Methods for Impact Assessment in the CGIAR

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October 2 2010

Government failure in agricultural R&D?

- Systematic slowdown in agricultural productivity growth
  - Notable exceptions are China, Brazil, India
- In spite of consistent evidence of high benefit-cost ratios for public investment and thus persistent past underinvestment
  - Slower (or negative) growth in total agricultural R&D spending in many places (especially more developed countries, notable exceptions are China, Brazil, India)
  - Change in public-private balance
  - Change in emphasis of spending (away from farm productivity)
- Reduced spillovers => technology orphans?
- Implications for the CGIAR?

R&D as an instrument of social policy?

- U.S. and other governments have shifted “agricultural” research priorities towards
  - Obesity
  - Environment (including biofuels)
  - Income distribution
- At the expense of farm-productivity enhancing R&D?
- In spite of advice from economists?
  - Relative payoff
  - Targets and instruments

Recent Advances in Impact Analysis Methods for Ex Post Assessments of Agricultural Technology: Options for the CGIAR – de Janvry, Dustan, and Sadoulet

- Explores applications of “new” methods that emphasize regression analysis of survey data collected with a view to impact analysis
- Insightful discussion of
  - conceptual and measurement issues that arise generally in evaluating impacts of agricultural innovation
  - econometric issues that arise with such methods generally
  - particular issues that arise in application of these methods to study agricultural innovation
- Appears to advocate use of such approaches in the CGIAR
Elements of Evaluation

Farm-Level Impact of Adoption
varies among farmers and over time relative to a counterfactual that varies among farmers and over time

Adoption Pattern
varies among farmers and over time

Measure of aggregate impact of adoption on quantities of inputs and outputs over time
combine and aggregate across farms
combine with other information, models, various transformations

Measures of impacts on prices or inputs and outputs, gross benefits and their distribution, etc.
combine with other information, various transformations

Measures of net benefits and their distribution, etc.

Dimensions of assessment

- Applications
  - Individual innovations
  - Institutions or programs
- Yardsticks
  - Benefit-cost ratio (or IRR, etc.)
  - Poverty measures
  - Other?
- Types of Assessment
  - Ex Ante
  - Ex Post
    - Full benefit-cost analysis (e.g., Persistence Pays, 2010)
    - Other (partial BCA ?)

Assessment in the CGIAR (or anywhere)

- Purposes for Assessment
  - Score card
  - Shore up (or increase) support
    - What measures are relevant to donors?
  - Guide allocation of research resources
    - What measures are useful for this?
- Limited resources for research evaluation
  - Total resources available
  - Skills and capacity of individuals
    - Are more-sophisticated econometric methods comparatively easy to get wrong?
  - Where and how should we spend these limited resources?

Thank You!

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Sources . . .

- **Persistence Pays: U.S. Agricultural Productivity Growth and the Benefits from Public R&D Spending**
  January 2010 (Springer Publishers)
  Julian Alston, Matthew Andersen, Jennifer James, and Philip Pardey

- **The Shifting Patterns of Agricultural Production and Productivity Worldwide**
  March 2010 (CARD, Iowa State University, MATRIC e-book)
  Julian Alston, Bruce Babcock, and Philip Pardey (editors)

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**Meta Evidence from Literature Prior to 2000**

1,821 observations
292 studies

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**Marginal Returns to U.S. Public Agricultural R&E**

logarithmic model

<table>
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<th>Returns to</th>
<th>Benefit-Cost Ratio (5% real discount rate)</th>
<th>Internal Rate of Return</th>
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<th>National</th>
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<td>National ratio</td>
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