

Sang Soo Park
Curriculum Vitae

Department of Economics
Vanderbilt University
VU Box 351819, Station B
2301 Vanderbilt Place
Nashville, Tennessee 37235-1819
Department Phone: (615) 322-2871
Department Fax: (615) 343-8495

Office: Calhoun Hall 413C
Phone: (615) 322-2411
Cell: (615) 498-2808
esesp.park@vanderbilt.edu
<http://people.vanderbilt.edu/~sang.s.park>

Current Position

Graduate Student, Department of Economics, Vanderbilt University, 2004 - present

Previous Positions

Evaluation and Analysis Officer, Korean Army, 2001-2003

Full-time Lecturer, Department of Economics and Management, Korea Military Academy, 1994-1997

Lecturer, Department of Economics and Management, Korea Military Academy, 1993-1994

Education

Ph.D. in Economics, Vanderbilt University, (Degree Expected: May 2008)

Dissertation: "Inference on Partially Identified Parameters – With Applications to the Evaluation of Heterogeneous Treatment Effects"

Advisor: Yanqin Fan

M.A. in Economics, Korea University, Seoul, Korea, 1993

Dissertation: "On the Choice of Functional Forms in Estimation - With an Application to Gross Production Function of Korea" (in Korean)

Advisor: Sang-Kyung Kwak

B.S. in Physics, Korea Military Academy, Seoul, Korea, 1989

Fields of Specialization and Research Interests

Partially Identified Econometric Models

Evaluation of Treatment Effects

Economic Growth and Development

Theory of Income Distributions

Teaching Fields

Primary Fields: Economic Statistics, Microeconometrics, Nonparametric/semiparametric Econometrics,

Secondary Fields: Mathematical Economics, Time Series Econometrics, Microeconomics, Growth and Development, Theory of Income Distributions

Working Papers and Current Research (Abstract Included)

“Confidence Sets for Some Partially Identified Parameters” (with Yanqin Fan), **Job Market Paper**, Submitted to *Econometrica*, 2007

Abstract: In this paper, we re-visit the inference problem for interval identified parameters originally studied in Imbens and Manski (2004) and later extended in Stoye (2007). We establish a new confidence interval that is asymptotically valid under the same assumptions as in Stoye (2007). Like the confidence interval of Stoye (2007), our new confidence interval extends that of Imbens and Manski (2004) to allow for the lack of a super-efficient estimator of the length of the identified interval. In addition, it shares the natural nesting property of the original confidence interval of Imbens and Manski (2004). A simulation study is conducted to examine the finite sample performance of our new confidence interval and that of Stoye (2007). Finally we extend our confidence interval for interval identified parameters to parameters defined by moment equalities/inequalities.

“Sharp Bounds on the Distribution of Treatment Effects and their Statistical Inference” (with Yanqin Fan), Submitted to *Econometric Theory*, 2007

Abstract: In this paper, we propose nonparametric estimators of sharp bounds on the distribution of the treatment effect of a binary treatment and establish their asymptotic distributions. We note the possible failure of the standard bootstrap with the same sample size and apply the ‘fewer-than-n bootstrap’ to making inferences on these bounds. The finite sample performances of the proposed estimators and confidence intervals for the bounds based on normal critical values, the standard bootstrap, and the fewer-than-n bootstrap are investigated via a simulation study. Finally we establish sharp bounds on the treatment effect distribution when covariates are available.

“Inference on Sharp Bounds on the Quantile of Treatment Effects” (with Yanqin Fan), in progress

Abstract: In this paper, we develop a general approach to the study of heterogeneous treatment effects via the quantile function of the treatment effect. We focus on randomized experiments for which the available sample information suffices to identify the marginal quantile of each potential outcome, but not the quantile of the treatment effects. Instead of imposing empirically non-refutable assumptions on the dependence between the two potential outcomes as in the quantile treatment effects to identify the quantile of the treatment effect, we take the bounding approach. This paper makes several contributions to the treatment effect literature. First, we provide nonparametric estimators of the quantile bounds and establish their asymptotic properties. Secondly, this paper proposes a new technique for constructing confidence intervals for these bounds. While the standard approach to constructing confidence intervals via the first order asymptotics requires the estimation of the unknown density functions, our new technique avoids nonparametric density estimation and is easy to implement. Extensive simulation results provide strong evidence on the superiority of the new approach. Finally and most importantly, we provide confidence intervals for the true quantile of the treatment effect using the approach we developed (Fan and Park 2007c).

