Targeting the poor by voluntary participation: Evidence from the National Rural Employment Guarantee Scheme in India [1]

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Abstract

Anti Poverty Policies are often very hard to implement. The National Rural Employment Guarantee Scheme launched in India is one of the largest policy initiatives in the world that seeks to alleviate poverty by guaranteeing households at least 100 days of work. It attempts to solve targeting issues by designing a scheme where primarily the poor have an incentive to voluntarily opt for doing public works, but the rich may not find it worthwhile. We investigate this underlying assumption by looking at household data from one such targeted district in India. We look at the determinants of who opts for the scheme and find almost every household takes advantage of the scheme. Further, we find that public works is taking people away from private casual labor. The lesson learnt from the Indian experience is that if public works wages are too high, it can be counter productive.

[1]. Without the financial support of PPRU from ISI (Delhi) and Centre de Sciences Humaines, the data collection could not have been possible. I also thank my research aides Jaydev Dubey and Neeraj Goswami for their help. The usual disclaimers apply.
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Introduction

Anti-poverty policies have often suffered in developing countries due to poor targeting. While poverty is very visible, it is often difficult to specify cut off thresholds of income to provide subsidies and cash transfers. Agriculture income is difficult to measure and is mostly misreported. Many programs, to get away from having to specify income cut offs, have sought to target people belonging to minority disadvantaged groups (for example disadvantaged castes in India) but the political wrangling that comes with it often makes this controversial.

In the period leading up to August 2005, some social activists and economists in India mooted the idea of an employment guarantee scheme to alleviate poverty. This led to the **National Rural Employment Guarantee Act (NREGA)** which was implemented on August 25, 2005. The NREGA provides a legal guarantee for one hundred days of employment in every financial year to adult members of any rural household willing to do unskilled manual work at the statutory minimum wage. The Statutory minimum wage can vary from state to state. The act was operationalised through the National Rural Employment Guarantee Scheme (NREGS). The scheme started in the financial year 2005-2006 and initially it was restricted to 200 poorest districts of India[2].

The advantage of the NREGS as a poverty alleviation scheme is that the government does not have to identify poor households. The thought behind the scheme is that needy households will self select themselves into the scheme. However the crucial element in this is that the wage from public works is not too high. In case it's too high, then every household will find it advantageous to work on public works and the fear is that it will take away time from private casual labour and disrupt the casual labour market in the long run.

Since the scheme has been operational for a short period of time, there aren't many rigorous studies on what the effects of the scheme are on rural households. Most of the studies have studied and commented on the implementing the scheme properly. Ambasta, Shankar and Shah (2008) have stressed on the need to reform the governanace of the scheme to reap its benefits. Vanaik et. al (2008) look at the nitty gritties of how wages are paid as a part of the scheme. The administritative design problems with public employment schemes have long been known and many articles, for example, Ravallion (1991) have pointed out the success of the pubic employment schemes in rural areas in South Asia depend crucially on how they are designed and financed. In terms of whether the scheme would benefit the poor, there has been very little rigorous work[3]. Murgai and Ravallion (2005) were to first to explore this topic on the basis of a microeconometric model of the casual labor market in rural. They found that "*a guaranteed wage rate sufficient for a typical poor family to reach the poverty line would bring the annual poverty rate down from 34 percent to 25 percent at a fiscal cost representing 3-4 percent of GDP when run for the whole year.*"

[2] There is recent talk that it will be extended to all districts in the near future.
[3] There are many papers on how public works in general help poverty alleviation in India

Most studies on NREGS reply on the working of a similar scheme in the state of Maharashtra in India. An employment guarantee scheme has been in operation in Maharashtra since 1972. Evidence on the effect of the scheme in Maharashtra was mixed. Gaiha (1996) pointed out that not only were the more affluent participating in the scheme, but they were getting more out of it. Ravillion et. al (1993) questioned if the employment guarantee was indeed a credible guarantee.

While there has been sparse work on this scheme, there has been an appreciation from the beginning that the minimum wage set by the government will be important. Ganesh-Kumar et al. (2004) report these thought in their piece on the probable effects of NREGS. In light of the sparse evidence in the context of the NREGS as implemented from 2005, this paper is one of the first to provide hard evidence on the effect of the scheme. Using panel data information on households from the Karauli district in Rajasthan, we explore on how the scheme has affected rural households. The information is based on two waves of primary surveys carried out in 2006 and 2007. In this paper, we explore three different strands. First we explore which households self select themselves into the scheme and what determines the amount of public works they do. Next using a probit model, we investigate what determines the probability of an individual doing public works under NREGS. In the end, we examine how NREGS has changed the occupation status of people. For this last investigation, we use the panel information on individuals before and after the imposition of the scheme.

