

## Editorial

# Experimental approaches to public economics: guest editors' introduction

The *Journal of Public Economics* published its first paper based on a laboratory experiment in 1981, the 10th year in the life of the *Journal*. The authors were Jerry Marwell, a sociologist from the University of Wisconsin, and his graduate student Ruth Ames. Marwell, well known to his friends for his jovial antagonism toward economists, titled the paper, “Economists free ride, does anyone else?” as a challenge to economic methods and assumptions. Ironically, this paper has become a classic in the field of both public economics and experimental economics, and has led to deeper and more meaningful economic models. Moreover, it is one of the most highly cited papers ever published by the *Journal*.

In the years since 1981, laboratory and field experiments have become increasingly important tools for public economists, and the *Journal of Public Economics* has played a key role in this transformation. As an illustration of these contributions, we provide [Table 1](#), which collates experimental studies that have been published in the *Journal*. The *Journal* has published dozens of papers that explore, for instance, basic assumptions on preferences, such as tastes for altruism or fairness and basic assumptions about Nash equilibrium. It has published papers exploring voting schemes and mechanisms designed to implement Pareto efficient allocations or to provide public goods. Experimental papers in this journal have also had direct policy implications, in exploring tax elasticities, asking whether people care about marginal or average tax rates, analyzing tax incidence in a general equilibrium or studying the effectiveness of plans for tax compliance.

Several of the studies within this lot are considered classics in the field. Besides Marwell and Ames' seminal work, the studies of Isaac et al. (1985), Andreoni (1988) and Palfrey and Rosenthal (1984, 1988) stand out in terms of citation counts and overall contribution to the field of economics. The paper by Isaac et al. (1985) is important for showing, among other things, that in a repeated setting contributions decline toward the Nash prediction. Andreoni (1988) develops a design that enables experimentalists to separate the effects of strategy and learning on contribution levels in a repeated public goods game; in doing so, the piece served to introduce the

Table 1

Papers using experimental data, published in the journal of public economics, from 1972–2004

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1. Gerald Marwell and Ruth E. Ames, Economists free ride, does anyone else?: experiments on the provision of public goods, IV, 15 (3), 1981, 295–310.
  2. Ronald M. Harstad and Michael Marrese, Behavioral explanations of efficient public good allocations, 19 (3), 1982, 367–383.
  3. Thomas R. Palfrey and Howard Rosenthal, Participation and the provision of discrete public goods: a strategic analysis, 24 (2), 1984, 171–193.
  4. Peter Bohm, Revealing demand for an actual public good, 24 (2), 1984, 135–151.
  5. R. Mark Isaac, Kenneth F. McCue and Charles R. Plott, Public goods provision in an experimental environment, 26 (1), 1985, 51–74.
  6. Michael W. Spicer and Rodney E. Hero, Tax evasion and heuristics: a research note, 26 (2), 1985, 263–267.
  7. J.W. Bennett “Strategic Behavior: some Experimental Evidence,” 32 (3), 1987, 355–368.
  8. Winfried Becker, Heinz-Jurgen Buchner, and Simon Slesking. The Impact of Public Transfer Expenditures on Tax Evasion: an Experimental Approach, 34(2), 1987, 243–252.
  9. Thomas R. Palfrey and Howard Rosenthal, Private incentives in social dilemmas: the effects of incomplete information and altruism, 35 (3), 1988, 309–332.
  10. James Andreoni, Why free ride?: strategies and learning in public goods experiments, 37 (3), 1988, 291–304.
  11. Mark Bagnoli, Shaul Ben-David, and Michael McKee, Voluntary provision of public goods: the multiple unit case, 47 (1), 1992, 85–106.
  12. Yoram Amiel and Frank A. Cowell, Measurement of income inequality: experimental test by questionnaire, 47 (1), 1992, 3–26.
  13. James Alm, Gary H. McClelland and William D. Schulze, Why do people pay taxes?, 48 (1), 1992, 21–38.
  14. R. Mark Isaac, James M. Walker and Arlington W. Williams, Group size and the voluntary provision of public goods: experimental evidence utilizing large groups, 54 (1), 1994, 1–36.
  15. Joachim Weimann, Individual behaviour in a free riding experiment, 54 (2), 1994, 185–200.
  16. Charles A. M. de Bartolome, Which tax rate do people use: average or marginal?, 56 (1), 1995, 79–96.
  17. Yan Chen and Charles R. Plott, The Groves–Ledyard mechanism: an experimental study of institutional design, 59 (3), 1996, 335–364.
  18. Martin Sefton and Richard Steinberg, Reward structures in public good experiments, 61 (2), 1996, 263–287.
  19. Thomas R. Palfrey and Jeffrey E. Prisbrey, Altruism, reputation and noise in linear public goods experiments, 61 (3), 1996, 409–427.
  20. Herman C. Quirmbach, Charles W. Swenson and Cynthia C. Vines, An experimental examination of general equilibrium tax incidence, 61 (3), 1996, 337–358.
  21. Roberto Burlando and John D. Hey, Do Anglo–Saxons free-ride more?, 64 (1), 1997, 41–60.
  22. Melanie Marks and Rachel Croson, Alternative rebate rules in the provision of a threshold public good: an experimental investigation, *Journal of Public Economics*, Volume 67 (2), 1998, 195–220.
  23. Simon P. Anderson, Jacob K. Goeree and Charles A. Holt, A theoretical analysis of altruism and decision error in public goods games, *Journal of Public Economics*, 70 (2), 1998, 297–323.
  24. Cadsby, Charles B., and Elizabeth Maynes, Voluntary Contribution of Threshold Public Goods with Continuous Provisions: experimental Evidence, 71 (1), 1999, 53–73.
  25. Axel Ockenfels and Joachim Weimann, Types and patterns: an experimental East-West-German comparison of cooperation and solidarity, 71 (2), 1999, 275–287.
  26. Daniel Rondeau, William D. Schulze and Gregory L. Poe, Voluntary revelation of the demand for public goods using a provision point mechanism, 72 (3), 1999, 455–470.
  27. M. A. Sillamaa, How work effort responds to wage taxation: an experimental test of a zero top marginal tax rate, 73 (1), 1999, 125–134.
  28. Jordi Brandts and Arthur Schram, Cooperation and noise in public goods experiments: applying the contribution function approach, 79 (2), 2001, 399–427.
  29. Joel Slemrod, Marsha Blumenthal, and Charles Christian. “Taxpayer Response to an Increased Probability of Audit: evidence from a Controlled Experiment in Minnesota,” 79 (3), 2001, 455–483.
  30. Georg Kirchsteiger and Andrea Prat, Inefficient equilibria in lobbying, 82 (3), 2001, 349–375.
  31. Marco Haan and Peter Kooreman, Free riding and the provision of candy bars, 83 (2), 2002, 277–291.
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Table 1 (continued)

