

# The power of transparency

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# Program implementation

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- Classic principal-agent-citizen problem
  - Central governments have a goal and design a program accordingly
  - But local officials who implement the programs may have incentives that run counter to that goal
  - Considerable leakage in public programs. Examples
    - Reinikka and Svensson pioneered "Public expenditure tracking survey" and show 87% of non teaching funds designed to school do not reach.
    - Olken, 2006: Compare rice sent to rice consumed in public distribution: huge "loss" along the way.
    - Qian and Nunn: international food aid is stolen
    - Niehaus, Atanassova, Bertrand, and Mullainathan (2013) : many ineligible households buy subsidized products through India's public distribution system and the price charged is, on average, higher than the stated price
    - Niehaus and Sukthankar (2013) search for 1499 individuals in the state of Orissa, who were reported as MGNREGS workers by nrega.nic.in. They found only 821 both exist and report having worked and of these 821, most received less than the reported amount payments.

# Transparency

- Today we'll talk about the role of transparency and program information
- Very fashionable (transparency international; publish what you pay). View that transparency will improve accountability and reduce corruption
- But not that much work.
- A paper by Reinikka and Svensson looks at press publication of PETS and compare places close or far from newspaper agent
  - Food Transfer program where beneficiaries may know less about rules than bureaucrat
  - Public employment program where beneficiaries may not know how much they are entitled to
  - Same public employment program but transparency in what motivates a fund flow
- In these three cases, how can transparency improve the functioning of the program?

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  - Eligible only receive 1/3 of intended subsidy
- Given low levels of information, officials may have an advantage in bargaining with villagers
- Question: Will program transparency increase the amount of subsidy eligible households receive?

## Conceptual Framework

- Bargaining between the project official and the beneficiaries
- leader makes a take it or leave it offer to villagers
- Villager can accept it or complain, if he complains it has a cost but he may get something. Cost to the leaders is that he may be thrown out of office if there are too many complaints
- Impact of providing more information is ambiguous: immediate reason to increased share offered but at the same time the probability of future complaints increase, this reduces the value of being in office, and hence increases the effective discount rate which may lead the official to make a worst offer.
- (there is a more general point here about "killing the golden goose": if the future benefits of keeping in good standing with citizens are high enough this may limit the temptation of official to cheat, and transparency may have the wrong objective).



# Project design

- Randomized trial in 572 villages working with the Indonesian government

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- Randomized trial in 572 villages working with the Indonesian government
- In 378 randomly chosen villages eligible households received Raskin identification cards, which informed them they were eligible and the amount of rice

# Sample card

	
<b>KARTU RASKIN</b> <b>SEPTEMBER 2012 - DESEMBER 2013</b> <b>KABUPATEN BANDUNG</b>	
<b>Nama KRT:</b> <b>Nama PKRT:</b> <b>Nama ART:</b> <b>Alamat:</b>	Agus Budi Siti Jasnah Habib Gg. Markisa No.24 Kampung Ciwedi, Saketi
<p>Tanda Tangan / Cap Jempol Pemegang Kartu</p>  <p><small>Kartu ini harus dipertahankan pada saat pengambilan beras</small></p>	
<p><b>HAK PEMEGANG KARTU RASKIN:</b></p> <ol style="list-style-type: none"><li>1. Pemegang kartu ini berhak untuk menerima beras Raskin sebanyak 15kg per RTS-PM per bulan selama bulan September 2012-Desember 2013</li><li>2. Harga tebus beras Raskin adalah Rp. 1.600 per kg di Titik Distribusi.</li></ol>	
<p><b>KETENTUAN:</b></p> <ol style="list-style-type: none"><li>1. Pembayaran Raskin dari RTS-PM kepada Pelaksana Distribusi Raskin dilakukan secara tunai</li><li>2. Kartu harus disimpan dengan baik, kehilangan atau kerusakan kartu menjadi tanggung jawab pemegang kartu</li><li>3. RTS-PM harus dapat menunjukkan kartu Raskin pada saat pengambilan beras.</li></ol>	

# Mechanisms

- Suppose the cards “worked”. What else might you want to know?



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- Suppose the cards “worked”. What else might you want to know?
- To elucidate mechanisms, within treatment villages varied 4 aspects of the card program
  - Public information about eligibility and cards (in addition to private information)
  - What information was printed on the cards (copay price or not)
  - Who received the cards (all eligible households or a subset) to test whether physical card matters
  - Whether cards contained clipoff coupons to examine perceived accountability effects

# Public vs. private information




- Public vs. private information. Designed to test whether common knowledge facilitates collective action.
  - Private information: village head gets list and one copy posted.
  - Public information: in addition, many copies of list and posters about cards posted

# Price vs. no-price

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KABUPATEN LAMPUNG TENGAH

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3. RTS-PM harus dapat menunjukkan kartu Raskin pada saat pengambilan beras.

