Behavioral Economics in Development and Policy design

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Chayanee Chawanote

Example: The Behavioral Economics of Fertilizer Use

- Key puzzle:
  - Sub-Saharan Africa use little or no fertilizer on their fields. Why is that so?

- Possible explanation?
  - Fertilizer is not easily available
  - Too expensive
  - Maybe fertilizer does not work well on real fields in real conditions as it does on test farms
  - Farmers may not know the advantage of using fertilizer

- The economic approach leads us to assume that a farmer who does not use fertilizer did not want to use it.

Example: The Behavioral Economics of Fertilizer Use

- However, studies show that fertilizer is available, affordable, effective, and appreciated. But it is still not used.

- Behavioral economics give alternative answers:
  - Farmers want to use fertilizer next round of cultivation. But when time arrived, they did not use because they had to go (far away) to the market to buy it (Kenyan farmers).
    - Just a procrastination
  - Farmers lack of self-control. They earned money from harvest and selling crops, but the money had been used for other activities before the next planting period.

- Key: constraints under which people make decisions
- In economists' point of view, we see resources (funding, time, labors, inputs) are scarce.
- But actually, mental resources is also limited
- When designing programs/policies, we always assume that people have unbounded cognitive capacity. They can think through complex problem effortlessly and quickly arrive at the correct choice
  - We usually assume that individuals have self-control that they can resist temptations and will definitely do what they plan (since what they plan/decide is already maximizing their objective function)

Behavioral approach on limited mental resources

- Scarcity of Self-control
- Scarcity of Attention
- Scarcity of Cognitive Capacity
- Scarcity of Understanding

Scarcity of Self-control

- Labor productivity in developing countries
  - Many projects aim to develop productivity by focusing on capacity issue and/or motivation(incentive)
  - Labor may actually want to work hard, but the key problem is the self-control. They work less hard than they themselves want to.
  - Kaur, Kremer, and Mullainathan (2011) did an experiment in and Indian data-entry company. They offered 'negative bonus': labors will earn normal piece rate if they do as plan, but will get a punishment (some payment) if not meet their target. Results show that this method increases output equivalent to the effect of increasing their piece rate by 33%
  - Key: instead of relying on enforcement and monitoring, try to reduce the problem of self-control.

Scarcity of Self-control

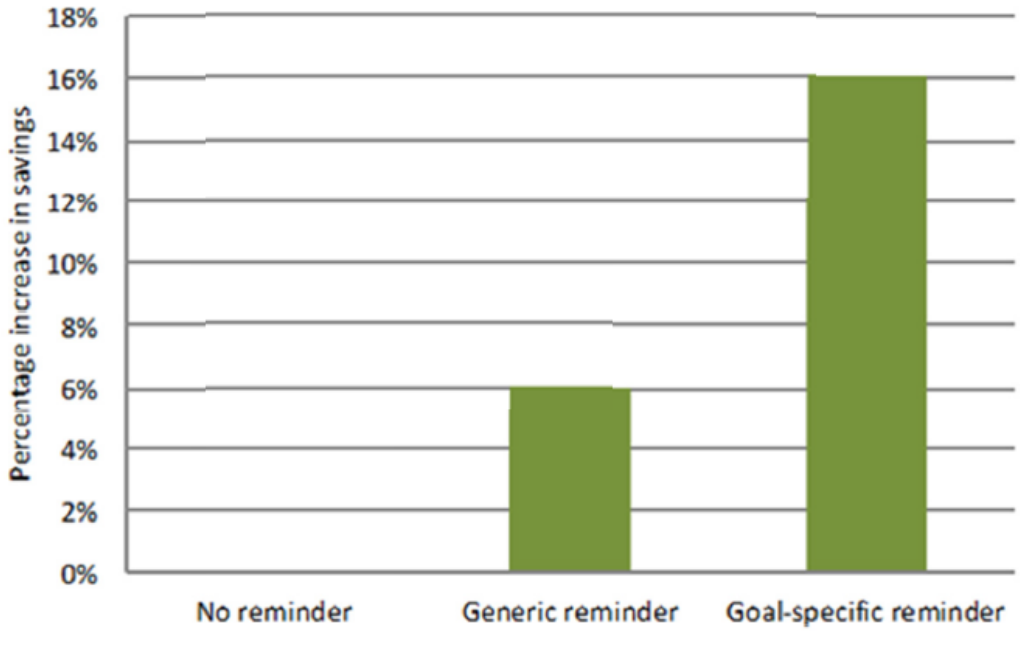
- Self-control and problems in farming and saving
  - To improve farm productivity, not only about fertilizer or technology adoption
  - Banik et al (2006) find that weeding 2 times per season will help increase wheat yields 23%. But farmers in India do weed so little. They know that they should do it, but it is time consuming, easy to postpone, and tedious.
  - Low saving is because of temptation. The poor spend money they earn on other (urgent) things before they actually save. Ashraf, Karlan, & Yin (2006) did an experiment in Philippines, increasing saving balance 81% by locking up funds in the client accounts until self-specific goal had been reached.

