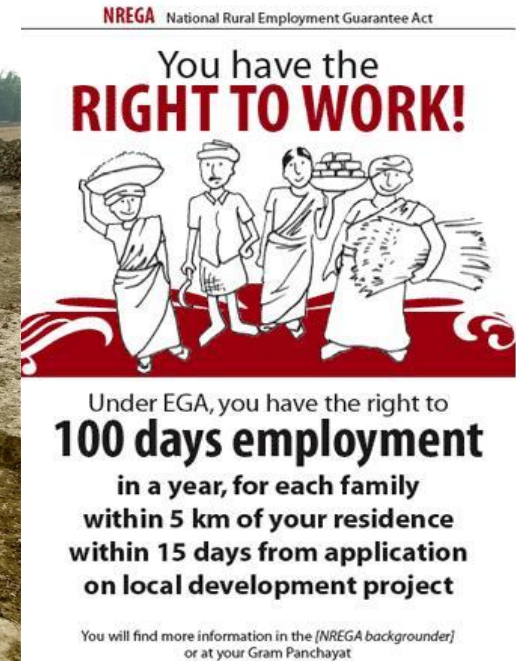
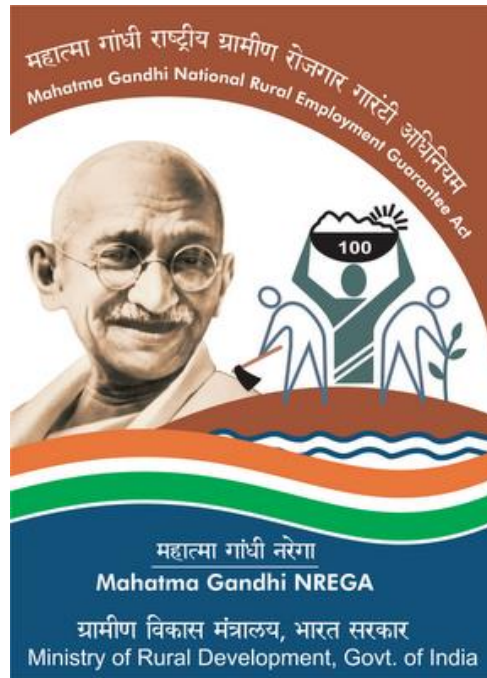


# Workfare as “Collateral”: The case of the National Rural Employment Guarantee Scheme (NREGS) in India



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Manchester Workshop on Impact Evaluations for Development Policies

12<sup>th</sup> June 2014

# You have the **RIGHT TO WORK!**



Under EGA, you have the right to  
**100 days employment**  
in a year, for each family  
within 5 km of your residence  
within 15 days from application  
on local development project

You will find more information in the *(NREGA backgrounder)*  
or at your Gram Panchayat



# Outline

- 1. Motivation**
- 2. Research objectives & backgrounds**
- 3. Data**
- 4. Econometric models & results**
- 5. A summary of conceptual framework**
- 6. Concluding observations**

# 1. Motivation

## 1.1 Uniqueness of NREGS

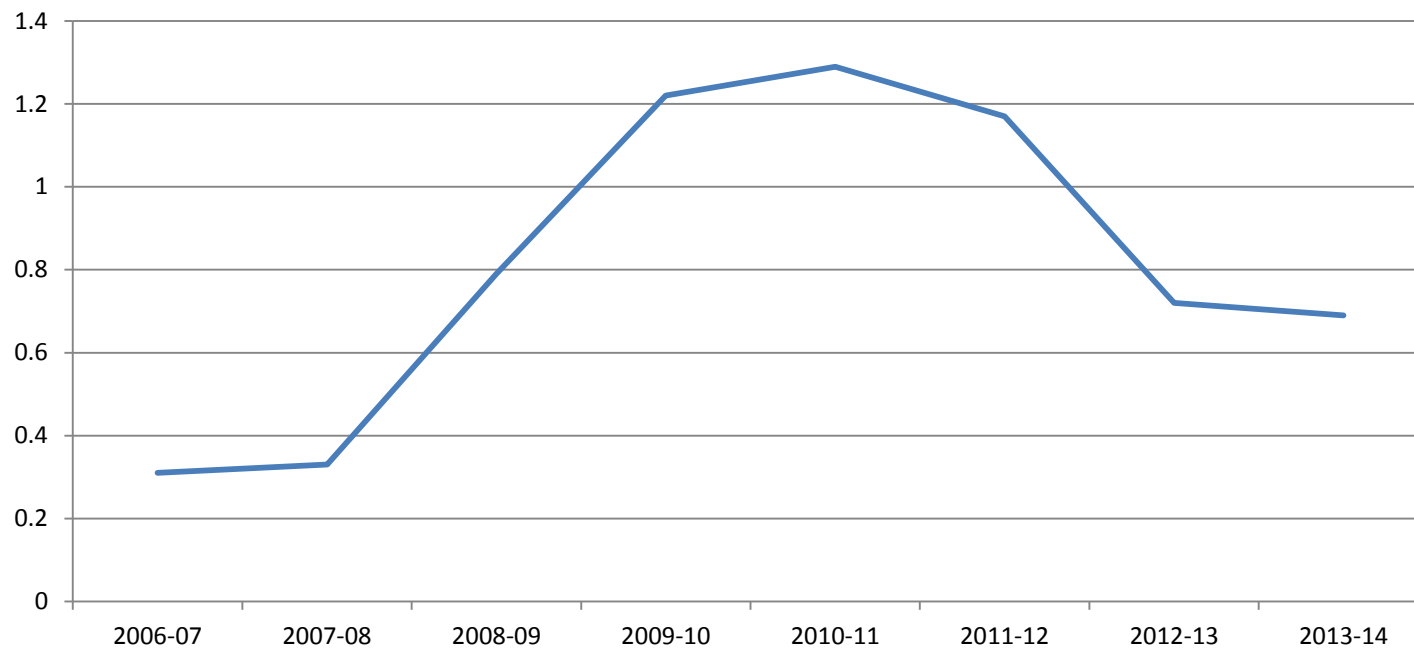
- a. NREGS – a **self targeted workfare programme** ensuring at least 100 days of unskilled manual/wage work on demand to each Rural Household.
- b. The Programme **came in operation in phases**. 2006 with 200 most backward districts , in 2007 more 137 districts and 2008 remaining 282 districts.
- c. The programme spent around **US\$ 6.52 Billion** as an average annual central budget in first 7 years (2006/7 to 2012/3).
- d. Decentralised Programme Implementation: Rural Municipality (**Gram Panchayat** - Rural Local self government) is the Programme implementing agency.