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32. Jacob K. Goeree, Charles A. Holt and Susan K. Laury, Private costs and public benefits: unraveling the effects of altruism and noisy behavior, 83(2), 2002, 255–276.
33. John Spraggon, Exogenous targeting instruments as a solution to group moral hazards, 84 (3), 2002, 427–456.
34. Frans van Dijk, Joep Sonnemans and Frans van Winden, Social ties in a public good experiment, 85 (2), 2002, 275–299.
35. Neil Buckley, Stuart Mestelman and Mohamed Shehata, Subsidizing public inputs, 87 (3–4), 2003, 819–846.
36. Yan Chen, An experimental study of serial and average cost pricing mechanisms, 87 (9–10), 2003, 2305–2335.
37. Jean-Robert Tyran, Voting when money and morals conflict: an experimental test of expressive voting, 88, (7–8), 2004, 1645–1664.
38. James Andreoni and Ragan Petrie, Public goods experiments without confidentiality: a glimpse into fundraising, 88 (7–8), 2004, 1605–1623.
39. Mari Rege and Kjetil Telle, The impact of social approval and framing on cooperation in public good situations, 88 (7–8), 2004, 1625–1644.
40. Michael Wenzel and Natalie Taylor, An experimental evaluation of tax-reporting schedules: a case of evidence-based tax administration, 88 (12), 2004, 2785–2799.
41. Marc Bilodeau, Jason Childs and Stuart Mestelman, Volunteering a public service: an experimental investigation, 88 (12), 2004, 2839–2855.
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concepts of “Partners” and “Strangers” treatments, which remain prominent in the experimentalist’s toolkit today. Palfrey and Rosenthal (1984) introduced a provision point game with binary contribution levels and examine symmetric mixed strategy equilibria. They further this line of research in their 1988 study by providing evidence in support of mixed strategy equilibria whereby changes in threshold levels can have ambiguous effect on contribution levels. Readers will find that each of these studies has influenced the work in this special issue.

Other studies that have been widely recognized as fundamental include the work of Isaac et al. (1994) and Alm et al. (1992). These studies remain a benchmark for scholars working in this area, but for different reasons. Isaac et al. (1994) provided the first empirical evidence that contradicts the belief that ability to provide the optimal level of a public good is inversely related to group size, whereas Alm et al. (1992) provided empirical evidence that agents undertake costly actions (i.e., paying taxes) when faced with incentives to evade such costs because they overweight the low probability of an audit. Both studies have important implications both positively and normatively.

In this special issue, we hope to showcase the breadth, depth and quality of ongoing experimental research in public economics. Our appeal for submissions to this issue generated a tremendous response, far exceeding even our most optimistic forecasts. This provided much angst in choosing the best studies in terms of quality and fit. Of the many submissions, we chose eleven high quality papers that represent some of the great palette of topics that experimental research can cover in public economics.

