in two ways: (1) since the disadvantaged households often live in poor areas, geographic targeting (as with the phased implementation of MGNREGA) may indirectly help the disadvantaged households and (2) there may be direct targeting of marginalised households within any given area.

In order to examine the targeting, we undertake three sets of analyses at the household level:

(1) First, we estimate models of whether a household participates in MGNREGA at an all-India level without including any state-level control variables. This allows us to examine total targeting of disadvantaged households at an all-India level. The basic specification takes the following form:

$$\Pr(\text{MGNREGA}_i) / \Pr(1 - \text{MGNREGA}_i) = \exp(\alpha_0 + \alpha_j X_{ij} + \beta_k X_{ik}) \quad (1)$$

where the probability of participation in MGNREGA by the i -th household in 2011–12 is a function of j variables measured in 2004–05 and k variables measured in 2011–12. Since economic status is both a function of and determinant of MGNREGA participation, the variables denoting economic status – household income, sources of income, ownership of consumer assets and education level – are drawn from IHDS-I conducted in 2004–05 before MGNREGA was implemented. Household structure variables – the number of adults in the household and social group – are drawn from the 2011–12 survey.

(2) Then, we model the effect of state of residence and whether the village is more developed or less developed in order to account for geographical variation. For India, as a whole, disadvantaged households

may enjoy greater access to MGNREGA because they live in disadvantaged states or in poorer villages within those states. Comparisons of the household coefficients in the two models will reveal how much of the targeting was accomplished simply by focusing on the poorer states and less developed villages. This model is specified as:

$$\Pr(\text{MGNREGA}_i)/\Pr(1-\text{MGNREGA}_i)=\exp(\alpha_0+\beta_j X_{ij}+\beta_k X_{ik}+\beta_s X_{is}) \quad (2)$$

where s denotes state of residence and whether the village can be classified as less developed or more developed. Less developed villages are defined as those that have six or fewer infrastructure facilities from a list of 10 facilities listed in Table A.1.

(3) However, our controls for village characteristics and state of residence do not encompass the full range of potential differences between different geographical areas and individual characteristics may act as a proxy for these regional differences. For example, it is well recognised that STs are often located in poorer districts and areas without good transportation access. In order to *control* for this geographical diversity and look at differences by caste and income within the village, we estimate a village-level fixed effects model:

$$\Pr(\text{MGNREGA}_{iv})/\Pr(1-\text{MGNREGA}_{iv})=\exp(\alpha_0+\beta_j X_{ij}+\beta_k X_{ik}+\beta_s X_{is}+\mu_v) \quad (3)$$

where μ_v reflects the intercept for each village. This is equivalent to adding a dummy variable for each village. These models are estimated by using STATA command `xtlogit` with a village-level fixed effects specification.

The village-level fixed effects model allows us to control all *unobserved* village characteristics to focus only on the impact of household characteristics within the villages. There may still be some elite capture within some villages where the more powerful households manage to secure the limited work available. The fixed effects model tests whether, even within a village, the more disadvantaged households have greater access to MGNREGA work.

Since households are constrained to a total of 100 days per year of work in MGNREGA, gender, age and marital status may determine which person within the household is chosen to participate in the programme.

As MGNREGA pay does not allow gender or age wage differentials, we expect women, the elderly and the very young to be disproportionately selected by households for MGNREGA work. This would then free prime-age males, who are better paid in the market economy, to seek market work. These age and gender differences have been estimated by using a household-level fixed effects regression.

$$\Pr(\text{MGNREGA}_{pi})/\Pr(1 - \text{MGNREGA}_{pi}) = \exp(\alpha_0 + \beta_p X_{pi} + \mu_i) \quad (4)$$

where the probability of MGNREGA participation for person p in household i is a function of age, education, gender and marital status of the individual within the household. This framework is similar to the village-level fixed effects model estimated in Equation (3).

4.1 Description of variables

One of the strengths of the IHDS survey is the wide range of social and economic data collected for each household. In our analytic models, we test for participation along several dimensions of social and economic disadvantages while holding constant other household and individual characteristics that might also influence MGNREGA participation. We focus on the following sets of variables:

Social background: The caste group (forward castes, other backward classes (OBCs), SCs and STs) and religion (Hindu, Muslim or other) of the household head.

