# Rui Wang

# **CONTACT INFORMATION**

Department of Economics The Pennsylvania State University University Park, PA 16802, USA Phone: (814)-852-9913 Email: rxw84@psu.edu https://sites.google.com/view/rui-wang-econ

# **EDUCATION**

Ph.D. in Economics, The Pennsylvania State University, 2016-2022 (expected) Advisors: Sung Jae Jun and Joris Pinkse

B.A. in Economics and B.S. in Mathematics, Wuhan University, 2012 - 2016

## **FIELDS OF INTEREST**

Econometrics, Industrial Organization

### WORKING PAPERS

"Semiparametric Identification and Estimation of Substitution Patterns" (Job Market Paper)

**Abstract:** This paper studies semiparametric identification of substitution patterns between two goods using a panel multinomial choice model with bundles. My model allows the two goods to be either substitutes or complements and admits heterogeneous complementarity through observed characteristics. I characterize the sharp identified set for the model parameters and provide sufficient conditions for point identification. My identification analysis accommodates endogenous covariates through flexible dependence structures between observed characteristics and fixed effects while placing no distributional assumptions on unobserved preference shocks. I propose a two-step consistent estimator of the identified set, which through Monte Carlo simulations is shown to perform more robustly than a parametric estimator. As an empirical illustration, I apply my method to estimate substitution patterns between cigarettes and e-cigarettes using the Nielsen data.

"Identification of Binary Choice Models with Misreported Outcomes" (with Orville Mondal)

**Abstract:** Our paper characterizes partial identification of a binary choice model when the binary dependent variable is potentially misreported. We propose two approaches using different instrumental variables which mainly exploit exclusion restrictions. In the first approach, the instrumental variable is assumed to only affect the true dependent variable but not the misreporting probabilities. The second approach uses an instrumental variable affecting misreporting probabilities monotonically but not influencing the true dependent variable. We place no restrictions on the distributions of unobserved disturbances and do not assume parametric models for the misreporting process. A two-step smoothed estimator is proposed based on our identification strategy and consistency of the estimator is established. In an extension, we study the joint identifying power of using both instrumental variables together, and identification under one-sided misreporting.

"Identifying LATE with Endogenous and Misreported Treatment"

**Abstract:** This paper provides partial and point identification for the local average treatment effect when the true treatment is endogenous and potentially misreported. I first characterize partial identification results for the local average treatment effect by using an instrumental variable which affects both overreporting and underreporting monotonically, under both exogenous and endogenous misreporting. Moreover, by using two different instrumental variables which only affect overreporting and underreporting respectively, point identification of the local average treatment effect is achieved.

# WORK IN PROGRESS

"Identification of Panel Multinomial Choice Models with Unconditional Stationarity" (with Wayne Yuan Gao and Ming Li)

**Abstract:** We establish new identification results for panel multinomial choice models under an unconditional stationarity assumption. In contrast to the standard conditional stationarity condition, our analysis places no restrictions on the dependence structure between covariates, individual fixed effects, and preference shocks. The identification strategy consists of two steps: the first step develops both lower and upper bounds for the unconditional distribution of preference shocks at each period, as functions of model parameters and observed data; the second step derives the identified set for model parameters based on the restriction that the bounds over different periods should have intersections.

"Point Identification of LATE with Two Instruments"

**Abstract:** The paper characterizes new point identification results of the local average treatment effect. Compared to Imbens and Angrist (1994) who use one instrument to identify the LATE, my paper exploits two instruments but requires weaker assumptions on both instruments. The instrument used by Imbens and Angrist (1994) is required to satisfy these three conditions: exclusion restriction, monotonicity, and independence, while their result no longer applies as long as one of the conditions fails. My paper uses two instruments where the first instrument can violate the exclusion restriction and the second one does not need to satisfy monotonicity. So the first instrument can affect the outcome directly and indirectly through the treatment. My method can identify the direct effects of the first instrument by using exogenous variation in the second instrument and consequently identify the local average treatment effect.

### HONORS AND AWARDS

Rosenberg Liberal Arts Centennial Scholarship, The Pennsylvania State University, 2019 University Scholarship, Wuhan University, 2013-2015 University Freshman Scholarship, Wuhan University, 2012

## PRESENTATIONS

Penn State Econometrics Seminar, 2021, 16th Economics Graduate Students' Conference at Washington University in St. Louis, 2021, European Winter Meetings of the Econometric Society, 2021 (scheduled)

## **TEACHING EXPERIENCE**

Teaching Assistant, The Pennsylvania State University

Spring 2020 & 2021	ECON 510 (Econometrics)	Graduate
Fall 2019 & 2020	ECON 306 (Introduction to Econometrics)	Undergraduate
Spring 2019	ECON 483 (Forecasting)	Undergraduate
Fall 2017 & 2018	ECON 465 (Cross Sectional Econometrics)	Undergraduate
Spring 2018	ECON 402 (Strategy)	Undergraduate
Fall 2016 & Spring 2017	ECON 106 (Statistical Foundations for Econometrics)	Undergraduate

#### REFERENCES

Keisuke Hirano Department of Economics The Pennsylvania State University (814) 867-3312 kuh237@psu.edu Sung Jae Jun Department of Economics The Pennsylvania State University (814) 865-6149 suj14@psu.edu Joris Pinkse Department of Economics The Pennsylvania State University (814) 933-2194 joris@psu.edu