

Experiments, Science, and the Fight Against Poverty

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A Polarized Discourse

- ▶ Jeffrey Sachs: Foreign aid can eradicate poverty.
- ▶ William Easterly: Foreign aid is useless. Free market can eradicate poverty.
- ▶ There is a demand for a discourse on poverty that is:
 - ▶ Scientifically legitimate
 - ▶ Forceful, with strong policy prescriptions

Cross-Country Comparisons

- ▶ To identify solutions to eradicate poverty, most experts compare the experiences of different countries.
 - ▶ Countries with more malaria cases are poorer (Jeffrey Sachs).
 - ▶ Countries with free market institutions are richer (William Easterly).
- ▶ The problem is that separating cause and effect is difficult:
 1. Malaria is correlated with Poverty.
 2. ...but maybe countries with poor institutions cannot fight malaria?
 3. → Poor institutions cause malaria and poverty.
 4. ...but maybe countries have poor institutions because they are poor?
 5. ...and maybe even malaria causes poor institutions (Daron Acemoglu and coauthors).

A New Approach is Necessary

- ▶ It will not be possible to identify the secret to ending poverty just by comparing the historical experiences of 100's countries.
- ▶ Does this mean social science has no place in the fight against poverty ("seven billion experts")?
- ▶ No: we just have to go back to a more modest objective. Poverty is not only defined by lack of income, but also by lack of education, health, powerlessness.
- ▶ Social science can play a role guiding policy in a process of creative experimentation.

The Need for Experimentation

“The country needs and, unless I mistake its temper, the country demands, bold, persistent experimentation. It is common sense to take a method and try it: If it fails, admit it frankly and try another. But above all, try something.”

–Franklin Delano Roosevelt, 1932

Social Science and Experimentation

- ▶ The fight against poverty is a response to a permanent crisis.
- ▶ Social policy needs, and often lacks, imagination: Researchers and policymakers are prisoners of the ambition to do too much, solve the entire problem at once.
- ▶ Economics can guide policy in a process of creative experimentation by
 1. Trying new things: Economists can make suggestions; and
 2. Rigourously evaluating through scientific investigations

The Positive Tradition

- ▶ There is a positive tradition in economics (Chicago school):
 - ▶ The economic agent is like a billiards player
 - ▶ The economist is like a physicist.
 - ▶ He needs to infer the law of physics from looking at the balls, but not interfere.
- ▶ Birth of modern development economics: The “Poor but efficient” farmer (Theodore Schultz).

The Economist as Plumber?

- ▶ Abhijit Banerjee (2002) suggests an alternative image for economic decision.
- ▶ Economic decision is like a craft: it needs experience and expertise.
- ▶ The economist can be like an experienced craftsman: on some subjects, he or she can have useful expertise.

Agricultural Decisions

- ▶ How much fertilizer should a farmer use?
- ▶ A controversial question:
 - ▶ Chicago school rejects fertilizer subsidies: farmers should not use fertilizer if they do not find them profitable at the competitive price.
 - ▶ Many countries have traditionally used fertilizer subsidy which Jeffrey Sachs recommends.
- ▶ A complex decision

Social Learning and the Need for Expertise

- ▶ Farmers do not have many occasions to experiment.
- ▶ They can copy their neighbors.
- ▶ But this reduces the incentive to experiment, since you can always free-ride on your neighbor's experiments.
- ▶ Experimentation and innovation are inefficiently low.
- ▶ There is a need for agricultural expertise; if social learning has broken down, a “big push” may be necessary (Malawi, Millenium villages).

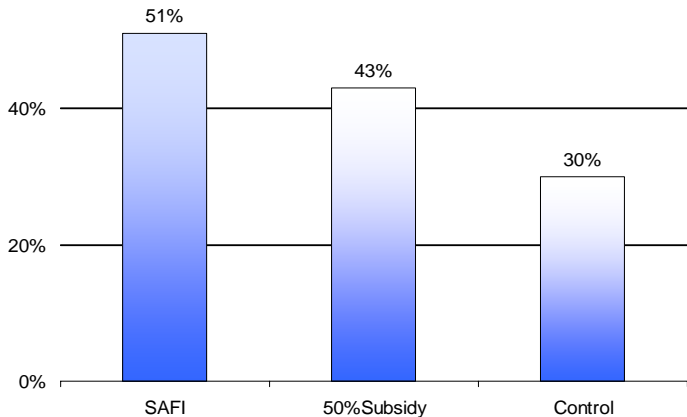
The Use of Economic Expertise: An Example

- ▶ Even when farmers think that fertilizer is productive, many of them do not use it:
 - ▶ They have money after harvest,
 - ▶ But they spent more than they planned to between harvest and planting, and
 - ▶ They have no money left at planting time.
- ▶ Procrastination behavior is common everywhere such as
 - ▶ Not saving for retirement; and
 - ▶ Quit smoking.
- ▶ Related to human tendency to be “present biased”:
 - ▶ We are impulsive in the present,
 - ▶ But are rational when considering the future.
- ▶ This may explain the farmers’ problem: at harvest time, they postpone the fertilizer purchase, since they will not need it until later. But at planting time, another need or desire often arises, and money is spent differently.

