Thoughts about the Diversity of Evaluations
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This paper is the Introduction to Economics of Evaluation in Public Programs  
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Thoughts about the Diversity of Evaluations

Evaluations of public programs are based on a number of different methodologies, and each exhibits great diversity of methods. All address the benefits of the programs and most compare benefits to costs, but the types of benefits and their measures vary greatly across the studies, especially for different types of public programs. This research collection illustrates the range of methods, providing discussion of different approaches and many examples of actual evaluations of public programs across several different public policy settings.

Critical Discussion and Commentary about Evaluation Methods

The collection begins with articles debating or commenting on the methodology of evaluations. The present value of future benefits depends crucially on the choice of the social discount rate. In Chapter 1, Baumol explains that the decision about the social discount rate that reflects the opportunity costs of society’s funding for public programs is grounded in the value foregone by not leaving the resources commanded by the funds in the private sector’s control. In practice, however, the social discount rate reflects a compromise among competing and imperfectly known forces determining opportunity costs. Link and Scott (2011) explain the current mandate from the U.S. Office of Management and Budget regarding the discount rate to be used in evaluating U.S. public programs, and that mandate is broadly consistent with Baumol’s view that the actual rate chosen is a practical compromise. Chapters 12, 20, and 26 illustrate the use of the OMB mandated social discount rate to determine present values of benefits and costs.
In Chapter 2, Maass sets out the case for public program evaluations that weigh the multiple objectives for public policy—in particular, objectives that include not only efficiency but also distributional effects. Most evaluations of public programs focus on efficiency effects as reflected in the present value of benefits net of the present value of opportunity costs, implicitly assuming the net gains from a socially valuable program could be redistributed to address distributional effects of an efficient program, although such redistribution is not typically observed. In Chapter 18, however, Kotlikoff, Smetters, and Walliser provide an example where distributional issues are front and center in the analysis because the evaluation examines the effects on different demographic groups of policies toward the U.S. Social Security program. In Chapter 3, Sen explains the concerns about the use of market values for benefits and costs in the evaluation of public programs. However, Scott (2009) provides several reasons why using market values to measure benefits and costs will nonetheless provide important input into the evaluation of public programs.

**Program Assessment**

The next chapters provide a window onto program assessment. We distinguish program assessment from program evaluation. As stated in Link and Scott (2011, p. 3):

It is important to distinguish between program assessment and program evaluation . . . Although many use the terms interchangeably with reference to public-sector activity, . . . we believe that a distinction is warranted. Policy assessment is based primarily on the criterion of effectiveness. Has the program met its stated goals and objectives; have its designated outputs been achieved? Program evaluation is based on

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1 Banzhaf (2009) provides the history of the debate about whether evaluations should focus on efficiency alone or instead multiple objectives including the distributional effects of a public program’s benefits and costs.
the criterion of efficiency: How do the social benefits associated with the program compare to the social costs?

Thus, a program evaluation will develop estimates of the economic value of the public program to society and its opportunity costs, grounded in the value of alternative uses of the resources needed for the program.

In Chapter 4, Georghiou and Roessner discuss a variety of tools and methods that have been used for both assessments and evaluations of public programs supporting the development of technology. In Chapter 5, David, Mowery, and Steinmuller explain that measuring the benefits of basic research—often paid for with public funding—with the streams of total economic surplus generated by basic research is in practice not possible. Instead, they develop alternative ways to provide assessments of those benefits. In Chapter 6, Narin and Hamilton explain and illustrate the use of bibliometrics to assess the performance of public programs. In Chapter 7, Bozeman and Kingsley offer a menu of elements that can be used for case study assessments of public R&D programs. In Chapter 8, Link and Scott develop and illustrate the use of survey data for comparisons of public intramural program performance with the performance of counterfactual programs without the intramural support, pointing up that the approach can be used to assess the effects of outside support for programs more generally.