**Measurement of physical progress of work, Social Audit, public scrutiny of Muster roll, women's active participation.**

## 1.2. Coverage and Outlay of NREGS

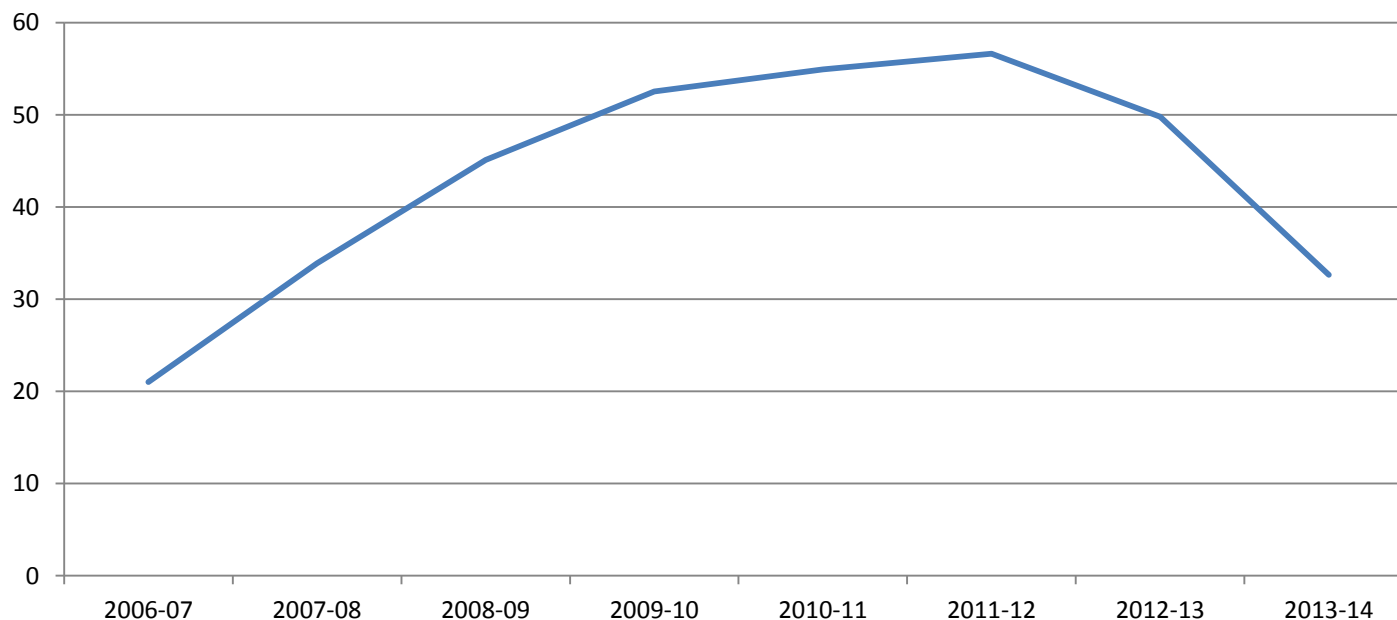
### Annual outlay as % of GDP



Source: [www.nrega.nic.in](http://www.nrega.nic.in)

## 1.2. Coverage and Outlay of NREGS

### HH coverage (In million), Absolute Term

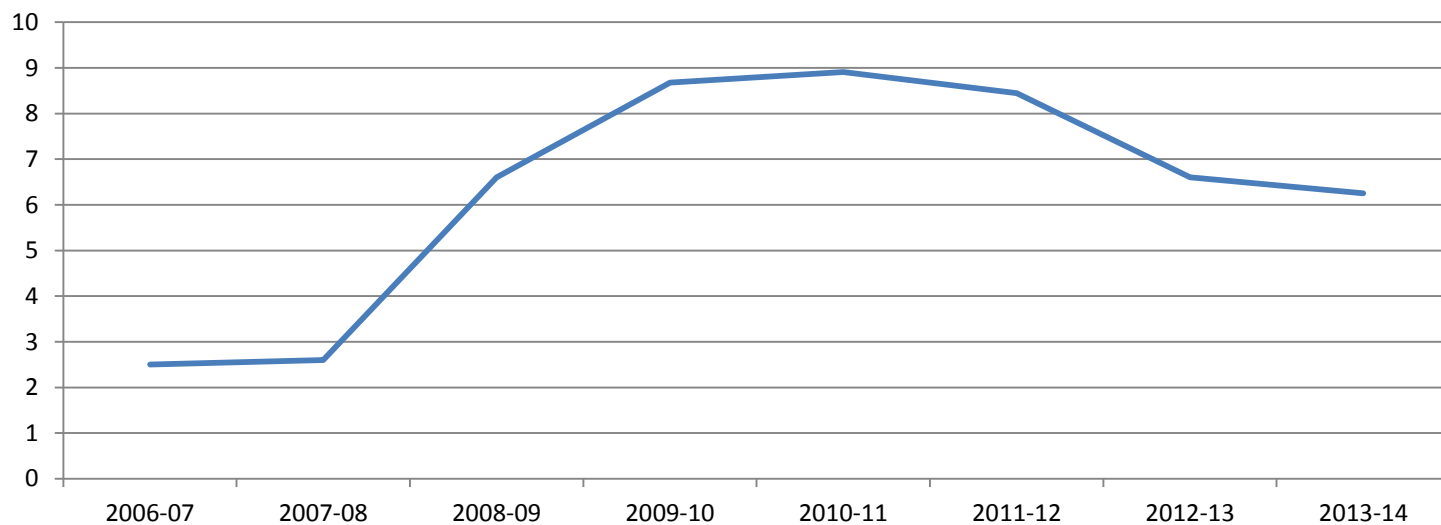


Source: [www.nrega.nic.in](http://www.nrega.nic.in)



## 1.2. Coverage and Outlay of NREGS

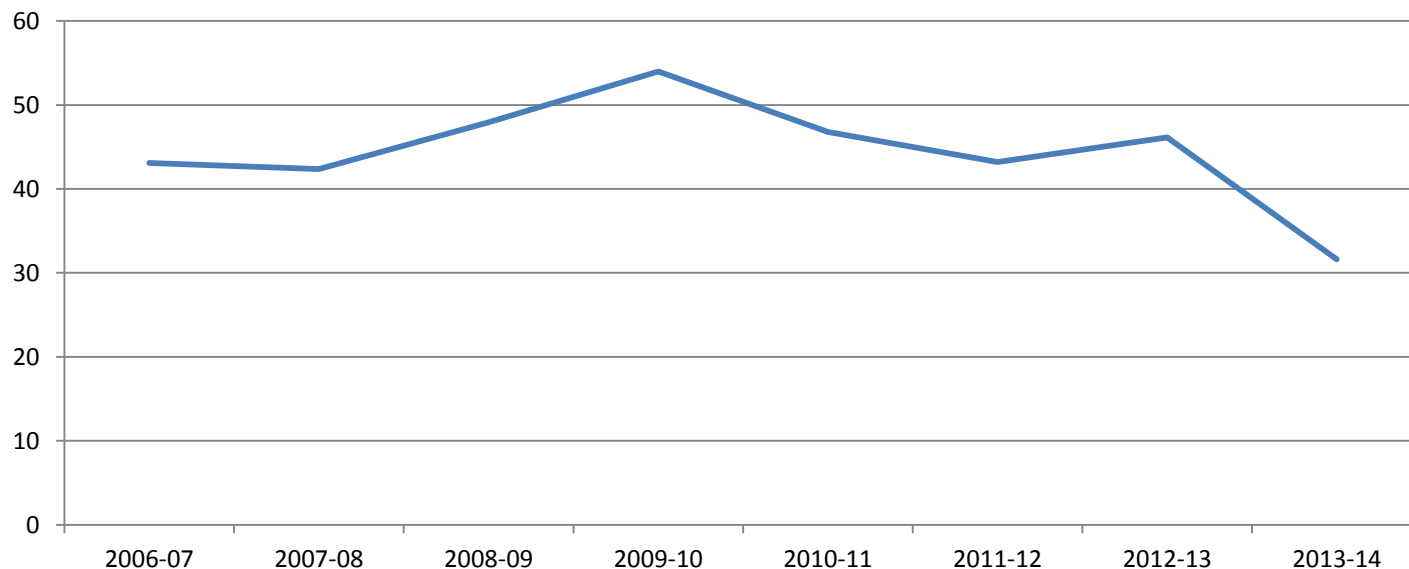
### Actual financial outlay (in \$ bn)