From Diagnostic to Solution

- ▶ Economic decisions can be improved if we make them ahead of time and are able to stick to them: demand for commitment.
- ▶ A program for the farmers: Give them an incentive to buy fertilizer right after harvest, when they still want to do it, rather than to wait until later.
- ▶ In partnership with an NGO, we have offered the SAFI program: free delivery to farmers who purchased fertilizer right after harvest.
- ▶ To evaluate it, we have offered it to randomly selected farmers.

Fertilizer Use



Another Example: Microcredit

- ▶ After the failure of big government sponsored lending programs, pessimism prevailed: Lending to the poor is impossible.
- ▶ Mohammad Yunus designed a new institution that made lending to the poor possible.
- ▶ It exploits social capital, dynamic incentives and regular meetings.
- ▶ Economic innovation is possible. It requires ingenuity and some luck. We should never assume that everything has been invented already.

The Need for Evaluation

- ▶ Economists can (and often do) get it wrong by
 - ▶ Simplifying reality to model and analyze it; and
 - ▶ Ignoring important elements.
- ▶ This is not a reason for inaction:
 - ▶ Economists are not the only ones to get it wrong: both international organizations and developing country governments make mistakes and do not learn from them.
- ▶ It is a reason for humility and careful evaluation.
- ▶ ... not only for programs suggested by economists.

Why are Programs not Evaluated?

- ▶ One hypothesis: Nobody wants evaluation:
 - ▶ Program supporters need to show success.
 - ▶ General tendency to overestimate success.
 - ▶ Nobody is fooled, but nobody learns.
- ▶ Another possibility: Evaluation is rare because it is difficult.

What is Evaluation?

- ▶ There is no automatic market test for social policy:
 - ▶ Social policy is necessary when market fails.
 - ▶ Beneficiaries have little alternative: they must take what they are given, even if the quality is very low.
 - ▶ It is only in extreme situations that they abandon social services.
- ▶ No guarantee that money is well spent.
- ▶ To make sure that money is well spent:
 - ▶ Process evaluation: did the policy take place as planned ?
 - ▶ Impact evaluation: what difference did the the policy make?

The Difficulty of Impact Evaluation

- ▶ We want to contrast the outcome for those exposed to a policy to the outcome they would have experienced if they had not been beneficiaries.
- ▶ The difficulty is to constitute an adequate comparison group.

An Example: Mandated Representation for Women

- ▶ Over 100 countries have some form of Mandated representation.
- ▶ What difference do this law make?
 1. Do they really contribute to electing more women (are they implemented)?
 2. Do women make a difference on policy decisions, or on attitudes towards women?
- ▶ Constituencies where women are elected are different from those where women are not elected: they are more favorably disposed towards women; they may have different policy preference.
- ▶ Therefore comparing policy decisions and attitudes across those types of places will not tell us the impact of having a woman in politics.

Solving the Evaluation Problem

- ▶ Traditional econometrics use statistical techniques (regression, matching) to control for all the available variables that suggest a difference between treatment and control groups.
 - ▶ The difficulty is that we are never sure to have control for everything.
- ▶ “Natural experiment” exploits situations where, by chance, the groups happen to be strictly comparable.
 - ▶ For example, compare places where a woman was barely elected to a place where a woman barely lost.
 - ▶ The problem is that there may not always be a natural experiment available.

