

Why Guarantee Employment? Evidence from a Large Indian Public-Works Program

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Introduction

What are the labor-market impacts of India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)?

- Unemployment and underemployment widespread problems in developing countries
 - aggregate shocks
 - seasonality
 - incomplete insurance markets

Introduction

What are the labor-market impacts of India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)?

- Unemployment and underemployment widespread problems in developing countries
 - aggregate shocks
 - seasonality
 - incomplete insurance markets
- Public-works programs popular government tools
- Resurgence of interest: long-run social protection
 - World Bank funded programs in 24 countries (2007-2009)
 - safety net
 - income transfer to poor
 - asset creation
 - legal guarantee and broad coverage make NREGS largest and most ambitious program

Related Literature

- Public-works programs in developing countries
 - Empirics
 - Subbarao 1997, Subbarao et al. 2013, Datt and Ravallion 1994, Berhane et al. 2011, Gilligan et al. 2009
 - Theory
 - Besley and Coate 1992, Basu 2002, Basu forthcoming
 - Conclusions
 - Propensity score matching and DID strategies, large focus on targeting and take-up, some evidence on time allocation
- NREGS
 - Labor market impacts
 - Azam 2012, Berg et al. 2012, Imbert and Papp 2013, Johnson 2009
 - Other outcomes
 - Deininger and Liu 2013, Klonner and Oldiges 2012
 - Conclusions
 - DID strategies, substantial consumption and poverty impacts, heterogeneous treatment effects in labor market outcomes

National Rural Employment Guarantee Scheme (NREGS)

- Based on National Rural Employment Guarantee Act (NREGA)
- Up to 100 days of public employment at minimum wage for each rural household

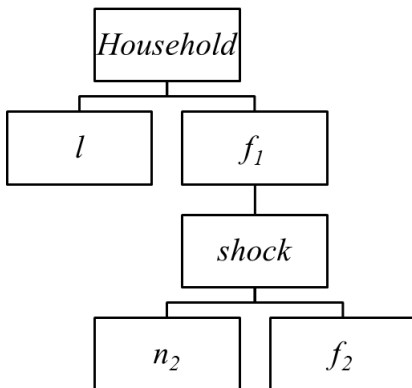
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- No other eligibility criteria
- Households can apply for work at any time of the year
- Men and women paid equally
- NREGS projects supposed to advance local development
 - no contractors or machines
 - number of permissible categories [Categories](#)
 - in practice, most projects focus on drought-proofing, land development [Projects](#)

Model Setup: Timing



$$\begin{aligned} \ell + f_1 &= T \\ n_2 + f_2 &= f_1 \end{aligned}$$

Empirical Predictions

If employment guarantee functions as a safety net

- 1 Ex post effect
 - NREGS employment higher after bad economic shock
- 2 Ex ante effect
 - NREGS employment is low
 - Private employment falls
 - Family employment rises

Extensions

Assumptions

Wage Impacts

Program Rollout

- National Rural Employment Guarantee Act (NREGA) passed in the Indian Parliament in August 2005
- Came into force in February 2006 in India's 200 'least developed' districts (Phase 1)
- Extended to 130 districts in April 2007 (Phase 2)
- Extended to the rest of the country in April 2008 (Phase 3)
- Since 2008, the scheme operates in 99 percent of Indian districts

The Government Algorithm

- The algorithm
 - Step 1: Numbers of treatment districts assigned to states based on state proportion of national poor (headcount poverty ratio)
 - Inter-state fairness

The Government Algorithm

- The algorithm
 - Step 1: Numbers of treatment districts assigned to states based on state proportion of national poor (headcount poverty ratio)
 - Inter-state fairness
 - Step 2: Within-state treatment assignment based on their rank according to a created poverty index
 - Intra-state fairness

The Government Algorithm

- Reconstruct the algorithm values
 - Headcount poverty ratio (Planning Commission 2009)
 - District poverty index variable and rank (Planning Commission 2003)
- Algorithm generates state-specific cutoffs
- Focus on Phase 2 cutoff
- Re-normalize the rank variable so that all cutoffs at 0
- All-India prediction success rate
 - Phase 1: 0.84
 - Phase 2: 0.82