Source: [www.nrega.nic.in](http://www.nrega.nic.in)

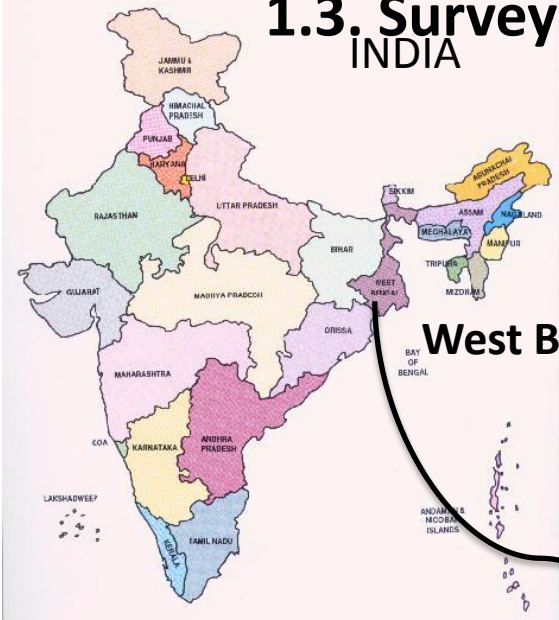
## 1.2. Coverage and Outlay of NREGS

### Average days worked by a HH



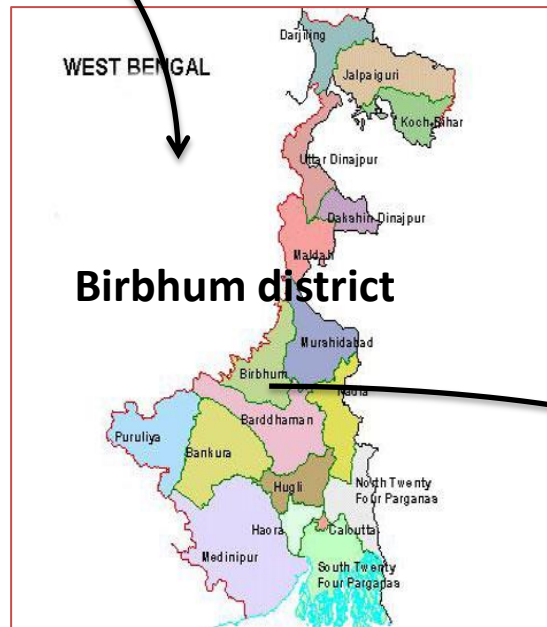
Source: [www.nrega.nic.in](http://www.nrega.nic.in)

### 1.3. Survey Area INDIA

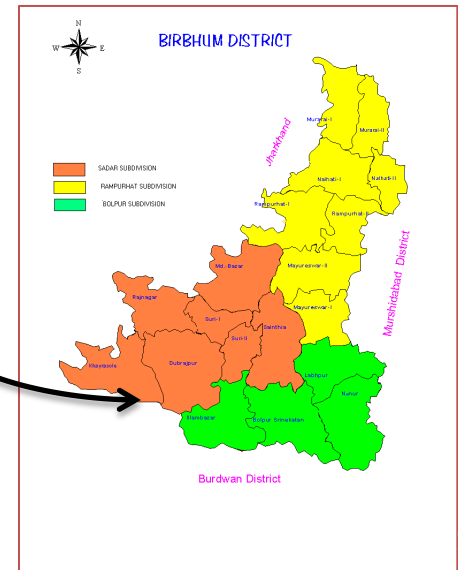


West Bengal

**500 households from  
49 villages in  
13 rural  
municipalities (Gram  
Panchayat)  
in Birbhum district of  
West Bengal,  
In 2009, 10 and 12**



Birbhum district



## 2. Research objectives & backgrounds

### 2.1. Main Objective

What are the *effects* of NREGS days of participation on the household's economic outcomes or welfare?

### 2.2. Unpacking the main Research Objective/Question

- 1) Is there any *effect* of NREGS days of employment on household economic outcomes? (e.g. monthly per capita expenditure (MPCE), monthly per capita income, and credit).
- 2) Does NREGS decreases fluctuation in consumption or income?

## 2.3. Who are the Participants?

- a. **Participants are poor in consumption, income and nutrition and vulnerable to shocks.**

They have incentive to work even at minimum wage with hard physical/manual labour ('work requirement'), while the non-poor do not have much incentive] (Besley and Coate, 1992, AER, "**Screening Argument**" of Workfare).

- b. In many cases **participants do not have any physical collateral and thus *cannot easily obtain either formal credit or informal credit (e.g. from local grocery shop owners).***

## 2.4. Cases for Workfare Programme vs. other alternatives

- a. Screening Argument (Besley and Coate 1992): Only the poor participate due to the work requirement (thus cost-minimizing for government).
- b. Deterrent Argument (B & C): Work requirement encourages the poor to make poverty-reducing investments in human capital and prevents dependence.
- c. Risk-benefit: Help the poor to cope with shocks and reduce vulnerability (Scandizzo et al. 2009).
- d. Indirect effect: Increase in agricultural wages; through the assets/infrastructure created by NREGS) (Imai, 2007).
- e. **“Credit” Argument: *Sustained participation helps the poor to escape from poverty traps by increasing “the creditworthiness” in the informal credit market.***

## 2.5. Empirical Challenge in assessing impact

- a. Since the provision of NREGS is **universal self-targeting**, finding counterfactual is very hard.
- b. **Non-random programme placement**.
- c. **Self-selection bias** (those who are poor they intend to access more NREGS)-impact contaminated.
- d. Absence of credible panel data in public domain in India.

## 2.6. Emerging literature around impact of NREGS

- a. **Ravi and Engler (2009, 2013), WD Working Paper:** Using 3 round panel data from Andhra Pradesh (AP) tried to find out the NREGS impact on health and education expenditure, savings and consumption. Used PSM & DID.
  - b. **Ravallion (2012), Working Paper:** In Bihar, find out the impact of NREGS days of work on poverty situation after considering the forgone income/employment of the participating households.
  - c. **Jha et al. (2011), JAsianE:** Showed the impact of NREGS on BMI. Based primary survey from 3 states of India.
  - d. **Klaus Deininger & Yanyan Liu, Working Paper (2013):** Estimated the Poverty Impact of NREGS using 3 round Panel in AP.
  - e. **Deepak, Saraswat (2011), Working Paper:** Estimated the effect of NREGS on access to Credit.
- **Overall, positive impacts have been found.**
- **Still few works focused on the impact using the panel data.**