Long-term economic status as measured in 2004–05: A count of up to 30 assets owned by the household, including possessions ranging from basic assets like a table or a chair to more modern and expensive possessions like a refrigerator or a washing machine. Household assets reflect the underlying economic well-being of that particular household, as possessions accumulated over many years shed better light on a household's long-term economic standing than do annual measures like income, which tend to be volatile. Assets also constitute the economic measure that is most likely to be visible to others in the village, which could act as a deterrent to MGNREGA participation.

Household income and occupation as measured in 2004–05: Household income quintile; sources of household income, including participation in wage labour, farming and business; and landownership.

Household demographics: The number of adult members in the household and the highest level of education attained by any adult household member.

Individual characteristics: Sex, age and marital status of the individual members of the household.

5. RESULTS AND DISCUSSION

In this section, we present the results of our analyses. We begin by highlighting the participation across different socio-religious and economic axes in MGNREGA. This is followed by different variants of econometric models described above.

5.1 Descriptive statistics

Descriptive statistics for all household variables are included in Table 1. The final column of the table shows the proportion of each category participating in MGNREGA. The overall household participation rate is 24.4 per cent, but Table 1 shows that participation varies widely by caste, religion, income level and other household characteristics. Even wider variation by states is seen, with only 2.9 per cent of the rural households in Maharashtra and Goa reporting MGNREGA participation as compared to a corresponding figure of 60.5 per cent in rural Chhattisgarh. However, it is important to note that the smaller IHDS samples within each state mean larger standard errors for these estimates.

All indices of social or economic position show greater MGNREGA participation among the least privileged. SC and ST households show higher participation rates than OBC households, which, in turn, show slightly more participation than forward-caste households. Households from the bottom three income quintiles participate in the programme at equivalent but higher rates (about 30 per cent) than the top two quintiles. In that sense, MGNREGA is proving to be an important anti-poverty

programme as it attracts more poor than rich households. However, its appeal is broader than its appeal to the poor alone, as middle-income households also participate in MGNREGA work at significant rates. In addition, landless households have higher participation rates (25.4 per cent) than large landowners (12.9 per cent). Households depending on farm or non-farm wage labour exhibit higher participation rates than those with salaried incomes. Illiterate households show higher participation rates than those with adults who are graduates or have acquired secondary school level education. Work offered under MGNREGA is low-skill, manual labour. Given this feature of the programme, we note that education, work and income variables have the intended distribution as shown in Table 1 follow the intended lines.

Although descriptive statistics are suggestive, econometric analysis is needed to explore the relationship between participation choice and other variables. Therefore, we run a logistic regression model regressing actual participation on the full range of variables.

5.2 Determinants of household-level participation

First, we estimate a household-level logistic regression model for all households given their initial household-level characteristics (that is, in 2005, before MGNREGA began). Table 2 gives the coefficients for a logistic regression at the all-India level, indicating the likelihood of MGNREGA participation. Here the economic variables of direct interest are consumer durables owned in 2004–05 and income in 2004–05. The asset coefficient is negative and significant; households with a relatively large asset base do not participate in the kind of work offered by MGNREGA.

Table 2 also delineates the relationship between household income in 2004–05 and MGNREGA participation. Here the results are intriguing. Although families from the top-income quintile are least likely to participate in MGNREGA (even after holding constant their asset level), the bottom 80 per cent are more or less equally likely to participate.