- Price vs. no-price: Designed to test precisely whether varying information on cards matters
  - Varied whether cards contained information on co-pay price or not

## Who received cards

- In all villages, full list of eligible beneficiaries was distributed
- But, varied
  - Whether cards were sent to all eligibles
  - Cards only send to bottom 10% of the population (about poorest 1/3 of beneficiaries)
- Designed to test role of physical card in bargaining

# Coupons

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 LINK absen dan download kepada Pemang Card/Raskin <b>DESEMBER 2012</b> Absen Download	 LINK absen dan download kepada Pemang Card/Raskin <b>AUGUST 2013</b> Absen Download	 LINK absen dan download kepada Pemang Card/Raskin <b>APRIL 2013</b> Absen Download	 LINK absen dan download kepada Pemang Card/Raskin <b>DESEMBER 2012</b> Absen Download
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- Coupons or no: Designed to test whether implied checking on the part of the government changed the results

# Experimental Design Issues - Matrix Design

- Within the 378 card villages, we want to run 4 different dimensions on 4 dimensions (so 16 possibilities):
  - Public vs. private information
  - Information on the cards
  - Who received cards
  - Tear-off coupons or no

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# Experimental design

		Public		Private	
		Price	No price	Price	No price
Cards to All	Coupons				
	No Coupons				
Cards to B10	Coupons				
	No Coupons				

# Data

- Data comes from three follow-up surveys:
  - Conducted 2 months, 8 months, and 18 months after cards distributed
  - Oversampled beneficiaries
  - Also interviewed the village leader
- Administrative data on eligibility status
- Baseline consumption data from the previous experiment

# Impact on card receipt and use

**Table 2: Reduced Form Effect of Card Treatment on Receipt and Use**

	Eligible Households			Ineligible Households		
	Received Card (1)	Used Card (2)	Correctly identifies own status (3)	Received Card (4)	Used Card (5)	Correctly identifies own status (6)
Card Treatment	0.28*** (0.02)	0.14*** (0.02)	0.09*** (0.02)	0.02** (0.01)	0.03** (0.01)	0.04* (0.02)
Observations	5,693	5,693	5,691	3,619	3,619	3,619
Control Mean	0.06	0.06	0.30	0.05	0.05	0.35

- Note that only 28% of eligibles received card.

## Impact on subsidy received

Table 3: Effect of Card Treatment on Rice Purchases and Price

	Eligible Households				Ineligible Households			
	Bought in the Last 2 Months (1)	Amount Purchase d (Kg) (2)	Price (Rp.) (3)	Subsidy (Rp.) (4)	Bought in the Last 2 Months (5)	Amount Purchase d (Kg) (6)	Price (Rp.) (7)	Subsidy (Rp.) (8)
Card Treatment	0.02 (0.02)	1.18*** (0.24)	-60*** (18)	7,023*** (1,361)	-0.06*** (0.02)	0.06 (0.19)	-38* (23)	512 (1,042)
Observations	5,693	5,692	4,881	5,692	3,619	3,619	2,283	3,619
Control Group Mean	0.79	5.29	2,276	28,605	0.63	3.46	2,251	18,754

- Recall only 28 pp impact on receiving a card. If you believed only effect was through receiving card, what would Wald estimate be?
- Is this valid?

## Does this help the poor or not?

- The cards increased receipt by eligibles, who were targeted. But was this at the expense of poor ineligibles?
- To investigate this they use per-capita consumption from a baseline survey and estimate:

$$y_{kvist} = \alpha_k + \alpha_{st} + \beta TREAT_v + \omega LNPCE_i + \\ + \gamma TREAT_v \times LNPCE_i + \epsilon_{kvist}$$

- This is again an interaction specification. What does  $\gamma$  tell us? What do we learn from  $\beta + \gamma$ ?

# Does this help the poor or not?

	Eligible Households				Ineligible Households			
	Bought in the Last 2 Months (1)	Amount Purchased (Kg) (2)	Price (Rp.) (3)	Subsidy (Rp.) (4)	Bought in the Last 2 Months (5)	Amount Purchased (Kg) (6)	Price (Rp.) (7)	Subsidy (Rp.) (8)
Card Treatment	-0.01 (0.03)	0.68** (0.31)	-69** (28)	4,074** (1,659)	-0.09*** (0.03)	-0.01 (0.18)	-60* (33)	119 (963)
Log Consumption	-0.00 (0.02)	0.11 (0.21)	-11 (19)	574 (1,115)	-0.12*** (0.02)	-0.66*** (0.11)	-19 (20)	-3,496*** (597)
Treatment x Log Consumption	-0.01 (0.02)	-0.23 (0.30)	22 (24)	-1,446 (1,591)	0.03 (0.02)	0.06 (0.14)	35 (25)	288 (740)
Observations	1,266	1,266	1,148	1,266	1,925	1,925	1,235	1,925
Control Group	0.82	5.09	2,313	26,653	0.62	2.99	2,305	15,663