The paper is structured thus: in Section 1, we discuss the sampling methodology and look at some data descriptives. In Section 2, we look at structure of NREGS and look at which households opt for being a part of NREGS. Section 3 looks at the amount and of public works undertaken by households and its determinants. Section 4 delves deeper into what are the covariates of individual participation into public works. Section 5 uses the panel data structure to look at how NREGS is changing people's occupation status. Section 6 concludes.

1. Sampling and Data Description

The analysis in this paper is based on primary data collected on households residing in the district of *Karuali*. Two waves of data were collected on a panel of 179 households in the months April-June of the years 2006 and 2007. While the scheme started end of the year 2005, it was not fully operational in the period April-June 2006 in Karauli. By April-June 2007 the scheme was fully operational.

The sampling was done in two stages. First we stratified the district according to administrative regions called "blocks" and then within each "block", we selected one village at random. This was done to give the sample spatial representability. Within each village, we selected approximately 30 households at random[4]. All members currently residing in the household were surveyed. This was done as the consumer expenditure

[4] Our Surveyors made a complete house listing starting from the center of the village and moving on any one side at random.

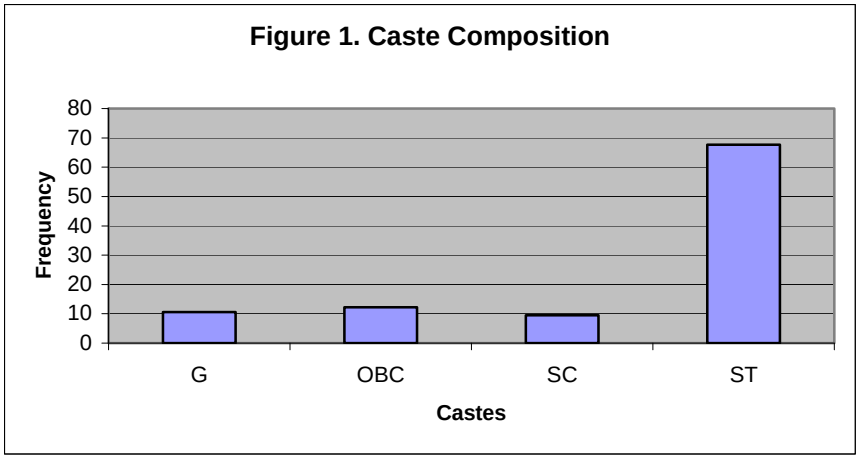
questionnaire pertained to short recall periods and it was important to take cognizance of the people temporarily visiting the household. In many cases, this led to interviewing of members who were in the house temporarily. Due note was made of this while interviewing and data on these individuals are not used for our analysis. Table 1 gives all the details of the survey.

Table 1: Descriptives of the Survey

Block	Village	Number of Households		Number of Persons	
		Round 1	Round 2	Round 1	Round 2
Hindaun	*Karwar*	30	30	168	160
Karauli	*Khirkhira*	30	30	186	154
Mandrail	*Kanchanpur*	29	29	153	161
Nadoti	*Jeerana*	30	30	186	174
Sapotara	*Kalagurha*	30	30	129	116
Todabhim	*Kheriya*	30	31	154	147
Total		179	180	976	912

There was minor attrition at the level of households. One household dropped out from the sample and was replaced with 2 households[5]. The replacement households was chosen from the same social caste. The survey thus has information from both rounds on 178 households. There is a lot more attrition at the level of the individual. We have information from both rounds on 841 individuals who are permanent residents of the household (86 percent of the original sample). We did not attempt to replace individuals. For most of our work involving both rounds, we will use information on a subset of these 841 individuals. However when we work with each round separately, we will use information on all the permanent members of the household. The descriptives below are based on round 2 of our survey.

[5] We replaced one household with two so that we had an additional flexibility in case the replacement was not good. As it turned out, both turned out to be close in characteristics to the household that dropped out.



Most surveyed individuals belong to Schedule Tribe households (ST). The next highest proportion of individuals belong to the "Other Backward Castes". The proportion of General (other higher castes denoted by G) and Scheduled Caste (SC) is the lowest at around 10 percent. All the individuals are Hindu. The caste and religious composition are in line with the population compositions in this district.

The average per capita land owned by the households is 1 *Bigha* (about 0.6 acres). 15 percent of households own no land. However 2 percent of the households own more than 5 Bigha of land per capita. Thus we have variation in the economic status of people in our sample.