Observations

State Success

Manipulation of Algorithm

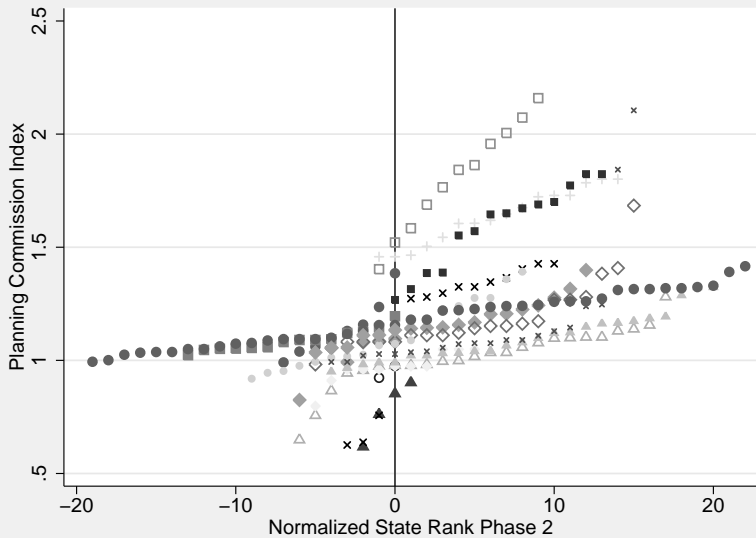
Unlikely

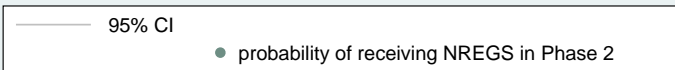
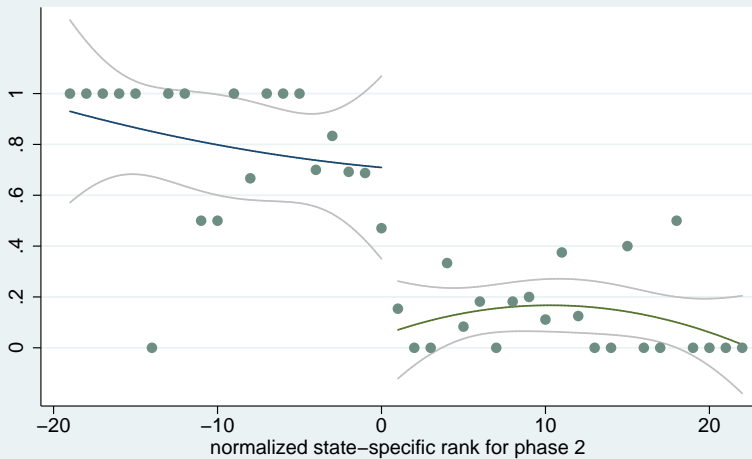
- Step 1
 - Headcount poverty ratios based on mid-1990s information
 - Population counts publicly available from Indian Census

Manipulation of Algorithm

Unlikely

- Step 1
 - Headcount poverty ratios based on mid-1990s information
 - Population counts publicly available from Indian Census
- Step 2
 - Development index/rank created in 2003 based on early- to mid-1990s information
 - Had been used in earlier programs (smaller, temporary), lower cutoffs
 - Detailed explanation of creation of rank variable publicly available





Data and Sample

- Representative National Sample Survey (NSS) data on Indian households (2007/08)
- Sample restrictions
 - Drop Phase 1 districts
 - Only keep rural areas
 - 18-60 year olds with at most secondary education
 - Collapse to district-season level
- Construct extensive-margin employment outcomes (public, private, family), daily private-sector wage
- Use baseline information from 2004/05 Baseline Test

Summary Statistics

Empirical Specification

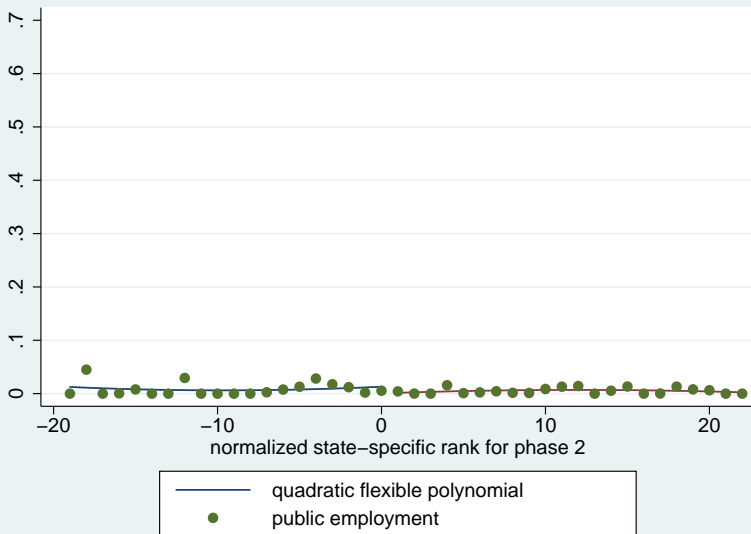
$$y_{ijk} = \beta_0 + \beta_1 nregs_{ij} + \beta_2 nregs * rank_{ij} + \beta_3 nregs * rank_{ij}^2 \\ + \beta_4 rank_{ij} + \beta_5 rank_{ij}^2 + \beta_6 baseline y_{ij} + \eta_j + \epsilon_{ijk}$$