# Discussion

- Results suggest cards had a substantial impact
  - Increase in subsidy for eligibles of 25%
  - And this is with only 28 pp increase in cards. With full penetration of cards, could have been higher
  - Cost effective: increase in subsidy is well over 5 times the cost of the cards over the period of the study.
- Investigate mechanisms:
  - Kinds of information
    - Providing public vs. private information
    - Providing more information on the cards about the program
    - Providing physical cards with the information
  - Testing accountability effects through coupons

# Public Information

- Public information
  - Cards provide individual information on one's eligibility status.
  - But, if I am thinking of protesting, I may need to know if others would join me if I protested: common knowledge matter
  - To test this we varied the information about the program:
    - Standard information: List sent to village head and one poster with beneficiary lists posted
    - Public information: 3 posters per hamlet and mosque radio announcements
  - test whether this indeed changed people's beliefs, and whether it in turn affected outcomes
  - NB: ends up not being a pure test of common knowledge since it affects both first-order and higher-order beliefs



# Knowledge and beliefs

Table 7: Effect of Public Information on Seeing the Eligibility List

	Eligible (1)	Ineligible (2)	Village officials (3)	Informal Leaders (4)
<i>Panel A: Respondent has seen the list</i>				
Public Info	0.14*** (0.02)	0.10*** (0.02)	0.20*** (0.06)	0.14** (0.05)
Standard Info	0.02 (0.01)	0.01 (0.01)	0.03 (0.06)	0.02 (0.05)
<i>Difference:</i>				
Public - Standard	0.11*** (0.02)	0.10*** (0.02)	0.17*** (0.06)	0.12** (0.05)
Observations	5,685	3,619	496	385
Control Mean	0.07	0.06	0.36	0.12
<i>Panel B: Respondent believes that stated category of individuals has seen the list</i>				
Public Info	0.35*** (0.04)	0.26*** (0.03)	0.24*** (0.05)	0.24*** (0.05)
Standard Info	0.07 (0.04)	0.01 (0.03)	0.03 (0.05)	0.06 (0.04)
<i>Difference:</i>				
Public - Standard	0.28*** (0.05)	0.25*** (0.04)	0.22*** (0.06)	0.18*** (0.05)
Observations	9,304	9,304	9,304	9,304
Control Mean	0.31	0.15	1.04	0.47

# Impacts

Table 9B: Effect of Public Information on Rice Purchases and Price

	Eligible Households				Ineligible Households			
	Bought in the Last 2 Months (1)	Amount Purchased (Kg) (2)	Price (Rp.) (3)	Subsidy (Rp.) (4)	Bought in the Last 2 Months (5)	Amount Purchased (Kg) (6)	Price (Rp.) (7)	Subsidy (Rp.) (8)
Public Info	0.03 (0.02)	1.54*** (0.30)	- 79*** (21)	9,081*** (1,665)	-0.07*** (0.03)	0.09 (0.23)	-50* (27)	657 (1,256)
Standard Info	0.01 (0.02)	0.79*** (0.30)	-41* (22)	4,778*** (1,690)	-0.04 (0.03)	0.07 (0.22)	-26 (25)	527 (1,222)
<i>Difference:</i>								
Public - Standard	0.01 (0.02)	0.75** (0.36)	-38* (22)	4,303** (1,999)	-0.03 (0.03)	0.03 (0.25)	-24 (25)	129 (1,338)
Observations	5,685	5,684	4,873	5,684	3,619	3,619	2,283	3,619
Control Mean	0.79	5.29	2,276	28,605	0.63	3.46	2,251	18,754

- Public information doubles impact of cards

## But card use also goes up

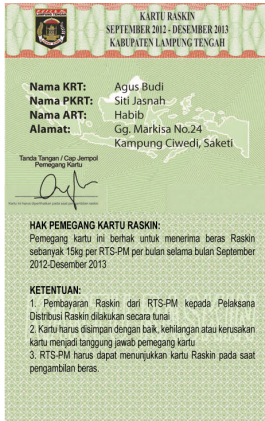
**Table 10A: Effect of Public Info on Card Receipt and Use**

	Eligible Households		Ineligible Households	
	Received Card	Used Card	Received Card	Used Card
	(1)	(2)	(3)	(4)
Public Info	0.31*** (0.02)	0.16*** (0.02)	0.02 (0.01)	0.03 (0.02)
Standard Info	0.25*** (0.03)	0.11*** (0.02)	0.03** (0.01)	0.04** (0.02)
Public - Standard	0.06* (0.03)	0.05* (0.03)	-0.01 (0.02)	-0.01 (0.02)
Observations	5,685	5,685	3,619	3,619
Control Mean	0.06	0.06	0.05	0.05

## Discussion

- So public information doubles increase of subsidy
- But part of the impact is that cards more likely to be distributed by 6 pp (compared to 25 pp in standard information)
- So could only impact of public information be because more cards were handed out?
- No:
  - If you compute the Wald effect of subsidy on receiving a card, it is Rp. 17,000 in standard and Rp. 31,000 in enhanced
  - Suggests it is not just about cards per se
  - Suggests a pure role for information

