What is impact evaluation, when and how should we use it, and how to go about it?

ADB

December 17, 2009

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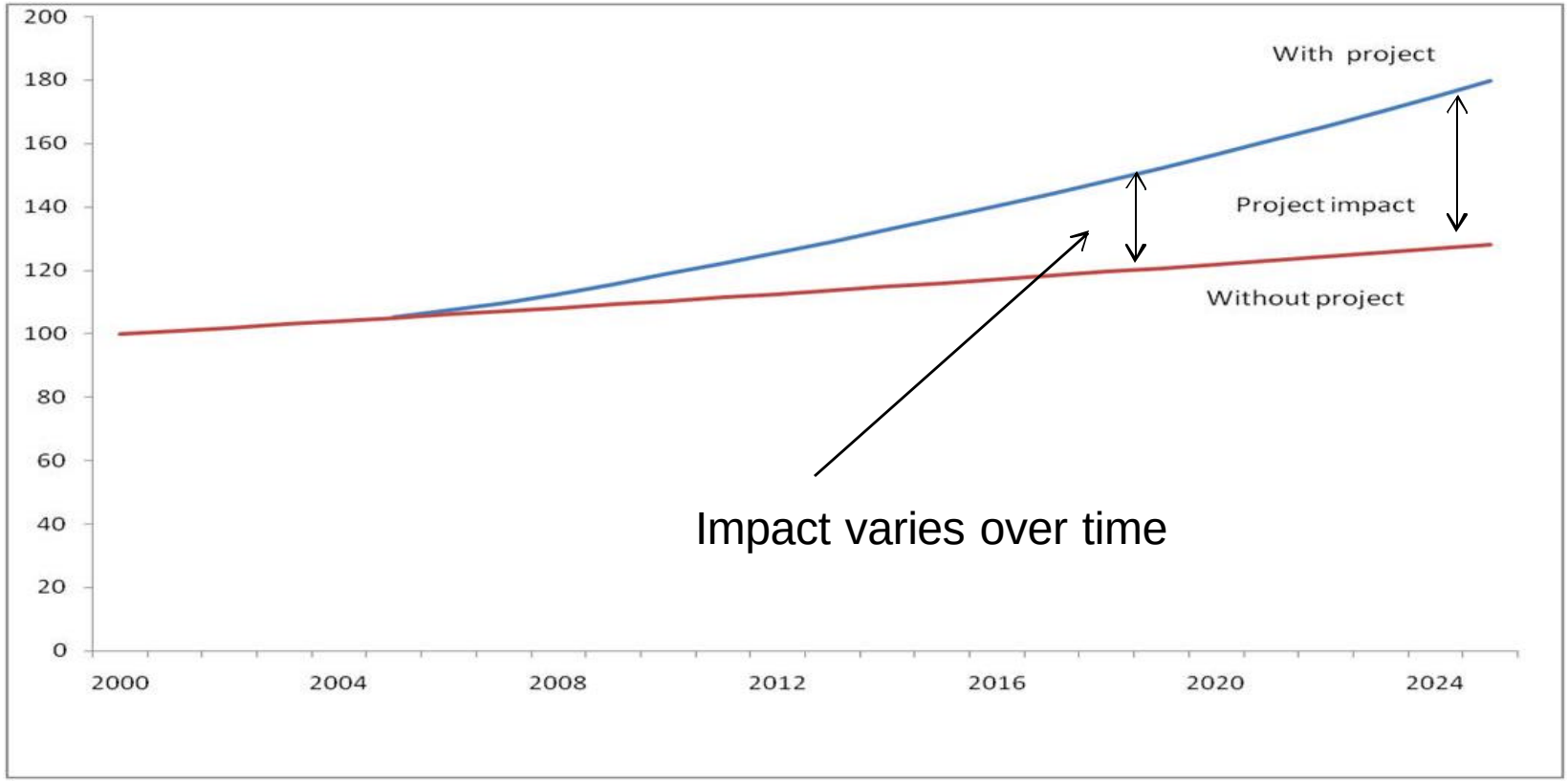
What is impact?

- Impact = the outcome with the intervention compared to what it would have been in the absence of the intervention
- At the heart of it is the idea of a attribution – and attribution implies a counterfactual

Defined in this way we have little evidence on impact of development programs i.e. we don't know the results of those programs

The attribution problem: factual and counterfactual



What has been the impact of the French revolution?

