

## Masayuki Sawada

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**Fields of Concentration:**

Econometrics (Primary field)  
Applied Microeconometrics, Labor Economics (Secondary fields)

**Desired Teaching:**

Econometrics  
Labor Economics

**Comprehensive Examinations Completed:**

2015 (Oral): Econometrics, Labor Economics  
2014 (Written): Microeconomics, Macroeconomics

**Dissertation Title:** *Essays in Theoretical and Applied Econometrics*

**Committee:**

Professor Edward Vytlačil (Chair)  
Professor Yuichi Kitamura  
Professor Yusuke Narita

**Expected Completion Date:** May 2019

**Degrees:**

Ph.D., Economics, Yale University, 2019 (expected)  
M.Phil., Economics, Yale University, 2016  
M.A., Economics, Yale University, 2016  
M.A., Economics, University of Tokyo, 2013  
B.A., Economics, Sophia University, 2011

**Fellowships, Honors, Awards and Research Grants:**

University Dissertation Fellowship, 2018- ,Yale University  
Teaching Fellowship, 2015-2018, Yale University  
L. E. Whiton Jackson (Class of 1946) Memorial Scholarship, 2016-2017, Yale University  
Cowles Foundation Fellowship, 2013-2017, Yale University  
University Fellowship, 2013-2015, Yale University  
Funai Overseas Fellowship, 2013-2015, the Funai Foundation of Information Technology  
Research Fellowship for Young Scientists DC1, 2013, JSPS, Japan.  
Research Grant, 2009, Department of Economics, Sophia University.  
Sophia Type I Scholarships, 2008, Sophia University.

**Teaching Experience:**

*As a Teaching Assistant:*

Econometrics (IDE), 2017, Yale University, instructor: Prof. Michael Booser  
Labor Economics, 2017, Yale University, instructor: Prof. Ilse Lindenlaub  
Econometrics and Data Analysis I, 2016, Yale University, instructor: Prof. Edward Vytlačil  
Econometrics, 2016, Yale University, instructor: Prof. Yuichi Kitamura  
Econometrics and Data Analysis I, 2015, Yale University, instructor: Prof. Douglas McKee  
Mathematics for Economics, 2012, International Christian University, instructor: Prof.

Akira Ogawa

Development Economics, 2012, University of Tokyo, instructor: Prof. Yasuyuki Sawada  
Game Theory, 2011, International Christian University, instructor: Prof. Akira Ogawa

**Research and Work Experience:**

Research Assistant for Prof. Edward Vytlačil, from May 2016  
Research Assistant for Prof. Costas Arkolakis, from August 2014 to April 2016  
Research Assistant for Prof. Yasuyuki Sawada from April 2012 to July 2013

**Working Papers:**

[“Identification and Inference of Post-Treatment Subgroup Effects”](#) (2018), *Job Market Paper*  
[“Privatization and Productivity in China”](#) with Yuyu Chen, Mitsuru Igami and Mo Xiao, (2018), *SSRN Working Paper*.

**Work in Progress:**

“*Empirical welfare maximization with subjective treatment surplus*” with Kohei Yata  
“*Competition and the Prolonged Duration of Postdoctoral Training in Life Sciences*” with Donghyuk Kim and Yin Jia Jeff Qiu

**Seminar and Conference Presentations:**

Presentation, 2018 and 2016, Kyoto Summer Workshop on Applied Economics  
Poster Session, 2013, Japanese Economic Association Spring Meeting

**Languages:** Japanese (native), English (fluent)

### References:

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### Dissertation Abstract

#### **Chapter 1: Identification of Post-Treatment Subgroup Effects [Job Market Paper Part#1]**

This paper considers the identification of heterogeneous treatment effects in a randomized experiment. I show identification of treatment effect heterogeneity across subgroups defined by endogenous post-assignment decisions. Unlike existing approaches, the identification does not rely on instruments or specific experimental designs such as selective trials. Instead, I exploit a proxy variable from a baseline survey conducted before the experiment. The baseline version of the outcome of interest may be the proxy. A key requirement is that the proxy outcome is similar to the control outcome in the sense that the underlying rankings of the two outcomes across individuals are identically distributed conditional on the endogenous decisions.