Coefficient of interest: β_1

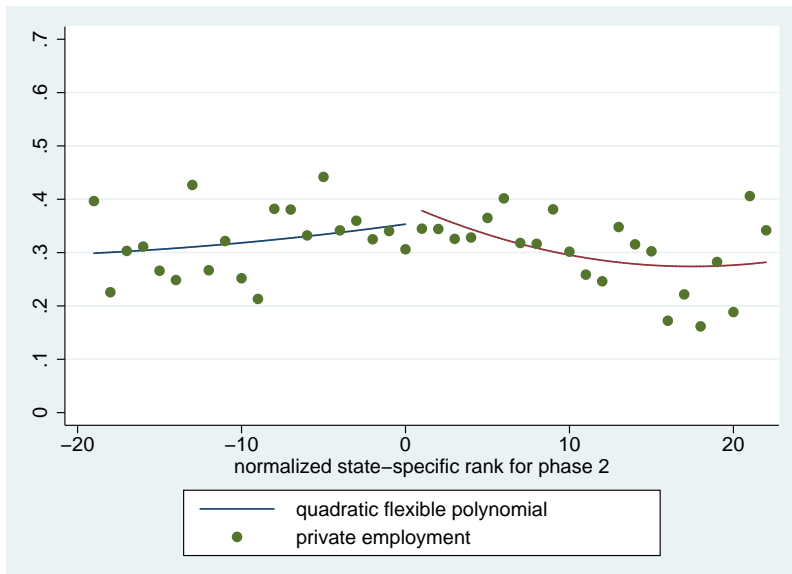
Standard errors clustered at the district level

Main specification: Intent-to-Treat effect

Public Employment (men, ITT)



Private Employment (men, ITT)



Ex Post Insurance: Men

Specification	employment				log private
	public	private	family	total	wage
Quadratic Flexible Slope	-0.0057 (0.0107)	-0.0381 (0.0404)	0.0389 (0.0458)	-0.0051 (0.0326)	-0.0056 (0.0677)
NREGS*negative shock	0.0299** (0.0152)	-0.0223 (0.0337)	-0.0085 (0.0414)	0.0021 (0.0316)	-0.0595 (0.0717)
N	532	532	532	532	504
outcome mean	0.0115	0.3380	0.4681	0.8176	4.1786

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors clustered at district level. *negative shock*: negative deviation of rainfall from expected rainfall.

Women

ITT Results (Restricted Sample)

Specification	employment				log private wage
	public	private	family	total	
Panel A: men					
Quadratic Flexible Slope	0.0022 (0.0053)	-0.0665** (0.0309)	0.0646* (0.0369)	0.0056 (0.0248)	-0.0357 (0.0555)
N	863	863	863	863	811
outcome mean	0.0076	0.3173	0.4963	0.8212	4.1252
Panel B: women					
Quadratic Flexible Slope	-0.0041 (0.0050)	0.0035 (0.0232)	0.0229 (0.0365)	0.0248 (0.0429)	-0.0954 (0.1017)
N	863	863	863	863	530
outcome mean	0.0064	0.1366	0.2290	0.3721	3.6326

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Standard errors clustered at district level. An observation is a district in a given season. The log private wage in column 4 is conditional on private employment.

Robustness

TOT

Meta Analysis

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Individual

Robustness Checks

Estimates robust to other specifications

- Exclusion of baseline controls
- Inclusion of additional controls
- Other parametric specifications
- Different bandwidth choices
- Use of population weights
- Donut-hole approach
- Meta analysis
- Change of running variable
- Individual level

Robustness Checks

Estimates robust to other specifications

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Effect size consistent with administrative data Administrative

DID (men)

DID (women)

Explanation

Conclusion

- RD analysis of impact of NREGS on labor-market outcomes
- NREGS functions as a safety net
 - Ex post effect
 - Higher take-up after negative rainfall shock
 - Ex ante effect
 - Low NREGS take-up
 - Move from private to family employment
 - If at all, wage impacts usually negative

Conclusion

- Implications: NREGS
 - No increase in local labor-market competitiveness
 - No better enforcement of minimum-wage laws
 - Incentivizes self-employment

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 - No large effect on household expenditures
 - Need information on household production
 - Short-run effects

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 - No increase in local labor-market competitiveness
 - No better enforcement of minimum-wage laws
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Thank you!

Permissible NREGS Project Categories

- 1 Water conservation and water harvesting
- 2 Drought proofing, including afforestation and tree plantation
- 3 Irrigation canals, including micro and minor irrigation works
- 4 Provision of irrigation facility to land owned by poor/low-caste households
- 5 Renovation of traditional water bodies
- 6 Land development
- 7 Flood control and protection works
- 8 Rural connectivity to provide all-weather access
- 9 Any work that may be notified by the Central Government in consultation with the State Government

Maximum emphasis is supposed to be on water conservation (Government of India 2010).