As noted above, of the many experimental papers published in the *Journal of Public Economics*, it is clear that a leading contributor is Tom Palfrey. We are proud, therefore, to lead off our special issue with a paper by Sean Gailmard and Palfrey. Their paper uses experiments to explore the effectiveness of various mechanisms for sharing the costs of a public good. They show that a version of the serial cost sharing mechanism, one that

sacrifices some theoretical elegance for the sake of pragmatic realism, is the most efficient. This paper shows the power of experiments to take us beyond theory and to understand how real institutions might perform.

Next is a series of papers on more informal mechanisms used to provide public goods. All of these take advantage of the fact that public goods are provided over time, either by sequential gifts or through repeated games. Jan Potters, Martin Sefton and Lise Vesterlund note that in the real world givers will differ in the information they possess on the quality of a public good and that givers often can move sequentially. They show both theoretically and experimentally that the informed givers will choose to move first, sending a signal of quality and, relative to exogenous ordering, improving efficiency. Matthias Cinyabuguma, Talbot Page and Louis Putterman examine a slightly different class of public goods, those provided repeatedly and whose future benefits people can be excluded from consuming. They show that the ability to exclude people has a dramatic effect of disciplining givers and promoting efficiency. Beth Seely, John Van Huyck and Ray Batallio examine a repeated public goods game with an unknown ending. They explore publicly announcing recommended strategies in order to find a “credible assignment” to an efficient equilibrium. Those with a strong trigger are most effective, they find, in part because of their effects on learning.

Two interesting papers that examine how networks of people affect the efficiency of outcomes follows; of course public goods, coordination, etc., are all deep issues in the network formation problem. Gary Bolton, Elena Katok and Axel Ockenfels examine how reputations that are imprecise and formed on short memories can nonetheless affect efficiency. They show that when strangers interacting in a social dilemma know the last move of their partner, as well as the last move of their partner’s partner, then this bit of reputational scoring can greatly improve efficiency. Steven Callander and Charlie Plott explore a different environment in presenting some of the first empirical tests of network theory. The major goal of their paper is to better understand the network formation process itself and examine mainstream theoretical predictions. They find that networks are able to overcome complex coordination problems and converge to stationary equilibrium. These studies add to a growing theoretical and empirical literature on network formation. In our view, this is a fascinating and important literature and we are excited about future laboratory tests of theory, as well as complementary field experiments that will permit an exploration of whether laboratory behavior is a good indicator of behavior in the field.

Guillaume Frechette, John Kagel and Massimo Morelli break new ground for experimenters by looking at the important topic of legislative bargaining. Models inspired by Baron and Ferejohn, which are difficult to test empirically, are given their first experimental test by these authors. They find that the Baron-Ferejohn model has more support than the alternative model, but that it too overstates the proposer’s legislative advantage. This paper highlights the richness of this area for further study.

Next, we include two papers that ask whether two theoretically equivalent presentations of government policy will nonetheless affect economic behavior. Bradley Ruffle examines the textbook claim that the economic incidence of a tax is independent of whether the statutory incidence is on suppliers or demanders. This contrasts with popular bias that equates actual and statutory incidence. Ruffle finds a strong confirmation of the theory—the market provides the discipline to override bias and to make actual incidence

independent of statutory incidence. By contrast, Catherine Eckel, Phillip Grossman and Rachel Johnston find a significant framing effect in the crowding out of public goods. When the “tax revenue” contributed by the government is framed as money belonging to the government, crowding out is low, but when it is framed as money belonging to the individual, then crowding is complete. This indicates that how people *perceive* policy can have a dramatic effect on its impact, especially when there is no market to discipline biased reasoning.

The final two papers concern other issues that public economists will find fascinating. Ian Bateman, Danny Kahneman, Alistair Munro, Chris Starmer and Robert Sugden introduce the novel concept of “adversarial collaboration” to the field of experimental economics in their study of loss aversion. Using an elaborate and well thought out experimental design, they find mixed empirical evidence, but the results are broadly consistent with the hypothesis that money outlays are perceived as losses. This finding should have implications in both a positive and normative sense within the economics community. Daniel Rondeau, Gregory Poe and William Schulze provide an excellent example of how experimental methods can be used to compare the relative performance of institutions to raise funds for public goods. They compare the two mechanisms most widely used for fundraising, the voluntary contribution and provision point mechanisms, and find that the provision point mechanism is, in general, more efficient than the voluntary contribution mechanism. Given that fundraisers are constantly searching for methods to improve the supply side of charitable fundraising, similar to the other papers in this special issue, this paper should have interest beyond academia.

In closing, we must express our gratitude to the editors for recognizing the importance of experiments in the study of public economics, and for supporting this special issue. We also appreciate the cooperation of the authors in complying with our many requests, restrictions and deadlines. Several of our colleagues also lent fine support in the refereeing process, which is a thankless job, but one which is gratefully appreciated by us. Finally, we must also extend special recognition to the exceptional work done by Liz Anderson, the editorial assistant to the *Journal*. She held things together beautifully and made our jobs much easier, for which we are deeply grateful.

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