**Program Evaluation**

Next are examples of evaluations as contrasted with assessments. That is, the evaluations aim to estimate the social economic value of a program’s results. The chapters are organized by the different types of programs considered in the studies.
**Agriculture.** Griliches’ article, in Chapter 9, is a seminal one in the literature evaluating public R&D; it examines the public investment in research and development of hybrid corn. In Chapter 10, from the perspective of three decades later, Bengston provides an overview and commentary about economic evaluations of agricultural research more generally.

**Modernization and Quality.** In Chapter 11, Feller and Nelson emphasize the importance of the spillover benefits—to rivals and customers of the firms benefitting from the programs—of public programs to accelerate the use of best-practice technologies by small and medium sized manufacturing firms. Evaluations focused on the clients of manufacturing modernization programs will understate the social benefits of the programs if the spillover benefits to rivals and customers are ignored. In Chapter 12, Link and Scott view the Baldrige National Quality Program as similar, in a broad sense, to a National Institute of Standards and Technology (NIST) laboratory that performs infrastructure technology R&D investments and sets performance standards. Chapter 12 illustrates the “counterfactual method” that has been developed by Link and Scott for the evaluation of public investments performed at NIST. The benefits of public investments are the costs avoided by the private sector—costs that would have been incurred in the counterfactual absence of the public investments. For example, if in the absence of the public investments, the private sector would have performed the investment project and obtained the same stream of economic surplus, the sole benefit from the public project is the investment cost avoided by the private sector. In addition to investment costs avoided by the private sector, the social benefits of the public investments include any shortfalls of the counterfactual private investments’ benefits.
from the benefits of the public program.\footnote{For example, in Chapter 26, the benefits from the counterfactual private sector investments in the absence of the public investments would have been delayed—the stream of benefits would have begun later and during the period of delay there would have been the cost of the shortfall of benefits from what they actually were.} Benefits from the public project would then exceed costs when the public sector performs the project more efficiently than the private sector would have performed it. The “counterfactual method” is distinguished from the “traditional method” of Griliches (Chapter 9) and Mansfield et al. (1977) by Link and Scott (1998). Link and Scott (2011) explain the special case where the “traditional” and “counterfactual” approaches are the same.

**Energy and Environment.** In Chapter 13, Fishelson develops formulations of the social economic benefits for energy innovations of various types in order to provide guidance for public policy makers evaluating public support for energy R&D projects. Gallaher and Delhota, in Chapter 14, provide a framework for accounting for evolving emissions abatement technologies and their diffusion when estimating the costs of mitigating greenhouse gas emissions and then projecting mitigation expected to be achieved over time. The framework provides information about behavioral responses to future carbon prices allowing better formulation of public policy to stimulate reduction of greenhouse gas emissions.

**Transportation.** In addition to the historical interest of its topic, Fogel’s analysis, in Chapter 15, is relevant for evaluations of public support for potentially transformative, spillover-inducing innovative investments by the private sector. Fogel emphasizes the need to develop the counterfactual that would most likely have resulted if the railroads had not emerged. In Chapter 16, Parry and Small evaluate public subsidies
of urban transit fares by developing and then applying a model that incorporates the complexities of the economics of public transit systems.

**Support of National Infrastructure.** Tassey explains, in Chapter 17, the economic role of technology infrastructure and provides perspectives about the measurement of its effects. In Chapter 18, Kotlikoff, Smetters, and Walliser evaluate potential reforms of the U.S. Social Security program and illustrate the treatment of distributional effects in the evaluation of a public program.

**Information Technology.** In Chapter 19, Gallaher’s and Rowe’s examination of the costs and benefits of the adoption—and acceleration of the adoption—of a new internet communications standard illustrates the type of evaluation that is needed to understand the importance of the government’s role in prospective infrastructure technology projects. Link and Scott, in Chapter 20, illustrate the “traditional” approach, following the method of Griliches, in Chapter 9, as it was developed by Mansfield et al. (1977), to estimating the social rate of return to public investment in new technology. Leech and Scott, in Chapter 21, develop the model of total factor productivity to evaluate industry’s perceptions of the importance of public support for newly emerging intelligent machine technologies. Link and Scott, in Chapter 22, illustrate “spillover analysis” that can be used for evaluations when the public funds support *privately performed* R&D investments, as contrasted with the traditional method used in Chapters 9 and 20 and the counterfactual method used to evaluate *publicly performed* R&D investment in Chapters 12 and 26.