# 3.Data

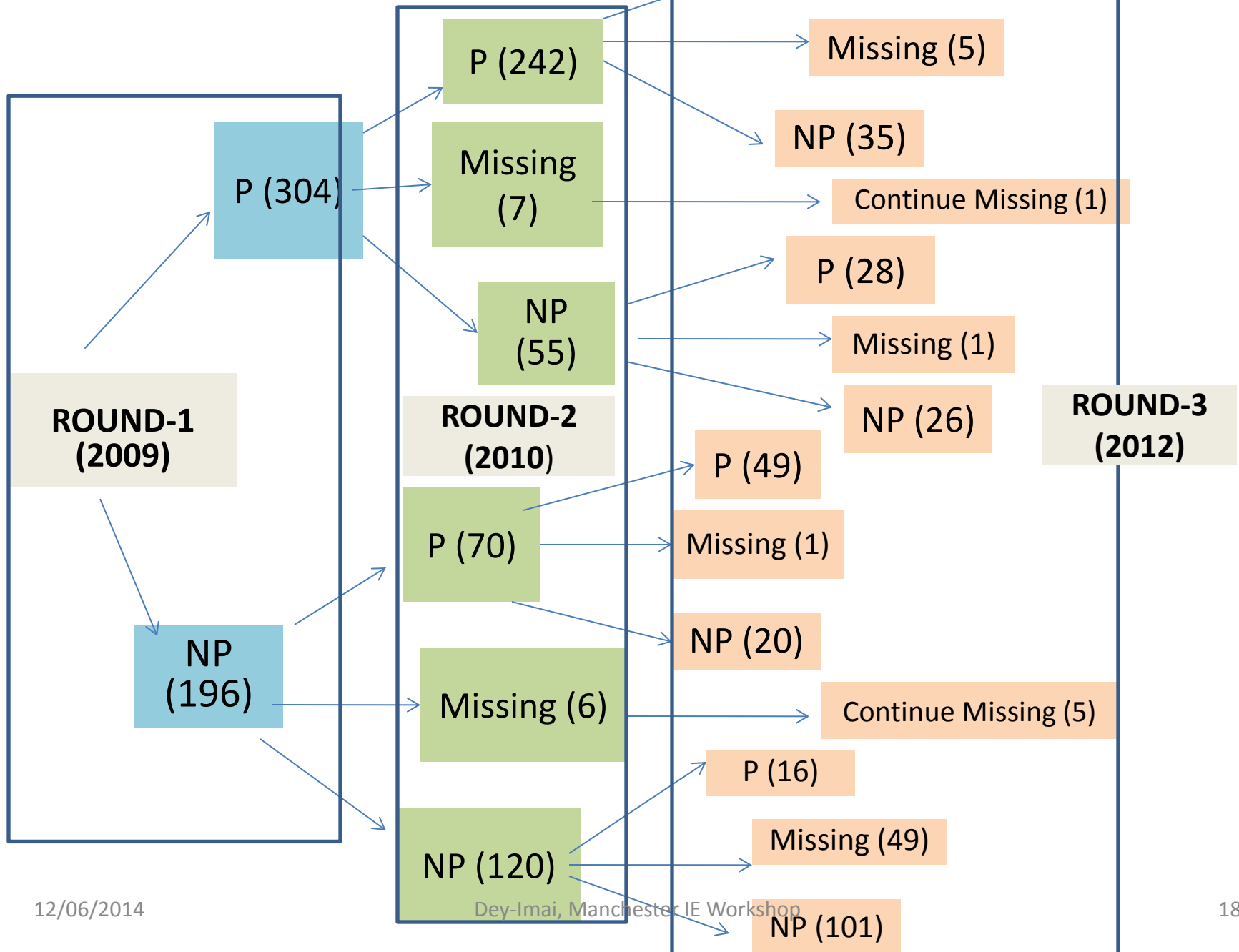
## 3.1. Structure of the data

Choice of the Gram Panchayat was purposive based on stratification but **households selected from these GP was random.**

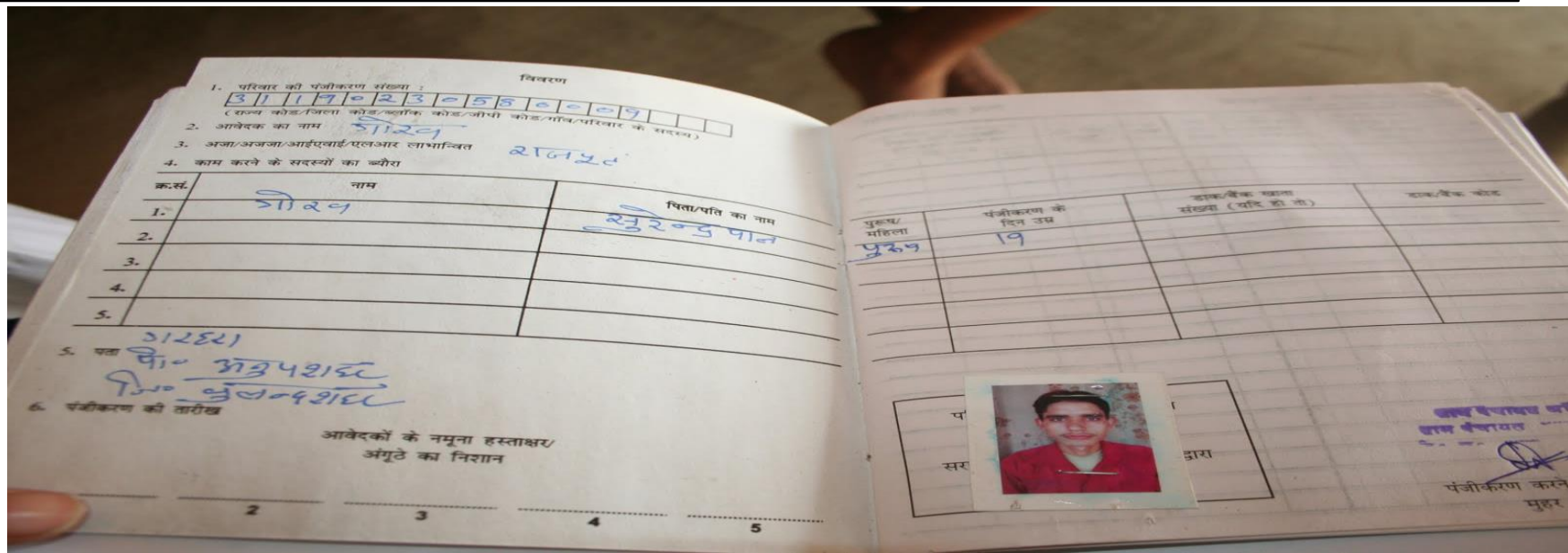
➤ Data was fairly balanced.

| Freq. | Percent | Cum.   | Pattern |
|-------|---------|--------|---------|
| 477   | 95.40   | 95.40  | 111     |
| 11    | 2.20    | 97.60  | 1.1     |
| 10    | 2.00    | 99.60  | 11.     |
| 2     | 0.40    | 100.00 | 1..     |
| 500   | 100.00  |        | XXX     |

