

MINSU CHANG
www.minsuchang.com
minsuc@sas.upenn.edu

UNIVERSITY OF PENNSYLVANIA

Placement Director: Guillermo Ordonez	ORDONEZ@ECON.UPENN.EDU	215-898-1875
Placement Director: Andrew Postlewaite	APOSTLEW@ECON.UPENN.EDU	215-898-7350
Graduate Student Coordinator: Gina Conway	GNC @ SAS.UPENN.EDU	215-898-5691

Office Contact Information:

The Ronald O. Perelman Center for
Political Science and Economics (PCPSE), Room 526
133 South 36th Street
Philadelphia, PA 19104
Phone Number: 215-586-1319

Personal Information: Female, South Korea (F-1 Visa)

Undergraduate Studies:

B.A., Economics, Seoul National University, *Summa Cum Laude*, 2011

Master Level Work:

M.A., Economics, Seoul National University, 2013

Graduate Studies:

University of Pennsylvania, 2013 to present

Thesis Title: “Essays on Heterogeneity in Macroeconomics”

Expected Completion Date: May 2019

Thesis Committee and References:

Professor Jesús Fernández-Villaverde (Co-advisor)
University of Pennsylvania (PCPSE)
133 South 36th Street, Room 521
Philadelphia, PA, 19104
Phone: +1 (215) 898-1504
Email: jesusfv@econ.upenn.edu

Professor Frank Schorfheide (Co-advisor)
University of Pennsylvania (PCPSE)
133 South 36th street, Room 621
Philadelphia, PA, 19104
Phone: +1 (215) 898-8486
Email: schorf@econ.upenn.edu

Professor Francis J. DiTraglia
University of Pennsylvania (PCPSE)
133 South 36th street, Room 630
Philadelphia, PA, 19104
Phone: +1 (215) 898-1506
Email: fditra@econ.upenn.edu

Professor Dirk Krueger
University of Pennsylvania (PCPSE)
133 South 36th street, Room 520
Philadelphia, PA, 19104
Phone: +1 (215) 573-1424
Email: dkrueger@econ.upenn.edu

Teaching and Research Fields:

Macroeconomics, Econometrics

Teaching Experience:

Spring 2018, 2017

PIER Workshop on Quantitative Tools for Macroeconomics, University of Pennsylvania, *Lab Instructor*

Summer 2017	Statistics for Economists (Undergraduate), University of Pennsylvania, <i>Instructor</i>
Fall 2015, 2014	Econometrics I (Graduate), University of Pennsylvania, <i>Teaching Assistant</i> for Professor Frank Schorfheide and Professor Xu Cheng
Spring 2015	Econometrics (Undergraduate), University of Pennsylvania, <i>Teaching Assistant</i> for Professor Frank Diebold
Spring 2012, Fall 2011	Econometrics (Undergraduate), Seoul National University, <i>Teaching Assistant</i> for Professor Yoon-Jae Whang

Research Experience and Other Employment:

2016-Present	Research Assistant for Professor Frank Schorfheide
Summer 2016	Dissertation Fellow, Federal Reserve Bank of Richmond
2011-Summer 2013	Research Assistant for Professor Yoon-Jae Whang

Professional Activities:

Presentations:	MFM Summer Session for Young Scholars (Poster Session), Cape Cod, 2018 NBER-NSF SBIES, Stanford University, 2018
Referee:	International Economic Review

Honors, Scholarships, and Fellowships:

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

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 Econometric Journal*, 2015, 18(3), pp.307-346
(with Sokbae S. Lee and Yoon-Jae Whang)

Research Papers:

“House Without a Ring: The Role of Changing Marital Transitions for Housing Decisions”
(Job Market Paper)

This paper shows that the evolving likelihood of marriage and divorce is an essential factor in accounting for the changes in housing decisions over time in the United States. To quantify the importance of this channel, I build a life-cycle model of single and married households who face exogenous age-dependent marital transition shocks. I then estimate the parameters of the model by a limited information Bayesian method to match the moments from 1995’s cross-section data. I conduct a decomposition analysis between 1970 and 1995, two years with similar real house prices but substantially different probabilities of marital transitions. The change in the likelihood of marital transitions explains 29% of the observed increase in the homeownership rate of singles. This fraction is quite substantial given that the changes in downpayment requirement, earnings risk and spousal labor productivity jointly replicate 45% of the change. When the change in marital transitions is shut down, the married's housing asset share increases which is opposite of the data’s pattern. Then I extend the scope of my analysis to the recent boom-bust episode characterized by dramatically

changing house prices. In contrast to other factors such as credit constraints, wage, and beliefs on price appreciation which induce an increase in homeownership during the boom, the change in the likelihood of marriage and divorce puts downward pressure on the married's homeownership rate, which helps to replicate the recent trend in decreasing homeownership of the married.

“Heterogeneity and Aggregate Fluctuations”

(with Xiaohong Chen and Frank Schorfheide)

We develop a state-space model with a state-transition equation that takes the form of a functional vector autoregression and stacks macroeconomic aggregates and a cross-sectional density. The measurement equation captures the error in estimating log densities from repeated cross-sectional samples. The log densities and the transition kernels in the law of motion of the states are approximated by sieves, which leads to a finite-dimensional representation in terms of macroeconomic aggregates and sieve coefficients. We use this model to study the joint dynamics of technology shocks, per capita GDP, employment rates, and the earnings distribution. We find that the estimated spillovers between aggregate and distributional dynamics are generally small, a positive technology shocks tends to increase the fraction of individuals earning less than the labor share of per capita GDP, and shocks that raise the inequality of earnings have ambiguous effects on per-capita GDP.

“Bypassing the Curse of Dimensionality: Feasible Multivariate Density Estimation”

(with Paul Sangrey)

Most economic data are multivariate and so estimating multivariate densities is a classic problem in the literature. However, given vector-valued data — $\{x_t\}_{t=1}^T$ — the *curse of dimensionality* makes nonparametrically estimating the data's density infeasible if the number of series D is large. Hence, we do not seek to provide estimators that perform well all of the time (it is impossible), but rather seek to provide estimators that perform well most of the time. We adapt the ideas in the Bayesian compression literature to this environment by randomly binning the data. The binning randomly determines both the number of bins and which observation is placed in which bin. This novel procedure induces a simple mixture representation for the data's density. For any finite number of periods T , the number of mixture components used is random. We construct a bound for this variable as a function of T that holds with high probability. We adopt the nonparametric Bayesian framework and construct a computationally efficient density estimator using Dirichlet processes. Since the number of mixture components is the key determinant of our model's complexity, our estimator's convergence rates — $\sqrt{\log(T)}/\sqrt{T}$ in the unconditional case and $\log(T)/\sqrt{T}$ in the conditional case — depends on D only through the constant term. We then analyze our estimator's performance in a monthly macroeconomic panel and a daily financial panel. Our procedure performs well in capturing the data's stylized features such as time-varying volatility and fat-tails.

Research Paper 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 illustrates how to estimate a heterogeneous agent model similar to Krusell and Smith (1998) with Bayesian particle filtering.

Languages: English (fluent), Korean (native), French (basic)

Computational Skills: Julia, MATLAB, Python, R (Rcpp), Stata, Eviews

Software: [cdpm](#) (Python package to provide estimators in “Bypassing the Curse of Dimensionality: Feasible Multivariate Density Estimation” paper)