Project-Category Breakdown in 2007/2008

- 46% Water conservation
- 20% Provision of irrigation facility to low-caste households
- 18% Land development
- 15% Rural connectivity
- 1% Any other activity

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Assumption 1

Private employment ℓ is less flexible than NREGS employment

- Labor contracts
- Seasonality of private-sector jobs

If ℓ can also be taken up after shock has been realized

- NREGS less attractive as ex post insurance
- More direct substitution between ℓ and NREGS work

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Assumption 2

Private employment ℓ is less risky than family employment

- Labor contracts
- Spot market as long as work is usually available
- Private-sector wage is constant for usual rainfall shocks (below 5 standard deviations)
- Wage rigidity in the private sector (Kaur 2012)

If ℓ is as affected/more affected by shock as family employment

- Lower incentive to work in private sector given the expected wage

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Assumption 3

Household derives utility from from self-employment and total income earned

- Anecdotal evidence (avoid exploitation, choose how to spend time)
- Self-employment is seen as preferable to private-sector work (Bandiera et al. 2013, Banerjee et al. 2011)
- Ensures interior solution

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Best-Response Function

Once a household chooses the fraction of time to spend on NREGS employment after the weather shock has occurred, l , n_1 , and y are fixed. The household therefore chooses n_2 to maximize

$$\max_{n_2} \alpha v((T - l - n_1)(1 - n_2)) + (1 - \alpha)u((T - l - n_1)(1 - n_2)y$$

$$+ (T - l - n_1)n_2\bar{w} + lw + n_1\bar{w})$$

Leading to the first-order condition

$$\alpha v'((T - l - n_1)(1 - n_2)) = (1 - \alpha)u'((T - l - n_1)(1 - n_2)y + (T - l - n_1)n_2\bar{w} + lw + n_1\bar{w})(\bar{w} - y)$$

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Leading to the first-order condition

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$$+ lw + n_1\bar{w})(\bar{w} - y)$$

Define the shock y_0 as the shock at which the first-order condition implies $n_2^* = 0$. Then FOC implies n_2^* for all shocks with income of y_0 or less. For all larger values, optimal n_2 is zero.

Household-Maximization Solution

A solution to the FOC exists if $(T - j) \frac{\partial^2 n_2^*}{\partial j^2} - 2 \frac{\partial n_2^*}{\partial j} > 0$ and

$$-\frac{u''((T - j)((1 - n_2^*)y + n_2^*\bar{w}) + j\tilde{w})}{u'((T - j)((1 - n_2^*)y + n_2^*\bar{w}) + j\tilde{w})} >$$

$$(\bar{w} - y) \left((T - j) \frac{\partial^2 n_2^*}{\partial j^2} - 2 \frac{\partial n_2^*}{\partial j} \right) \frac{1}{\tilde{w} - y + (\bar{w} - y) \left((T - j) \frac{\partial n_2^*}{\partial j} - n_2^* \right)^2}$$

or if $(T - j) \frac{\partial^2 n_2^*}{\partial j^2} - 2 \frac{\partial n_2^*}{\partial j} < 0$ and

$$-\frac{v''((T - j)(1 - n_2^*))}{v'((T - j)(1 - n_2^*))} > \frac{-\left((T - j) \frac{\partial^2 n_2^*}{\partial j^2} - 2 \frac{\partial n_2^*}{\partial j} \right)}{(1 - n_2^* + (T - j) \frac{\partial n_2^*}{\partial j})^2}$$

holds for all possible values of y

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Model Extensions

- NREGS 100-day cap
 - decreases attractiveness ex post risk-coping tool
 - attenuates labor-market impacts
- Implementation problems
 - rationing works like cap
 - corruption works like lower wage
 - attenuates labor-market impacts
- Private-sector wage variability
 - the more variable the wage is to shocks, the less it is a good risk-mitigation tool
 - increases private-sector impacts of NREGS

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Model Prediction Assumptions

- Safety net predictions:
 - predictions clearest if $\bar{w} < w$, implies that n_2^* and l are substitutes
 - $\frac{-\partial n_2^*}{\partial l} < \frac{1-n_2^*}{T-l}$ (relatively poor substitutes)
 - then private employment falls