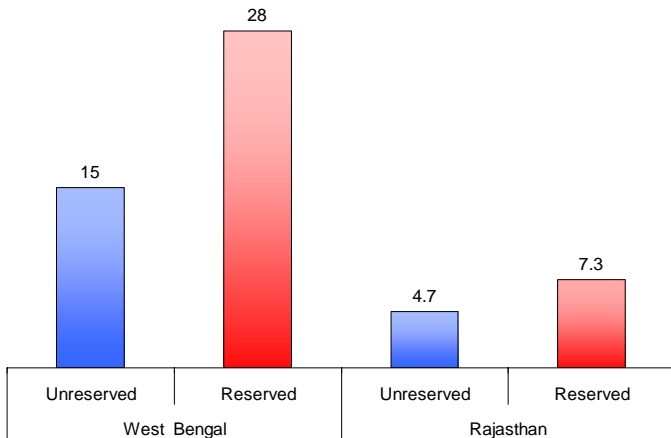
Randomized Evaluation

- ▶ Before the program starts, assign the program randomly to a subset of an eligible group (the treatment group).
- ▶ This is possible
 - ▶ for pilot programs,
 - ▶ when the budget is limited, and
 - ▶ when the program is being phased in.
 - ▶ Some times randomization is considered the best way to allocate the program!
- ▶ Groups are now strictly comparable.
- ▶ We can determine the impact of the program by comparing the outcomes in the treatment and the comparison groups.

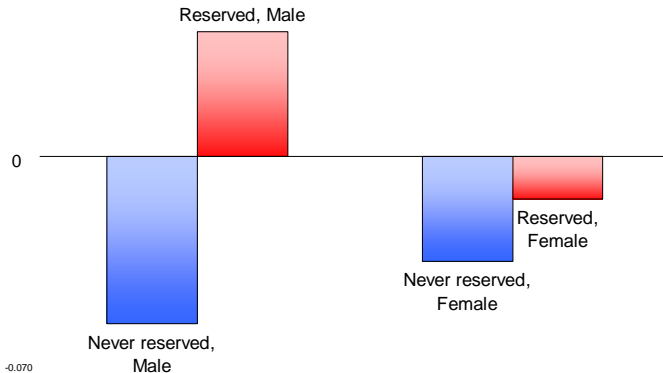
The Impact of Mandated Representation for Women in India

- ▶ In 1993, a constitutional amendment mandated that one third of village council must be made of women,
- ▶ and one third of the village council must have a female head.
- ▶ To avoid manipulations, villages are randomly selected.
- ▶ We evaluated:
 - ▶ The impact on the types of investment made by the village council. ▶ [Figure](#)
 - ▶ The impact on discrimination against women: we asked villagers to rate the same speech, which they heard on a tape given either by a man or by a woman ▶ [Figure](#).
 - ▶ This change in perception has real political differences: future election results. ▶ [Figure](#)

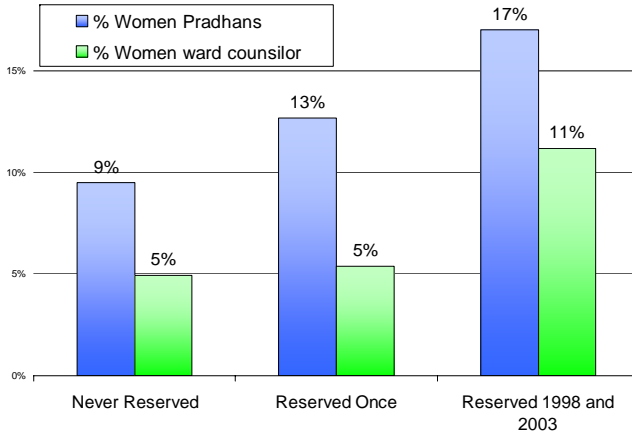
Drinking Water Facilities Built or Repaired



Difference between Rating of Female versus Male speech



Fraction of Women Elected on Non-Reserved Seats



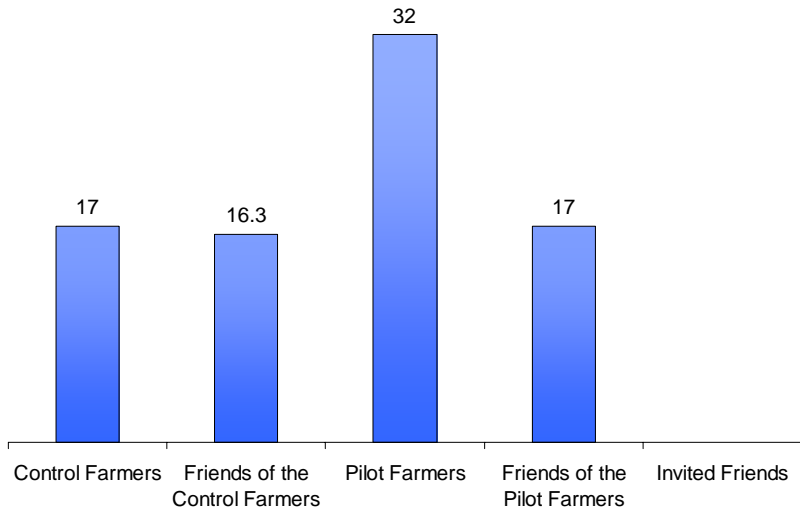
Randomization Today

- ▶ Almost unheard of in development economics 10 years ago, randomized evaluation is now more prevalent:
 - ▶ Over 100 ongoing or finished projects in the J-PAL network, a network of researchers working on randomized evaluation.
 - ▶ World Bank, AFD, MCC now support randomized evaluations
- ▶ The first generation of program evaluation in development were just trying to determine what works
- ▶ But today, researchers try to use randomization as a tool to answer questions that are motivated by theory.

