Social Networks, Reputation, and Commitment: Evidence from a Savings Monitors Experiment

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Motivation: Informal Finance

Developing countries have weak formal financial institutions:

- Poor information, contract enforcement, creditor rights
- $\Longrightarrow$ Formal financial sector has limited reach
  - 1.7bn unbanked adults in 2017 (Global Findex)

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Informal, network-based finance (partially) fills this void

- Community-members have informational advantage
- Well-positioned to screen and monitor
  - e.g. Rigol et al 2020, Bryan et al 2015
- Relational contracting tools can be used for enforcement

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Focus of this project: community-based enforcement

Motivation: Group-Based Finance

Group-based financial products ubiquitous in LICs

- Rotating Savings and Credit Associations (RoSCAs), Self-Help Groups (SHGs), Village Savings and Loan Associations (VSLAs), Microfinance (MF) groups
- Typically limited or no collateral, no formal enforcement
- Financial decisions observed by others

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In theories of informal groups, "social reputation" often assumed:

> *"the contributing member may admonish his partner for causing him or her discomfort and material loss. He might also report this behavior to others in the village, thus augmenting the admonishment felt. Such behavior is typical of the close-knit communities in some LDCs."*
>
> *– Besley and Coate (1995)*

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Very hard to get traction on how these institutions work, empirically

- Complicated objects 5, 10, even up to 30 members
- Typically endogenous group formation process
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This paper: a field experiment to get inside this black box

- Context: help individuals save more
  - Savings "contract" even simpler than credit (no wronged party)
  - Increasing savings is beneficial (e.g., Dupas and Robinson '13, Schaner '13)
  - Psychological frictions make it difficult to save (e.g., Ashraf et al '06, Karlan et al '12, Kast et al '13)
- Simplified "institution" of 1 saver and 1 observer
- Random "group" formation

What we do

RCT in Indian villages to encourage savings by assigning a unique **monitor** to each, randomly-selected saver.

- Basic idea:
  - Make a bet with self about ability to save over 6 months.
  - Stakes: reputation gain/loss from progress in front of some other member of village.
- Monitor assigned to a saver for the duration of experiment.
  - Informed about savings in *target account*.
  - Simply told about progress (bi-weekly).
  - Monitor need not do anything!
- Not all monitors created equal
  - Key role for network position to play

Roadmap: Questions

1. Can we encourage savings with monitors from the community?
2. Can we encourage even more savings using central/proximate monitors?
3. Are there reputation effects? Does information about the savers flow?
4. When given choice of monitor, do individuals pick well or unwind?

Roadmap: Questions

1. Can we encourage savings with monitors from the community?
   - Design
   - Treatment effect from receiving a monitor
   - Shock Mitigation and Longer-Run Savings

2. Can we encourage even more savings using central/proximate monitors?

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Design Overview

Avg. 38 households pre-selected to be potential savers per village

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- Goal elicitation (conducted at pre-screen home visit)
- Bi-weekly visits (reminders and weak monitoring)