### 3.2. Dynamics of Participation



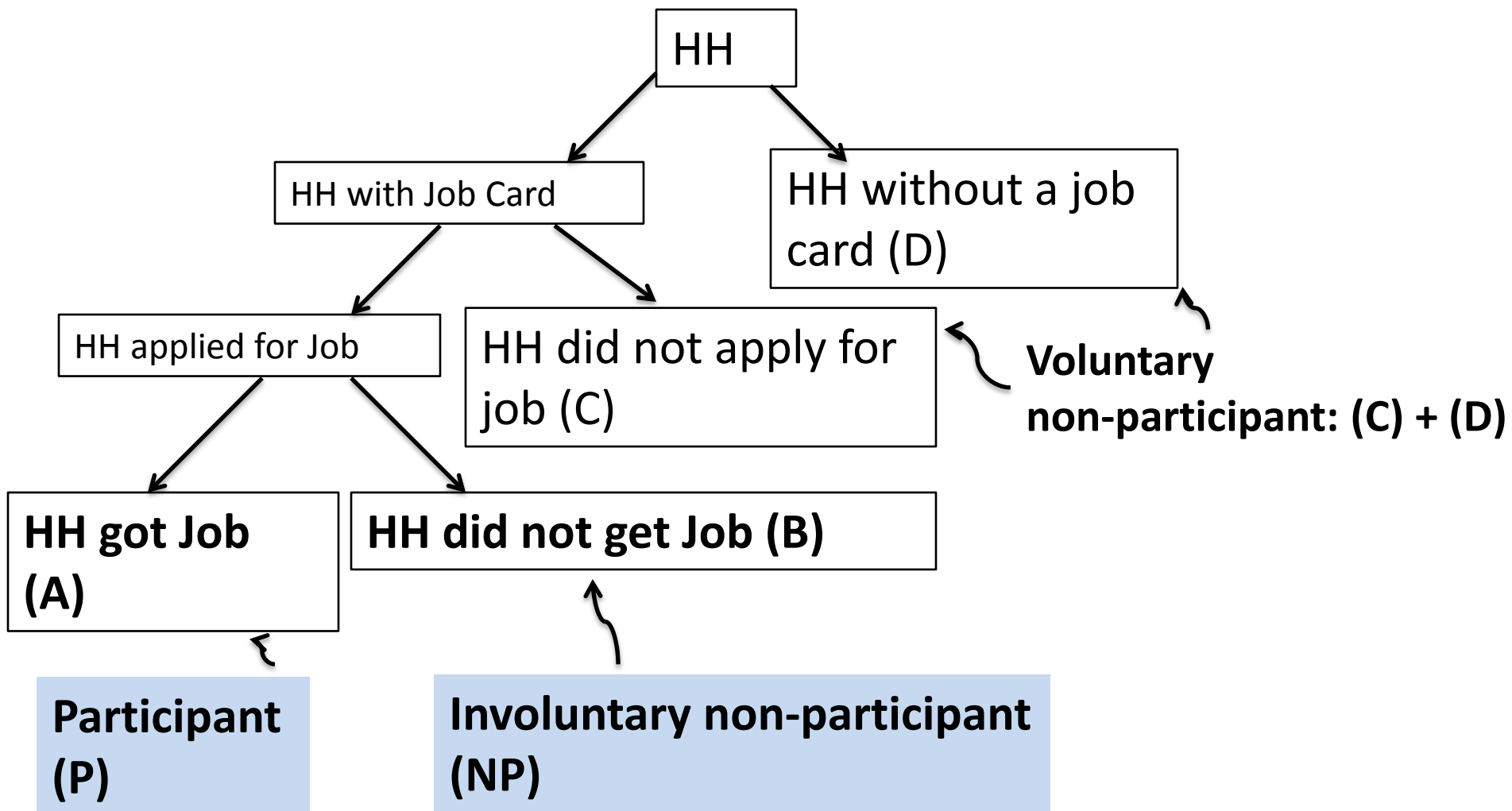
# 3.3. What is a Job-Card?



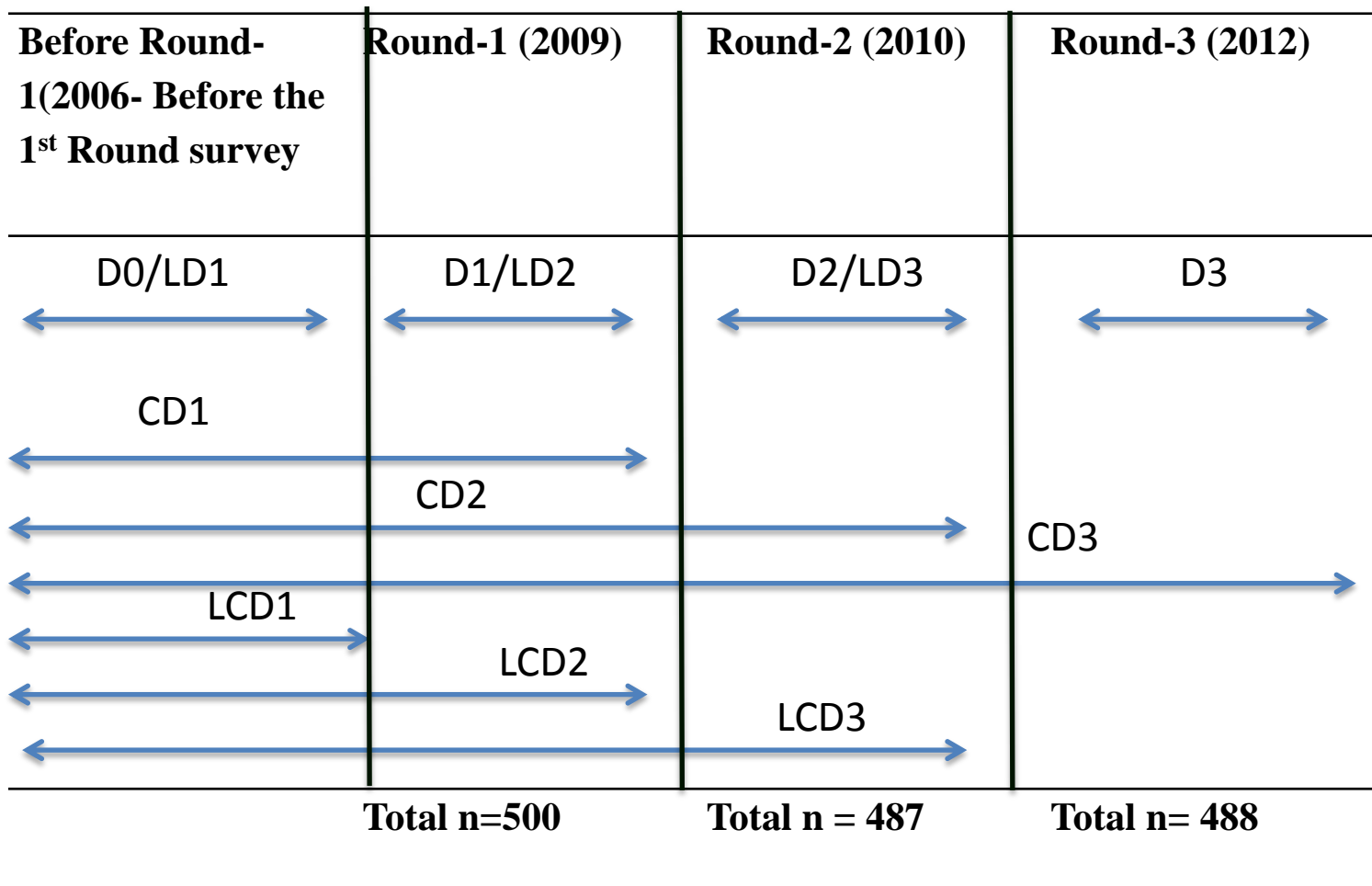
12/06/2014

Dey-Imai, Manchester IE Workshop

### 3.4. Four categories of Households



### 3.5. Different notion of participation



$$CD = \sum D \text{ and } LCD = CD - D$$

### 3.6. Descriptive Statistics

#### a. 'Days of Participation (D, CD)'

| Year     | D (Current Days of Participation) |             |           | CD (Cumulative days of participation since inception of the programme) |             |           |
|----------|-----------------------------------|-------------|-----------|------------------------------------------------------------------------|-------------|-----------|
|          | <i>n</i>                          | <i>mean</i> | <i>sd</i> | <i>n</i>                                                               | <i>mean</i> | <i>sd</i> |
| 2009     | 304                               | 24.46       | 19.78     | 304                                                                    | 72.33       | 50.91     |
| 2010     | 312                               | 34.34       | 26.61     | 312                                                                    | 101.98      | 57.98     |
| 2012     | 299                               | 37.52       | 28.34     | 299                                                                    | 148.24      | 81.29     |
| Over all |                                   | 32.09       | 25.75     | -                                                                      | 107.25      | 71.58     |