# Information about prices



- Changing the information on the cards is the cleanest test of information
- Everything held constant except we added a single extra line to the cards with co-pay price information

# Impacts of price information

Table 11B: Effect of Printing Price on Cards on Rice Purchases and Price

	Eligible Households				Ineligible Households			
	Bought in the Last 2 Months (1)	Amount Purchased (Kg) (2)	Price (Rp.) (3)	Subsidy (Rp.) (4)	Bought in the Last 2 Months (5)	Amount Purchased (Kg) (6)	Price (Rp.) (7)	Subsidy (Rp.) (8)
Cards with Price	0.01 (0.02)	1.13*** (0.36)	-55** (25)	6,708*** (2,056)	-0.04 (0.03)	0.12 (0.26)	-37 (29)	881 (1,415)
Cards without Price	0.01 (0.02)	0.46 (0.32)	-34 (24)	2,935 (1,797)	-0.04 (0.03)	0.08 (0.25)	-7 (27)	451 (1,349)
<i>Difference:</i>								
Price - No Price	0.00 (0.02)	0.67* (0.36)	-21 (25)	3,773* (2,031)	-0.01 (0.03)	0.03 (0.24)	-31 (25)	430 (1,279)
Observations	5,688	5,687	4,877	5,687	3,615	3,615	2,281	3,615
Control Group Mean	0.79	5.29	2,276	28,605	0.63	3.46	2,251	18,754

## Receipt of cards

- In all card villages, village heads received a letter with the complete list of eligible households, and all lists that were posted publicly had the complete list
- But, the government varied who received the cards
  - In half of villages, cards were mailed to all beneficiaries
  - In the other half of village, cards were mailed only to the bottom 10% of all households (about bottom 1/3 of beneficiaries)
- We can analyze our data separately for these three groups of households – eligible bottom 10, eligible non-bottom 10, and ineligible
- This isolates the role of getting a card per se

## Who receives cards

	Subsidy received by ....		
	Bottom 10 households	Other eligible households	Ineligible households
	(1)	(2)	(3)
Cards to Bottom 10	4,662** (1,911)	1,624 (1,783)	691 (1,338)
Cards to All	4,484** (2,238)	4,779** (1,869)	690 (1,409)
Bottom 10 - All	178 (2091)	-3155* (1833)	1 (1257)
Observations	3,682	2,966	3,619
Control Group Mean	29457	27941	18428



## Conclusion: Raskin

- Sending out identification cards dramatically improved a subsidy
- Results suggest role for many different types of information
  - Public information doubled the impact of the cards
  - Return to increased information per se written on cards
  - Physical proof of information (through cards) important
- Note that this intervention was designed working closely with the Indonesian government
  - Designed in response to a request
  - Scaled up nationally in June 2013
  - Video

## Enforcing transparency: Biometric payment for benefits in India: Murlidharan et al (2014)

- India's federal workfare program – MGNREGS – centrepiece of India's rights-based social spending programs
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- India's federal workfare program – MGNREGS – centrepiece of India's rights-based social spending programs
  - 90% funded by the centre; all work provision at village-level. Local Panchayat responsible for implementation
- Significant expansion: In 2013 the program had roughly 50 million beneficiary households and cost 0.3% of GDP.

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- India's federal workfare program – MGNREGS – centrepiece of India's rights-based social spending programs
  - 90% funded by the centre; all work provision at village-level. Local Panchayat responsible for implementation
- Significant expansion: In 2013 the program had roughly 50 million beneficiary households and cost 0.3% of GDP.
- Two common concerns
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  - Significant leakage
- Key e-governance reforms:
  - Everywhere: online data entry, publicly available. Complete records of people, day worked, payments.
  - On experimental basis: electronic payment of wages to beneficiaries (Muralidharan et al, 2014)

## Leakage in MGNREGS

- Niehaus and Sukthankar (2013) search for 1499 individuals in the state of Orissa, who were reported as MGNREGS workers by nrega.nic.in. They found only 821 both exist and report having worked and of these 821, most received less than the reported amount payments.
- Comparison of survey estimates (NSS) to MNREGA data suggest leakage of about 40%-60% in 2007-2008 (Imbert and Papp)
- Leakage has gone down to 20% in 2011 (Imbert and Papp).