“Confidence Intervals for the Distribution of Treatment Effects,” in progress

Abstract: Given the increasing evidences on the heterogeneous treatment effects the bounding approach of the distribution of treatment effects becomes appealing more and more (Fan and Park 2007a). In addition, recent development in the inference on the partially identified parameters, Fan and Park (2007c) and Andrews and Soares (2007) among others, makes it possible to find the confidence set for the partially identified parameters whose size is asymptotically exact. However, the existing approaches including Fan and Park (2007c) and Andrews and Soares (2007) are not directly applicable when the partially identified parameter is the distribution of treatment effects because the limiting distribution of the estimator of the lower and upper bounds of the distribution of treatment effects is not even continuous in the model parameters. So, the construction of confidence intervals when the partially identified parameters are the distribution of treatment effects

remains unsolved. In this paper, I developed a method to extend the approach of Fan and Park (2007c) to the case of the distribution of treatment effects from a randomized treatment where the asymptotic distribution of the estimator of bounds suffers from the lack of continuity.

“Heterogeneous Effects of Class Size Reduction: Re-Visiting Project STAR,” in progress

Abstract: Beginning with the seminal work of Manski (1990), there has been a growing literature on statistical inference on partially identifiable parameters, including the distribution and quantile of the heterogeneous treatment effect. Unlike the conventional approach that focuses mainly on the average treatment effect, this approach allows researchers to move their understanding beyond the ATE toward identification of the bounds on the treatment effect distribution. This paper presents new results on the identification and inference on the distribution and quantile of a binary treatment and applies them to re-examine the treatment effect in Project STAR. Project STAR, conducted by Tennessee State Department of Education in 1985-1988, is a large-scale, randomized experiment designed to investigate the effect of class size reduction on student performance. Although several papers have examined the positive effects of class size reduction, almost all the existing literature considers the ATE only, abstracting away from the possibility of heterogeneous treatment effects. The empirical results of this paper show the advantage of the new approach over the conventional ATE approach.

“The Mixing Problem in Program Evaluation: Inference,” in progress

Abstract: In a randomized experiment, the interpretation of the outcome from a policy intervention depends on the ‘treatment share’, say, what fraction of the sample population will comply with the intervention. Although it is impossible to identify the outcomes without information on the treatment share, we can partially identify the distribution of outcomes. This is known as the ‘mixing problem’ (Manski 1997, 2003). The inference on the partially identified distribution of outcomes is similar to the inference on the partially identified parameters but suffers from the lack of continuity of the limiting distribution of the estimators for bounds. Park (2007a) discusses this problem in the inference on the distribution of treatment effects. I apply Park (2007a)’s approach to the mixing problem context to provide a uniformly asymptotically valid confidence interval for the distribution of outcomes.

Publications

“A Study on the Development of Models for the Optimal Requirement Level of the CSP” (with Kyu Heon Lee, in Korean), *Journal of Military Operational Research*, vol 23, pp 63-75, 1997

“Social Optimality of Environmentally Motivated Taxes,” (with Seung Jun Kwak, in Korean), *Resource and Environmental Economics Study*, vol. 5, pp 25-38, 1996

“A Study on Dynamic Effects of Defense Expenditures on the Korean Economy with an Error Correction Model” (with Young Lak Ahn, in Korean), *Journal of National Defense*, 1996-winter, pp86-103, 1996

“A Study on Optimal Defense Expenditure” (with Young Lak Ahn, in Korean), *Korea Military Academy Journal*, 1994