There is a strong link between levels of education and poverty. A better educated household has more job opportunities and is in a better position to escape poverty. Since MGNREGA offers only casual unskilled labour work on a temporary basis, a less educated household is more likely

Table 2: Logistic regression results (household level)

MGNREGA participation status	Coefficients	Standard error
Round II (2011–12) Variables		
No. of adults	0.050**	0.016
Caste and ethnicity ('forward castes' omitted)		
OBCs	0.053***	0.061
SCs	0.652***	0.068
STs	0.301***	0.082
Religion ('Hindus' omitted)		
Muslims	-0.052	0.075
Others	-0.450***	0.105
Round I (2004–05) Variables		
No. of consumer durables owned	-0.046***	0.006
Household income in 2004–05 (bottom quintile omitted)⁺		
2nd quintile	0.141**	0.062
3rd quintile	0.104	0.065
4th quintile	0.082	0.070
Top quintile	-0.271***	0.091
Education level of the household (no education omitted)		
Primary (1–4 std.)	-0.064	0.071
Secondary (5–9 std.)	-0.210***	0.054
10–11 std.	-0.381***	0.081
12 std./some college	-0.470***	0.102
Graduate/diploma	-0.748***	0.119
Sources of income (farm/own cultivation omitted)		
Non-agricultural wage	0.004	0.065
Agricultural wage	0.229***	0.063
Salary	-0.225**	0.082
Business	-0.252**	0.088
Animal care	-0.507***	0.106
Remittances/other	-0.359**	0.103
Constant	-0.879***	0.099
Sample size (<i>N</i> households)	28,129	

***<0.001, **<0.01, *<0.5 and + 0.5 to 0.05 respectively.

⁺ Quintile calculations are based on rural income distribution.

Source: Authors' calculations from IHDS I and II.

to turn to MGNREGA as a source of employment even holding constant their economic level. In Table 2, the education effect appears to be quite linear with lower levels of participation seen for people with each higher level of education.

MGNREGA operates in rural areas that remain predominantly agrarian even today despite a falling share of agriculture in national income and employment. Since agricultural activities are seasonal in nature, it is vital for the workforce employed in agriculture to have access to alternative channels of employment. The regression results show that households with agricultural wage workers are more likely to participate in MGNREGA than households who cultivate their own land.⁵ It thus appears that MGNREGA does act as a source of alternative employment and provider of safety net.

Historically, SCs and STs have lagged behind in overall development and hence have rightly been the focal point for this programme. As compared to the forward-caste households, SC and ST households are characterised by less education, income and household assets and are thus favoured for targeting in this programme, which is essentially meant for poor and less educated households. The results in Table 2 show higher SC and ST participation even beyond these economic and educational characteristics. This confirms that MGNREGA is succeeding as a self-targeting programme for the most disadvantaged communities.

In contrast to Dalits and Adivasis, Muslims have no significantly different participation rates from economically equivalent majority Hindus. More detailed analyses, not shown here, have shown that Christians tend to have somewhat higher participation rates and Sikhs lower participation rates, but these differences are entirely a function of the high participation rates in the North-East and low rates in Punjab.

5.3 State and village fixed effects logistic models

The findings depicted in Table 2 thus clearly indicate that participation in MGNREGA is largely from the marginalised groups. However, some of these results might be due to the strong geographical variation noted in Table 1, which is not captured by this model. For example, since caste and income vary by place of residence and its economic opportunity structure, the

successful targeting of disadvantaged households may derive primarily from targeting disadvantaged regions and villages. Regional targeting could be particularly important for Adivasis since they are most likely to live in remote areas where few alternative job opportunities exist but which were earlier targeted for inclusion in MGNREGA. Adivasis integrated into more developed, mixed-caste rural areas, on the other hand, might not enjoy the same access to MGNREGA employment. In order to estimate how much of the targeting is only a result of the geographical targeting of poorer states and villages, we calculate two additional models that control first for state-level and then village-level differences.

Interestingly, instead of attenuating caste effects, the geographic controls have little or no impact on the estimates of participation levels by Dalits and Adivasis. State-level controls in Table 3 actually slightly raise the estimates of Adivasi participation while slightly lowering the estimates for Dalits. The more extensive village controls reverse those changes but leave the estimates almost equal or even somewhat stronger than in the initial estimates from Table 2. This indicates that the higher participation rate of Dalits and Adivasis is not a function of Dalit and Adivasi areas getting more programme access but rather of greater programme participation even in mixed locations.