## This paper

- Evaluates introduction of biometric smart card for payment of NREGA and pension
- under status quo: payment is done at post office. Lots of opportunities for leakage, e.g. village official goes with the person's passbook, collect their entire payment, and only give them a part.
- new system: biometric smart card, network of (female) bank employees who handle the cash payment with mini ATMs
- Randomized roll out across 158 subdistricts (19 million people).
- partial implementation: 50% of payment after roll out (like the Indonesian cards...)
- But impressive results

# People get paid faster and with less delay

Table 2: Access to payments

	Time to Collect (Min)				Payment Lag (Days)			
	(1)	(2)	(3)	(4)	(5) Average	(6) Average	(7) Deviation	(8) Deviation
Treatment	-21** (9.3)	-21** (8.7)	-5.6 (5.3)	-2.8 (5.6)	-7.1* (3.8)	-10*** (3.6)	-2.9*** (1.1)	-4.7*** (1.5)
Carded GP								
BL GP Mean		.08* (.041)		.22*** (.069)		-.027 (.09)		.043 (.054)
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Week Fe	No	No	No	No	Yes	Yes	Yes	Yes
Adj R-squared	.06	.08	.06	.11	.14	.31	.07	.17
Control Mean	112	112	77	77	34	34	12	12
N. of cases	10252	10181	3814	3591	14279	7254	14279	7254
Level	Indiv.	Indiv.	Indiv.	Indiv.	Indiv-Week	Indiv-Week	Indiv-Week	Indiv-Week
Survey	NREGS	NREGS	SSP	SSP	NREGS	NREGS	NREGS	NREGS



# Less leakage

Table 3: Official and survey reports of program benefits

(a) NREGS

	Official		Survey		Leakage	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	9.9 (12)	7.6 (12)	35** (15)	35** (15)	-25* (13)	-27** (13)
BL GP Mean		.12*** (.027)		.11*** (.037)		.089** (.038)
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	.03	.05	.05	.06	.03	.04
Control Mean	127	127	146	146	-20	-20
N. of cases	5179	5143	5179	5143	5179	5143

# Less stealing from specific people (as expected)

Table 1. Estimating impact of village election

(a) NREGS						
	Ghost households		Other overreporting		Bribe to collect	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-.011 (.02)	-.011 (.021)	-.082** (.033)	-.083** (.036)	-.0021 (.0088)	-.0028 (.0092)
BL GP Mean		-.013 (.067)		.019 (.043)		.014 (.018)
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	.02	.02	.05	.04	.01	.01
Control Mean	.11	.11	.26	.26	.021	.021
N. of cases	5314	5278	3984	3703	10437	10366
Level	Hhd	Hhd	Hhd	Hhd	Indiv.	Indiv.

# More use of the program

Table 5: Access to programs

	Proportion of Hhds doing NREGS work		Was any Hhd member unable to get NREGS work in...		Is NREGS work available when anyone wants it		Did you have to p anything to get th NREGS work?	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Study Period	Study Period	May	January	All Months	All Months	NREGS	NREG
Treatment	.075** (.033)	.074** (.033)	-.025 (.027)	-.031 (.033)	.026* (.015)	.023 (.015)	-.00016 (.0015)	-.0003 (.0015)
BL GP Mean		.14*** (.037)				-.023 (.027)		-.0056* (.0027)
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-squared	.05	.06	.10	.10	.02	.02	.00	.00
Control Mean	.42	.42	.2	.42	.035	.035	.0022	.0022
N. of cases	4978	4944	4783	4531	4790	4750	7232	6908

# Interpretation

- More transparency in program implementation
- But it could also be better service by the final step
- There was little push back by program officials apparently
- perhaps because reform was voluntary and partial (leaves the option to steal from the "ghosts")
- Also if the program is more popular, there may be a larger program, leading more opportunity for grafts on other fronts

## Transparency in fund flow: Banerjee et al.

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- Traditionally flow of funds for decentralized social programs from central coffers to local implementing bodies is based on anticipated, *not* realized expenditures

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- Three common concerns
  - Regions often receive resources that don't match need: dormant funds some place, lack of funds elsewhere.
  - Delay between expenditure and payment create leakage opportunities
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- Electronic platforms now allow local governments to relay (in close to real time) information of expenditures incurred allow for expenditure-based fund flow systems could increase efficiency, and reduce corruption by increasing transparency
- This paper: Can e-reform of public finance management system in a region with very weak implementation capacity improve program performance



# The project

- Working with the administration in charge of MGNREGS, the national rural employment program in India, we evaluate the impact of a fund flow reform design to improve transparency and efficiency
- In the status quo: 4 layers (State/ district /block/ village)
- In the reformed system, local government access funds directly from the State by claiming a specific wage payment, through a computerized system.
- We evaluate the scheme in and RCT covering 3,000 Panchayat in 12 districts (1,000 T, 2,000 control) (covering 33 million people).
- We compare expenditure, employment outcomes, leakage and corruption, in treatment and control panchayats.

## Context: MGNREGS in Bihar

- Quality of MGNREGS implementation has varied significantly across states, and employment generation in Bihar has been relatively low
- 2009-10 NSS data suggests that 35% of Bihar households were rationed out of MGNREGS work (wanted to work but could not) and only 10% of households worked.
- Recent world bank study suggests that 20 – 25% of MGNREGS payments are unaccounted for (older data suggested higher levels of leakage).
- We surveyed 350 local politicians: 48% cited corruption as an important reason for poor implementation

## Funds Flow: Intervention Design

- In 2010, the government had introduced an electronic platform - Central Planning Scheme Monitoring Scheme (CPSMS) - to monitor account balances. It also created a common state pool of funds and opened Zero Balance accounts for districts.

