

## Wei Song

### ADDRESS

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Updated: November 5, 2016

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EDUCATION	<b>Ph.D.</b> in Economics, University of Wisconsin-Madison Dissertation: <i>“Essays on Discrete Choice Models”</i>	(Expected) 2017
	<b>M.S.</b> in Economics, University of Wisconsin-Madison	2013
	<b>M.A.</b> in Economics, CCER, Peking University, China	2011
	<b>B.S.</b> in Physics with Finance Minor, Nankai University, China	2008

RESEARCH INTERESTS  
**Primary:** Econometrics  
**Secondary:** Applied Microeconomics

RESEARCH PAPERS  
**Job Market Paper:**  
“Least Square Estimation of Semiparametric Binary Response Model with Endogeneity”.  
**Abstract:** In this paper we develop new results on identification and estimation of semiparametric binary response model with an endogenous explanatory variable. The identification is achieved based on a control variable approach. We also propose a semiparametric estimator, and show that it is  $\sqrt{n}$ -consistent and asymptotically normal. The estimation is based on a nonlinear least square criterion, which we show is equivalent to an integrated maximum score criterion. In the literature, a semiparametrically efficient estimator for the binary response model with endogeneity is not yet available, and neither our least square estimator nor the existing maximum likelihood estimator (Rothe, 2009) dominates the other. Therefore, we provide a model averaging estimator, which combines and dominates both the least square estimator and the maximum likelihood estimator. Monte Carlo simulation shows that the performance of our estimator is consistent with our theory in finite samples. Finally, we apply our estimator to the study of the causal effect of economic conditions on civil conflicts as in Miguel et al. (2004). In their paper, they use two-stage least square to estimate the effect of economic conditions on civil conflicts. We re-estimate their model using our semiparametric least square estimator.

### Working Papers:

“Estimating Semiparametric Panel Multinomial Choice Models using Cyclic Monotonicity”. (with Xiaoxia Shi and Matthew Shum) *R&R at Econometrica*.

**Abstract:** This paper proposes a new semi-parametric identification and estimation approach to multinomial choice models in a panel data setting with individual fixed effects. Our approach is based on cyclic monotonicity, which is a defining feature of the random utility framework underlying multinomial choice models. From the cyclic monotonicity property, we derive identifying inequalities without requiring any shape restrictions for the distribution of the random utility shocks. These inequalities point identify model parameters under straightforward assumptions on the covariates. We propose a consistent estimator based on these inequalities.

“A Semiparametric Estimator for Binary Response Models with Endogenous Regressors”.

**Abstract:** This paper proposes a new semiparametric estimator for the binary response model with endogenous explanatory variables. We assume a triangular structure and use the control variable approach to account for endogeneity. In order to identify the model, we construct a control variable and assume the error is quantile independent of the covariates given the control variable for a given quantile. This quantile independence assumption compared to the statistical independence is rather flexible in that it admits heteroskedasticity. The semiparametric series estimator in this paper is an extension of Khan (2013) with control variable. It can estimate both the coefficients and the error distribution, and we prove this estimator is consistent and derive its convergence rate. In the Monte Carlo experiment, our estimator in general has smaller bias and standard deviation in comparison with the parametric two-stage Probit estimator for the binary response model with continuous endogenous regressors.

SCHOLARSHIPS AND AWARDS	Graduate School Conference Presentation Fund, UW-Madison	2016
	Two-Year University Fellowship, UW-Madison	2016, 2011
	Vilas Welcome Award, UW-Madison	2011
	Graduate Scholarship, Peking University	2008-2011
	Outstanding Student Scholarship, Nankai University	2005-2007
TEACHING EXPERIENCE	Teaching Assistant, University of Wisconsin-Madison	
	Introductory Econometrics	Fall 2015
	Statistics: Measurement in Economics	Spring 2013
	Principles of Microeconomics	Fall 2012
RESEARCH EXPERIENCE	Project Assistant for Bruce Hansen	Spring 2016
	Project Assistant for Ananth Seshadri	Summer 2014
	Project Assistant for Xiaoxia Shi	2013-2015
PRESENTATIONS	Annual Meeting of the Midwest Econometrics Group	October 2016
	UW-Madison Econometrics Workshop	October 2016
	China Meeting of the Econometric Society	June 2016
	UW-Madison Econometrics Lunch	April 2016
SKILLS	<b>Computer:</b> Matlab, R, Stata, C/C++, Java <b>Languages:</b> Chinese (native); English (fluent)	
REFERENCES	<u>Xiaoxia Shi (Main Advisor)</u> Assistant Professor of Economics <i>University of Wisconsin-Madison</i> Phone: (608) 262-8910 <i>email: xshi@ssc.wisc.edu</i>	<u>Bruce Hansen</u> Professor of Economics <i>University of Wisconsin-Madison</i> Phone: (608) 263-3880 <i>email: bruce.hansen@wisc.edu</i>
	<u>Jack Porter</u> Professor of Economics <i>University of Wisconsin-Madison</i> Phone: (608) 263-3870 <i>email: jrporter@ssc.wisc.edu</i>	<u>Elizabeth Kelly (Teaching)</u> Faculty Associate of Economics <i>University of Wisconsin-Madison</i> Phone: (608) 262-8829 <i>email: eskelly@wisc.edu</i>