Observation: Current Days of participation is very low compared to the provision under the Act i.e. 100 days

## b. Expenditure and Income

| Year        | Type of household | Per-capita household expenditure |         | Per-capita monthly income |         | Per-capita Monthly food exp. |         | Per-capita Monthly non-food exp. |         |
|-------------|-------------------|----------------------------------|---------|---------------------------|---------|------------------------------|---------|----------------------------------|---------|
|             |                   |                                  |         |                           |         |                              |         |                                  |         |
| 2009        | P(n=304)          | 613                              | (52.88) | 582.8                     | (82.61) | 401.65                       | (44.77) | 46.83                            | (9.57)* |
|             | IVNP(n=91)        | 685.93                           |         | 700.83                    |         | 471.96                       |         | 65.73                            |         |
|             | VNP(n=105)        | 1402.86                          |         | 2172.09                   |         | 651.42                       |         | 229.97                           |         |
| 2010        | P(n=312)          | 653.63                           | (59.54) | 662.39                    | (259.9) | 439.81                       | (36.26) | 54.70                            | (14.19) |
|             | INVP(n=84)        | 735.79                           |         | 922.29                    |         | 469.03                       |         | 72.58                            |         |
|             | VNP(n=91)         | 1212.01                          |         | 2029.09                   |         | 557.54                       |         | 124.44                           |         |
| 2012        | P (n=299)         | 724.36                           | (50.33) | 630.15                    | (89.82) | 481.32                       | (25.98) | 71.10                            | (10.65) |
|             | INVP(n=116)       | 781.12                           |         | 709.87                    |         | 506.77                       |         | 84.60                            |         |
|             | VNP(n=73)         | 1169.34                          |         | 1702.61                   |         | 600.61                       |         | 151.76                           |         |
| pooled data | P(n=915)          | 663.25                           | (31.18) | 625.41                    | (60.25) | 440.69                       | (20.2)* | 57.45                            | (6.77)* |
|             | IVNP(n=291)       | 738.27                           | *       | 768.36                    | *       | 484.99                       |         | 75.23                            | *       |
|             | VNP(n=269)        | 1274.93                          |         | 1996.31                   |         | 605.87                       |         | 173.05                           |         |

Values in the bracket shows Standard Error of 't' test of whether difference in mean values of said variable for 'Participant' and 'Involuntary non-participants' are statistically significant. '\*' $p < 0.05$  '\*\*' $p < 0.01$

# 4. Econometric models & results

## 4.1. Specification

**a. The base specification** to estimate the effect of “days of participation” on the household level economic variable.

$$y_{it} = \beta_1 CD_{it} + \beta X_{it} + \delta_t + \gamma_r + a_i + \varepsilon_{it} \dots \dots \dots t = 1, 2, 3$$

where  $y_{it}$  = log of main outcome variable (real terms).

**CD**= Cumulative days of NREGS participation.

**X**= A vector of other covariates (*‘landholding’*, *‘hhsiz*e’, *‘religion’*, *‘sex of head of HH’*).

$\delta_t$  = Time fixed effects.

$\gamma_r$  = region specific (Rural Muni./GP) FE.

$a_i$  = a household specific unobservable FE.

$\varepsilon_{it}$  = an idiosyncratic error term.



## 4.1. Specification (cont.)

### b. Our Approach

First, we used **Fixed Effects (FE)** model.

Next, to address the endogenous relation between Days of Participation and outcome variable, we used **IV-Fixed Effect**.

Finally we used **FE-IV with PSM**.

-----Here we trim down our sample using PSM (propensity score matching) *to drop the sample hh outside the common support regions.*

## 4.2. Justification for our IV: 1<sup>st</sup> Instrument ‘village\_meeting’

“Whether the household member regularly attends the village council/development community meetings (1 = Yes, 0=No).”

**\*This will affect NREGS participation days because this is a useful source for obtaining the information about many schemes, including NREGS**

***\*Does this affect income or consumption directly? - “No”.***

a. Field observation confirms that **the attendance of the meeting is NOT related to the political awareness** which may directly affect hh income/consumption.

b. Village is small: **attendance may NOT be related to the location of home**: which would directly affect hh income.

c. **Statistically valid** (pair-wise correlations; significant coef. est. in the first-stage; passed the Sargan test for over-identification or the Davidson and Mackinnon test etc.).

## 4.2. Justification for our IV (cont.)

2<sup>nd</sup> Instrument: 'village\_avgCD'

[the village level average CD] – [the household level CD]

a. Given the small size of the village, **village\_avgCD** well proxies the past cumulative outlay of the programme at the village level, influencing CD.

*\*Does this affect income or consumption directly? –No.*

b. HH income/consumption is not directly affected by village\_avgCD .

**c. Statistically valid** (pair-wise correlations; significant coef. est. in the first-stage; passed the Sargan test for over-identification or the Davidson and Mackinnon test etc.).

### 4.3. Choice of the model: “*Are there any alternatives given the data constraints?*”

-PSM (as it is originally designed by Rosenbaum and Donald Rubin in 1983) to derive the for each cross-section: Cannot fully control **unobservable factors**.

-DID-PSM: Not enough sample.

-RDD or FRDD: **No discontinuity** is found in outcome variables regardless of the assignment variable.

*-We have chosen **FE, FE-IV and FE-IV with PSM**.*

**Heterogeneity?** *E.g. No clear quantile effects* have been found in the results of quantile or panel quantile regressions.

## 4.4. A Summary of results

Table 2. Effects of NREGS participation on log of real monthly Per-capita **Consumption Expenditure**

| Selected Explanatory variable       | Log of real Monthly per-capita consumption exp. |                                  |                                  |
|-------------------------------------|-------------------------------------------------|----------------------------------|----------------------------------|
|                                     | (1) Fixed Effect                                | (2) Fixed Effect IV              | (3) Fixed Effect-IV with PSM     |
| CD (Cumulative Days)                | <b>0.001</b><br><b>[0.000]**</b>                | <b>0.0054</b><br><b>[0.003]*</b> | <b>0.009</b><br><b>[0.004]**</b> |
| Land Holding                        | 0.049<br>[0.016]***                             | 0.047<br>[0.017]***              | 0.034<br>[0.028]                 |
| -----                               | <b>[Control Variables]</b>                      |                                  |                                  |
| Observations                        | 1475                                            | 1475                             | 1050                             |
| R <sup>2</sup>                      | 0.114                                           | 0.061                            | 0.8837                           |
| F                                   | 7.275                                           | 5.933                            | 3.257                            |
| Sargan test (p-value)               | -                                               | 0.7623                           | 0.8517                           |
| No. of excluded instruments         | -                                               | 2                                | 2                                |
| Under identification test (p-value) | -                                               | 0.0024                           | 0.0101                           |