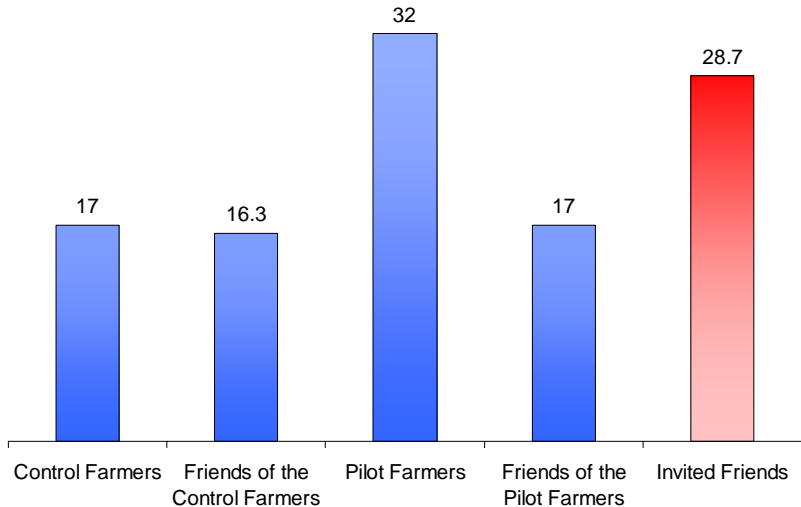
An Example: Social Networks and Fertilizer Adoption

- ▶ First experiment:
 - ▶ Some farmers are shown how to use fertilizer on their own plot (with a treatment and a control plot).
 - ▶ They use fertilizer more the next year.
- ▶ Social network experiment:
 - ▶ Do the friends of the pilot farmers use fertilizer more than the friends of the control farmer?
 - ▶ If they do, this will suggest that information has circulated.

Creative Experimentation

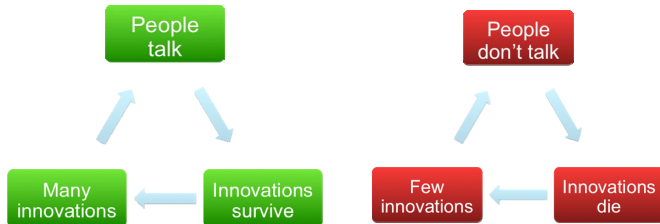


Creative Experimentation



An Epidemiological Model of Social Learning

- ▶ Adopters of an innovation of an experiment eventually forget it.
- ▶ Innovation survives if it is diffused.
- ▶ There is a cost to talking.
- ▶ There can be multiple steady states.



Theory and External Validity

- ▶ The theoretical framework allows experiments to respond to each other, so that knowledge builds.
- ▶ The result of a single experiment do not necessarily replicate: the effect depends on the context.
- ▶ A theoretical framework gives us guidance for the next experiment.

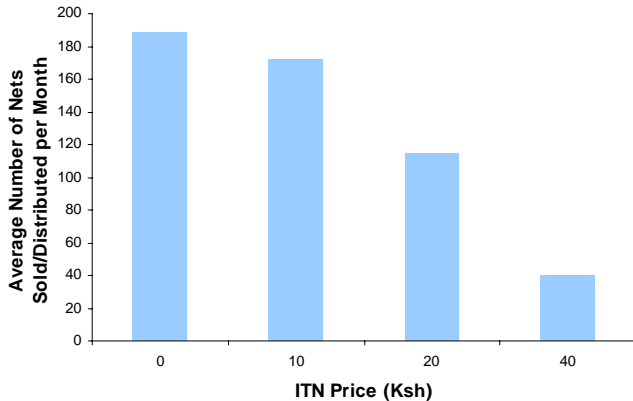
An Example: Free Long-Lasting Mosquito Nets

- ▶ Here is another Jeffrey Sachs-William Easterly controversy: Should long-lasting impregnated mosquito nets be free?
- ▶ Arguments for free mosquito nets:
 - ▶ Price elasticity of demand is high.
 - ▶ They have positive externalities.
- ▶ Argument for a positive (but subsidized) price in the social marketing literature:
 - ▶ Selection: People who do not need or want one will get one if it is free, there will be wastage.
 - ▶ Sunk cost effect: By paying for a good, we attribute it a higher value.
- ▶ For these two reasons, usage of those who get a net should be higher when they have paid for it.