The average household size in the first year of the survey is 4.8 individuals which is smaller than the usual household sizes in rural India. We believe that recent episodes of drought in the district have led to mass out-migration. This in part explains the smaller than usual household size. The household size does not vary much in the two rounds. We have checked that the out migrants are not temporary (which would lead to an artificial fall in household size).

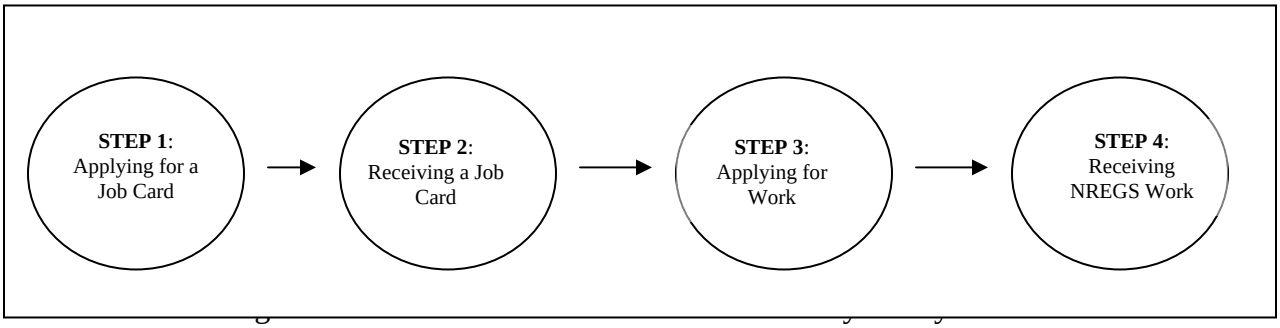
Fifty five percent of our sampled individuals are male. The average age of males is 24.36 years while the average age of females is 24.55. The average number of years of education of males is 5 years while that of females is only 2 years.

Given these characteristics of our sample, in the next section, we explore how the households have responded to NREGS and how it has affected their allocation of labour supply.

2. Households Opting for the Scheme and Getting to Work on NREGS

The National Rural Guarantee Scheme (NREGS) works through households voluntarily opting to be a part of the scheme. However, there are various steps involved in finally getting work through the scheme. Figure 2 shows the various steps involved.

Figure 2: Steps to receive work under NREGS



wage fixed by the state. The wage fixed by the state of Rajasthan was Rupees 73. Any adult member of the family can apply for work.

The household has choices at two steps of the process. The first choice is the decision to apply for a job card (STEP 1). The second choice is the decision to apply for work once they have received the job card (STEP 3). In the practical application of the scheme, there can be two impediments: first, when the local authorities illegally deny the household a job card (STEP 2) and second, when the local authorities do not provide work to households who have applied for work (STEP 4). It would therefore be interesting to explore what determines the choices that the households make and if they face impediments to get NREGS work.

Table 2: Application for Job Card

Applied for a Job Card	Number of Households	Percentage
YES	176	97.78
NO	4	2.22
Total	**180**	**100.00**

A look at Table 2 shows that there is an almost universal demand for Job Cards in the case of households surveyed in the villages of Karauli. Almost 98 percent of households apply for a job card. This is not surprising as applying for a job card is a costless process. The 4 households who do not apply for a job card belong to the highest wealth quartile. However, about 33 percent of those applying for a job card are from the highest wealth quartile. Given the large proportion of people who apply for job cards across economic strata, public works seems to be an insurance most households register for to tide over any shocks over the year.

The first impediment to getting work could be receiving the job card. However it would seem that the villages in Rajasthan are fairly good at providing Job Cards as around 97 percent of those who applied got a job card.

Table 3: Receiving a Job Card

Receiving a Job Card	Number of Households	Percentage
YES	171	97.16
NO	5	2.84
Total	**176**	**100.00**

This evidence points to an efficient working of the Job Card registration system in the district of Karauli. This is in contrast to corruption charges that have been pointed out at this stage in other states.

Given the costless procedure of getting a job card, the variation in choices could be at the stage of applying for work under NREGS. However as Table 4 shows, this is not the case.

Table 4: Applying for Work Under NREGS

Applying for Work Under NREGS	Number of Households	Percentage
YES	167	97.66
NO	4	2.34
Total	**171**	**100.00**

Most households who get the job card apply for work. This seems at odds with the underlying idea behind the scheme that only the most needy households would volunteer for the scheme. While 75 percent of households who do not apply for work belong to the highest two wealth quartiles[6], about 32 percent of those who do apply for work under NREGS are in the highest wealth quartile. This would suggest that most households treat the public works scheme as an additional source of income and take advantage of it. So it would seem that NREGS in the district of Karuali is not very good at targeting itself to the poorest households.