Similar results are also observed for the estimates of economic effects. Both asset levels and income coefficients become larger after state-level controls are added. This suggests that contrary to the initial impressions, MGNREGA participation levels are not especially high in the poor states. Like the poorer states of Chhattisgarh and Rajasthan, the better-off states of Tamil Nadu, Andhra Pradesh, and the North-East also register high participation rates. States like Jharkhand, Bihar and Odisha, while showing moderate levels of MGNREGA participation (see Table 1), have negative coefficients once household-level economic standing is controlled for. Hence, rather than low-income households having high MGNREGA participation rates because they are located in poor states, it appears to be more likely that within each state, it is the low-income households that participate.

Table 3: State and village fixed effects logistic models

MGNREGA participation status	State fixed effects**		Village fixed effects**	
	Coefficient	Standard error	Coefficient	Standard error
Round II (2011–12) variables				
No. of adults	0.137***	0.018	0.166***	0.015
Caste and ethnicity (forward caste omitted)				
OBC	0.142*	0.069	0.260***	0.068
SC	0.587***	0.074	0.740***	0.072
ST	0.486***	0.098	0.335**	0.102
Religion (Hindus omitted)				
Muslims	-0.182*	0.089	-0.250*	0.110
Others	-0.132	0.136	-0.226	0.143
Round I (2004–05) variables				
No. of consumer durables owned	-0.088***	0.008	-0.076***	0.007
Household income in 2004–05 (bottom quintile omitted)*				
2nd quintile	0.096*	0.049	0.112*	0.060
3rd quintile	-0.005	0.051	0.059	0.063
4th quintile	-0.087	0.056	-0.056	0.069
Top quintile	-0.424***	0.074	-0.381***	0.086
Highest adult education level of the household in 2004–05 (no education omitted)				
Primary (1–4 std.)	0.024	0.081	-0.039	0.073
Intermediate (5–9 std.)	-0.109*	0.060	-0.108*	0.052
10–11 std.	-0.189*	0.092	-0.250**	0.075
12 std./ some college	-0.203*	0.111	-0.296**	0.090
Graduate/diploma	-0.596***	0.126	-0.646***	0.108

Contd..

MGNREGA participation status	State fixed effects**		Village fixed effects**	
	Coefficient	Standard error	Coefficient	Standard error
<i>Sources of income in 2004–05 (farm/own cultivation omitted)</i>				
Non-agricultural wage	–0.033	0.074	0.013	0.067
Agricultural wage	0.172*	0.076	0.252***	0.066
Salary	–0.335***	0.091	–0.266**	0.079
Business	–0.143	0.096	–0.175*	0.084
Animal care	–0.456***	0.113	–0.133	0.100
Remittances/other	–0.351**	0.111	–0.493***	0.094
<i>Village infrastructure in 2004–05 (more developed villages omitted)</i>				
Less developed villages	0.375***	0.053		-
Constant	–1.297	0.131		-
Sample size (N households)	27,909		18,463	

Note: State dummies are included in the state-fixed effects model but are not reported. ***<0.001, **<0.01, *<0.05 and + 0.5 to 0.05 respectively.

* Quintile calculations are based on rural income distribution.

** Fixed effects models estimated only with cases that contain variation in MGNREGA participation within the second level unit.

Source: Authors' calculations from IDHS-I and II.

5.4 Individual-level fixed effect logistic model

In addition to providing livelihood security for households, MGNREGA contains a particular focus on women and is expected to ensure that 33 per cent participants are women. In order to examine the success of this objective, we run the household-level fixed effects model to study the intra-household dynamics of MGNREGA participation. For this analysis, we consider individual demographic characteristics, viz. gender, age and marital status. The data utilised for individual-level regression has been taken from MGNREGA-participating households in the second round of the survey (IHDS-II), and the results are presented in Table 4.

Table 4: Household-level fixed effect logistic model: MGNREGA and overall work participation**

	MGNREGA participation		Overall work participation	
	Coefficients	Standard error	Coefficients	Standard error
Round II (2011–12) variables				
Gender				
Female	–0.550***	0.031	–2.183***	0.026
Age category (18–29 years) (Omitted)				
30–39	0.925***	0.057	1.320***	0.040
40–59	0.969***	0.051	1.464***	0.034
60–75	–0.003	0.071	–0.374***	0.042
76 and above	–1.767***	0.222	–2.489***	0.086
Marital status (currently married omitted)				
Never married	–0.812***	0.069	–1.825***	0.038
Widowed	–0.405***	0.080	–0.869***	0.048
Separated/ divorced	–0.590***	0.202	–0.476**	0.147
Married, no <i>gauna</i>	–1.049**	0.456	–0.176	0.272
Sample size (N individuals)	19,432		60,226	

Note: ***<0.001, **<0.01, *<0.5 and + 0.5 to 0.05 respectively.

