

Minsu Chang

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Education

University of Pennsylvania (Penn)

Ph.D., Economics, degree expected May 2019.

Fields: Bayesian econometrics, Household finance, Computational economics

M.A., Economics, May 2016.

Seoul National Univeristy (SNU)

M.A., Economics, Aug 2013.

B.A., *Summa Cum Laude*, Economics, Aug 2011.

Publications

“A Generalized Focused Information Criterion for GMM with Applications to Panel Data Models,” *Journal of Applied Econometrics*, 2018, 33 (3), pp. 378-397 (with Francis J. DiTraglia)

“Nonparametric Tests of Conditional Treatment Effects with an Application to Single-Sex Schooling on Academic Achievements,” *The Econometrics Journal*, 2015, 18 (3), pp.307-346 (with Sokbae S. Lee and Yoon-Jae Whang)

Working papers

“Marriage, Home Ownership and Portfolio Share” (Job Market Paper)
— *Abstract coming soon!*

“Does Heterogeneity Matter for Aggregate Fluctuations?”

(with Xiaohong Chen and Frank Schorfheide)

We specify a vector autoregressive model that stacks macroeconomic aggregates and cross-sectional distributions to provide semi-structural evidence about the interaction of aggregate and distributional dynamics. The specification of our functional VAR is motivated by a linearization of a reduced-form model where dynamics of aggregates and a function of lagged cross-sectional distribution of individual-level decisions or states, and the units (households or firms) base their decisions on lagged macroeconomic aggregates and cross-sectional distributions. To make the functional VAR analysis tractable, we approximate the log-densities of the cross-sectional distributions as well as the transition kernels in the functional VARs by sieves. We apply our techniques to study the dynamics of technology shocks, per capita GDP, employment, and the earnings distribution.

**“Lifting the Curse of Dimensionality With a Mixture Approximation:
Feasible Multivariate Density Estimation”** (with Paul Sangrey)

The curse of dimensionality makes multivariate nonparametric density estimation infeasible with more than a few series. We provide Bayesian nonparametric density estimators whose complexity is independent of the number of series by exploiting the concentration of probability measures in high dimensions. We study Gaussian hidden Markov processes providing a mixture representation where the number of components grows logarithmically with the time dimension T . We consider an asymptotic experiment where the time series dimension T grows and the number of series is fixed. Our marginal density estimator contracts at a rate $\sqrt{\log(T)}/\sqrt{T}$, and our transition density estimator contracts at a rate $\log(T)/\sqrt{T}$. We provide a computationally efficient Bayesian estimator using Dirichlet processes and apply it to two empirical examples.

**Work
in progress**

**“Estimating Heterogeneous Agent Models: A Likelihood Approach
with Particle Filter”**

Heterogeneous agent macroeconomic models have mostly relied on calibration, which cannot make testable statements regarding parameter uncertainty and its statistical significance. This paper suggests how to estimate a heterogeneous agent model similar to Krusell and Smith (1998) with Bayesian particle filtering.

**Teaching
experience**

Instructor, PIER Workshop on Quantitative Tools for Macroeconomics, Penn, 2018
Instructor, Statistics for Economists (Undergraduate), Penn, Summer 2017
Instructor, PIER Workshop on Quantitative Tools for Macroeconomics, Penn, 2017
Teaching Assistant, Econometrics I (Ph.D.), Penn, Fall 2014/Fall 2015
Teaching Assistant, Econometrics (Undergraduate), Penn, Spring 2015
Teaching Assistant, Econometrics (Undergraduate), SNU, Fall 2011/Spring 2012

**Other
experience**

Dissertation Fellow, Federal Reserve Bank of Richmond, Summer 2016
Research Assistant to Professor Frank Schorfheide (Penn), Jan 2016 - Present
Research Assistant to Professor Frank Schorfheide (Penn), July 2015 - Aug 2015
Research Assistant to Professor Yoon-Jae Whang (SNU), Aug 2011 - Aug 2013

**Awards and
fellowships**

Maloof Family Dissertation Fellowship, University of Pennsylvania, 2017-2018
University Fellowship, University of Pennsylvania, 2013-2014
Kwanjeong Educational Foundation Scholarship, 2013-2017
BK21 Scholarship, National Research Foundation of Korea, 2011-2012
Graduate of Highest Honor, Seoul National University, Aug 2011

Referee

International Economic Review

**Languages
and skills**

English (fluent), Korean (native), French (reading knowledge)
Julia, MATLAB, Python, R (Rcpp), Stata, L^AT_EX