Scarcity of Attention

- Technology adoption in developing countries
  - Technology adoption may take a long time. The government usually solve the problem by promoting more of benefits and how to use the new technology
  - However, not only general information of a new technology, but users need to pay attention to some details of technology
  - Because of limited attention, people are unlikely to notice all aspects of the new technology
  - Hanna, Mullainathan & Schwartztein (2012) study seaweed farming in Indonesia. The size of seaweed pods does matter to increase the yields, but farmers just simply ignore it because they do not think pod size is important.

Scarcity of Attention

- Saving
  - Saving experiments in Peru, Bolivia, and the Philippines successfully raised the amount people saved by providing them with timely reminders about their own saving goals.



In Bolivia, Peru and the Philippines, text message reminders about bank customers' own saving goals increased savings by 16% (Karlan et al. 2010)

Scarcity of Cognitive Capacity

- Ineffective financial literacy programs
  - Many of those who run small businesses are not financially literate enough to handle a lot of financial management procedures. The governments tend to provide financial training with very detailed content, or providing an incentive to attend the training. But these methods could not increase business profits (Drexler et al. 2011)
  - The cognitive resources available to people at any moment are limited and can be depleted by being used for other activities.
  - The successful method is giving the enterpreneurs 'Rules of thumb' of financial management. Now, it is easy to apply these rules/keys.

Scarcity of Cognitive Capacity

- Application to pension saving
  - It is quite difficult to get more people participating in pension systems and save for their old age.
  - Usually, a lack of interest in saving for the future and the saving programs not meeting people's needs. We end up having more options for saving.
  - But, more choice is cognitively taxing. Giving people too many choices may overwhelm them. It is difficulty to decide which choice is the best. So, it could end up with no saving!
  - Bertrand et al. (2010) find that choice simplification is very powerful to increase the uptake of the program

Scarcity of Understanding

- Believes or misunderstanding some basic logics lead to incorrectly decision - flawed mental model
- Imbalanced fertilizer use
  - Indian farmers tend to over-use nitrogenous fertilizer because they think that “green = healthy”. For grains, too much leafy growth can detract from yield.
- Schooling decisions
  - Parents in Madagascar and Morocco strongly think of schooling as essentially worthless unless they can afford to send their children all the way through high school.
  - Just telling parents about the average income gains from spending one more year in school for students with similar family background increased children’s test scores and reduced drop-out rate from school.

Behavioral Design

- Finding the behavioral bottleneck: Diagnosis
- Behavioral design principles
- Testing and re-design

Figure 1: The stages of the behavioral design process

Source: Datta & Mullainathan (2012)

Behavioral Design

- Behavioral design principles
  1. Facilitate self-control by employing commitment devices
  2. Reduce the need for self-control
  3. Remove snags to choosing
  4. Use micro-incentives
  5. Reduce inattention: reminders and implementation intentions
  6. Maximize the impact of messaging: framing effects, social comparison, norms
  7. Frame messages to match mental models