"It is too early to say"

Zhou Enlai

What do we need to measure impact? Girl's secondary enrolment

	Before	After
Project (treatment)		66
Control		

The majority of evaluations have just this information … which means we can say absolutely nothing about impact

Before versus after single difference comparison

Before versus after = 66 – 40 = 26

	Before	After
Project (treatment)	40	66
Control		

Sometimes this can work e.g. Water supply and time use… but usually not

This 'before versus after' approach is outcome monitoring, which has become popular recently. Outcome monitoring has its place, but it is not impact evaluation

Before versus after: water supply

	Sri Lanka	Tanzania
Time taken to collect water (minutes)		
Before	24	176
After	14	13
Incidence child diarrhea (prevalence last 2 weeks)		
Before	1.9	12.6
After	1.8	10.4

Outcome monitoring does not tell us about effectiveness

*Results… cannot as a rule be attributed specifically, **either wholly or in part**, to the Netherlands ("Results report 2005-06")*

Post-treatment control comparison
Single difference = 66 – 55 = 11

	Before	After
Project (treatment)		66
Control		55

But we don't know if they were similar before… though there are ways of doing this (statistical matching = quasi-experimental approaches)

Double difference = (66-40)-(55-44) = 26-11 = 15

	Before	After
Project (treatment)	40	66
Control	44	55

Conclusion: Longitudinal (panel) data, with a control group, allow for the strongest impact evaluation design (though still need matching). SO WE NEED BASELINE DATA FROM PROJECT AND COMPARISON AREAS

Main points so far

- Analysis of impact implies a counterfactual comparison
- Outcome monitoring is a factual analysis, and so cannot tell us about impact
- The counterfactual is most commonly determined by using a control group

If you are going to do impact evaluation you need a credible counterfactual using a control group - VERY PREFERABLY WITH BASELINE DATA

However….

- This is for ‘large n’ interventions
  - There are a large number of units of intervention, e.g. children, households, firms, schools.
  - Examples of small n are policy reform and many (but not all) capacity building projects.
  - Some reforms (e.g. health insurance) can be given large n designs
- ‘Small n’ interventions require either
  - Modelling (computable general equilibrium, CGE, models), e.g. trade and fiscal policy
  - Qualitative approaches, e.g. the impact of impact assessments
  - A theory-based large n study may have elements of small n analysis at some stages of the causal chain (this will be explained this afternoon)

But our focus is on learning why things work, not just what: **theory-based impact evaluation** (*measurement is not evaluation*)

An example followed by principles

See 3ie working paper 3

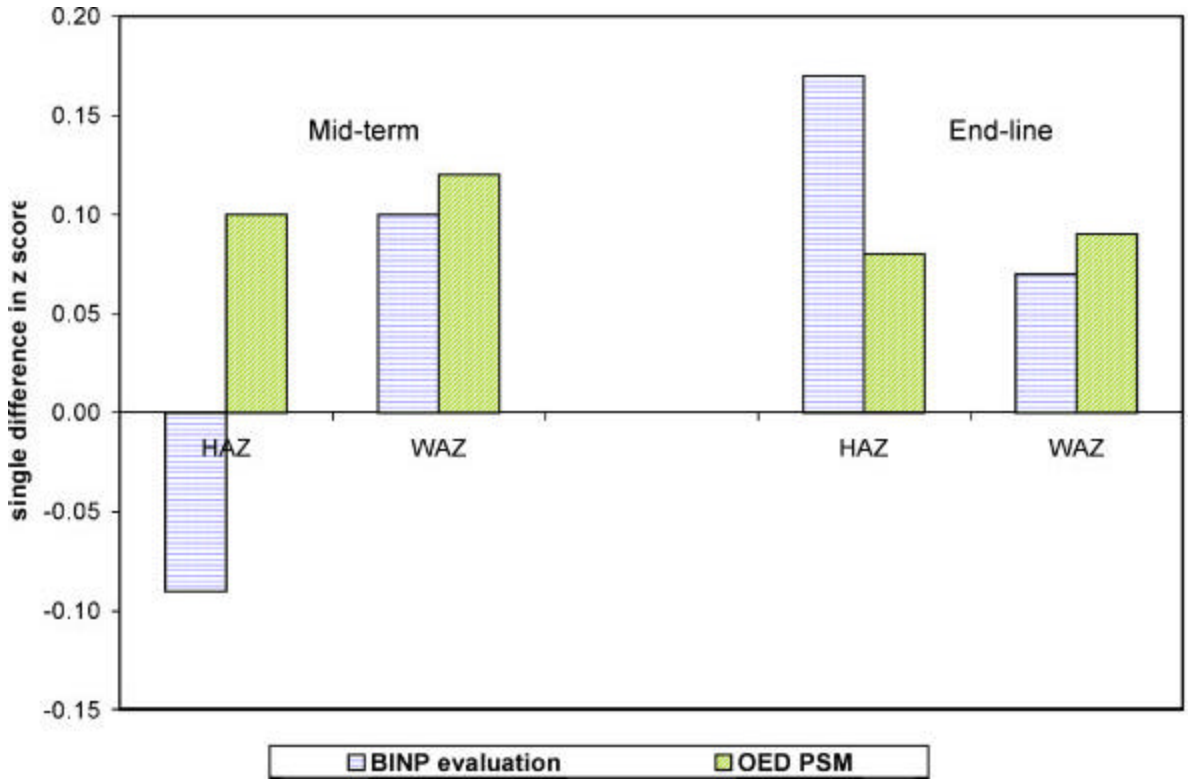
Theory-based impact evaluation: an example