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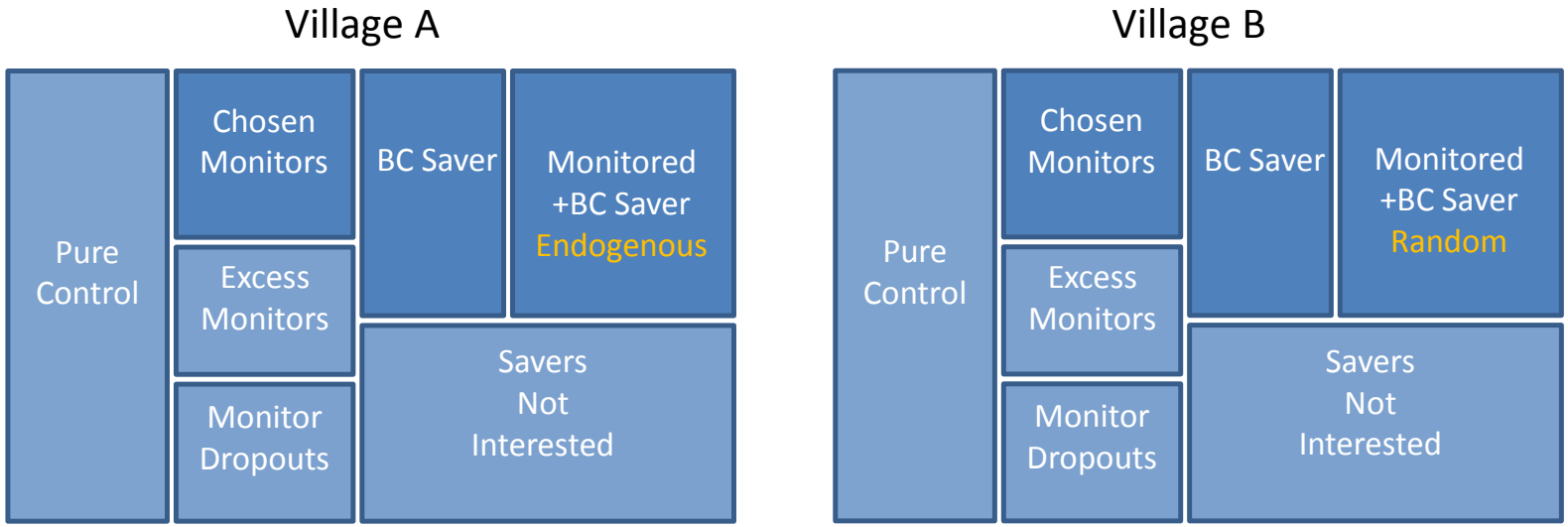
Treatments: 1300+ savers, 1000+ monitors, 60 villages

1. No Monitor (BC): in all 60 villages
2. Researchers Choose Monitor at Random (R): 30 villages
3. Savers Choose Monitor Endogenously (E): 30 villages

Treatments and Roll-Out



- Random vs. Endogenous Monitor assignment randomized at **village** level
- Random Matching (30 villages)
  - Savers randomly assigned to a monitor from pool
- Endogenous Matching (30 villages)
  - Savers choose monitor from pool in random order

Compensation

- Savers (takers only)
  - In Kind: Account opening services
  - Direct: Rs. 50 ($1) deposited into account
- Monitors
  - Payment:
    - Rs. 50 if saver reaches half of goal [helps in a robustness exercise]
    - Rs. 150 if saver meets goal
    - Rs. 0 otherwise

Results: Log **Total** Savings

$$\log(\text{Formal} + \text{Informal Savings})_{iv} = \alpha + \beta \text{Rand. Mon.}_{iv} + \delta' X_{iv} + \epsilon_{iv}$$

	(1)	(2)	(3)
Dependent Variable	Log Total Savings	Log Total Savings	Log Total Savings
Monitor Treatment: Random Assignment	0.370**	0.284*	0.353**
	(0.146)	(0.162)	(0.138)
Observations	544	544	544
R-squared	0.008	0.125	0.086
Dependent Variable Mean (Omitted Group)	7.647	7.647	7.647
Fixed Effects	None	Village	
Controls	None	Saver	Double-Post LASSO

- Random monitor causes 35% increase in total savings balances relative to non-monitored group
- Random monitor also causes an 80% increase in goal attainment in target account (base of 7.3% attainment, unreported)