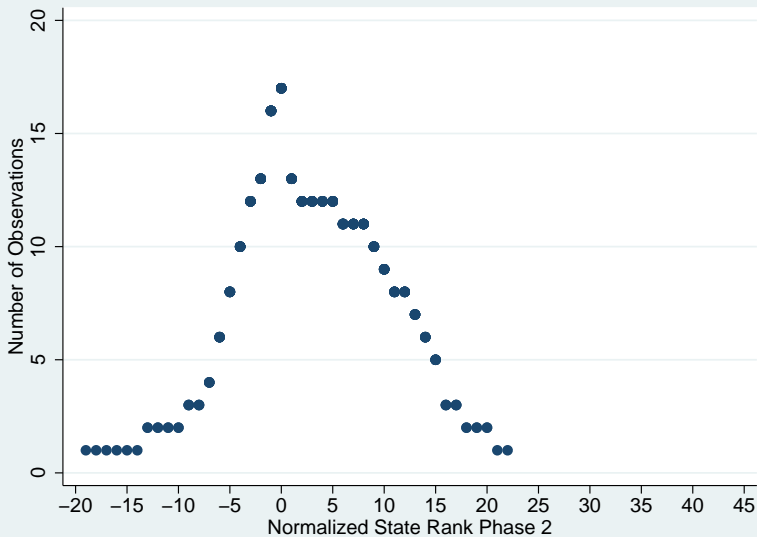
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- Little consensus about model of Indian casual private sector
 - e.g. Basu 2002, Basu and Felkey 2008, Basu forthcoming, Besley and Coate 1992, Kaur 2012
- Under standard assumptions (perfect competition, decreasing marginal product)
 - Wage rises
 - Attenuates negative private employment effect
- Wage also rises if NREGS enforces minimum-wage laws

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- Under standard assumptions (perfect competition, decreasing marginal product)
 - Wage rises
 - Attenuates negative private employment effect
- Wage also rises if NREGS enforces minimum-wage laws
- Wage could also fall, e.g.
 - Wage equals marginal product, independent of number of workers
 - Heterogeneity in worker productivity
 - Higher-productivity workers have higher α

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	N	actual NREGS		prediction success rate	
		Phase 1	Phase 2	Phase 1	Phase 2
Andhra Pradesh	21	13	6	0.90	0.75
Assam	23	7	6	0.91	0.75
Bihar	36	22	14	0.81	1.00
Chhattisgarh	15	11	3	0.73	1.00
Gujarat	20	6	3	0.80	0.93
Haryana	18	2	1	0.72	0.94
Jharkhand	20	18	2	0.85	1.00
Karnataka	26	5	6	0.88	0.52
Kerala	10	2	2	0.77	1.00
Madhya Pradesh	42	18	10	0.76	0.88
Maharashtra	30	12	6	0.93	0.56
Orissa	30	19	5	0.73	0.91
Punjab	15	1	2	1.00	0.93
Rajasthan	31	6	6	0.90	0.72
Tamil Nadu	26	6	4	0.88	0.95
Uttar Pradesh	64	22	17	0.88	0.79
West Bengal	17	10	7	0.76	1.00
Total	447	180	100	0.84	0.82

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Specification	employment				log private		log per capita	
	public	private	family	total	wage	education	land	expenditure
Panel A: men								
Linear	-0.0006 (0.0024)	-0.0188 (0.0187)	0.0077 (0.0212)	-0.0111 (0.0201)	0.0596 (0.0398)	-0.16* (0.09)	83.97 (123.03)	-0.0015 (0.0314)
Linear Flexible Slope	-0.0007 (0.0024)	-0.0187 (0.0187)	0.0077 (0.0212)	-0.0109 (0.0199)	0.0596 (0.0397)	-0.16* (0.09)	80.19 (118.21)	-0.0019 (0.0314)
Quadratic	-0.0009 (0.0023)	-0.0155 (0.0187)	0.0088 (0.0210)	-0.0069 (0.0194)	0.0527 (0.0396)	-0.17* (0.09)	31.01 (118.39)	-0.0116 (0.0315)
Quadratic Flexible Slope	-0.0013 (0.0040)	-0.0365 (0.0265)	0.0297 (0.0278)	-0.0070 (0.0277)	0.0805 (0.0542)	-0.04 (0.11)	51.60 (147.20)	-0.0248 (0.0403)
N	1063	1063	1063	1063	1007	1063	1063	1063
outcome mean	0.0025	0.3109	0.5529	0.8663	4.0352	3.32	1099.63	6.34
Panel B: women								
Linear	0.0018 (0.0012)	0.0005 (0.0132)	0.0459 (0.0303)	0.0503 (0.0336)	0.0608 (0.0494)	-0.17* (0.09)	53.70 (130.69)	-0.0037 (0.0317)
Linear Flexible Slope	0.0018 (0.0012)	0.0003 (0.0130)	0.0457 (0.0302)	0.0500 (0.0333)	0.0609 (0.0495)	-0.17* (0.09)	49.72 (126.00)	-0.0041 (0.0317)
Quadratic	0.0018 (0.0012)	-0.0011 (0.0129)	0.0420 (0.0298)	0.0450 (0.0330)	0.0615 (0.0494)	-0.18** (0.09)	-3.91 (123.27)	-0.0133 (0.0319)
Quadratic Flexible Slope	0.0047** (0.0020)	-0.0170 (0.0162)	0.0278 (0.0394)	0.0183 (0.0440)	0.1324** (0.0645)	-0.11 (0.11)	-3.70 (155.16)	-0.0265 (0.0400)
N	1063	1063	1063	1063	656	1063	1063	1063
outcome mean	0.0018	0.1400	0.3059	0.4480	3.6807	2.34	1134.90	6.35

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ Standard errors clustered at district level.