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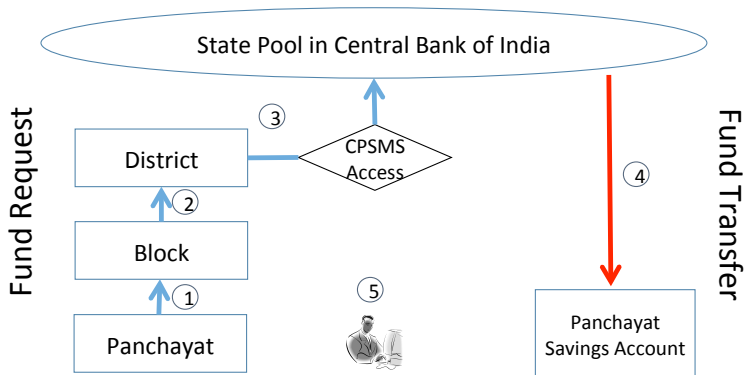
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- The reform began Sep 1 2012 and ran till March 31 2013.
  - Covered 12 districts in Bihar (covering 33 million rural people).
  - Village councils in one third of (randomly selected) blocks in each district used the the new system to request funds from state.

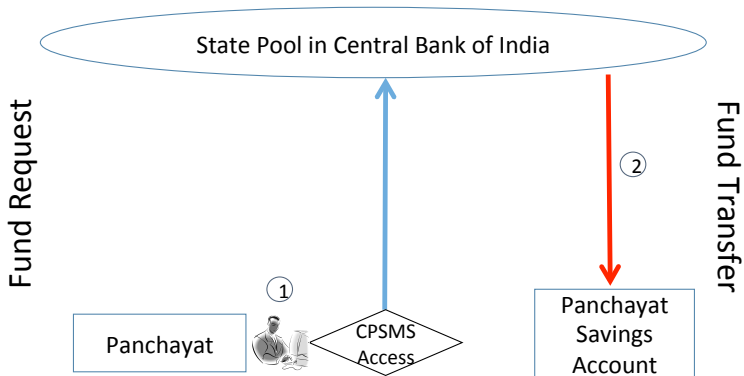
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- Throughout the year the final stage of payments from GP account to workers was unchanged

# Fund Flow of Expenditures in Control



# Fund Flow of Expenditures in Treatment (Labor Payments only)





# Parsing the intervention

- 1. Transparency: The intervention makes it more difficult/dangerous to cheat
  - In the regular system, entry into nrega.inc is lagged by many months.
  - In the new system, entry is real time: it becomes immediately possible to audit.
  - Audits are few and far between but they do carry large penalties (prison).

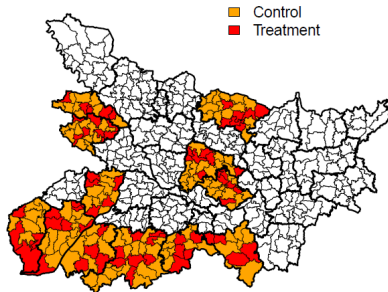
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  - In the new system, entry is real time: it becomes immediately possible to audit.
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- 2. The intervention also changes who can take a cut:
  - In the regular system, cheating is done by the lower level. The block level and district levels are in a position to collect a tax.
  - In the new system, the district level is cut out. The block level remains critical because it has the infrastructure to access the system.

## Expected impacts

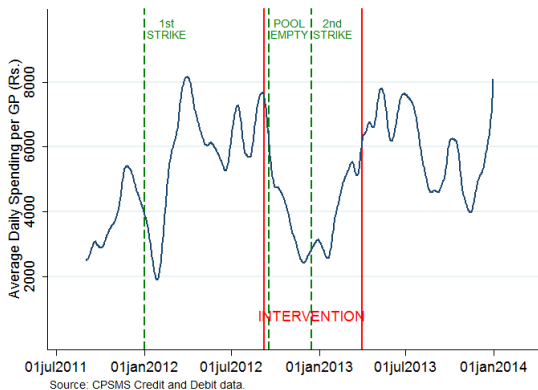
- Increase in transparency should lead to a decline in leakage overall
- Decrease in the tax on corruption (from district officials) can have an ambiguous effect:
  - Income effect would reduce corruption
  - Substitution effect would increase corruption
- We would also expect an impact on the distribution of the proceed: the district officials are clearly cut out of the chain, as they have no role in the new system.