Real Effects: ↓ in (inability to respond to) shocks

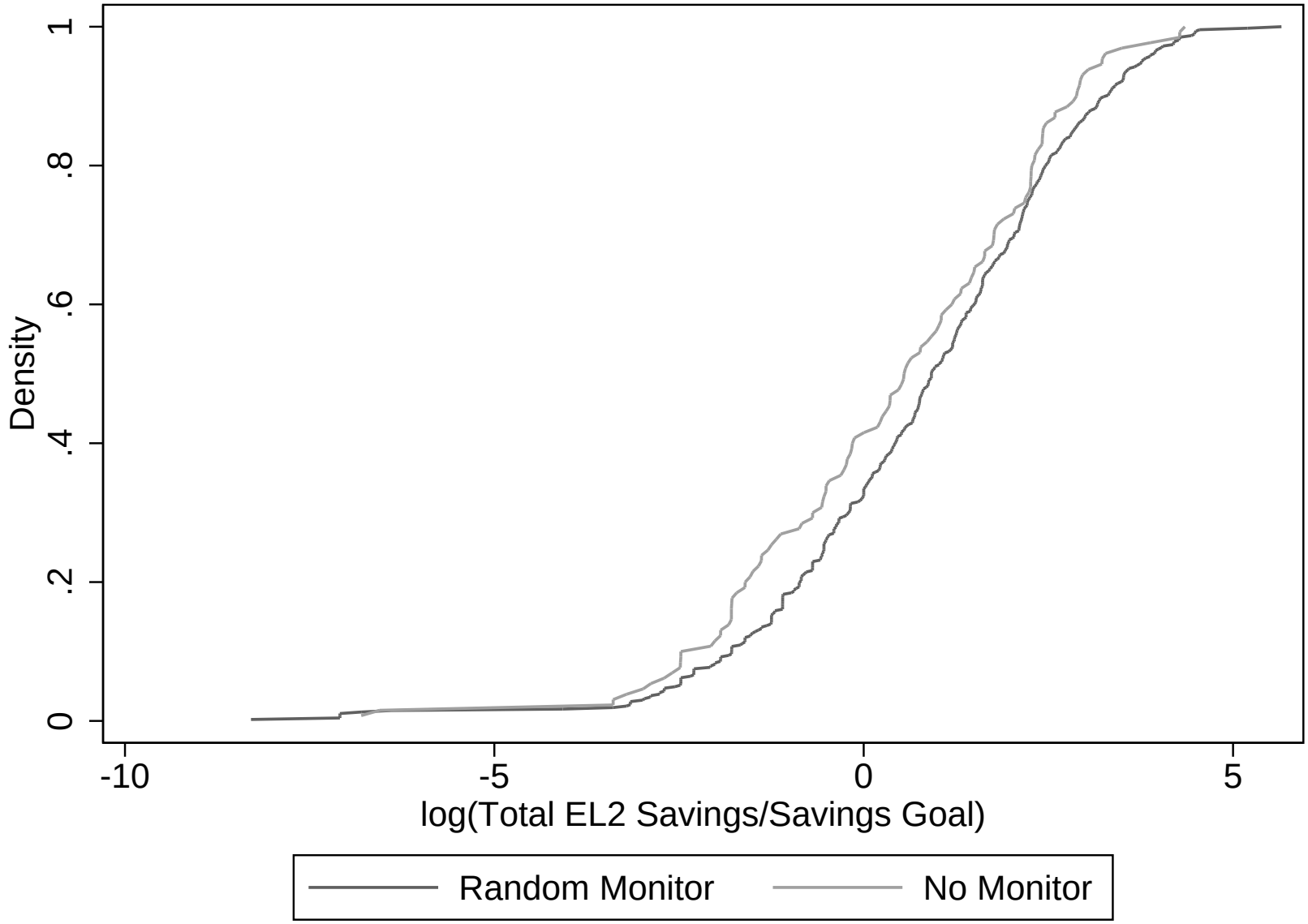
Asked about not having enough money to cover necessary expenses in response to:

- Health shock, livestock health shock, other urgent consumption need etc.

Dependent Variable: Shocks	Total Number	Total Number	Greater than Median	Greater than Median
Monitor Treatment: Random Assignment	-0.199	-0.249	-0.0757	-0.0944
	(0.128)	(0.131)	(0.0416)	(0.0441)
Observations	1,153	1,153	1,153	1,153
R-squared	0.021	0.021	0.019	0.016
Mean of Dep. Var (Control)	1.769	1.769	0.577	0.577
Fixed Effects	Village	No	Village	No