**Health Care.** Weisbrod’s evaluation, in Chapter 23, of alternative ways to treat the mentally ill illustrates the use of an experimental design and also emphasizes well the
idea that many important benefits are difficult to quantify. In Chapter 24, Miller, Galbraith, and Lawrence estimate the costs and benefits of a hypothetical community program where the proposed public intervention would reduce unhealthful behavior that imposes external costs on the community. In Chapter 25, French, McCollister, Sacks, McKendrick, and De Leon use an experimental design to evaluate an alternative approach to treating homeless mentally ill abusers of chemicals, comparing the results of the alternative approach to what happens with conventional treatment and providing information for policy makers deciding on the funding for proposed public programs.

In Chapter 26, Coursey and Link illustrate the “counterfactual” method, also used in Chapter 12 in the evaluation of the development and application of management quality standards, to evaluate public performance of R&D to develop scientific standards at NIST to allow the safe use of radiopharmaceuticals in the health care industry. In Chapter 27, Cohen, Neumann, and Weinstein evaluate preventative care by comparing the “cost-effectiveness ratios” for preventive measures with those ratios for the treatments for the conditions the measures could prevent.

**Local Public Goods.** Local government policy is often evaluated by its net effect on property values which include the capitalized value of the net benefits from local public goods. Such evaluations have been developed from theory by Tiebout (1956) about optimal provision of public goods by local governments. The Tiebout hypothesis is that households move into areas with the fiscal policies they find most attractive—those doing the best job of providing public goods—and thereby in equilibrium local public goods are efficiently provided. Bewley (1981) provides a critical review of Tiebout’s theory and cites many other papers that have pointed up problems with the idea that a
Pareto efficient equilibrium results when consumers migrate to the areas with the best fiscal policies. The applications of the Tiebout hypothesis to the evaluation of local public programs uses the idea that good fiscal policies will increase property values and was developed prominently in articles by Sonstelie and Portney (1978, 1980) and by Brueckner (1979a, 1979b, 1982, 1983) and others cited in those papers. In this present collection, Deller, in Chapter 28, and Cellini, Ferreira, and Rothstein, in Chapter 29, illustrate the evaluation of local public programs by observing their effects on property values. With cross-sectional data, Deller evaluates local governments’ provision of law enforcement, road maintenance and public transit, and public education. Using panel data, Cellini et al. evaluate local governments’ investment in school facilities.

We hope that this collection of articles usefully illustrates the diversity of approaches available for the evaluation of public programs, and that it challenges scholars to contemplate an evaluation in terms of its theoretical foundation.

References


Economics of Evaluation in Public Programs

Tentative Table of Contents

I. Introduction
Albert N. Link and John T. Scott
“Thoughts about the Diversity of Evaluations”

II. Critical Discussion and Commentary about Evaluation Methods

Chapter 1
William J. Baumol
“On the Social Rate of Discount”

Chapter 2
Arthur Maass
“Benefit-Cost Analysis: Its Relevance to Public Investment Decisions”

Chapter 3
Amartya Sen
“The Discipline of Cost-Benefit Analysis”
Journal of Legal Studies, 29 (S2), pp. 931-952, 2000

III. Program Assessment

Chapter 4
Luke Georghiou and David Roessner
“Evaluating Technology Programs: Tools and Methods”
Research Policy, 29 (4-5), pp. 657-678, 2000

Chapter 5
Paul David, David Mowery, and W. Edward Steinmuller
“Analyzing the Economic Payoffs from Basic Research”
Economics of Innovation and New Technology, 2 (1), pp. 73-90, 1992

Chapter 6
F. Narin and Kimberly S. Hamilton
“Bibliometric Performance Measures”
Scientometrics, 36 (3), pp. 293-310, 1996
Chapter 7
Barry Bozeman and Gordon Kingsley
“R&D Value Mapping: A New Approach to Case Study-Based Evaluation”
*Journal of Technology Transfer*, 22 (2), pp. 33-41, 1997