Parametric regressions with different levels of flexibility. Column 4 conditional on private employment.

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	Men				Women			
	phase 2		phase 3		phase 2		phase 3	
		N		N		N		N
private employment	0.2975	396	0.2938	668	0.1397	396	0.1332	668
family employment	0.5810	396	0.5271	668	0.2559	396	0.3281	668
public employment	0.0038	396	0.0015	668	0.0028	396	0.0013	668
daily wage (total)	52.75	387	65.71	645	38.19	306	45.93	504
daily wage (private)	52.77	386	65.78	645	37.69	303	45.76	497
daily wage (public)	53.44	18	63.54	22	53.42	12	52.32	17

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Ex Post Insurance: Women

Specification	employment			total	log private wage
	public	private	family		
Panel A: rainfall shock					
Quadratic Flexible Slope	-0.0163*	0.0100	0.0404	0.0304	-0.0215
	(0.0094)	(0.0284)	(0.0385)	(0.0433)	(0.1032)
NREGS*negative shock	0.0280	-0.0277	0.0067	0.0149	-0.0049
	(0.0172)	(0.0278)	(0.0396)	(0.0456)	(0.1201)
Panel B: rainfall variance					
Quadratic Flexible Slope	-0.0101	-0.0037	0.0442	0.0289	-0.0202
	(0.0103)	(0.0288)	(0.0414)	(0.0458)	(0.1124)
NREGS*risky	0.0078	0.0056	-0.0042	0.0107	0.0034
	(0.0072)	(0.0233)	(0.0263)	(0.0318)	(0.0908)
N	532	532	532	532	321
outcome mean	0.0093	0.1282	0.2114	0.3489	3.7233

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors clustered at district level. *negative shock*: negative deviation of rainfall from expected rainfall. *risky*: districts with above-median variance of rainfall.

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Meta analysis results

Specification	employment				log private wage
	public	private	family	total	
Linear (simple average)	-0.0021 (0.4926)	-0.0348** (0.0283)	0.0302 (0.1113)	-0.0067 (0.6368)	0.0153 (0.6214)
Quadratic (simple average)	0.0029 (0.3468)	-0.0738*** (0.0001)	0.0693*** (0.0037)	-0.0017 (0.9108)	-0.0156 (0.6865)
Linear (pop. weighted)	-0.0016 (0.5661)	-0.0299* (0.0632)	0.0374* (0.0606)	0.0059 (0.6802)	0.0111 (0.7301)
Quadratic (pop. weighted)	-0.0003 (0.9297)	-0.0501*** (0.0051)	0.0616*** (0.0067)	0.0113 (0.4549)	-0.0059 (0.8729)
N	863	863	863	863	811

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TOT results

Specification	employment				log private wage
	public	private	family	total	
Panel A: men					
Linear	0.0027 (0.0085)	-0.0799 (0.0508)	0.0579 (0.0583)	-0.0157 (0.0417)	-0.0093 (0.0847)
Linear Flexible Slope	0.0025 (0.0086)	-0.0805 (0.0507)	0.0591 (0.0576)	-0.0155 (0.0417)	-0.0087 (0.0853)
Quadratic	0.0017 (0.0089)	-0.0875* (0.0528)	0.0696 (0.0608)	-0.0130 (0.0439)	-0.0165 (0.0871)
Quadratic Flexible Slope	0.0082 (0.0092)	-0.1056* (0.0567)	0.0603 (0.0631)	-0.0328 (0.0438)	-0.1203 (0.1071)
N	1063	1063	1063	1063	1007
outcome mean	0.0069	0.3279	0.4846	0.8195	4.1208
Panel B: women					
Linear	0.0030 (0.0100)	-0.0081 (0.0376)	0.0376 (0.0594)	0.0318 (0.0683)	0.0091 (0.1439)
Linear Flexible Slope	0.0030 (0.0101)	-0.0078 (0.0379)	0.0370 (0.0596)	0.0311 (0.0684)	0.0063 (0.1410)
Quadratic	0.0035 (0.0106)	-0.0049 (0.0388)	0.0255 (0.0605)	0.0239 (0.0698)	0.0115 (0.1498)
Quadratic Flexible Slope	0.0019 (0.0118)	-0.0161 (0.0394)	0.0906 (0.0687)	0.0792 (0.0800)	-0.1220 (0.1887)
N	1063	1063	1063	1063	656
outcome mean	0.0053	0.1309	0.2285	0.3647	3.6488