- Intervention improves shock mitigation

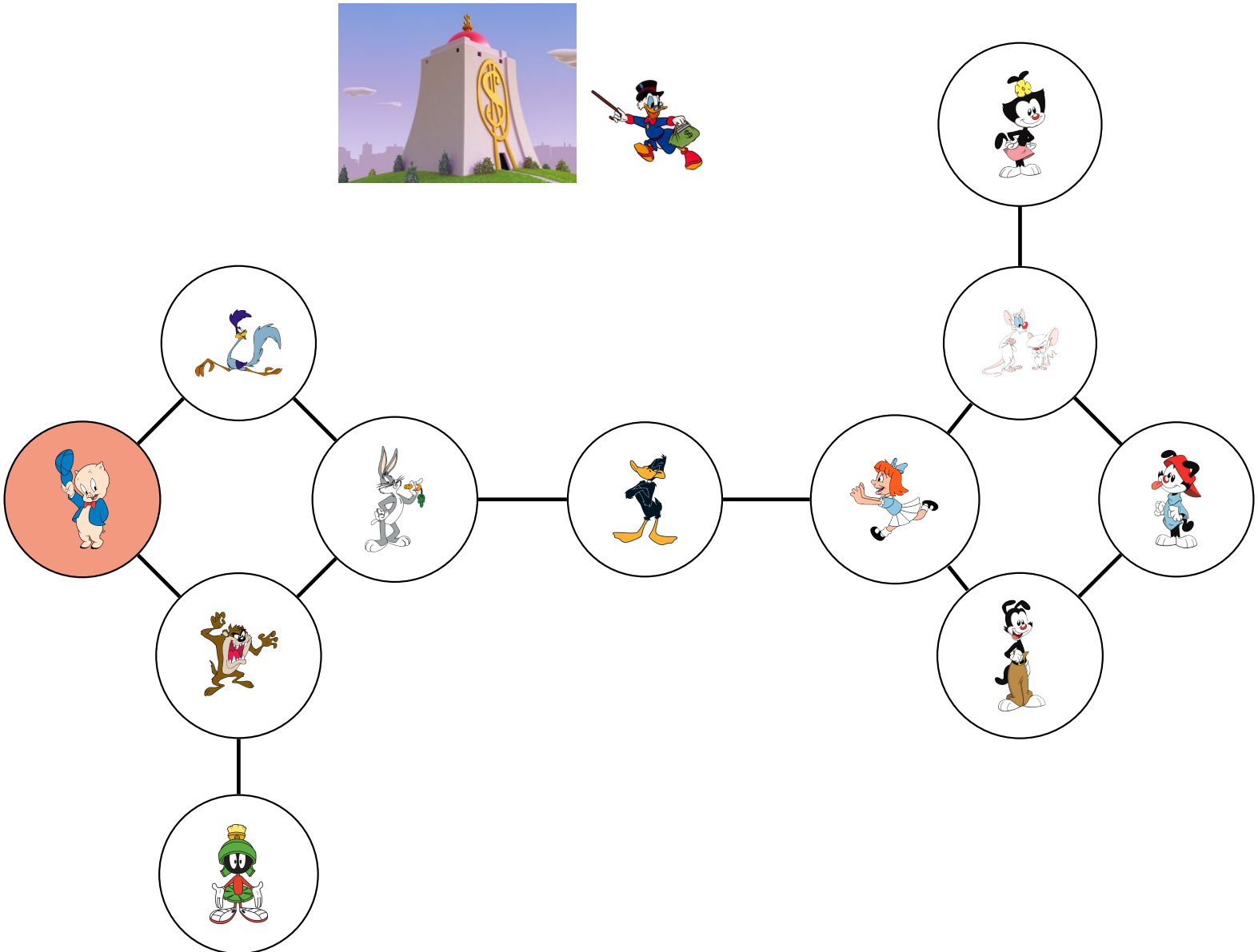
Savings Persist 15 Months Later



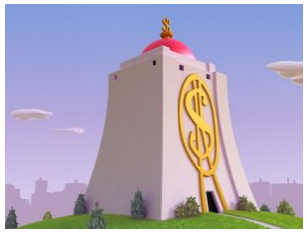
Roadmap: Questions

1. Can we encourage savings with monitors from the community?
2. Can we encourage even more savings using central/proximate monitors?
   - "Model" of reputation flow
   - Network data
   - Results
3. Are there reputation effects? Does information about the savers flow?
4. When given choice of monitor, do individuals pick well or unwind?