The most important application of this general strategy is to a randomized assignment of access to treatment where those assigned access need not take up the treatment. Consider the special case where the treatment is only available to those assigned access. As the treatment may be taken only by the treatment group, the primary parameter of interest is the average treatment effect on treated (ATT), which is the average treatment effect conditional on the subgroup of the treatment units taking up the treatment. In such a setting, the randomization does not directly reveal the ATT unless we assume that treatment access has no direct impact on the outcome. Access to treatment may have a direct effect on outcomes if access changes behavior beyond the choice to obtain the treatment. Consider an example of a microcredit experiment. In this experiment, randomly selected villages receive access and promotion to the treatment of borrowing from the microfinance. The access to the microcredit affects the small business outcomes of non-borrowers as the access may encourage villagers to start or continue small businesses in expectation for future lending opportunities. Since the access to the microcredit is assigned to a village, there can be equilibrium effects as the access may affect interest rates for local informal lending and sales prices within the

village economy. Such an assignment structure may also generate peer effects through transfers among friends or relatives. Without an assumption of no direct effect, random assignment to access is not a valid instrumental variable for treatment; consequently, the conventional ATT estimate using the random assignment as an instrument is biased. I demonstrate that the degree of bias can be enormous when the take-up probability is relatively small, as the bias takes the form of the direct effect times the probability of no take-up divided by the probability of take-up. I show that the additional proxy variable allows identification of the ATT even when access to treatment has a direct effect on outcomes. I also show identification of the direct effect of the treatment assignment itself.

### **Chapter 2: Inference on Post-Treatment Subgroup Effects, with an Application to a Microcredit Experiment. [Job Market Paper Part #2]**

In this chapter I propose an estimation procedure for the counterfactual subgroup effect introduced in Chapter 1, exploiting the weak convergence results for semi-parametric distribution regression established by Chernozhukov, Fernández-Val, and Melly (2013). The counterfactual distribution of interest is a known Hadamard differentiable mapping of observable conditional distribution functions, allowing estimation by substituting the semi-parametric estimates of conditional distribution functions. I show that the weak convergence of the empirical process of the counterfactual distribution function to a tight zero-mean Gaussian process through the functional delta method. I propose an inference procedure for the subgroup mean effect as well as a uniformly robust inference for the subgroup quantile difference based on an exchangeable bootstrap. Adopting the latest result on the cluster-robust weak convergence by Davezies, D'Haultfoeuille, and Guyonvarch (2018), I show that the proposed procedure is robust to clustered sampling.

I apply the proposed estimator to a microcredit experiment in Morocco conducted by Crépon, Devoto, Duflo, and Parienté (2015). For the control outcome of the sales value of production outputs, I use the same output measure observed in the baseline survey. The treatment of microcredit access was randomly given to treatment villages, whereas access was wholly forbidden to control villages. As the original authors argue, the direct effect of access to microcredit services is a credible threat to the identification of the ATT based on an IV strategy using treatment access as an instrument. Using my estimator, I find a strong positive ATT and a relatively small (and insignificant) positive direct effect. Although the small magnitude of the direct effect is consistent with the findings of the original authors, I find that the size of the IV estimate obtained under the assumption of no direct effect is 2.3 times larger than my estimate. Thus, here the small magnitude of the direct effect results in substantial bias in the estimated ATT.

### **Chapter 3: Privatization and Productivity in China, with Yuyu Chen, Mitsuru Igami and Mo Xiao**

We study how changes in ownership affect the productivity of firms. Privatization of state-owned enterprises (SOEs) was a major economic reform during China's rapid growth, but its true impact remains controversial. Although private firms seem more productive than SOEs, the government selectively privatized (or liquidated) non-performing SOEs, which complicates the measurement of productivity. We address this selection problem by incorporating endogenous ownership change into a nonparametric estimation method and exploiting a lag structure in data. For that purpose, we adopt the procedure by Gandhi, Navarro, and Rivers (2017) to incorporate the discrete nature

of the ownership type as an endogenous input to the production function. Our results suggest that privatization conferred both short-run and long-run productivity gains. We also find that the private-SOE productivity gap is larger among older firms and in less economically liberal regions.