- Bangladesh Integrated Nutrition Project (BINP)
- Growth monitoring, nutritional counselling and supplementary feeding (based on TINP)
- Implemented by NGOs at field level, using Community Nutrition Practitioners (CNPs)

The evaluation story

- Looked like it was working – all bits in place and monitoring data showed sharp fall in severe malnutrition
- Bank agreed to scale up
- But Save the Children UK critical, though Bank's evaluation positive
- Bank's evaluation department (IEG) did evaluation – found little or no impact
- Theory-based approach explains why

Impact estimates (using propensity score matching)

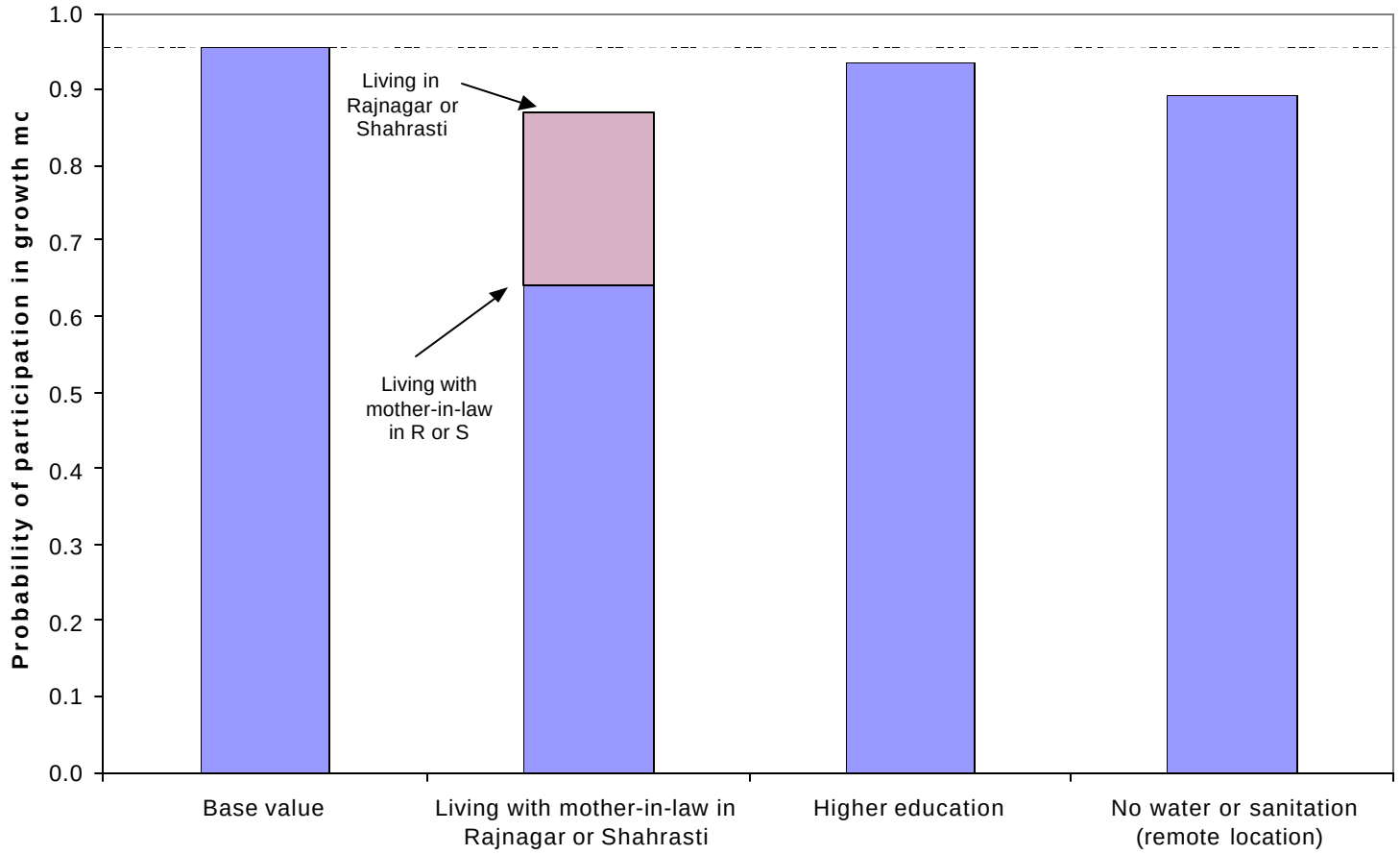


3ie

Assumption	Findings
Provide nutritional counseling to care givers	Mothers are not decision makers, especially if they live with their mother-in-law
Women know about sessions and attend	90% participation, lower in more conservative areas
Malnourished and growth faltering children correctly identified	No – community nutrition practitioners cannot interpret growth charts
Women acquire knowledge	Those attending training do so
And knowledge is turned into practice	No there is a substantial knowledge-practice gap
Supplementary feeding is additional food for intended beneficiary	No, considerable evidence of substitution and leakage
Adopted changes are sufficient to improve intended outcomes	Only sometimes (not for pregnant women)

