

Oleksii Birulin

Address: Department of Economics
608 Kern Graduate Building
The Pennsylvania State University
University Park, PA 16802

Telephone: (814) 867-3293 (Home)
(814) 571-3018 (Cell)
E-mail: oxb108@psu.edu
Website: www.econ.psu.edu/~oxb108

Curriculum Vitae

- CITIZENSHIP:
- Ukraine, F1 visa
- EDUCATION:
- Ph.D., Economics, The Pennsylvania State University, expected June 2004
 - M.A., Economics, New Economic School, Moscow, 1999
 - M.Sc., Physics, Moscow State University, Moscow, 1996
- Ph.D. THESIS:
- “Efficiency in Auctions and Public Goods Mechanisms”
Thesis Advisor: Professor Vijay Krishna
- PAPERS:
- “Public Goods with Congestion: A Mechanism Design Approach,” 2003.
 - “On Efficiency of the English Auction,” 2003 (joint with Sergei Izmalkov).
 - “Inefficient Ex-Post Equilibria in Efficient Auctions,” 2003, *Economic Theory*, 22/3, pp. 675-683.
- IN PROGRESS:
- “Dynamic All-Pay Dollar Auction with Asymmetric Information,” 2002.
 - “Efficient Equilibria in the English Auction,” 2002 (joint with Sergei Izmalkov).
- TEACHING EXPERIENCE:
- Graduate Instructor: Intermediate Micro (two semesters)
 - Teaching Assistant: Principles of Micro and Intermediate Micro, Environmental Economics
- RESEARCH EXPERIENCE:
- Research Assistant to Professor Motty Perry, summer 2001
 - Research Assistant to Professor Vijay Krishna, 2002-2003
- PRESENTATIONS:
- 13th Conference on Game Theory, SUNY at Stony Brook, 2002
 - 14th Conference on Game Theory, SUNY at Stony Brook, 2003
 - Mid-West Economic Theory Meetings, Indiana University, Bloomington, 2003
- REFEREE:
- Games and Economic Behavior
 - Mathematics of Operations Research
 - Economics Bulletin

THESIS ABSTRACT

Essay 1: *Public Goods with Congestion: A Mechanism Design Approach*

I consider the problem of the efficient provision of a public good with congestion in a setting with asymmetric information. Mailath and Postlewaite (1990) and Rob (1989) show that in such a setting an efficient, budget balanced and individually rational mechanism for provision of *pure public* goods does not exist. Many public goods, however, are *not* pure public goods, that is, they are excludable and to some extent congested. I show that when congestion is taken into account, in a wide class of economies it is *possible* to construct a “first-best” mechanism—efficient, incentive compatible mechanism that balances the budget ex-post and satisfies individual rationality constraints.

It is known, see Krishna and Perry (2000), that a first-best mechanism exists if and only if the Vickrey-Clarke-Groves (VCG) mechanism runs an expected budget surplus. In the VCG mechanism each consumer is levied a tax equal to the externality that she exerts on the rest of the society. When a good is pure public a consumer pays only if she is pivotal. When a public good is congested even a consumer that is not pivotal exerts an externality on the others. This externality is stronger when congestion is higher, hence the payment from such a consumer “increases with the level of congestion.” On the other hand, when congestion is higher, fewer consumers are given access to the good, hence fewer consumers pay at all. Due to this trade off, it is too simplistic to say that the VCG mechanism runs an expected budget surplus if the good is “congested enough.” There are simple examples where the VCG mechanism runs an expected budget surplus with less congested good and an expected budget deficit with more congested good.

I show that it is most likely that the VCG mechanism runs an expected budget surplus if the level of congestion is *neither too high nor too low*. I present a simple and intuitive condition on the parameters of the economy that guarantees that the VCG mechanism runs an expected budget surplus. As a result, in these economies, there also exists an efficient, incentive compatible, individually rational and ex-post budget balanced mechanism.

Essay 2: *On Efficiency of the English Auction* (joint with Sergei Izmalkov)

We study efficiency properties of a single-object irrevocable exit English auction in the setting with interdependent and asymmetric values. Maskin (1992) shows that the pairwise single-crossing condition is both necessary and sufficient for efficiency of the English auction with two bidders. Our paper extends both Maskin's result and the single-crossing condition to the English auction with N -bidders. The pairwise single-crossing imposes the following: if starting from a signal profile where the values of two bidders are equal and maximal we slightly increase the signal of one of the bidders, her value becomes the highest.

We introduce the *generalized single-crossing* condition (GSC)—a fairly intuitive extension of the pairwise single-crossing. GSC requires the following: if starting from a signal profile where the values of a group of bidders are equal and maximal we slightly increase the signals of a subset of the group, no bidder outside of the subset can attain the value higher than the maximal value attained among the bidders from the subset. GSC both implies the pairwise single-crossing and reduces to it in the case of two bidders.

The two main results of the paper are *necessity*: if GSC is violated at some interior signal profile, then no efficient equilibrium in the N -bidder English auction exists; and *sufficiency*: if value functions satisfy GSC both in the interior and on the boundary of the signals' domain, then there exists an efficient ex post equilibrium in the N -bidder English auction.

REFERENCES:

Professor **Vijay Krishna**
Department of Economics
The Pennsylvania State University

Address: 608 Kern Graduate Building
University Park, PA 16802, USA
Tel: (814) 863-8543
E-mail: vkrishna@psu.edu

Professor **Tomas Sjöström**
Department of Economics
The Pennsylvania State University

Address: 608 Kern Graduate Building
University Park, PA 16802, USA
Tel: (814) 863-1295
E-mail: jts10@psu.edu

Professor **Motty Perry**
Department of Economics
The Hebrew University of Jerusalem

Address: Department of Economics
The Hebrew University of Jerusalem
Mount Scopus
Jerusalem, 91905, ISRAEL
Tel: 972-2-588-3251
E-mail: motty@math.huji.ac.il