+ Quintile calculations are based on rural income distribution.

** Fixed effects models estimated only with cases that contain variation in MGNREGA participation within second level unit.

Source: Authors' calculations from IDHS-I and II.

It is necessary to compare the individual MGNREGA participation results with similar results for overall work participation. We need to understand not only which individuals participate in MGNREGA, but whether such participation rates are greater or lesser than general work participation in those households. While women are less likely than men to participate in MGNREGA, this

disadvantage is smaller than for overall work participation. The female coefficient is -0.55 for MGNREGA participation but -2.18 for overall work participation. This confirms that female workers find greater favour in MGNREGA work than in other types of work. This could be because MGNREGA is the only sector where wage equality is enforced; in all other work, women earn substantially less than men. Another explanation for the higher female participation in MGNREGA could be the 33 per cent reservation for female workers in the programme.

The second variable of interest is the age of individual MGNREGA workers. MGNREGA participation shows an inverse U relationship with the youngest and oldest workers least likely to participate in it. However, once again, when compared to the inverse U relationship with overall work participation in the panel, we see that for MGNREGA work, the inverse U is more muted. This suggests that while the youngest and oldest workers are left out of the other sectors, MGNREGA is more open to them. Similarly, though married individuals are most likely to participate in MGNREGA, widows/widowers face fewer disadvantages in MGNREGA work as compared to other types of work.

These results are interesting in that they highlight ways in which labour market opportunities shape household work participation decisions. Adult males who have access to better labour force opportunities than women are not as attracted to MGNREGA as are women and the elderly who have limited opportunities in other kinds of work.

6. CONCLUSION

We began by asking which households are more likely to participate in the MGNREGA programmes, what their characteristics are and what the intra-household dynamics are with regard to participation patterns. Our results provided an intriguing answer. We found that for the categories of households who otherwise are excluded socially and for those which the Act defines as being marginalised, that is, Dalits and Adivasis (SCs and STs), participation rates are higher. This relationship persists even when we controlled for prior income and consumer assets, sources of income and place of residence, all of which are themselves related to MGNREGA participation. Women are not quite on par with men in MGNREGA

participation but the disadvantage they faced is much less than what they experienced in other types of work. However, higher participation rates are not observed for groups that have not been explicitly identified, like Muslims.

Like the targeting of socially excluded groups, the economic targeting of MGNREGA seems to have been moderately effective, though there is a broader band of people falling in the low to middle economic groups who have taken advantage of MGNREGA. While the highest income and education groups seem to self-select themselves out of MGNREGA work, there is little gradation among the population in the bottom 60 per cent. This actually speaks about the broad-based support that MGNREGA as a programme enjoys. Moreover, MGNREGA work seems most attractive to agricultural wage labourers, who are familiar with the hard, manual labour offered by MGNREGA.

Although the paper confirms some of the observations made using other data-sets and that of micro-level studies, it strengthens these earlier observations by reinforcing those findings and adding to them using a longitudinal data set that allows us to look at before and after MGNREGA incomes for the same set of households. These results provide a useful starting point given current discourses around reforming MGNREGA. Concerns about the high costs of the social programme and a belief that MGNREGA has failed to reach the poorest drives the call for reforms in MGNREGA (Dutta et al. 2014). In this paper, we offer somewhat different evidence and suggest that despite being plagued by various deficiencies, MGNREGA's achievements are moderately effective in terms of its programme participation and that it would be worthwhile to build on this success instead of reinventing the wheel.