# Sample



12		Districts
69T	126C	Blocks
1002T	2029C	Panchayat

# Context: Fund shortage and very low implementation in Bihar



## Decrease in spending (CPSMS)

	Daily Panchayat Spending			
	Before	Sep-Dec 12	Jan-Mar 13	After
Treatment	-0.360 (0.961)	-1.034*** (0.322)	-1.300*** (0.283)	-0.449 (0.974)
Observations	2,918	2,918	2,917	2,766
Mean in Control	18.38	5.367	4.126	16.71
Effect as % of Mean	-1.959	-19.26	-31.51	-2.685

Source: CPSMS Debit Data.

S.e. are clustered at the block level

Total Estimated effect = Rs 230,000 per Panchayat

Total Estimated effect = 4.1 million USD

## Decrease in spending (nrega.nic.in)

Expenditure items	Annual Panchayat Spending			
	Apr 12-Mar 13		Apr 13-Mar 14	
	Labour	Material	Labour	Material
	-2.270***	-1.077**	-0.277	0.313
	(0.760)	(0.526)	(0.725)	(0.534)
Observations	2,947	2,947	2,954	2,954
Mean in Control	13.83	7.717	13.61	8.373
Effect as % of Mean	-16.42	-13.96	-2.032	3.735

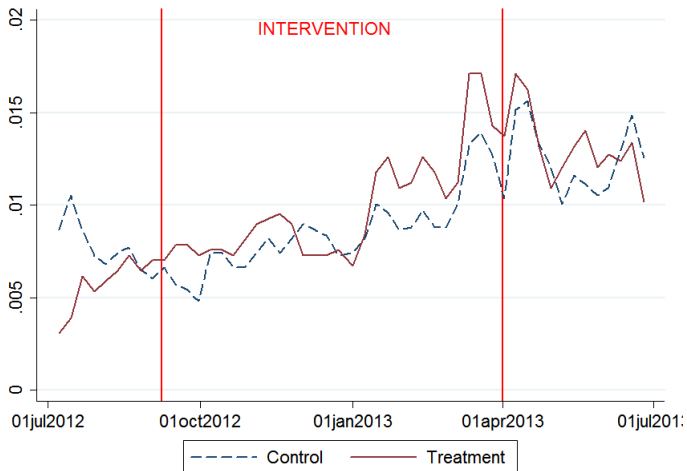
Source: nrega.nic.in. Annual Expenditures from MIS data.

S.e. are clustered at the block level

Estimated effect = Rs 330,000 per Panchayat

# No change in weeks worked (Households)

Balances and total credit to Panchayat



Source: Household survey (May-July 2013)



## No change in participation

<b>Participation</b>	<b>Before</b>	<b>During</b>	<b>After</b>
Treatment	-0.00708*** (0.00241)	0.00202 (0.00532)	0.00303 (0.00510)
Mean in Control	0.0124	0.0378	0.0391
Effect as % of Mean	-57.27	5.360	7.747

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Source: Survey of 9996 households (May-July 2013)  
s.e. clustered at block level. District FE and HH Controls

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<b>Weeks Worked</b>	<b>Before</b>	<b>During</b>	<b>After</b>
Treatment	-0.00942 (0.0226)	0.0386 (0.0571)	0.00679 (0.0333)
Mean in Control	0.0853	0.324	0.184
Effect as % of Mean	-11.05	11.92	3.698

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<b>Days Worked</b>	<b>Before</b>	<b>During</b>	<b>After</b>
Treatment	-0.161*** (0.0497)	0.193 (0.230)	0.0736 (0.362)
Mean in Control	0.231	1.192	1.825
Effect as % of Mean	-69.60	16.21	4.033

Source: Survey of 9996 households (May-July 2013)  
s.e. clustered at block level. District FE and HH Controls

## No change in projects built

	<b>Registered (MIS)</b>	<b>Completed (MIS)</b>	<b>% Found in Survey</b>
Treatment	0.0494 (0.263)	0.372 (0.342)	0.0176 (0.0176)
Observations	390	390	4,165
Mean in Control	13.82	2.126	0.855
Effect as % of Mean in C	0.357	17.48	2.057

Source: MIS and NREGA Asset survey (May-July 2013)

Standard errors are clustered at the block level

## Results Summary

- Drop in Funds parked in Panchayat
- Drop in Panchayat Expenditure (about 25%) Rs. 250,000 per panchayat (4545 dollars)
- Combined, during the intervention period a panchayat received 38% less funds on average : Rs 350,000 (6300 dollars)
- No drop in number of participation / weeks / days worked according to households.
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- Where is the missing missing money?

## Margin of leakages

- Two main types of corruption in MGNREGS:
  - “Ghost workers”: add people who did not work.
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- Different interventions would impact different margins:
  - Muralidharan et al. (2014), which provides people with a direct transfer to their bank accounts, find decrease in “ghost days”.
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  - Our intervention made it more risky to invent “ghost workers” but ghost days become non verifiable.
- Test this empirically: by matching survey households to households registered on [nrega.nic.in](http://nrega.nic.in).
- We find suggestive evidence in matching in ghost workers, not days (all the decline in NREGA is accounted for by households we cannot match in the survey).

