Shadow Prices Needed for CBAs of Early Childhood Interventions

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Assertions

- Plausible but imperfect shadow prices are available for application to most predictions based on long-term experiments
- Long-term experiments, however, cannot adequately support policy choice
- Experiments and other efforts to estimate shadow prices may be better use of resources
- Value in developing “linked” shadow prices to connect immediate effects to social benefits

Background: Role of Shadow Prices in CBA

- Shadow prices convert projected program impacts into social benefits (willingness to pay) and program resource use into social costs (opportunity costs)
- Sources:
  - Market prices if undistorted markets exist
  - Adjusted market prices if markets distorted
  - Indirect methods when markets are missing (market analogies, contingent valuation, etc.)

Background: Early Childhood Intervention Examples

- Market prices: wages (and benefits) of teachers in pre-school programs
- Adjusted market prices: opportunity cost of use of school buildings
- Missing markets:
  - Opportunity costs of volunteer time
  - Returns to improved educational outcomes
  - Valuation of the benefits of avoided crime

“Ideal” CBA Model

- Long-term random assignment experiment directly relevant to prospective program
- Prediction of program impacts based on experiment
- Valuation of program impacts
  - Direct estimation of earnings increases
  - Application of cost of crime shadow prices to changes in criminal behavior
  - Shadow prices for changes in quality of life?

Why "Ideal" CBA Model is Not Ideal as a Public Policy Strategy

- Long term experiments are costly, so sample sizes small
  - As noted by Besharov, Hanushek, Anderson, and others, small sample size makes generalization and reliability (overly influential participants) suspect
  - Only small number of such studies feasible
- Attrition can threaten internal validity
- Secular change may invalidate generalization
- Can we wait?

Alternative Approach: Invest in Developing Better Shadow Prices

- "Wholesale" rather than "retail" experiments
  - Example: RAND Health Insurance Experiment
  - Broader but shorter ECI experiments to link more confidently effects of program variations to outcomes, such as school completion, for which shadow prices may be more readily available
- Better shadow prices for crime
- New shadow prices, such as willingness to pay for redistribution, using contingent valuation

Research to Link Narrow Outcome Measures to Social Benefits

- Identify shadow price to convert narrow, but readily measured, outcome to social benefit
  - Example: Haveman and Wolfe (1984) household utility approach
    - Estimate non-labor market benefits of schooling (reductions in crime, efficiency of consumption)
    - Rule-of-thumb: non-labor market gains approximately equal to labor market gains
  - Wolfe and Haveman (2001)
    - Additional affects: for example, fertility choices of daughters

More on Haveman and Wolfe (1984)

- Nonmarketed Outputs Monetized
  - Cognitive development of children
  - Contraceptive use
  - Consumption efficiency (education alters budget allocations in same direction as income)
  - Criminal apprehension
  - Improvement in health
- Estimates suggest very rough shadow price of $1 per $1 of higher earnings from education

More on Wolfe and Haveman (2001)

- Possible components of comprehensive shadow price for education
  - Effect of schooling on children's schooling
  - Effect of schooling on family members' health
  - Effect of schooling on one's own health
  - Effect of schooling on efficiency of consumption
  - Effect of schooling on daughters' fertility choices
  - Effect of schooling on neighborhood
- Can we estimate effects sufficiently well to get plausible shadow price?

Research to Link Immediate Impacts to Future Benefits

- Objective: Draw on empirical research of all sorts to link immediate impacts of ECI programs (such as school readiness) to outcomes for which we have shadow prices (say, school completion)
- Compress chain to produce a shadow price for immediate impact that can be used in comparing alternative programs.

Exemplary Empirical Approach: Aos et al. 2006 WSIPP Criminal Justice Study

- Meta-analysis of relevant studies that report program effects
- Downward adjustment of weighted average effect because of three factors
  - Methodological quality of studies (random assignment, quasi-experimental, etc.)
  - Outcome measure relevance (decay of effects over time)
  - Researcher involvement (.5 reduction for all studies that were not “real world” trials)

Conclusion

- Widespread comparison of ECIs using CBA requires more and better shadow prices
- All empirical approaches, including experiments, but also observational studies and contingent valuations, should be considered in the effort to create and improve shadow prices