Table 5: Receiving Work Under NREGS

Receiving Work Under NREGS	Number of Households	Percentage
YES	140	83.33
NO	27	16.17
Total	**167**	**100.00**

The last step of the process is to be awarded work under NREGS to those who apply. Table 5 shows, surprisingly, that about 16 percent of those who apply don't receive work. However a village wise disaggregation shows that 26 of the 27 households not receiving work belong to one village (Kheriya). Further investigation reveals that this

[6] One household from the poorest wealth quartile does not apply for NREGS as they are state that they are too old to work.

is because of a standoff between the local authorities and the villagers on the issue of land acquisition for public works. The proposed public works in this village required that the villagers donate some land from their farms, but the villagers oppose this and thus no public works has been done in this village.

Thus out of the 180 households surveyed in Karauli, 140 households, that is about 78 percent of those surveyed, have some member doing public works. Given that a large number of those who don't do public works belong to one village, any econometric analysis of this problem is useless in this context[7]. Apart from Kheriya, simple tabulations show that most of those who don't do public work belong to the highest wealth quartile.

3. Amount of Public Works done by Households

Most households opt for public works, but they may vary in the degree of public works they undertake. In this section, we first look at the number of days of public works each household has done in the last year. The NREGS guarantees each household 100 days of work in the last year. However, some households may opt not to work for the full 100 days. Moreover, due to delay in getting a job card, they may not be able to avail of the full 100 days. However in the case of Karauli, most got their job cards by June 2006 and could therefore work for 100 days in the year 2006-2007.

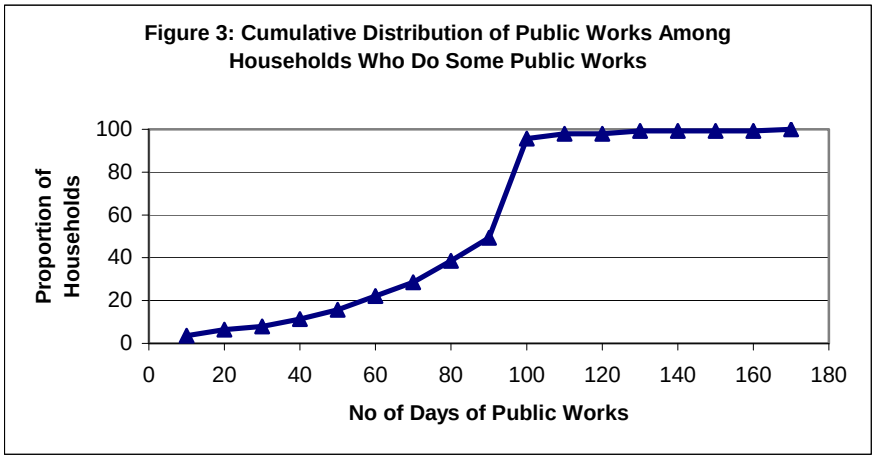


Figure 3 shows the distribution function of total public works done by households in the last 365 days. As can be seen from the steep spike in the interval from 90 to 100 days, most of the households are clustered in this range. About 46 percent of households work 100 days. A small proportion of households (4 percent) work more than 100 days. Most of the mass of the density function is within the 80 to 100 days interval. This implies that most households try to cash in on the public works opportunity. The clustering around 100 days also suggests that households who want to do more public works are constrained by the local authorities who provide what is legally the minimum requirement. Next we try to look at what determines the number of days of public works

[7] A village dummy for the village for Kheriya will explain almost all instances of no public works.

a household provides. We fit a negative binomial model to look at the significance of the covariates. Table 6 provides the implied marginal effects. Results suggest that wealthier households work less. Households with higher average age work more on public works, though as the household gets older this tendency reduces. More educated households work less on public works. Minorities work more days on public works while the significance of the village dummy for Khirkhira suggests that in some villages, there is more public works available. The insignificance of the household size variable and the gender composition of the household is surprising at first glance. Anecdotal evidence has suggested that families send their children and women to do public works. While this is consistent with our results, it also suggests that families which are smaller and have lower proportion of women too take advantage of the scheme by allocating more public work to each household members.

