

# KIRILL PONOMAREV

## CONTACT INFORMATION

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UCLA Department of Economics  
Bunche Hall 8283  
315 Portola Plaza  
Los Angeles, CA, 90095

[kirillponomarev.com](http://kirillponomarev.com)  
ponomkirill@gmail.com  
+1(310) 254-8799

## REFERENCES

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|-------------------|----------------------------|
| Rosa Matzkin      | matzkin@econ.ucla.edu      |
| Andres Santos     | andres@econ.ucla.edu       |
| Denis Chetverikov | chetverikovdenis@gmail.com |

## EDUCATION

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Ph.D. in Economics, University of California, Los Angeles, 2016–present (expected June 2022)

Advisors: Rosa Matzkin, Andres Santos

B.S. in Economics, *summa cum laude*, Higher School of Economics, Moscow, Russia, 2012–2016

Major: Mathematical Economics

## FIELDS

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Primary: Econometrics

Secondary: Industrial Organization, Economic Theory

## RESEARCH

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Working Papers:

– **Efficient Estimation of Directionally Differentiable Functionals (Job Market Paper)**

This paper studies estimation of parameters of the form  $\phi(\theta_0)$ , where  $\phi$  is a known directionally differentiable function, and  $\theta_0$  is an estimable feature of the observed distribution of the data. Such parameters are abundant in econometric models and typically take the form of maxima or minima of some estimable objects. Examples include bounds on the average treatment effects in non-experimental settings, identified sets for the coefficients in regression models with interval-valued data, bounds on the distribution of wages accounting for selection into employment, and many others. In this paper, I show that the efficient (Locally Asymptotically Minimax) estimators for such parameters take the form  $\phi(\hat{\theta}_n + \hat{v}_{1,n}) + \hat{v}_{2,n}$ , where  $\hat{\theta}_n$  is the efficient estimator for  $\theta_0$ , and  $\hat{v}_{1,n}, \hat{v}_{2,n}$  are suitable adjustment terms. I show that the optimal adjustment terms depend on the chosen loss function and develop a general procedure to compute them from the data. A simulation study suggests that the proposed estimator may have lower finite-sample bias and variance than the existing alternatives. As an empirical illustration, I apply the developed theory to estimate the bounds on the distribution of valuations, expected profit, and the optimal reserve price in English auctions with independent private values.

– **Peer Effects in Endogenous Networks with Positive Spillovers**

This paper studies a class of network games in which each player chooses both an activity level and a set of connections, and the activity levels exhibit positive spillovers. Examples include peer

effects in education, labor market participation, criminal activity, and R&D collaboration. The contribution of this paper is twofold. First, I provide a detailed characterization of the equilibrium (Pairwise Nash Stable) networks, activity levels, and welfare distribution. Importantly, I allow for heterogeneous players with different types, defined by ex-ante ability level and linking costs, and do not impose strong separability restrictions on payoffs. I show that the equilibrium networks consist of several interlinked components with simple structures: each component contains central and peripheral players of the same type; central players of different types may be interlinked; within each type, central players exhibit higher activity levels and receive higher payoffs. The resulting network structures closely resemble the asymmetric and weakly connected networks observed in the data. Second, I discuss the implications of the above results for empirical analysis and construct identified sets for the payoff parameters that remain tractable in networks of moderate size. A simulation study suggests that the proposed identified sets can be sufficiently info

#### – **Selecting Inequalities for Identification in Finite Games**

The empirical analysis of finite games (i.e., games with a finite number of possible outcomes) is complicated by the multiplicity of equilibria. In such settings, the underlying structural parameters of the game are typically partially identified. In the recent literature, sharp identified sets for such parameters have been characterized by a special type of moment inequalities. However, even in games with a relatively small number of players, checking all inequalities may be computationally infeasible. This paper develops a more practical characterization by identifying the smallest subset of the inequalities that guarantees sharpness. This subset is entirely determined by the structure of the game (i.e., payoff functions and the notion of equilibrium) and can be efficiently computed using graph propagation techniques. In a class of finite games, the proposed characterization can substantially simplify identification, estimation, and inference. In the settings where checking even the smallest set of inequalities is computationally infeasible, the result can inform inequality selection and help avoid substantial information losses.

Publications (prior to Ph.D.)

- “From Correlation to Causation: Econometric vs Computer Science Approaches”  
*HSE Economic Journal*, 19(3) (2015) pp. 457-496 (in Russian, with N. Arefiev and S. Kuznetsov)

#### TEACHING EXPERIENCE

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Instructor:

- Statistics for Economists (undergraduate), UCLA 2019–2021

Teaching Assistant:

- Introduction to Econometrics (first-year Ph.D. sequence), UCLA 2018–2020
- Summer Preparation Course (masters) Anderson School of Management, UCLA 2019–2020
- Statistics for Economists; Introduction to Econometrics (undergraduate), UCLA 2017–2020
- Linear Algebra; Probability and Statistics; Econometrics (undergraduate), HSE 2013–2016

#### FELLOWSHIPS AND AWARDS

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- Graduate Dissertation Year Fellowship, UCLA 2021–2022

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| Best Proseminar Paper Award, Department of Economics, UCLA           | 2020      |
| TA Awards for Outstanding Performance, Department of Economics, UCLA | 2018–2021 |
| Graduate Summer Research Mentorship Award, UCLA                      | 2017      |
| Department of Economics Fellowship, UCLA                             | 2016–2017 |

#### SEMINARS AND CONFERENCES

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2021 University of California Los Angeles, Bristol Econometric Study Group

#### SKILLS

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Software: R, Julia, Python, Stata, Matlab, Git

Languages: English (fluent), Russian (native)