**Table 3. Effects of NREGS participation on log of real monthly food Expenditure**

| Selected Explanatory variable       | Log of real Monthly food exp.     |                                  |                                  |
|-------------------------------------|-----------------------------------|----------------------------------|----------------------------------|
|                                     | (1) Fixed Effect                  | (2) Fixed Effect IV              | (3) Fixed Effect-IV with PSM     |
| CD (Cumulative Days)                | <b>0.001</b><br><b>[0.00034]*</b> | <b>0.008</b><br><b>[0.003]**</b> | <b>0.010</b><br><b>[0.004]**</b> |
| Land Holding                        | 0.033<br>[0.016]**                | 0.031<br>[0.021]                 | 0.022<br>[0.030]                 |
| -----                               | <b>[Control Variables]</b>        |                                  |                                  |
| Observations                        | 1475                              | 1475                             | 1050                             |
| R <sup>2</sup>                      | 0.099                             | 0.526                            | 0.998                            |
| F                                   | 6.211                             | 3.951                            | 2.630                            |
| Sargan test (p-value)               | -                                 | 0.7386                           | 0.8165                           |
| No. of excluded instruments         | -                                 | 2                                | 2                                |
| Under identification test (p-value) | -                                 | 0.0024                           | 0.0101                           |

**Table 4. Effects of NREGS participation on log of real monthly non-food Expenditure**

| Selected Explanatory variable       | Log of real Monthly non-food exp. |                         |                              |
|-------------------------------------|-----------------------------------|-------------------------|------------------------------|
|                                     | (1) Fixed Effect                  | (2) Fixed Effect IV     | (3) Fixed Effect-IV with PSM |
| CD (Lagged Cumulative Days)         | <b>0.001</b><br>[0.0016]**        | <b>0.006</b><br>[0.006] | <b>0.009</b><br>[0.007]      |
| Land Holding                        | 0.108<br>[0.036]***               | 0.107<br>[0.037]***     | 0.110<br>[0.050]**           |
| -----                               | <b>[Control Variables]</b>        |                         |                              |
| Observations                        | 1475                              | 1475                    | 1050                         |
| R <sup>2</sup>                      | 0.125                             | 0.082                   | 0.040                        |
| F                                   | 8.048                             | 7.516                   | 5.6872                       |
| Sargan test (p-value)               | -                                 | 0.5568                  | 0.79834                      |
| No. of excluded instruments         | -                                 | 2                       | 2                            |
| Under identification test (p-value) | -                                 | 0.0024                  | 0.0101                       |

**Table 5. Effects of NREGS participation on log of real monthly per-capita income adjusted after NREGS earning**

| Selected Explanatory variable       | Log of real Monthly per-capita income adjusted after NREGS earnings |                     |                              |
|-------------------------------------|---------------------------------------------------------------------|---------------------|------------------------------|
|                                     | (1) Fixed Effect                                                    | (2) Fixed Effect IV | (3) Fixed Effect-IV with PSM |
| CD (Cumulative Days)                | 0.001<br>[0.00046]**                                                | 0.010<br>[0.004]**  | 0.010<br>[0.005]**           |
| Land Holding                        | 0.118<br>[0.021]**                                                  | 0.115<br>[0.027]*** | 0.145<br>[0.035]***          |
| -----                               | <b>[Control Variables]</b>                                          |                     |                              |
| Observations                        | 1475                                                                | 1475                | 1050                         |
| R <sup>2</sup>                      | 0.179                                                               | 0.338               | 0.547                        |
| F                                   | 12.269                                                              | 7.801               | 5.940                        |
| Sargan test (p-value)               | -                                                                   | 0.5119              | 0.4841                       |
| No. of excluded instruments         | -                                                                   | 2                   | 2                            |
| Under identification test (p-value) | -                                                                   | 0.0024              | 0.0101                       |

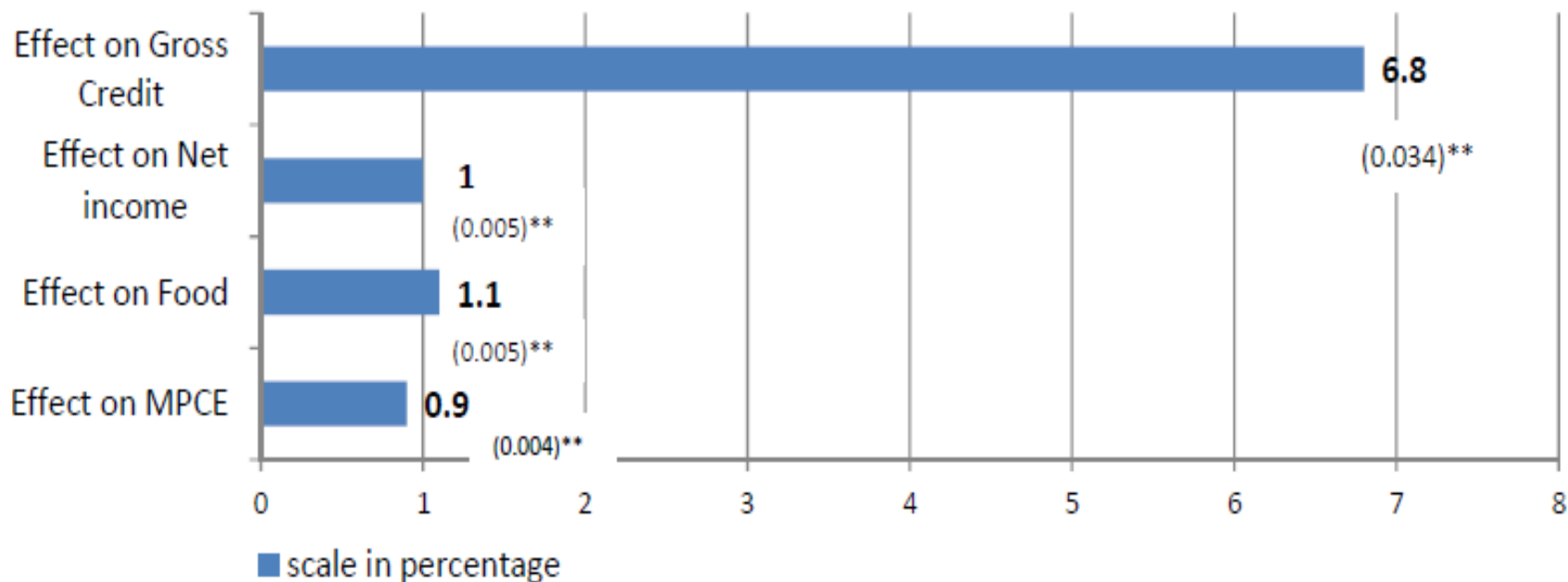


**Table 6. Effects of NREGS participation on log of real value of gross volume of monthly credit.**

| Selected Explanatory variable       | log of real value of Gross Volume of monthly Credit |                     |                              |
|-------------------------------------|-----------------------------------------------------|---------------------|------------------------------|
|                                     | (1) Fixed Effect                                    | (2) Fixed Effect IV | (3) Fixed Effect-IV with PSM |
| CD (Cumulative Days)                | 0.003<br>[0.002]*                                   | 0.034<br>[0.020]*   | 0.068<br>[0.031]**           |
| Land Holding                        | -0.162<br>[0.128]                                   | -0.170<br>[0.139]   | -0.220<br>[0.219]            |
| Non-NREGP days                      | <i>[Control Variables]</i>                          |                     |                              |
| Observations                        | 1475                                                | 1475                | 1050                         |
| R <sup>2</sup>                      | 0.098                                               | 0.070               | 0.724                        |
| F                                   | 6.121                                               | 5.226               | 2.491                        |
| Sargan test (p-value)               | -                                                   | 0.2520              | 0.5209                       |
| No. of excluded instruments         | -                                                   | 2                   | 2                            |
| Under identification test (p-value) | -                                                   | 0.0024              | 0.0101                       |

# Zooming on impact coefficients

**Fig-3: Effect of one extra days of NREGS work in cumulative terms on outcome variable in percentage terms**



Note: Values in the bracket shows the standard error of impact co-efficient and \*\* shows they are statistically significant at 5 % level.