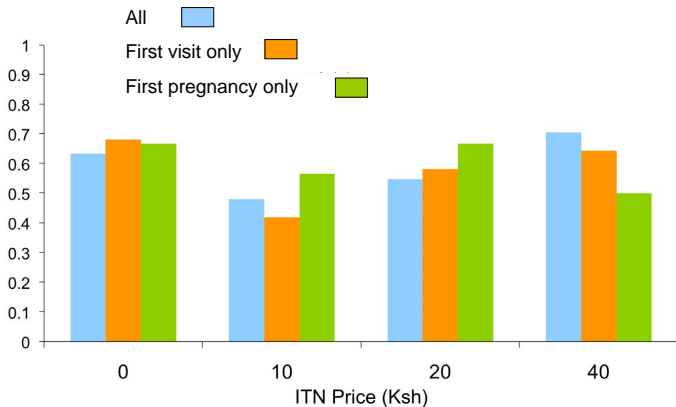
A Social Marketing Experiment

- ▶ Jessica Cohen and Pascaline Dupas tested both hypotheses (high price elasticity and more usage for those who pay) by randomly varying level of subsidy at which mosquito nets are offered in maternity clinics in Western Kenya.
- ▶ Findings:
 - ▶ Purchase drops quickly with price.
 - ▶ Usage is not affected.
- ▶ It seems more cost effective to distribute the mosquito nets for free.

Number of Nets Distributed



Fraction of Households Using their Nets



The Controversy

- ▶ Dani Rodrik posted the results of the story in his influential blog under the title “Jeff Sachs vindicated.”
- ▶ Mead Over protested (“Jeff Sachs not vindicated”), and suggested that the results
 - ▶ May be specific to pregnant women; and
 - ▶ May be specific to Kenya, where social marketing had been active for a while.
- ▶ Thus, the initial result forced Mead Over to refine the theory: the refinements can now be tested.
- ▶ Pascaline Dupas replicated the experiment in markets with the same results. Alison Comfort replicated the experiment in Madagascar and also got the same results.

Field Experiments are the Best Way to Test Theory

- ▶ Testing the effectiveness of the project in a field experiment allows us to test a theoretical prediction.
- ▶ We can also test theories using variation that occurs naturally.
 - ▶ However, we must then rely on strong identification assumptions. If the results are too surprising, we may think that they are due to a failure of identification: there is a strong consensus bias against rejecting theory.

Field Experiments are the Best Way to Test Theory

- ▶ We can also use “lab experiments,” which offer great flexibility.
 - ▶ However, the lab environment and the lab subjects are not representative of the real world: results can be dismissed.
- ▶ Field experiments have a subversive power that neither observational studies nor lab experiments possess: this is probably their main strength, and the main way in which they can contribute to the fight against poverty and to knowledge building.

Careful Evaluation: A First Step Against Poverty

By focusing on creative experimentation, we are not abandoning the goal to reduce poverty significantly one day.

On the contrary, experimenting with specific programs to fight the ills associated with poverty is a necessary first step.

To be Wealthy, One Needs to be Alive

“In the long run, we will all be dead”

–J.M. Keynes

- ▶ This joke is unfortunately quite true for all the children who do not get the necessary immunization.
- ▶ More generally, it is likely that a healthy and well-educated population will be more likely to be able to take advantage of any growth opportunity.

A Political Imperative

“The millions who are in want will not stand by silently forever while the things to satisfy their needs are within easy reach.”

– F.D. Roosevelt

- ▶ Brazil, after the rapid growth but high inequality in the 1960s: populism, hyperinflation, decades of slow growth.
- ▶ India: defeat of the BJP despite rapid growth. The government poured money in the social services, but without much thinking about what to do to make them work better (e.g., National Rural Health Mission).

Microeconomic Estimation May be the Key to Understanding Macroeconomics

- ▶ We have seen that growth regressions cannot go very far in uncovering the secret of growth.
- ▶ It may be more promising to start from micro-funded and micro-estimated models, and to use these as building blocks for a macro model, which can then be calibrated to a real economy.
- ▶ The better we understand the micro-relationship, the more useful the macro model will be.

Economics, a Human Science

I would like to practice economics as a true human science:

- ▶ A science: rigorous, impartial
- ▶ A science of the human being: in all its imperfections and complexities
- ▶ A human science: humble and condemned to error
- ▶ Humane finally: generous and committed