NOTES

- 1 The National Rural Employment Guarantee Act (NREGA), 2005, was later renamed as the Mahatma Gandhi National Rural Guarantee Act (MGNREGA).
- 2 This focus on the vulnerable population was enhanced through phased implementation of the programme in 2006 with the first 200 districts being chosen on the basis of their backwardness.
- 3 See www.mgnrega.nic.in and MoRD, 2012.
- 4 Although there are differences of opinions among researchers about suitability of logit models, for a binary dependent variable such as the present (whether

- household participates or not), logit models are better suited unless there is a compelling reason to use a LPM model.
- 5 We also use landownership as a control in regression in Table A.2. It shows that only large landowners opt themselves out of participation in MGNREGA.

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Appendix A

Table A.1: Variables – Definitions and details

Name of the variable	Details
Variables from Round II (2011-12)	
No. of Adults (age>18) in the Household	Mean = 2.86 SD = 1.40
Caste and Ethnicity	Forward castes, OBCs, SCs, STs
Religion	Hindus, Muslims, Others
Variables from Round I (2004–05)	
Number of consumer durables owned by household (0-30)	Mean =9.97 SD = 5.24
Household income	Household Income Quintile Class
Education level category of the household based on the highest level of adult education	No education, primary (1–4 std.), secondary (5–9 std.), 10–11 std., 12 std./some college, Graduate/Diploma
Main source of income for household	Non-agricultural wages, agricultural wages, farming/own cultivation, salary, business, animal care, remittances/other
Village infrastructure	Type of village (more developed/less developed) based on access to 10 infrastructure facilities, namely electricity, paved road, grocery shop, bus stop, landline and mobile telephone, post office, police station, markets and bank
Type of farmers based on land ownership	None, marginal (0–1 hectares), small (1–2 hectares), medium (2–5 hectares), large (5 hectares and more)
Gender	Male, female
Age category	18–29 years, 30–39 years, 40–59 years, 60–75 years, 76 years and above
Marital status	Currently married, never married, widowed, separated/divorced, married, No <i>gauna</i>

Source: Authors' calculations from IHDS-I and II.

Table A.2: Logistic regression with landownership (household level)

MGNREGA participation status	Coefficient	Standard error
Round II (2011-12) Variables		
No. of adults	0.136***	0.017
Caste and ethnicity (forward castes omitted)		
OBCs	0.155*	0.069
SCs	0.672***	0.074
STs	0.524***	0.098
Religion (Hindus omitted)		
Muslims	-0.135	0.088
Others	-0.116	0.139
Round I (2004-05) Variables		
No. of consumer durables owned in 2004-05	-0.097***	0.007
Household income in 2004-05 (bottom quintile omitted)*		
2nd quintile	-0.406 ^a	0.208
3rd quintile	0.112	0.069
4th quintile	-0.016	0.071
Top quintile	-0.120***	0.076
Education level of the household in 2004-05 (no education omitted)		
Primary (1-4 std.)	0.004	0.080
Secondary (5-9 std.)	-0.143*	0.060
10-11 std.	-0.243**	0.091
12 std./some college	-0.275*	0.110
Graduate/diploma	-0.703***	0.127
Village infrastructure in 2004-05 (more developed villages omitted)		
Less developed villages	0.356***	0.053
Type of farmers		
Marginal (0-1 hectares)	0.209***	0.056
Small (1-2 hectares)	0.233**	0.078

Medium (2–5 hectares)	0.277**	0.090
Large (5 and more hectares)	–0.094	0.187
Constant	–1.460***	0.124
Sample size	27,909	

Note: State dummies are included in the model specification but are not reported.

***<0.001, **<0.01, *<0.5 and + 0.5 to 0.05 respectively.

+ Quintile calculations are based on rural income distribution.

** Fixed effects models estimated only with cases that contain variation in MNGREGA participation within second level unit.

Source: Authors; calculations from IHDS-I and II.

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7. The journal follows British English spelling (with -ise variant), not American (e.g. programme, not program; labour, not labor). The Oxford Advanced Learner's Dictionary is to be followed for spellings.
8. Quotation marks should be consistently single, except for a quote within a quote: e.g. Sen summed it up best by saying: 'The importance of capital in the production process notwithstanding, a distinction must be made between "foreign" and "domestic" capital.'
9. Authors will receive a PDF file of their published article.

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