

# Social and Financial Incentives for Overcoming Collective Action Problems

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# Outline

1 Background and Motivation

2 What We Did

3 What We Found

## Background and Motivation

- Previous intervention offering subsidies for hygienic latrines
- Consistent use and maintenance necessary for health gains
- 1.5 years later, want to maintain gains and promote further adoption and use
- Payment for environmental service (latrine use) may be appropriate
  - ▶ Sustainable financing?
  - ▶ Monitoring?
- Cheaper alternatives
  - ▶ Recognition
  - ▶ Peer pressure

## Context

- Rural Tanore district, north-west Bangladesh
  - ▶ 31% of households report open defecation
  - ▶ Only 50% have a hygienic latrine
- 107 villages (19,271 households)
- Previous intervention: subsidies increase adoption of hygienic latrines among subsidized *and unsubsidized* households
  - ▶ Presence of social multiplier, interdependent preferences

## Interventions

- Created 1,236 groups of 15-20 contiguous households
- Pure control:
  - ▶ No activities
  - ▶ 23 villages, 256 “groups”
- Common intervention:
  - ▶ 84 villages, 980 groups
  - ▶ Three monthly meetings with Health Motivator

## Interventions (2)

- Reward treatments: based on share of households in group with a *hygienic* latrine at followup
  - ▶ Monetary reward: USD 3.5-7 if group achieved threshold and household had a hygienic latrine
  - ▶ Non-monetary reward: certificate of hygiene attainment from local government
- Commitment treatments:
  - ▶ Public commitment: pledge in group meeting to work towards a hygienic latrine for own household and for others in the group
  - ▶ Private commitment: same but in own home
    - ★ Distinguish public commitment from private goal-setting
- Cross-cut
  - ▶ NB: limited # of villages  $\implies$  low power to detect interactions
  - ▶ [Details on design](#)

# Design

	Commitment		
Reward	None	Private	Public
None	A: 8 villages; 121 groups 1,898 households (9.8%)	B: 11 villages; 177 groups 2,626 households (13.6%)	C: 11 villages; 69 groups 1,088 households (5.6%)
Monetary	D: 10 villages; 79 groups 1,159 households (6.0%)	E: 5 villages; 58 groups 885 households (4.6%)	F: 9 villages; 97 groups 1,568 households (8.1%)
Certificate	G: 12 villages; 145 groups 2,314 households (12.0%)	H: 9 villages; 110 groups 1,694 households (8.8%)	I: 9 villages; 124 groups 1,970 households (10.2%)
Pure Control	J: 23 villages; 256 groups 4,069 households (21.1%)		

▶ Back

## Outcome of Interest

- Ownership and use of a hygienic latrine
  - ▶ Hygienic: “safely confines feces from the environment”
  - ▶ Slab, water seal, sealed pit
  - ▶ Cost ranges from USD 5 (simple improvements to existing latrine) to USD 40-50
- Measure as objectively as possible
  - ▶ Key components present and in good working order
  - ▶ Latrine clean and appears maintained
- Short-term outcome: measured at conclusion of intervention (as part of reward check)
  - ▶ Longer-term outcome (not analyzed yet): 12-15 months later



## Empirical Strategy

- Estimation equation:

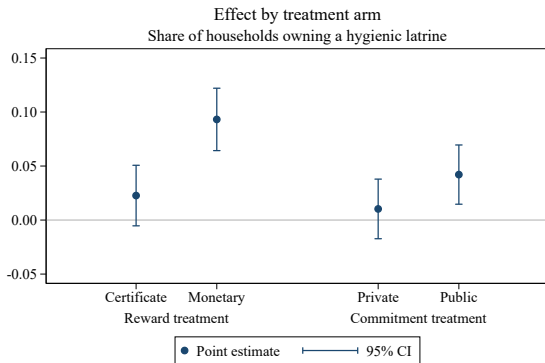
$$y_{gv} = \beta_0 + \beta_1 \text{Incent}_v + \beta_2 \text{Cert}_v + \beta_3 \text{Priv}_v + \beta_4 \text{Publ}_v \\ + \delta y_{0gv} + \alpha' X_{gv} + \varphi_u + \varepsilon_{1gv}$$

- $y_{gv}$ : share of households in group  $g$  with a hygienic latrine at followup
- $\text{Incent}_v, \text{Cert}_v, \text{Priv}_v, \text{Publ}_v$ : treatment(s) of group  $g$
- $y_{0gv}$ : baseline share of households with hygienic latrine
- For precision, combine Pure Control and Common Intervention Only
  - ▶ Results unaffected, since Common Intervention Only had 0.0 effect

Table 5: Pure Control vs. Basic Treatment – Group-level Data  
 (No commitment, No reward)  
 Hygienic latrine ownership (group share, R5)