Table 6: Number of Days of Public Works (Negative Binomial Regression)

	Marginal Effect
Per Capita Land	-7.14
	(-1.76)^
Average Age of HH members	2.57
	(2.34)*
Square of Average Age	-0.04
	(-2.29)*
Average Years of Education	-2.82
	(-1.69)^
Prop of Females in the HH	24.42
	-1.25
Average Wage in Pvt Casual Lab	-0.01
	(-0.01)
Household Size	1.13
	(-0.62)
Reference Group: Other Castes	
OBC	77.00
	(2.49)*
SC	52.32
	(-1.77)^
ST	51.47
	(3.32)**
Reference Village: Jeerana	
Kalagurha	6.46
	(-0.43)
Kanchanpur	6.79
	(-0.74)
Khirkhira	-34.82
	(-3.65)**
Number of Observations	149.00

^ Significant at 10 percent * Significant at 5 percent, ** Significant at 1%

4. Individual Participation in Public Works

The discussion in the last section points out that in Karauli, most households opt for the scheme and, barring disputes at the village level, work on public works. We have also looked at what determines the total content of public works at the household level. Next we look at who, in the household, is sent out for public works. In this section, we investigate who is more likely to do public works in households where some public work is done. Are women in such households more likely to do public works? Is an individual less likely to do public works if he comes from a richer household? Does Caste have a role? To answer these questions we model the probability of an individual doing some public works conditional on some one in the household doing public works[8]. This model should not be taken as inferential but merely descriptive. We concentrate on the age group 16 and above[9] to focus on people who may potentially be in the labour force.

There are 425 individuals in the sample in the relevant age group belonging to our selected households. Fifty percent of the individuals in our selected sample partake in public works. First, we look at the how the proportion of people doing public works vary with individual characteristics.

Table 7 shows that there is no significant difference in the proportion of males on public works from the proportion of females. However this is an important indicator that the public works scheme are affecting women more than men because women's labour force participation usually tends to be lower (For example, the 61st round of the National Sample Survey puts this figure at 25 percent for rural women). It is also interesting to see that women tend to work for a larger number of days in public works. This drawing of women to public works will be looked at in a later section.

[8] As we have seen before, because there is a village level protest which describes most of those who don't do public works, selecting households with positive supply of labour in public works will not lead to selection bias.

[9] We deviate from the convention of looking at the age group 15-59 because it may be the case that households send older members to work on public projects. While the scheme stipulates adults should be working on public works, we find people at the ages 16 and above working on NREGS.

Table 7: Proportion Doing Public Works: Individual Attributes

Individual Attributes	Doing Public Works	Average Number of Days in Public Works Among Those Who Do Public Work
Gender		
Males	50	44
Females	51	57
Age Groups		
15-25	31	41
26-35	60	54
36-59	67	51
60 and Above	22	60
Highest Education		
No Schooling	59	55
Primary Schooling	41	39
Higher Secondary Schooling	40	44
Tertiary Education	43	40

Table 7 also suggests an inverted U relationship between age and doing public works. Not surprisingly, the participation in public works and the number of days worked is highest in the 26-59 age group. This is also the age group for the highest participation in the labour force in most of rural India. The effect of education on working for public works also seems reasonable except at the highest level. However it must be pointed out that there are very few people at the highest level of education and hence the proportion may not be very robust (there may also be other factors that co-vary which are difficult to capture in such summaries). Hence, as expected, more uneducated people have a higher probability of working in public works. It can also been seen that there is trade off between how many people do public works and how many days the person works. Taking both into account, there is not much difference between people with Higher Secondary Schooling and people with Tertiary education.

Table 8: Proportion Doing Public Works: Household Attributes

Individual Attributes		Proportion Doing Public Works	Average Number of Days in Public Works Among Those Who Do Public Work
Per Capita Land			
	1st Quartile	49	55
	2nd Quartile	56	50
	3rd Quartile	58	46
	4th Quartile	42	50
Social Group			
	Schedule Tribes (ST)	58	49
	Schedule Caste (SC)	42	55
	Other Backward Caste (OBC)	40	60
	Other Castes	29	40
Someone else in the Household doing Public Works			
	NO	90	72
	YES	42	40
Correlation			
Household Size		-0.16	
Average Education of the Household		-0.12	

Next, we look at the attributes of the households that individuals belong to. We see an inverted U relation between wealth quartile (based on per capita land) which is a bit baffling if we ignore the intensity of public works. Among those who work in public works, the average number of days of public works each person in the first quartile does is 55 days where as the corresponding number in the the 2nd Quartile is 50 days and 3rd Quartile is 46 days. Similarly, although the proportion of individuals doing public works is lowest in the highest wealth quartile (42 percent), the average number of days worked is 50 days. This would suggest that maybe wealth as measured by per capita land is not important in deciding how much public works is provided by individuals. More disadvantaged castes have a higher proportion of people doing public works. This rules out the assertion made by many that minorities may be denied access to public works.