Source: Howard White and Edoardo Masset (2007) 'The Bangladesh Integrated Nutrition Program: findings from an impact evaluation' *Journal of International Development* 19: 627-652

Participation rates



Illustrating the principles

- **Map out the causal chain** (programme theory): see figure
- **Understand context**: Bangladesh is not TN
- **Anticipate heterogeneity**: more malnourished children; different implementing agencies
- **Rigorous evaluation** of impact using an appropriate counterfactual: PSM versus simple control
- **Rigorous factual** analysis: targeting, KP gap, CNPs
- **Use mixed methods**: informed by anthropology, focus groups, own field visits

Problems in implementing rigorous impact evaluation: selecting a control group

- Contagion: other interventions
- Spill over effects: control affected by intervention
- Selection bias: beneficiaries are different
- Ethical and political considerations

The problem of selection bias

- Program participants are not chosen at random, but selected through
  - Program placement
  - Self selection
- This is a problem if the correlates of selection are also correlated with the outcomes of interest, since those participating would do better (or worse) than others regardless of the intervention

Selection bias from program placement

- A program of school improvements is targeted at the poorest schools
- Since these schools are in poorer areas it is likely that students have home and parental characteristics are associated with lower learning outcomes (e.g. illiteracy, no electricity, child labour)
- Hence learning outcomes in project schools will be lower than the average for other schools
- The comparison group has to be drawn from a group of schools in similarly deprived areas

Selection bias from self-selection

- A community fund is available for community-identified projects
- An intended outcome is to build social capital for future community development activities
- But those communities with higher degrees of cohesion and social organization (i.e. social capital) are more likely to be able to make proposals for financing
- Hence social capital is higher amongst beneficiary communities than non-beneficiaries regardless of the intervention, so a comparison between these two groups will overstate program impact

Examples of selection bias

- Infant mortality in Bangladesh:
  - Hospital delivery (0.115 vs 0.067)
  - Immunization status (0.062 vs 0.094)
  - Breastfeeding (0.03 vs. 0.77)
- Secondary education and teenage pregnancy in Zambia
- Male circumcision and HIV/AIDS in Africa

Main point

There is ‘selection’ in who benefits from nearly all interventions. So need to get a control group which has the same characteristics as those selected for the intervention.

Dealing with selection bias

- Need to use experimental or quasi-experimental methods to cope with this; this is what has been meant by rigorous impact evaluation
- Experimental (randomized control trials = RCTs, commonly used in agricultural research and medical trials, but are more widely applicable)
- Quasi-experimental
  - Propensity score matching
  - Regression discontinuity
  - Pipeline approach
  - Regressions (including instrumental variables)

Examples: rural roads

- Bangladesh (Khandker et al., 2009):
  - Reduced poverty significantly by raising agricultural production, wages and output prices and lowering input and transport costs.
  - Schooling outcomes improved
  - Impacts were proportionately higher for the poor relative to the non-poor
- Georgia (Lokshin and Yemtsov 2005): increased off farm employment
- Vietnam (Mu and van de Walle, 2008)
  - Increased markets and services
  - Diversification into off-farm activities

Examples: rural electrification

- IEG (2006)
  - Benefits far greater than costs, especially for grid extension (less so for off grid)
  - Multiple proven benefits, including fertility decline, causal mechanism = media
  - But connection charge is barrier to access for the poor (RCTs on-going on subsidy schemes in Ethiopia)

Examples: Water supply and sanitation

- 3ie synthetic review (65 studies)
  - No health benefits community level water supply
  - Hygiene and sanitation similar levels of benefit
  - Point of use treatment appears cost effective but serious questions about sustainability

Main points

Be issues-driven not methods driven

Find best available method for evaluation questions at hand

Randomization often *is* possible

But do ask, is this sufficiently credible to be worth doing?

What do mission leaders need to know

- If an IE is needed and viable
- Your role as champion
- The importance of ex ante designs with baseline (building evaluation into design)
  - Funding issues
- The importance of a credible design with a strong team (and how to recognize that)
  - Help on design
- Ensure management feedback loops

So when to do an impact evaluation?

- Pilot programs
- Innovative programs
- Representative or important programs

Thank you

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