Chapter 8
Albert N. Link and John T. Scott
“Evaluating Public Sector Intramural Research Programmes: The Case of the US Advanced Technology Program’s Intramural Research Initiative”

IV. Program Evaluation

Agriculture

Chapter 9
Zvi Griliches
“Research Costs and Social Return: Hybrid Corn and Related Innovations”

Chapter 10
David N. Bengston
“Economic Evaluation of Agricultural Research: An Assessment”

Modernization and Quality

Chapter 11
Irwin Feller and Jon P. Nelson
“The Microeconomics of Manufacturing Modernization Programs”

Chapter 12
Albert N. Link and John T. Scott
“Economic Evaluation of the Baldrige National Quality Award”

Energy & Environment

Chapter 13
Gideon Fishelson
“Measuring the Benefits from an Innovation: An Application to Energy”
Chapter 14
Michael Gallaher and K. Casey Delhotal
“Modeling the Impact of Technical Change on Emissions Abatement Investments in Developing Countries”
Journal of Technology Transfer, 30 (1-2), pp. 211-225, 2004

Transportation

Chapter 15
Robert William Fogel

Chapter 16
Ian W. H. Parry and Kenneth A. Small
"Should Urban Transit Subsidies Be Reduced?

Support of National Infrastructure

Chapter 17
Gregory Tassey
“Modeling and Measuring the Economic Roles of Technology Infrastructure”
Economics of Innovation and New Technology, 17 (7-8), pp. 617-631, 2008

Chapter 18
Laurence J. Kotlikoff, Kent Smetters, and Jan Walliser
“Mitigating America’s Demographic Dilemma by Pre-Funding Social Security”

Information Technology

Chapter 19
Michael P. Gallaher and Brent R. Rowe
“The Costs and Benefits of Transferring Technology Infrastructure Underlying Complex Standards: The Case of IPv6”

Chapter 20
Albert N. Link and John T. Scott
“Evaluating Public Sector R&D Programs: The Advanced Technology Program’s Investment in Wavelength References for Optical Fiber Communications”
Journal of Technology Transfer, 30 (1-2), pp. 241-251, 2005
Chapter 21
David P. Leech and John T. Scott
“Intelligent Machine Technology and Productivity Growth”
*Economics of Innovation and New Technology*, 17 (7-8), pp. 677-687, 2006

Chapter 22
Albert N. Link and John T. Scott
“Public/Private Partnerships: Stimulating Competition in a Dynamic Market”

**Health Care**

Chapter 23
Burton A. Weisbrod
“Benefit-Cost Analysis of a Controlled Experiment: Treating the Mentally Ill”

Chapter 24
Ted R. Miller, Maury S. Galbraith, and Bruce A. Lawrence
“Costs and Benefits of a Community Sobriety Checkpoint Program”

Chapter 25
Michael T. French, Kathryn E. McCollister, Stanley Sacks, Karen McKendrick, and George De Leon
“Benefit-Cost Analysis of a Modified Therapeutic Community for Mentally Ill Chemical Abusers”

Chapter 26
Bert M. Coursey and Albert N. Link
“Evaluating Technology-Based Public Institutions: The Case of Radio-pharmaceutical Standards Research at the National Institute of Standards and Technology”

Chapter 27
Joshua T. Cohen, Joshua T., Peter J. Neumann, and Milton C. Weinstein
“Does Preventive Care Save Money? Health Economics and the Presidential Candidates”
and
“Supplementary Appendix,” pp. 1-5 (available with the full text of this article at www.nejm.org)
Local Public Goods

Chapter 28
Deller, Steven C.
“An Application of a Test for Allocative Efficiency in the Local Public Sector”

Chapter 29
Cellini, Stephanie Riegg, Fernando Ferreira, and Jesse Rothstein
“The Value of School Facility Investments: Evidence from a Dynamic Regression,