A person's decision to do public works seems to be affected by what other members in the household do. If the person lives in a household where no one else does public works, he/she is more likely to engage in public works. In this case, the person works for almost double as compared to households where many members partake in public works. This suggests an interesting trade off, one where the household is choosing how many persons to send for public work and how many days of public work he/she does. The same effect is re-affirmed by the negative correlation between household size

and doing public works. The negative correlation between the average education of the households and decision to work also re-emphasis that households with less educated individuals are more likely to be greater participants in public works.

4.1 A Multivariate Model of Public Works Participation

The preceding section looks at summary statistics which suggest some of the forces at play. However, since more than one factor determines the decision to do public works, we look at a multivariate model of public works participation. We model the participation to public works using a probit model, that is, we model the probability of public works using a latent variable model. The underlying latent variable y^* is assumed to depend on individual characteristics, the vector of which is denoted by X , household characteristics denoted by Z and Village level characteristics denoted by V. Thus

$$y^* = \beta_0 + \beta' X + \gamma' Z + \mu' V + \varepsilon$$

where β, γ and μ are parameters to be estimated and ε is the stochastic element which follows a Normal distribution. We observe y, which is whether a person works in public works or not. We assume that:

$$y = 1 \quad \text{if } y^* \geq 0$$
$$\text{and} \qquad y = 0 \text{ otherwise.}$$

We consider the individual and household characteristics that we have discussed in the previous section. We add to that list of variables, two variables at the village level, the average village level agriculture wage for the same gender and average village level agriculture wage for the other gender. These have been obtained as a part of village questionnaire from the local authorities.

In this specification, we have omitted the variable that captures if some one else has been doing public works in the household. This is because this is an endogenous variable and while the model is not causative, putting it on the right hand side would make variables very collinear[10]. The variables that come out significant in the estimation are age of the individual, the square of the age of the individual, the dummy denoting that the household is a Scheduled Tribe household, household size and the two private casual agriculture wages. The signs of these significant variables are in line with what we discussed in the earlier section. There is an inverted U shaped relation of age with the

[10] If the variable is introduced in this specification, it is significant and negative.

Table 9: Probit Estimation of Participation in Public Works: Marginal Effects

Dependent Variable: *y=1 if Individual has done Public Works, =0 otherwise.*	Marginal Effects
Gender: Omitted Group: Female	
D_Male (=1 if individual is a male	**0.110**
=0 therwise)	(1.51)
Age of Individual	**0.064**
	(5.36)**
Square of the Age of Individual	**-0.001**
	(4.90)**
Years of Education of Individual	**-0.007**
	(0.80)
Per Capita Land Owned by Houshold	**0.009**
	(0.20)
Square of Per Capita Land Owned by Household	**-0.001**
	(0.24)
Social Caste: Omitted Group: Other Castes	
D_OBC (=1 if individual is from Other Backward Caste HH	**0.107**
=0 otherwise)	(0.91)
D_SC (=1 if individual is from a Schedule Caste HH	**0.122**
=0 otherwise)	(0.97)
D_ST (=1 if individual is from a Schedule Tribe HH)	**0.273**
=0 otherwise)	(2.61)**
Household Size	**-0.029**
	(2.00)*
Average Education Level of the Household	**-0.005**
	(0.34)
Average Private Agriculture Wage for the Same Gender	**-0.021**
	(3.13)**
Average Private Agriculture Wage for the Other Gender	**0.022**
	(3.24)**
Observations	***425***
Robust z statistics in parentheses	
* significant at 5%; ** significant at 1%	
Log Likelihood	-247.42603
Prob > χ^2	0.00

probability of doing work under NREGS. The significant dummy for Scheduled Tribes is positive indicating that they are more likely to do public works than other (higher) castes. The dummies of other minority groups are insignificant indicating they are as likely to work as other castes. The coefficient on household size is negative. This picks up the effect of the possibility of other members in the larger household who can do public works[11].

[11] In the specification where we introduce a variable for other members doing public works, household size comes out to insignificant.

Most strikingly and not discussed before is the effect of the average own wage for casual agriculture work and the effect of the average other gender's wage. The signs indicate that a higher own private wage offer in the village reduces the probability to do public works. This picks up the opportunity cost of public work and points out that there are possibilities of substitution from private to public work if the private wage is not high enough. The marginal effect of the other genders wage is positive. This implies, for example, that if the wage for males is higher, then females have higher probability to do public works. This together with the earlier result indicates the optimization going on in the intra household allocation of labour.