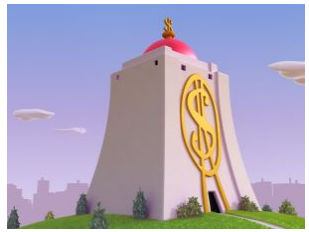
A simple model social reputation flow



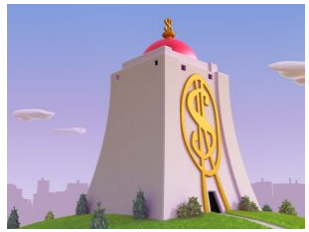
Record savings



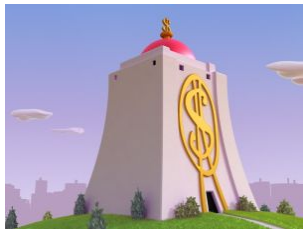
Report to Monitor (Low Centrality)



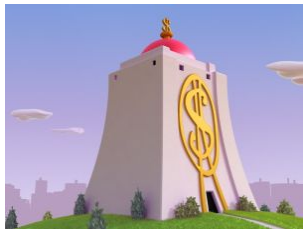
Only a few people hear gossip



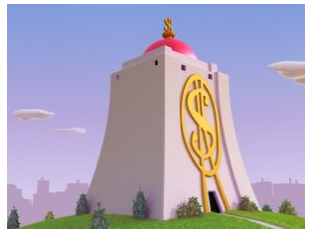
Report to Monitor (High Centrality)



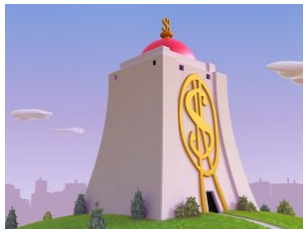
Many more people hear gossip



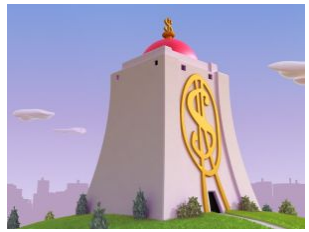
Report to Monitor (Low Proximity)



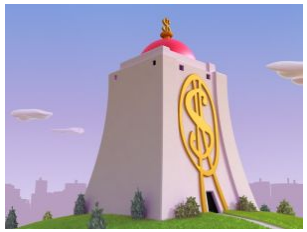
Only a few (distant) people hear gossip



Report to Monitor (High Proximity)



Only a few (close) people hear gossip



Who would make a good monitor?