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ITT results

Specification	employment				log private wage
	public	private	family	total	
Panel A: men					
Linear	0.0012 (0.0038)	-0.0351* (0.0208)	0.0253 (0.0247)	-0.0069 (0.0185)	-0.0041 (0.0377)
Linear Flexible Slope	0.0011 (0.0038)	-0.0351* (0.0208)	0.0256 (0.0244)	-0.0068 (0.0185)	-0.0041 (0.0377)
Quadratic	0.0007 (0.0038)	-0.0369* (0.0204)	0.0292 (0.0243)	-0.0055 (0.0187)	-0.0070 (0.0375)
Quadratic Flexible Slope	0.0018 (0.0045)	-0.0522* (0.0273)	0.0302 (0.0331)	-0.0165 (0.0231)	-0.0196 (0.0500)
N	1063	1063	1063	1063	1007
outcome mean	0.0069	0.3279	0.4846	0.8195	4.1212
Panel B: women					
Linear	0.0013 (0.0044)	-0.0035 (0.0166)	0.0166 (0.0259)	0.0140 (0.0301)	0.0041 (0.0660)
Linear Flexible Slope	0.0013 (0.0044)	-0.0034 (0.0166)	0.0161 (0.0256)	0.0137 (0.0298)	0.0038 (0.0663)
Quadratic	0.0015 (0.0045)	-0.0020 (0.0165)	0.0108 (0.0255)	0.0101 (0.0296)	0.0050 (0.0660)
Quadratic Flexible Slope	-0.0026 (0.0043)	-0.0073 (0.0210)	0.0340 (0.0334)	0.0263 (0.0385)	-0.0706 (0.0925)
N	1063	1063	1063	1063	656
outcome mean	0.0053	0.1309	0.2285	0.3647	3.6488

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ITT Results Index

Specification	employment				log private wage
	public	private	family	total	
Panel A: men					
Linear	0.0015 (0.0032)	-0.0135 (0.0174)	0.0060 (0.0201)	-0.0041 (0.0151)	-0.0334 (0.0324)
Linear Flexible Slope	0.0007 (0.0033)	-0.0145 (0.0172)	0.0123 (0.0197)	0.0005 (0.0155)	-0.0311 (0.0329)
Quadratic	0.0007 (0.0037)	-0.0201 (0.0181)	0.0230 (0.0213)	0.0055 (0.0163)	-0.0324 (0.0356)
Quadratic Flexible Slope	0.0000 (0.0045)	-0.0353** (0.0178)	0.0338 (0.0250)	-0.0183 (0.0176)	-0.0044 (0.0383)
N	1063	1063	1063	1063	1007
outcome mean	0.0069	0.3279	0.4846	0.8195	4.1212
Panel B: women					
Linear	0.0023 (0.0048)	-0.0077 (0.0132)	0.0231 (0.0221)	0.0164 (0.0251)	-0.0379 (0.0551)
Linear Flexible Slope	0.0021 (0.0050)	-0.0046 (0.0132)	0.0284 (0.0216)	0.0248 (0.0243)	-0.0384 (0.0550)
Quadratic	0.0018 (0.0053)	0.0012 (0.0141)	0.0482** (0.0222)	0.0504* (0.0257)	-0.0412 (0.0581)
Quadratic Flexible Slope	0.0006 (0.0057)	-0.0191 (0.0138)	0.0417* (0.0253)	0.0248 (0.0294)	-0.0544 (0.0708)
N	1063	1063	1063	1063	656
outcome mean	0.0053	0.1309	0.2285	0.3647	3.6488

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ITT Results Individual Level