**Table 7. Effects of NREGS participation on Variability of consumption and income- OLS and IV estimation after collapsing the data**

| Covariates as Mean value            | IV estimation after collapsing the data |                     |                        |                        |
|-------------------------------------|-----------------------------------------|---------------------|------------------------|------------------------|
|                                     | SD of MPCE                              | SD of Monthly food. | SD of Monthly non-food | SD of MPI_ NREGS       |
| (mean) CD                           | -4.460<br>[1.371]***                    | -1.116<br>[0.4]***  | -0.032<br>[0.565]      | -6.150<br>[2.288]***   |
| (mean) landholding                  | 43.625<br>[20.858]**                    | 5.102<br>[6.098]    | 23.619<br>[8.6]***     | 113.866<br>[34.824]*** |
| Observations                        | 500                                     | 500                 | 500                    | 500                    |
| R <sup>2</sup>                      | 0.081                                   | 0.146               | 0.146                  | 0.124                  |
| F                                   | 5.370                                   | 4.438               | 3.684                  | 7.016                  |
| Sargan test (p-value)               | 0.5495                                  | 0.7740              | 0.7267                 | 0.2733                 |
| Under identification test (p-value) | 0.0000                                  | 0.0000              | 0.0000                 | 0.0000                 |

## 4.5. Interpreting coefficient

a. Coefficients shows *the average (continuous) effect of NREGS participation on top of alternative effect which one could have earned by engaging him/her self in other activities.*

Table 2: Consumption: *If CD increases by 1 day then their monthly per-capita consumption expenditure would increase by 0.9%.*

With average MPCE as **INR 663.25**. 0.9% increase of this average value will be **INR 5.97**. HH with 5 members realise an increase of MPCE by  $5 \times 6.63 =$  **INR 33.15**.

Now one extra day of work in NREGS can transfer roughly around **INR105** during our survey time. Therefore by transferring **INR 105** though NREGS, a participating household can increase monthly consumption by around INR 33.

## 4.5. Interpreting coefficients (cont.)

**b.** Table 6: 1 day extra work in NREGS till the current period (i.e. if CD increases by 1 day) then gross volume of monthly informal credit increases by **6.8%**.

*This implies that **the credit worthiness of the NREGS participating household increases with the increase of their previous accumulated days of participation.***

## 5. A summary of conceptual framework

- Why CD (not D)? Why Credit?
- A Simple model of no-collateral lending and patronage game.
- Consider *tri-lateral stage game* (involving NREGS participant, lender and politician) with two components:

# Structure of infinitely-repeated games

Value of Credit :  
 $V_B \in [V_L(1-r), \infty)$ ;

Discount factor  
 $\delta^B \in [0, 1)$

**Repayment**  
 $= (1+r) V_L$

*Repay ('R'), or not ('NR')*

**Credit**  
 $= V_L$

Lender (Grocery Owner)

*Lend (as 'L') or not ('NL').*

Participant

*Support ('S'),  
 or not ('NS')*

**NREGS Job**  
 $= V_N$

Valuation of  
 political support  
 :  $V_P \in [0, \infty)$

*Provide job ('P') or not ('NP').*

**Political  
 Support =  $V_P$**

Politician (PRI member)

Valuation of  
 NREGS job :  
 $V_N \in [0, \infty)$

Discount factor  
 $\delta^P \in [0, 1)$

Pay-offs of stage games

- (1) Grim trigger strategy**
- (2) Introduce IR (Individual Rationality) constraint**

→ (L, R) is an equilibrium

Solution iff  $\delta^B \geq r$ .

NREGS Participants

Game A: Bi-lateral lender-borrower game

|                    |    | Lender             |     |
|--------------------|----|--------------------|-----|
|                    |    | L                  | NL  |
| NREGS Participants | R  | $V_L(1-r), (V_L)r$ | 0,0 |
|                    | NR | $V_L, -V_L$        | 0,0 |

**(1)+(2)**

→ (P, S) is an equilibrium

Solution iff  $\delta^B \geq \frac{1}{V_N}$  &  $\delta^P \geq \frac{1}{V_P}$ .

NREGS Participants

Game B: Bi-lateral Patron-client game

|                    |    | Politician             |           |
|--------------------|----|------------------------|-----------|
|                    |    | P                      | NP        |
| NREGS Participants | S  | $(V_N - 1), (V_P - 1)$ | -1, $V_P$ |
|                    | NS | $V_N, -1$              | 0,0       |



## Game C: Trilateral game

All players simultaneously play both bilateral games.

- All player will consider *Trilateral grim trigger strategy*:
  - a) NREGS participant chooses 'R' and 'S' iff lender has chosen 'L' and politician has chosen 'P' in all previous rounds.
  - b) Lender chooses 'L' iff the NREGS participant has chosen 'R' and 'S' in all previous rounds and politician has chosen 'P' in all previous round.
  - c) Politician chooses 'P' iff lender has chosen 'L' in all previous round and NREGS participant has chosen 'R' in all previous round.

Under Trilateral game Politician's IR constraint will remain same as before but for NREGS participant's new IR constraint will be.....

### Game C: Trilateral game

$$V_L + V_N \leq \frac{V_L(1-r) + (V_N - 1)}{1 - \delta^B} \longrightarrow \delta^B \geq \frac{1 + V_L r}{1 + V_N} \dots\dots(4)$$

$$= \frac{(\text{Opportunity cost of Political support}) + (\text{cost of credit in terms of implicit interest rate})}{(\text{Volume of lending in credit}) + (\text{Value of NREGS job})}$$

$$\delta^P \geq \frac{1}{V_P} \dots\dots(3)$$

$$= \frac{(\text{opportunity cost of providing NREGS job by Politician})}{(\text{Politician's value of political support by Participant})}$$

This trilateral grim trigger strategy profile results in fully cooperative outcome (L, R, P, S) which is a pareto-optimal sub-game perfect Nash equilibrium.

***Continuous participation (CD, not D)– which is sustained by the re-election motive of the politician over time – is likely to be associated with credit acquisition.***

***Field observation has confirmed*** that:

if the members of a household works in a stone crushing belt, illegal coal-digging unit or in any uncertain farm/non-farm level daily work in a nearby locality with the unstable stream of earnings, then the credit was denied by the grocery shop owner,

while, ***if the same members of the household had worked in the NREGS sector for a considerable period of months in the last few years, then the informal credit was provided for the same members of the same household.***

## 6. Concluding remarks

- a. CD (cumulative days of participation), rather than current days, has a significant effect on consumption and income.
- c. We find similar results with **'monthly food expenditure'**, but not with **'monthly non-food expenditure'**
- d. There is a **positive effect of CD on Credit Acquisition.**
- e. NREGS participation has a **consumption smoothing effect** over relatively long run.
- f. These empirical results are **supported by the simple conceptual framework based on the trilateral infinitely repeated game** among Participant, Lender and Politician.

*More specifically...*

**-Once one becomes a sustained participant of NREGS, this will give a good signal that the individual is a credible borrower (serving as Collateral).**

**-This will relax the credit constraint, allowing NREGS participants to borrow more for more consumption - mainly on food.**

***g. More generally, we have provided a new case for workfare focusing on its role of facilitating credit acquisitions.***