	(1)	(2)	(3)	(4)
Basic motivation only	0.031 (0.032)	0.032 (0.035)	-0.001 (0.032)	-0.002 (0.031)
Hygienic latrine ownership (group share, R4)			0.530*** (0.049)	0.495*** (0.056)
Share of households landless				-0.074** (0.035)
Union FEs	No	Yes	Yes	Yes
Wild cluster bootstrap SE	[0.039]	[0.047]	[0.044]	[0.042]
Number of villages	31	31	31	31
Number of groups	377	377	376	376
Omitted category mean	0.339	0.339	0.341	0.341
Omitted category SD	(0.223)	(0.223)	(0.222)	(0.222)

# Effect on Share of Households with a Hygienic Latrine



Combines pure control and basic treatment villages.

Controls: union fixed effects, baseline share with hygienic latrine, share landless.

- Monetary reward most effective:  $\approx 10$  pp increase in share of households with a hygienic latrine
  - ▶ Some effect of certificate:  $\approx 3$  pp
- *Public* commitment modestly successful: +4.5 pp
  - ▶ Public aspect seems important: little to no effect of private pledge

## Detailed Regression Results

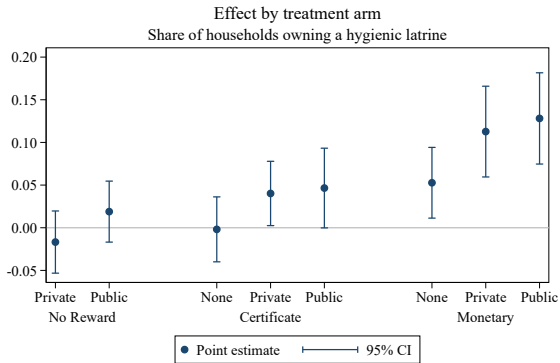
	(1)	(2)	(3)	(4)	(5)
Monetary reward	0.148*** (0.032)		0.133*** (0.029)	0.091*** (0.015)	0.093*** (0.015)
Reward certificate	0.068* (0.034)		0.054 (0.035)	0.022 (0.014)	0.023 (0.014)
Private commitment		0.021 (0.038)	0.012 (0.033)	0.012 (0.014)	0.010 (0.014)
Public commitment		0.093** (0.034)	0.061 (0.031)	0.043** (0.014)	0.042** (0.014)
Hygienic latrine ownership (group share, R4)				0.635*** (0.026)	0.607*** (0.027)
Share of households landless					-0.061*** (0.018)
Number of villages	107	107	107	107	107
Number of groups	1,236	1,236	1,236	1,235	1,235
Omitted category mean	0.328	0.349	0.349	0.350	0.350

Table 7: Reduced Form Effects – Household-level Data  
Household owns hygienic latrine (R5)

	(1)	(2)	(3)	(4)	(5)
Monetary reward	0.146*** (0.033)		0.143*** (0.031)	0.101*** (0.017)	0.102*** (0.016)
Reward certificate	0.062* (0.034)		0.057 (0.035)	0.030* (0.016)	0.030* (0.016)
Private commitment		0.008 (0.038)	0.020 (0.036)	0.021 (0.016)	0.020 (0.016)
Public commitment		0.069* (0.036)	0.063* (0.034)	0.049*** (0.017)	0.049*** (0.017)
Owns hygienic latrine (R4)				0.549*** (0.012)	0.538*** (0.011)
Household landless					-0.048*** (0.009)
Monetary – Certificate	0.084 (0.040)		0.085 (0.038)	0.071 (0.019)	0.072 (0.019)
p-value	0.037		0.027	0.000	0.000
Public – Private		0.061 (0.042)	0.043 (0.035)	0.028 (0.017)	0.029 (0.017)
p-value		0.151	0.233	0.103	0.089
Number of villages	84	84	84	84	84
Number of groups	980	980	980	980	980
Number of households	13,443	13,443	13,443	13,220	13,197
Omitted category mean	0.323	0.323	0.370	0.371	0.372

*Notes:* The omitted category in column (1) consists of groups that did not receive a reward treatment. The omitted category in column (2) consists of groups that did not receive a reward treatment. The omitted category in column (5) consists of groups that did not receive a reward or commitment treatment. All regressions include union fixed effects. Standard errors clustered at the village level. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

# Effect on Share of Households with a Hygienic Latrine



Control group consists of basic treatment villages only. Drops pure controls.  
Controls: round 4 ownership share, share landless, union fixed effects.

- Effect appears to be roughly additive (no crowding out)
- NB: low power

## Future Work

- Longer-term followup (are gains sustained?)
- Mechanisms
  - ▶ Social pressure or cross-subsidizing?
  - ▶ What types of groups or households are responsive?