Enzo Di Pasquale

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Education

New York University 2020 – present

Ph.D. Candidate in Economics

Bocconi University 2017 – 2020

M.Sc. in Economics and Social Sciences, 110/110 cum laude

Bocconi University 2014 – 2017

B.Sc. in International Economics and Finance, 110/110 cum laude

References

Alfred Galichon
Professor of Economics and Mathematics
New York University
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Daniel Waldinger
Assistant Professor of Economics
New York University
danielwaldinger@nyu.edu

Quang Vuong
Professor of Economics
New York University
qvuong@nyu.edu

Research Interests

Econometrics, Industrial Organization, Market Design

Research Papers

Estimating Random Utility Models over Bundles with Large-Scale Linear Programming
Job Market Paper

Abstract: This paper develops a simulation-based estimator for random utility models over combinatorial choice sets. When utility is linear in parameters, minimizing the average regret—the difference in utility between the observed choice and the optimal alternative under simulated shocks—yields a convex objective function. Convexity overcomes the computational hurdles of the standard simulated method of moments, enabling the estimation of high-dimensional parameter vectors such as item fixed effects and complementarities. I recast the sample objective as a linear program and solve it via constraint generation. In the numerical experiments, constraint generation terminates in far fewer iterations than worst-case convex optimization benchmarks. I establish formal consistency and asymptotic normality in the standard many-observation limit, with the number of choices and parameters fixed. I then use numerical experiments to demonstrate the method's scalability to single-profile large combinatorial objects, such as supermodular potential games. Finally, I apply the framework to the 1996 FCC C-Block spectrum auction. After estimating geographic complementarities and license-

specific fixed effects from the realized allocation, I evaluate counterfactual bundling policies where licenses are aggregated into a coarser geographical partition, finding that it would have lowered both seller revenue and bidder surplus.

Auction Algorithms for Demand Inversion with Nonlinear Transfers

Abstract: Inverting demand in random utility models with non-additive utility is equivalent to computing stable outcomes of a two-sided matching market with imperfectly transferable utility. This project develops auction algorithms for that computation. The classical auction algorithm for the assignment problem relies on a common unit of transfer: raising the price of a product lowers every consumer's payoff from it by the same amount. With nonlinear transfers, arising for instance from progressive taxation or risk aversion, the effect of a price change varies across consumer–product pairs, and the classical bidding step no longer applies. I propose a forward–reverse ε-scaling auction that handles this case, study its computational complexity, and implement it for batches of markets on GPUs and across distributed processes. In numerical experiments, I use the algorithms to invert demand with non-additive valuations and document accuracy and running time as markets grow large.

Vanishing Perturbations and Rent Selection in Nonlinear Matching Markets

with Alfred Galichon and Antoine Jacquet

Abstract: Matching markets with imperfectly transferable utility can admit multiple equilibrium divisions of surplus. We study selection by exponential regularization, which assigns positive mass to every allowed match and to remaining single. Under continuity, strict monotonicity, and coercivity assumptions, payoffs converge to a uniquely selected equilibrium vector. We characterize this limit using market clearing within submarkets with equal worker and firm populations. Matches whose masses vanish with the perturbation can nevertheless determine the limiting rents. The characterization recovers the payoff selection associated with entropic optimal transport under transferable utility and applies to nonlinear transfers. Under differentiability and positive partial derivatives, we also characterize the first-order change in payoffs as the perturbation vanishes, which determines the limiting allocation.

Software

combRUM

Open-source Python library for high-dimensional estimation and bootstrap inference in combinatorial random utility models. It handles constraint generation and runs both estimation and bootstrap across MPI processes or compute nodes, with HiGHS and Gurobi backends.

Ubiquitous: Dynamic Games Between Python Strategies

with Alfred Galichon and Antoine Jacquet

A platform for running dynamic games between autonomous Python strategies. A researcher specifies the game, players submit code, and the server runs the rounds, computes payoffs, and records the full history as a panel dataset of strategic behavior.

Presentations

Empirical Models of Matching Markets, IASC Cargèse; math+econ+code Seminar Series; New Research in Economic Theory (NRET), NYU; IO Workshop, NYU; Student Micro Theory Lunch, NYU.

Awards and Fellowships

C.V. Starr Center Data Funding Award, NYU 2026

Google Cloud Research Credits Award 2026

Graduate Research Institute Fellowship, NYU Paris 2026

MacCracken Fellowship, New York University 2020 – 2025

Bocconi Merit Graduate Award, Bocconi University 2017 – 2020

Research Assistant

Alfred Galichon, New York University 2022 – 2026

Thomas J. Sargent, New York University 2024 – 2026

Teaching Assistant

Data and Computation I (MSQE), Prof. Alfred Galichon — Summer 2026

Econometrics I (MSQE), Prof. Alfred Galichon — Summer 2026

Data and Computation II (MSQE), Prof. Alfred Galichon — Winter 2026, Winter 2025

Computational Economics (Ph.D.), Profs. Alfred Galichon and Thomas J. Sargent — Spring 2025

Math for Economists II (Ph.D.), Prof. Efe Ok — Spring 2025, Spring 2024

Microeconomic Theory (Undergraduate), Prof. Erik Madsen — Fall 2024, Fall 2023

Skills and Languages

Programming: Python (pandas, NumPy, SciPy, statsmodels, scikit-learn, PyTorch), SQL; Gurobi, HiGHS, OR-Tools; MPI, SLURM, CUDA.

Tools: Linux/Unix, Git, Docker, FastAPI, Google Cloud Run, GitHub Actions.

Languages: Italian (native), English (fluent), French (basic).