This result points out to the importance of the wage set for public works. If it is too high relative to private wages, it has the potential to change intra household labour allocations. In particular if the wage is higher than both the male and female private wage, this will cause increased move away from private casual work to public work. Is this indeed the case? In the next section we look at the transitions of what households and individuals do after the NREGS is implemented.

5. Occupation Status Transitions

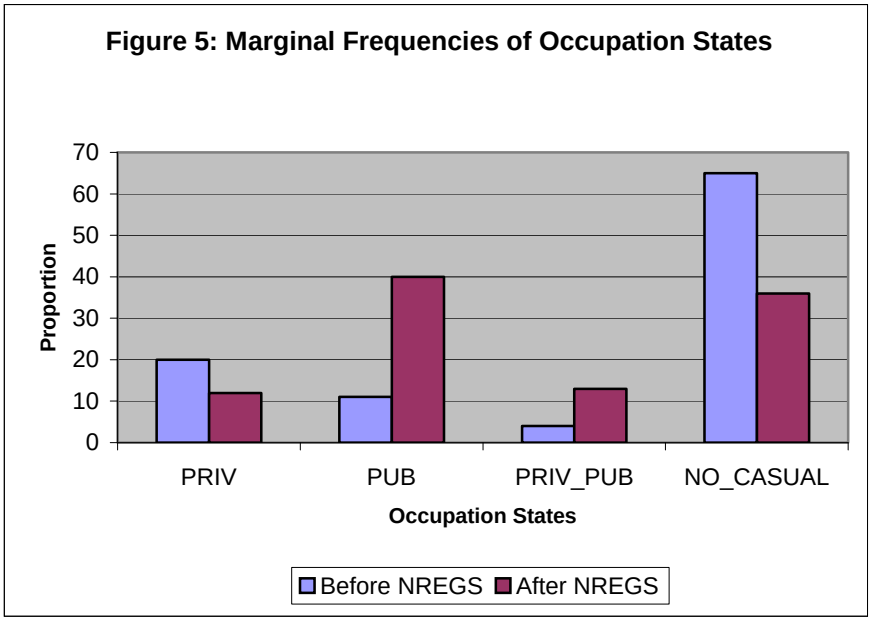
The National Rural Employment Guarantee Scheme represents an increase in job opportunities for individuals. There can be two different effects on the casual labour market. Individuals can act on the extensive margin, where they reduce time working on their farms and on domestic duties and spend time working on public works. They can also substitute on the intensive margin where they spend more time on public works and reduce time on private casual labour. These two effects can be simultaneous. In this section we investigate these possibilities using data on the same individuals from the two waves of surveying. We base our analysis on data on 409 individuals in the age group 16 and above who were present in both rounds.

First, we look at individual labour transitions. We define four states of occupation status. The four states are

A. Those who do some private casual work but NO public work (PRIV).
B. Those who do some public work but NO private casual labour (PUB)
C. Those who do both private and public work (PRIV_PUB)
D. Those who don't do any private or public casual work. These include only people working on their farms and/or doing domestic work (NO_CASUAL)

It is important to point out here that individuals in state A, B and C may also be working on their farms or doing domestic work[12]. Figure 5 gives the marginal frequency in both rounds.

[12] Very few people declare themselves as doing just casual labour.



There is a move away from the occupation states of PRIV and NO_CASUAL. The biggest gainer of this movement is PUB, that is a state where there is no private casual work. It is not surprising that a large number of individuals who were not doing public works are currently doing public works after NREGS. But what is striking is that a greater proportion of people who move away from PRIV and NO_CASUAL do not partake in any private casual labour. To look at this more in detail, let us look at the transitions between the states in the two periods.

Table 10: Occupation Transitions (%s)

	After NREGS			
	PRIV	PUB	PRIV_PUB	NO_CASUAL
Before NREGS				
PRIV	21	33	28	18
PUB	2	63	22	13
PRIV_PUB	6	56	13	25
NO_CASUAL	11	37	6	46

Each row may not add to 100 because of rounding

A simple example clarifies what the cells in Table 10 stand for. The cell entry of 21 in (PRIV, PRIV) indicates that 21 percent of those doing PRIV before NREGS remain in the same state after NREGS. Recall that individuals in the states PRIV and PRIV_PUB have some private casual work content in their labour supply. It can be seen that 33

percent of individuals of the private labour force is lost to the public works labour. Similarly 56 percent of those who do some private and public labour before NREGS switch to doing only public works after NREGS. Similarly there is a movement from NO_CASUAL to PUB (37 percent) and PRIV_PUB (6). Thus the opportunity to public works seems to be have two effects discussed before. People move from NO_CASUAL to public works and people who were doing some private labour (PRIV and PRIV_PUB) overwhelmingly move into doing no private casual work but some public work (PUB).