high centrality
high proximity

>

low centrality
high proximity

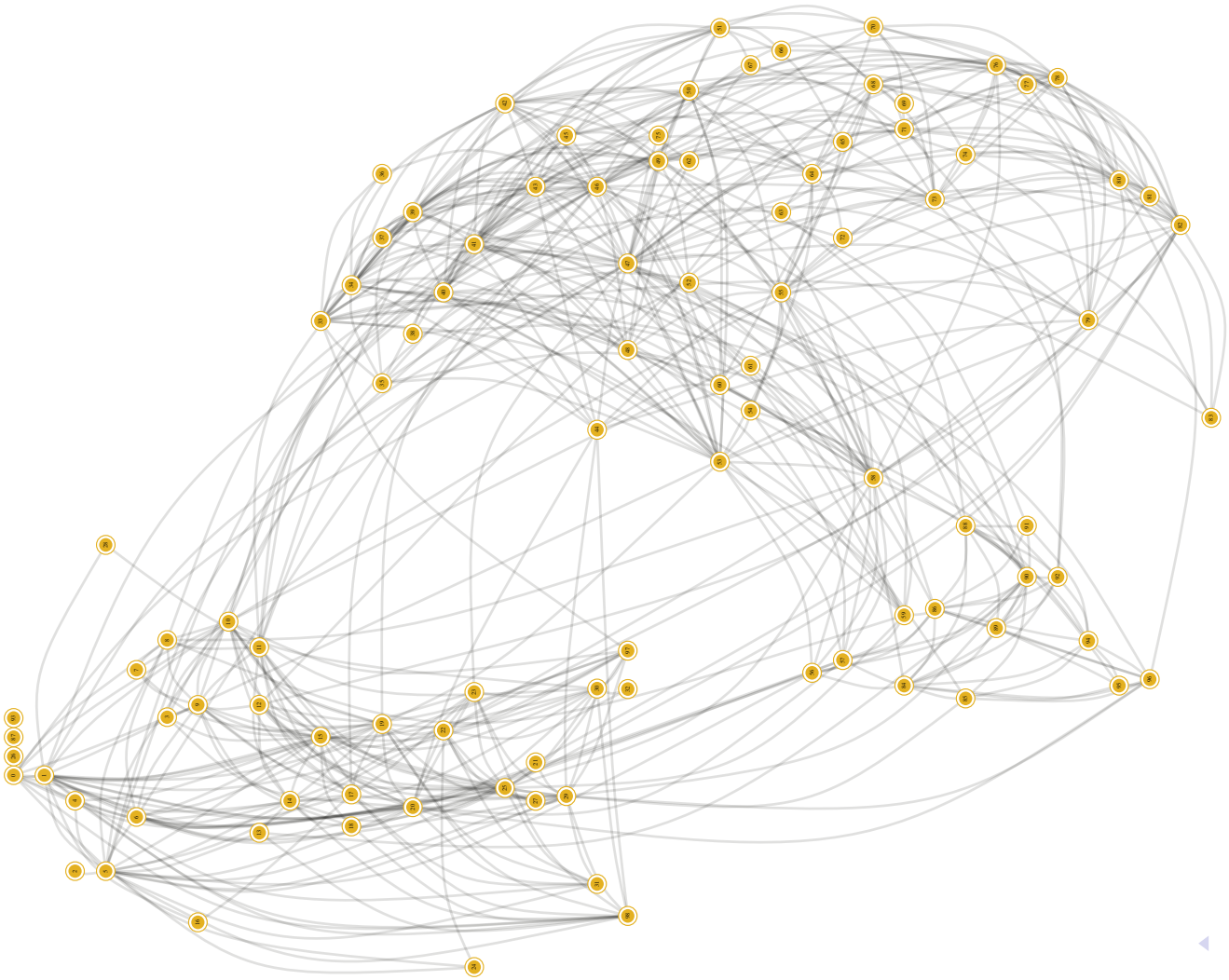
>

low centrality
low proximity

- greater motivation to save if more people are likely to hear about your good/bad deeds (centrality)
- more relevant if people informed of your good/bad deeds are those you are likely going to meet in the future (proximity)
- we write down a signaling model on a network, produces a new network statistic that combines these intutitions q_{ij}, which we can use directly in our regressions "Model-based regressor"

Village network data

Testing these predictions requires network data



- ∼16,500 households surveyed across 75 villages (BCDJ, ‘16)
- Relationships: relatives, friends, creditors, debtors, advisors and religious company
- Undirected, unweighted OR network

Monitor effectiveness & graph position

$$\log(\text{Form.+Inform. Sav.})_{iv} = \alpha + \beta Cent_{mon(i)} + \gamma Prox_{i,mon(i)} + \delta' X_{iv} + \epsilon_{iv}$$

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Log Total Savings	Log Total Savings	Log Total Savings	Log Total Savings	Log Total Savings	Log Total Savings
Monitor Centrality	0.178**		0.134*		0.153**	
	(0.0736)		(0.0729)		(0.0675)	
Saver-Monitor Proximity		1.032***	0.865**		1.108***	
		(0.352)	(0.334)		(0.294)	
Model-Based Regressor				1.450**		1.819***
				(0.693)		(0.632)
R-squared	0.150	0.155	0.161	0.148	0.101	0.080
Fixed Effects	Village	Village	Village	Village		
Controls	Saver, Monitor	Saver, Monitor	Saver, Monitor	Saver, Monitor	Double-Post LASSO	Double-Post LASSO

- Increasing monitor centrality by one std dev increases tot savings by 14%
- Increasing proximity by one std dev increases tot savings by 16%
- Can also use "model-based regressor"

Regs. conditional on demographics (e.g., caste, wealth, age, geo.)

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Network Endogeneity

Graph is *endogenous*

- Centrality may be correlated with many other traits (e.g., gregariousness)

In previous analysis, take the network as given and look for heterogeneous treatment effects

- Control for wealth, marital status, caste, geography, age
- But, cannot randomize network position of the monitor

Solution: trace out information flow.