# NREGA data base shows decline in number of workers, not days per worker

	MGNREGS days worked per household		
	Before intervention (1)	Intervention Period (2)	Since Intervention (3)
<b>Panel A: Days worked (nrega.nic.in)</b>			
Treatment	-245.8 (340.5)	-692.8* (364.1)	-890.2 (543.4)
Observations	2,941	2,941	2,941
Mean in Control	4956	5008	10567
Effect as % of Control Mean	-4.959	-13.83	-8.424
<b>Panel B: Days per working household (nrega.nic.in)</b>			
Treatment	-0.578 (0.797)	0.0530 (0.935)	-0.116 (0.841)
Observations	2,874	2,856	2,930
Mean in Control	28.54	33.57	40.29
Effect as % of Control Mean	-2.025	0.158	-0.288
<b>Panel C: Number of working households (nrega.nic.in)</b>			
Treatment	0.853 (9.940)	-14.20* (8.141)	-15.16 (9.941)
Observations	2,941	2,941	2,941
Mean in Control	168.2	139.6	249.5
Effect as % of Control Mean	0.508	-10.17	-6.079

# There is a decline in workdays for unmatched workers, not matched workers

	MGNREGS days worked per household		
	Before intervention (Yes)	Intervention Period (Yes)	Since Intervention (Yes)
<b>Panel D: Days worked by household not matched with survey (nrega.nic)</b>			
Treatment	-250.5 (336.8)	-704.0* (360.1)	-910.8* (534.4)
Observations	2,941	2,941	2,941
Mean in Control	4896	4954	10440
Effect as % of Control Mean	-5.117	-14.21	-8.725
<b>Panel E: Days worked by household matched with survey (nrega.nic.in)</b>			
Treatment	0.764 (30.66)	-3.829 (62.09)	27.98 (67.96)
Observations	372	372	372
Mean in Control	89.89	456.4	436.1
Effect as % of Control Mean	0.850	-0.839	6.416

# Reported Wealth of Panchayat Officials (block and village)

	1st batch (2012)		2nd batch (2014)			
WHOLE DATA						
Treatment	-0.0293 (0.0709)	-0.0372 (0.144)	-0.133 (0.109)	-0.121 (0.110)	-0.144 (0.139)	-0.0905 (0.149)
Treatment*Block Level Posting					0.0834 (0.211)	
Observations	2,074	2,074	1,317	1,317	1,317	1,317
Controls	No	Yes	No	Yes	Yes	Yes
TRIMMED 1%						
Treatment	-0.0307 (0.0687)	-0.0350 (0.142)	-0.148 (0.100)	-0.135 (0.101)	-0.183 (0.127)	-0.132 (0.135)
Treatment*Block Level Posting					0.168	
Observations	2,055	2,055	1,303	1,303	1,303	1,303
Controls	No	Yes	No	Yes	Yes	Yes
TRIMMED 5%						
Treatment	-0.0461 (0.0670)	-0.0481 (0.137)	-0.203** (0.0863)	-0.192** (0.0871)	-0.242** (0.108)	-0.178 (0.117)
Treatment*Block Level Posting					0.186 (0.171)	
Observations	1,991	1,991	1,231	1,231	1,231	1,231
Controls	No	Yes	No	Yes	Yes	Yes

## Increased delays in payments

<b>Work done</b>	<b>Days between work and payment</b>			
	<b>Before</b>	<b>Sep-Dec</b>	<b>Jan-Mar</b>	<b>After</b>
Treatment	-18.06 (24.03)	35.03** (17.47)	15.84 (9.770)	-2.467 (5.630)
Observations	123	170	225	381
Mean in Control	73.44	72.80	49.95	38.41
Effect as % of Mean	-24.60	48.12	31.71	-6.423

Source: Household survey (May-July 2013)

Standard errors are clustered at the block level

## No change in Consumption

	<b>Log monthly household expenditures</b>			
	<b>All</b>	<b>Frequent</b>	<b>Recurrent</b>	<b>Rare</b>
Treatment	-226.3 (700.1)	-41.19 (48.86)	-16.91 (16.47)	-168.2 (691.8)
Observations	9,966	9,966	9,966	9,966
Mean in Control	8856	3153	766.5	4937
Effect as % of Mean	-2.717	-1.837	-1.902	-3.405

Source: Household Survey (May-July 2013)

S.e. clustered at the block level

## Epilogue

- The reform reduced dormant funds in GP account and reduced leakage (through a decline in expenditure, not an increase in actual delivery)
- This was done on a very large scale, in difficult circumstances.
- Initial phase posed technical problems which increased delays.
- Around January the implementation took off, delays came down.

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- Initial phase posed technical problems which increased delays.
- Around January the implementation took off, delays came down.
- However... the system was discontinued.
- Wealth of Panchayat and block official has gone down...
- The district officials hated the system
- Difficult for state officials to disentangle whether lowered expenditure meant more unmet demand or less leakage
- however... effort under way to scale this up nationwide!