Conference Presentations

“A Study on Two-Dimensional Inequality Indices,” Graduate School of Vanderbilt University, April 2006

“Sharp Bounds on the Distribution of the Treatment Effects and their Statistical Inference,” Department of Economics, Vanderbilt University, 2007

- “Effect of Class Size Reduction: Re-Examination of Project STAR,” Graduate School of Vanderbilt University, April 2007
- “Confidence Sets for Some Partially Identified Parameters,” Canadian Econometrics Study Group, September 2007
- “Sharp Bounds on the Distribution of Treatment Effects and their Statistical Inference,” Midwest Econometric Group, October 2007
- “Confidence Sets for Some Partially Identified Parameters,” Departmental Seminar, Department of Economics, Vanderbilt University, November 2007
- “Effect of Class Size Reduction: Re-Examination of Project STAR,” Southern Economics Association Meeting, November 2007

Referee Reports

- 2005 Economic Bulletin (1), *Econometrica* (1)
- 2006 The American Economic Review (1), The Journal of Nonparametric Statistics (1)

Honors and Awards

- Graduate Student Travel Grant, Vanderbilt University, 2007
- The Noel Dissertation Fellowship, Vanderbilt University, 2007
- Scholarship for Prospect Professors of the Korean Military Academy, Korean Army, 1991-1993

Teaching Experiences

- Economic Statistics (Instructor): Summer 2005, Fall 2006 (Department of Economics, Vanderbilt University)
- Math Camp (Co-Instructor): Summer 2007 (Department of Political Science, Vanderbilt University)
- Principles of Economics/Managerial Science (Instructor): 1993-1997 (Department of Economics and Management, Korea Military Academy)
- Teaching Assistant*: 2004 – 2007 (Department of Economics, Vanderbilt University)
For Professors Andrew Daughety (Graduate Microeconomics), Yanqin Fan (Undergraduate Econometrics), Andrea Maneski (History of Economic Thought)

Research Experiences

- Research Assistant* for Yanqin Fan, Summer 2005, 2006
- Researcher*, Project on “The Estimation of Optimal Requirement for Concurrent Spare Parts (CSP)”, Hwarangdae Research Institution (attached to Korea Military Academy), 1996
- Researcher*, Project on “The Dynamics of Defense Expenditure in Korea” Hwarangdae Research Institution (attached to Korea Military Academy), 1995

Service

- Council of Economics Graduate Students (CEGS), Vanderbilt University, 2006-2007
- Representative of CEGS in Graduate Students Council (GSC), Vanderbilt University, 2006-2007
- Member of Academic Affairs Committee in GSC, Vanderbilt University, 2006-2007

Memberships

The Econometric Society, Southern Economics Association

Visa Status

F-1

References

Yanqin Fan

Department of Economics
Vanderbilt University
VU Box 351819, Station B
2301 Vanderbilt Place
Nashville, Tennessee 37235-1819
Department Phone: (615) 322-2871
Department Fax: (615) 343-8495
<http://sitemason.vanderbilt.edu/econ/fan>

James Foster

Department of Economics
Vanderbilt University
VU Box 351819, Station B
2301 Vanderbilt Place
Nashville, Tennessee 37235-1819
Department Phone: (615) 322-2871
Department Fax: (615) 343-8495
<http://sitemason.vanderbilt.edu/econ/foster>

Tong Li

Department of Economics
Vanderbilt University
VU Box 351819, Station B
2301 Vanderbilt Place
Nashville, Tennessee 37235-1819
Department Phone: (615) 322-2871
Department Fax: (615) 343-8495
<http://sitemason.vanderbilt.edu/econ/li>

Bryan Shepherd

Department of Biostatistics
Vanderbilt University School of Medicine
S-2323 Medical Center North
Nashville, TN 37232-2158
Department Phone: (615) 322-2001
Department Fax: (615) 343-4924
<http://biostat.mc.vanderbilt.edu/wiki/bin/view/Main/BryanShepherd>