There may be different transition patters for different genders. Table 11 provides the transitions for males and females.

Table 11: Gender Decomposition: Occupation Transitions (%s)

	After NREGS			
	PRIV	PUB	PRIV_PUB	NO_CASUAL
Before NREGS				
Males				
PRIV	26	26	32	15
PUB	4	50	29	17
PRIV_PUB	7	53	13	27
NO_CASUAL	17	32	8	43
Females				
PRIV	0	59	12	30
PUB	0	77	14	9
PRIV_PUB	0	100	0	0
NO_CASUAL	7	40	5	48
		Each row may not add to 100 because of rounding		

Decomposing the transitions for males and females yield some common trends and some divergence. The movement from doing no public works but some private labour (PRIV) to the reverse scenario (PUB) is apparent for both males and females. However this effect is more for females than males. One big divergence is the movement from some private and public labour (PRIV_PUB) to only public labour (PUB). This movement is much more pronounced for females. Another big divergence is the movement from PRIV to NO_CASUAL is much more pronounced for females than for males.

These transitions paint the following picture. Women who were doing some private casual labour either move out of the casual labour force or start substantiating their private casual labour time with time on public works. A similar trend is also true for males though much less pronounced.

6. Conclusion

In this paper, we investigate the effect of one of the largest employment schemes launched in the world: the National Rural Employment Guarantee Scheme (NREGS), that has the potential to bring households out of poverty while building public infrastructure. The NREGS is unique in that it guarantees atleast 100 days of public works in a year to households who apply for such work, thus solving, in theory, the problem of targetting. Using data on rural households in *Karauli* district of the state of Rajasthan in India, we first investigate which households apply and work for the scheme. We find that 78 percent of the surveyed households work for the scheme. However most of those who are not are from one village where the workers were protesting against appropriation of their lands for the public project. Among others households, we find that almost all households opt for the scheme and provide some public labour. Thus, atleast in Rajasthan, the targeting of the scheme has gone a little awry with both poor and rich households opting to work for public works. Of course it can be argued that even the rich households have some people engaged in casual labour and these individuals prefer to do public works. But this was not the intention of the scheme.

Next we investigate how many days households work for the scheme. We find that most households work 90 to 100 days a year. The spike at 100 days indicates that there is some censoring. Households want to work more on the scheme but local authorities provide what is the minimum legal limit. This indicates that there is a great demand for public works but not enough supply of it. When we look at what determines the quantity of public works done by households, we find that households who are wealthier and are more educated work less. Households who are from disadvantaged communities work more on the scheme.

Next we look at individual participation in public works project. Using data on 425 individuals, we construct a multivariate model of Public works participation. We find that there is an inverted U relation between age and the probability of participation. More interestingly, we find that household size has a negative impact. The larger the household, the higher the chance that some other member in the household is employed in public works. Our summary statistics show us that the probability of doing public works falls drastically if there are other members involved in public works. Hence there is an allocation of public works among members in the household. The allocation would depend on the wages that the members could earn. We proxy the wage of a person by the average daily wage (male/ female) that is prevalent in the village. We obtain a negative marginal effect which indicates that private wages are important in the allocation problem. This result is emphasized by the positive sign on the marginal effect of the wage of the other gender. This captures the earning opportunity of another distinct member of the household. This result points out that the public works wage has been fixed, in many cases, above the private casual wage. Thus there can be potential effects on the supply of private casual labour.

The effect of NREGS on private casual labour is explored by looking at transitions of occupation states over two different regimes: when NREGS was not fully

operational and when it was. We find that there has indeed been a movement away from private casual labour towards public works. This is more so in the case of women. Moreover, we find a move away from not doing any casual labour to doing public works. As before this is more so for women. Thus NREGS is not merely an addition to work opportunity. It is also leading to switch from private casual labour to labour on public works. This is an interesting phenomenon which may have far reaching effect on the private labour market and these effects should be studied further.

These preliminary results based on the experience of a part of India have important lessons for policy makers who implement similar policies in other parts of the world. Targeting policies is often tough and such schemes based on voluntary participation seem very attractive. However, as these results suggest, sometimes these schemes need a lot more fine tuning for them to succeed. What is crucial is having the wage rate offered correct. Otherwise more affluent households will find it fruitful to be part of such scheme, thus taking away the targeting aspect of the schemes. Secondly, too high a wage rate offered by public works project can distort the private casual labour market, thus making household more dependent on public works schemes.

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