- If people learn about savers it has to be caused by the network

Respondents' beliefs about savers

- 560+ random respondents chosen 15 mo. after end of intervention
- asked about 8 savers who had monitors
- asked if each saver was responsible (e.g., "good at meeting goals")
- is respondent more likely to say "Yes" when the saver truly did meet her savings goal (or "No" when the saver didn't) when the random monitor is more central?

	(4)	(5)	(6)
Dependent Variable: Beliefs about Saver	Good at Meeting Goals	Good at Meeting Goals	Good at Meeting Goals
Monitor Centrality	0.0389	0.0374	0.0353
	(0.0144)	(0.0140)	(0.0148)
Respondent-Monitor Proximity	0.0476	0.0181	0.0360
	(0.0422)	(0.0366)	(0.0342)
Observations	4,743	4,743	4,743
R-squared	0.030	0.023	0.314
Fixed Effects	No	Village	Respondent
Controls	Saver	Saver	Saver

Vignettes: Reputational Consequences

Panel C: Successful vs. Unsucessful Saver

5). If given the choice between a saver with:

A) High Savings (Rs. 1,000)

B) Low Savings (Rs. 100)

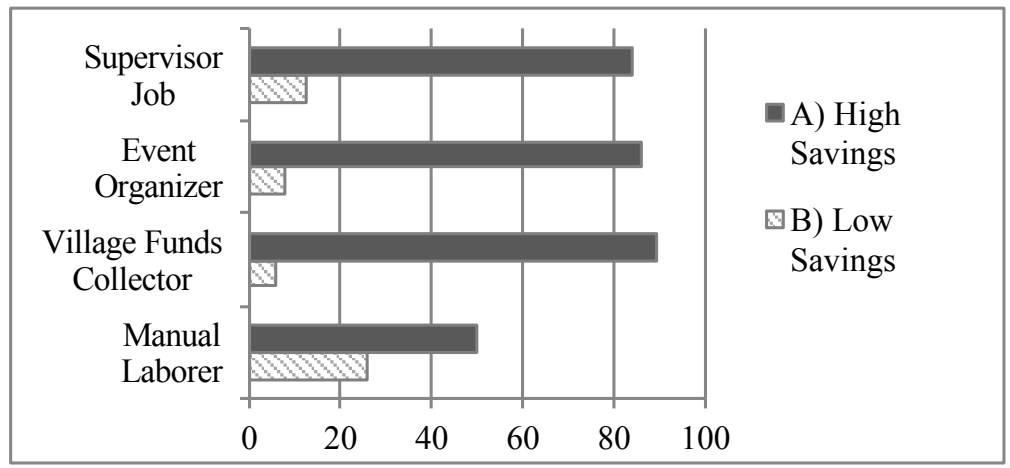
who would you select for each of the following opportunities:

i) Supervisor Job

ii) Organizer of Village Event

iii) Collector of Funds for Village

iv) Job that requires manual labor



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Endogenous treatment

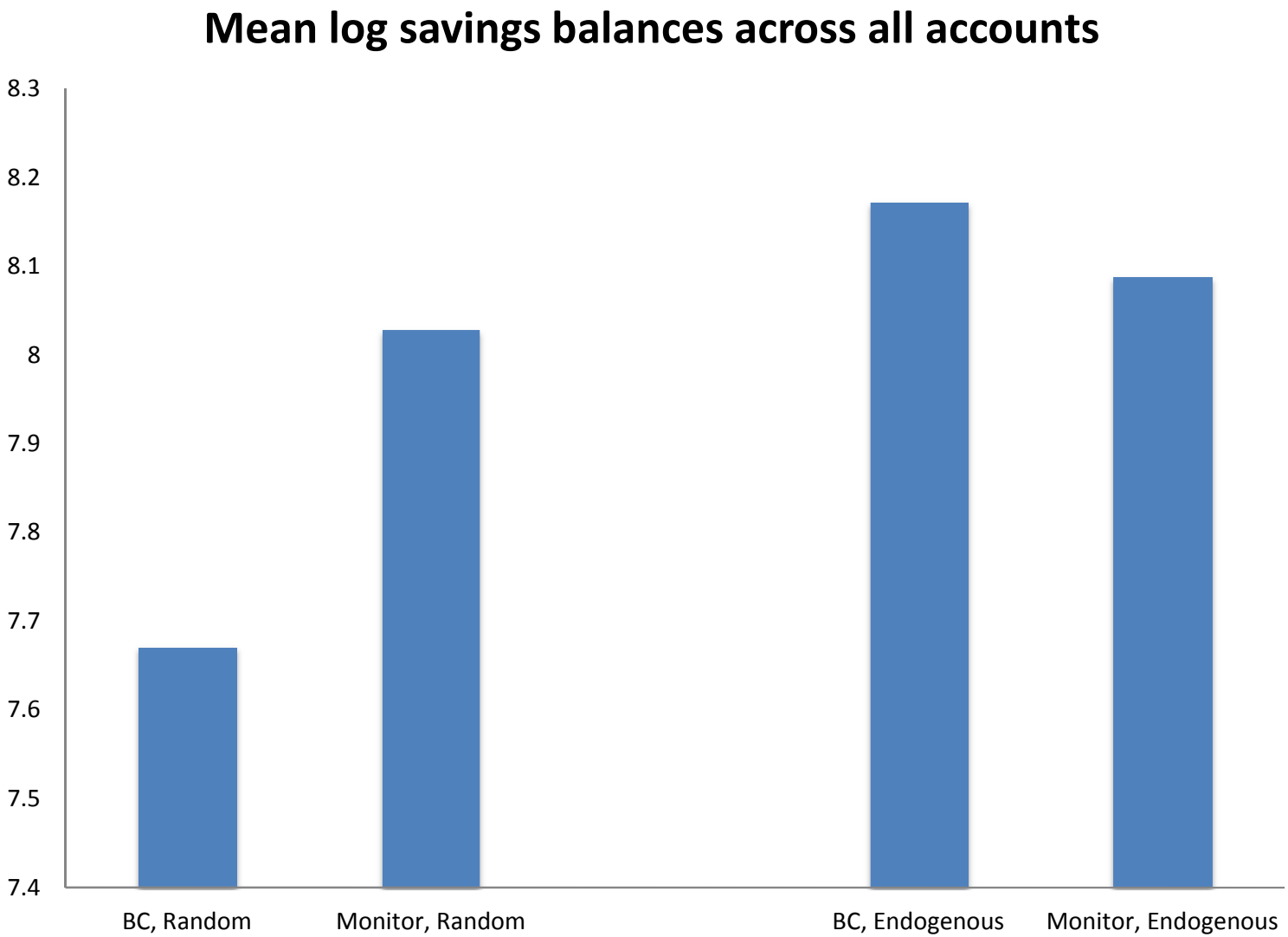
Goal: Benchmarking exercise

- Policy-relevant alternative, naturalistic implementation
  - recall MF and ROSCAs often have endogenous group formation
- Experimental design allows for this measurement

What should we expect? Lots of possible outcomes:

- savers could pick enablers, unwind any benefits of a monitor
- savers could pick savings-maximizing allocation of monitors
- anything in between

Note: Experiment not designed to unpack choice



- Community does reasonably well at mobilizing savings:
  - Savings of monitored savers indistinguishable E vs. R
- Large spillovers onto BC savers in endog. villages. Surprising!
  - Could be due to increased conversations (which we document)
  - Are community-driven institutions more effective?

Conclusions

Embedding of group members within network is important

- Emphasis: role for heterogeneous value in transmitting signals to other agents
- Large, persistent economic effects

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Policy relevance

- Reputational channel may be an important driver of behavior in RoSCAs, SHGs, MFI groups, etc.
- Network may be a useful policy tool
- Network-based allocation of monitors could be *very* effective
  - Choose central and close monitors
- Community does okay on its own (in this context)

Why should a saver care about the monitor?

"A person may save more if it is an important person knowing they might get more benefits from this person later on."

– Subject 1

"The monitor will feel that if in the future he or his friends gives her some job or tasks or responsibilities, the saver may not fulfill them"

– Subject 2

"They would speak less to the saver and feel 'cheated to trust' [sic]. They may tell others..."

– Subject 3

"People will only reach their goals if their monitors are family, friends, neighbors, or important people."

– Subject 4