

Interdependent Decisions and Demand for Improved Sanitation

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UCB WSH, March 2011

Outline

- 1 Research Questions
- 2 Context
- 3 Interventions
- 4 Outcomes of Interest
- 5 Further Analysis

What is interesting about the economics of sanitation?

A very large set of things. We're focusing on:

- Large externalities relative to private benefits
- Strategic interaction among neighbors
 - Strategic complementarities, either health (O-ring model) or based on social norms (shame)
 - Strategic substitutes (herd immunity)

Our primary research questions:

- How important are all of the above?
 - Dickinson and Pattanayak: +10% neighbors' adoption \rightarrow +5-7% own probability of adoption \rightarrow social multiplier of 2-3
- What are the implications for policy?
- How do these compare for adoption vs. use?

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- Rural Bangladesh
 - Low sanitation coverage: $\approx 62\%$ open defecation
 - Those with improved sanitation are primarily using rudimentary pit latrines
- Baseline intervention: CLTS-like program
 - Similarities: Village level, use transect walk, village mapping
 - Key differences:
 - Second step on sanitation ladder – improved pour-flush latrine
 - Use of discounts and incentives

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Primary Interventions: Price

- Group discount
 - Reduce price as the share of households in a neighborhood (*para*) adopting increases
 - For example: 25% discount if 75% of *para* adopts
 - Could be efficient use of external funds if there are high social returns to high coverage
 - High coverage could reinforce social norms
- Early adopter discounts
 - With complementarities, early adopters have low private returns and are taking a risk that others will not adopt
 - Risks:
 - If private returns are initially low, learning could reduce future adoption

Primary Interventions: Incentives for Use

- Use of latrine provides positive externality.
 - Standard PF: should be subsidized
- Incentive could vary on a few dimensions:
 - Material vs. social (+: social recognition; -: mocking, shaming)
 - Based on individual vs. group performance
 - Paid to individuals vs. a community payment (or good)
- Proposed intervention:
 - Surprise inspection of a few households in each *para*
 - Payment to all members of the *para* based on individuals' performance
 - Group incentive leverages social pressure
- Alternatives / additions: pay individuals based on their own performance; pay community based on community performance (surprise transect walk); competitions between *paras* in a village

Other potential interventions

- Purchase on credit
 - Sensible: cash constraint, present bias
 - Relate to our primary questions
 - Makes commitment / coordination easier
 - Could combine with incentive for use
 - How to incentivize repayment?
- Institutions: Facilitate coordinated decision-making
 - Nudge: provide common time and place to purchase
 - vs. control of individual, door-to-door sale
- Messaging: vary emphasis on
 - Private benefits
 - Private benefits + public benefits
 - Private benefits + interdependency of benefits

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Outcomes of interest

- Demand
- Use and maintenance over time
- Health impacts

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Structural modeling

- Structural econometric analysis is a useful complement to the RCT methodology
- The RCT allows one to convincingly identify key inputs to the structural model.
- A structural model allows one to extrapolate from the RCT evidence and analyze policies prospectively
 - Impact of different magnitudes of treatment variables
 - Changes in variables not randomized

Structural modeling

- Two margins on which households will make decisions.
 - Whether to purchase
 - How intensively to use and maintain the technology
- Extend standard discrete choice to accommodate interdependence
 - Externalities – HH 1's level of utility may depend on what HH 2 does
 - Complementarities – HH 1's gains from adopting may depend on what HH 2 does
 - Social Norms – may be dynamic and self-reinforcing.

Externalities

- Health spillovers
- Demand spillovers
 - Staggered introduction – treat control clusters at 2 years
 - How to untangle channels (aspiration / status vs health gains)?