

JIAQI REN

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EDUCATION

Pennsylvania State University

Ph.D. Candidate in Economics

University Park, PA

2021 – Feb 2027 (*Expected*)

Hong Kong University of Science and Technology

Bachelor of Science in Mathematics and Economics, First Class Honors

Clear Water Bay, Hong Kong

2017 – 2021

Harvard University

Visiting Undergraduate Student

Cambridge, MA

Jan 2020 – May 2020

London School of Economics and Political Sciences

Summer School Student

London, UK

July 2019

FIELDS OF INTEREST

Econometrics, Industrial Organization

REFERENCES

Keisuke Hirano (Co-chair)

Professor of Economics

Pennsylvania State University

kuh237@psu.edu

Joris Pinkse (Co-chair)

Professor of Economics

Pennsylvania State University

joris@psu.edu

Marc Henry

Professor of Economics

Pennsylvania State University

marc.henry@psu.edu

RESEARCH PAPER

“An Instrument-free Method for Testing Firm Conduct” (Job Market Paper)

- *Abstract:* Identifying how firms compete, that is, their *conduct*, is central to empirical industrial organization and antitrust policy. The standard approach tests candidate conduct models using markup-shifting instruments. When such instruments are weak or unavailable, existing tests have limited power to distinguish among competing conduct hypotheses. This paper develops an instrument-free procedure. In place of an instrument, I use economically motivated bounds on marginal cost. Under the null hypothesis, the marginal cost implied by a candidate conduct model, evaluated at the true demand parameter, must lie within these bounds. This turns conduct testing into a system of linear inequality restrictions on the implied marginal costs. I adapt the Conditional Chi-square testing approach of Cox and Shi (2023) to this framework and establish asymptotic validity of the resulting test. The test adapts its critical value to the geometry of the binding constraints. It requires neither tuning parameters nor simulation, and its critical value comes directly from the chi-square distribution. I design a structural mixed-logit Monte Carlo simulation to Döpper et al. (2025) to verify the test’s finite-sample performance. The test controls size well under two common demand estimators, GMM via PyBLP and the *Conformant Likelihood Estimator with Exogeneity Restrictions* (CLEER) via GruMPS.

“Identification of Peer Effects in Social Networks” (Neil Wallace Best Third-Year Paper Award)

- *Abstract:* This paper studies the identification and estimation of the linear-in-means model of peer effects when network links are censored. I show identification in a general setting imposing no restrictions on link formation other than the standard exogeneity requirement, and allowing the censoring of links to be correlated with unobservable determinants of the outcome. Specifically, I propose three identification strategies by developing censoring-adjusted instrumental variables for groups of individuals whose observability is unaffected by censoring. I then construct three 2SLS estimators and

combine them for more efficient point estimation using an adaptive approach. In a simulation study, I show that my estimators have satisfactory finite sample performance.

“Dams and Violence in Africa”, with Li Han and Yabin Yin (*Accepted at the 2025 annual meeting of American Economic Association*)

- *Abstract:* This paper examines how hydropower dams trigger conflict incidence in Africa. Combining data on 54 dams commissioned between 2001–2022 with georeferenced conflicts, we employ a difference-in-differences approach comparing areas near dam-affected versus unaffected river branches before and after dam completion. We find dams significantly increased monthly conflict incidence by 0.8 percentage points, corresponding to 114 % relative to baseline in downstream areas, with effects emerging after two years and persisting in the long run. These effects were mostly concentrated near national borders and more likely involved larger-scale conflicts by organized armed groups. No such effect was observed for upstream regions. A major mechanism is through reduced downstream water availability, intensifying competition for scarce domestic water resources.

RESEARCH EXPERIENCE

Research Assistant for Prof. Keisuke Hirano Penn State
Topic: Adaptive Experiments and Batched Bandits *Aug 2025 – Now*

- Implemented Thompson and exploration sampling for batched bandits in Julia using Gauss–Hermite quadrature.
- Computed worst-case welfare regret for two post-experiment assignment rules across 3–6 arms and 3–17 batches.
- Developed a best-arm test, calibrating critical values via adaptive grid search with up to 100K Monte Carlo replications per design, and validating performance of the test via distributed HPC simulations using Julia.

Research Assistant for Prof. Patrik Guggenberger Penn State
Topic: Subvector inference in Linear Instrumental Variables Regression *May 2022 – Aug 2022*

Research Assistant for Prof. Guojun He HKUST
Topic: Locusts and infant mortality in Africa *Jan 2021 – May 2021*

- Constructed georeferenced data linking locust infestations, birth records, weather, and infrastructure across Africa using ArcGIS and R.
- Used difference-in-differences and wind speed and direction as Instrumental Variables to estimate the causal effect of prenatal locust exposure on infant mortality.
- Found robust evidence that prenatal exposure to nearby locust plagues significantly increased infant mortality.

TEACHING EXPERIENCE

Teaching Assistant Penn State
Economic Forecasting (Undergraduate) for Prof. Keisuke Hirano Spring 2025
Econometrics (Ph.D.) for Prof. Patrik Guggenberger Spring 2024

- Weekly 1-hour recitation session for 20 students.

Environmental Economics (Undergraduate) for Prof. Patrik Guggenberger Fall 2023, Fall 2022

Economics of Matching (Undergraduate) for Prof. Ran Shorrer Spring 2022

Introductory Economics (Undergraduate) for Prof. Dave Brown Spring 2022, Fall 2021

INDUSTRY EXPERIENCE

Amazon | Economist Intern *May 2026 – Aug 2026*

Improving 72-hour Policy in WebLab (A/B Test) Latency Analysis

- Built latency datasets for 40,000+ A/B tests using SQL and distributed PySpark pipelines on AWS EMR.
- Developed a simulation-based method to compute power for detecting latency regressions across metrics and days.
- Designed a Bayesian framework to optimize monitoring duration, with \$54.1M in projected annual US savings.
- Collaborated with engineers, scientists, and product managers to productionize proposed recommendations.

SEMINARS AND CONFERENCES

Optimization-Conscious Econometrics Summer School and Conference at the University of Chicago (2024), Cornell-Penn State Conference on Econometrics and IO (2023, 2022), New Faces in International Economics Conference (2023), The Gary Chamberlain Online Seminar in Econometrics (2023-Present), Conference on Poverty and Inequality at Harvard Kennedy School (2020).

HONORS AND AWARDS

Rosenberg Liberal Arts Centennial Scholarship	Penn State, 2024-2025
Graduate Assistantship	Penn State, 2021-Present
The Joseph Needham Merit Scholarship Programme	HKUST, 2021-Present
The S.S. Chern Class of Elite and Talented Students in Mathematics	HKUST, 2018-2021
Dean's List	HKUST, 2018-2021
The University Scholarship for Continuing Undergraduate Students	HKUST, 2017-2021

SKILLS AND LANGUAGE

Programming & Data: Python (Numpy, Pandas), Julia, SQL, PySpark, R, Stata; AWS, Git, HPC.
Languages: English (fluent), Chinese (native)

Last Update: September 2, 2026