Specification	employment			total	log private wage
	public	private	family		
Panel A: men					
Linear	-0.0025 (0.0039)	-0.0286 (0.0208)	0.0341 (0.0253)	0.0031 (0.0185)	0.0472 (0.0417)
Linear Flexible Slope	-0.0024 (0.0039)	-0.0286 (0.0209)	0.0339 (0.0250)	0.0028 (0.0182)	0.0468 (0.0416)
Quadratic	-0.0031 (0.0040)	-0.0296 (0.0205)	0.0391 (0.0251)	0.0065 (0.0184)	0.0454 (0.0418)
Quadratic Flexible Slope	-0.0031 (0.0056)	-0.0531** (0.0252)	0.0595* (0.0320)	0.0033 (0.0211)	0.0441 (0.0480)
N	37224	37224	37224	37224	12062
outcome mean	0.0082	0.3261	0.4756	0.8099	4.0473
Panel B: women					
Linear	0.0009 (0.0036)	-0.0025 (0.0171)	0.0254 (0.0251)	0.0238 (0.0296)	-0.0231 (0.0528)
Linear Flexible Slope	0.0010 (0.0035)	-0.0032 (0.0172)	0.0274 (0.0250)	0.0252 (0.0295)	-0.0220 (0.0537)
Quadratic	0.0008 (0.0036)	-0.0015 (0.0172)	0.0199 (0.0248)	0.0192 (0.0295)	-0.0257 (0.0532)
Quadratic Flexible Slope	-0.0027 (0.0041)	-0.0125 (0.0206)	0.0409 (0.0327)	0.0257 (0.0381)	-0.0585 (0.0606)
N	41978	41978	41978	41978	5339
outcome mean	0.0046	0.1234	0.2106	0.3385	3.5428

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Discussion

Does NSS data adequately capture public employment?

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 - implication: on average 0.0764 NREGS workdays per person per week in typical district
- NSS data
 - average public-works workdays per person per week in typical district (Phase 1 and Phase 2): 0.0789
 - about 4 days of employment per person per year

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DID Results (men)

	employment			private wage		
	public	private	family	cond.	cond. log	uncond.
Actual Treatment						
NREGS* post period	0.0083** (.0036)	0.0060 (.0160)	-.0344** (.0173)	-0.47 (1.73)	0.0100 (.0297)	0.60 (1.25)
NREGS	0.0019 (.0018)	-0.0019 (.0122)	.0319** (.0137)	-4.17*** (1.55)	-.0741*** (.0297)	-1.71** (.82)
post period	0.0014 (.0009)	0.0147 (.0103)	-.0555*** (.0103)	5.76*** (1.20)	.0832*** (.0179)	2.65*** (.91)
Predicted Treatment						
NREGS* post period	.0056* (.0031)	0.0141 (.0159)	-0.0405** (.0165)	-0.98 (1.72)	-0.0075 (.0289)	0.64 (1.24)
NREGS	-0.0022 (.0016)	-0.0192 (.0121)	.0404*** (.0142)	-4.27*** (1.58)	-.0664** (.0283)	-2.34*** (.86)
post period	0.0022 (.0016)	0.0114 (.0104)	-.0523*** (.0110)	5.98*** (1.25)	.0900*** (.0188)	2.62*** (.93)
N	2126	2126	2126	2018	2014	2126
outcome mean	0.0047	0.3194	0.5188	63.59	4.08	20.42

Background

Discussion

DID Results (women)

	employment			private wage		
	public	private	family	cond.	cond. log	uncond.
Actual Treatment						
NREGS*post period	.0075**	0.0035	0.0049	-1.40	-0.0126	0.30
	(.0035)	(.0109)	(.0174)	(2.05)	(.0461)	(.52)
NREGS	0.0028	0.0115	-0.0167	-2.24	-0.0458	0.12
	(.0019)	(.0102)	(.0186)	(1.47)	(.0369)	(.45)
post period	0.0007	-0.0104	-0.0793***	2.01	-0.0058	-0.35
	(.0005)	(.0064)	(.0119)	(1.60)	(.0288)	(.33)
Predicted Treatment						
NREGS*post period	0.0043	0.0073	0.0159	-2.72	-0.0249	0.35
	(.0031)	(.0104)	(.0173)	(2.10)	(.0451)	(.51)
NREGS	-0.0001	0.0176*	0.0073	-4.42***	-.1013***	0.15
	(.0014)	(.0099)	(.0198)	(1.45)	(.0358)	(.44)
post period	0.0018	-.0119*	-.0837***	2.69	0.0004	-0.38
	(.0012)	(.0069)	(.0122)	(1.74)	(.0305)	(.35)
N	2126	2126	2126	1326	1312	2126
outcome mean	0.0036	0.1354	0.2672	41.99	3.64	5.22

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Discussion

DID Differences Explanation

- Typical DID results stress substantial private-sector wage increases, NREGS take-up (e.g. Azam 2012, Berg et al. 2012, Imbert and Papp 2013)
- Differences to my results could be driven by sample composition, data, empirical specifications

DID Differences Explanation

- Typical DID results stress substantial private-sector wage increases, NREGS take-up (e.g. Azam 2012, Berg et al. 2012, Imbert and Papp 2013)
- Differences to my results could be driven by sample composition, data, empirical specifications
- Replication of results possible, differences driven by
 - choice of empirical specification: Imbert and Papp 2013 (seasonality), Berg et al. 2012 (high implementation quality)
 - sample composition: Azam 2012 (casual workers)

So differences mostly explained by emphasis on different subgroups of districts or individuals. Overall patterns consistent with my results

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