

Sangmyung Ha

Department of Economics, Indiana University Bloomington
ha1@iu.edu | sangmyung3.github.io

Education

Indiana University Bloomington

Ph.D. in Economics

Dissertation committee: Joon Y. Park and Yoosoon Chang (co-chairs), Keli Xu, and Ruli Xiao.

Expected completion: May 2027

Bloomington, IN

August 2020–present

Sungkyunkwan University

B.A. in Economics

Seoul, Korea

March 2012–August 2019

References

Professor Joon Y. Park

Economics Department, Indiana University
joon@iu.edu

Professor Yoosoon Chang

Economics Department, Indiana University
yoosoon@iu.edu

Professor Keli Xu

Economics Department, Indiana University
kelixu@iu.edu

Professor Ruli Xiao

Economics Department, Indiana University
rulixiao@iu.edu

Research Fields

Econometrics; Large-Dimensional Data Analysis; Machine Learning; Functional Data Analysis

Working Papers

Estimating Heterogeneous Teacher Effects with Grouped Three-Way Interactive Fixed Effects

Job Market Paper

Paper

Develops a grouped three-way interactive fixed-effects model for teacher effectiveness that varies across student groups and years. Establishes consistency and asymptotic inference for joint least-squares estimation, characterizes incidental-parameter bias, and develops consistent selection of the number of interactive components. In matched student–teacher records, teacher–group matching accounts for approximately 27% of fitted relative-value-added variation under common reference weights.

A General Factor Model with Common Components Identified by Tensor Structure

With Yoosoon Chang and Joon Y. Park

Uses canonical polyadic tensor structure to identify factors and loadings up to scaling and permutation. Develops alternating least-squares estimation, consistency and asymptotic normality, and a factor-number test based on generalized singular values. An application to 19 countries examines common macroeconomic fluctuations and heterogeneous COVID responses.

Analysis of Global Yield Curve Using Functional Factor Model with Tensor Structure

With Yoosoon Chang and Joon Y. Park

Develops a functional factor model with tensor structure, procedures for estimating factors and their number, and consistency theory. An application to international yield curves identifies global level and slope movements, with curvature emerging for some countries.

Determining the Structure of Dynamic Factor Models

Paper

Develops alternating least-squares estimation of dynamic factors and procedures for jointly selecting their number and the loading-filter length without requiring an exact finite-order VAR specification. Also develops consistent factor-VAR lag-order selection under additional conditions, using a penalty that accounts for both panel dimensions. An application examines U.S. macroeconomic time series.

Work in Progress

Large-Dimensional Autocovariance Estimation and Network Connectedness

Factor-based estimation of large-dimensional autocovariance matrices, with an application to predictive connectedness of COVID-19 cases across U.S. states and counties.

Teaching Experience

Indiana University Bloomington

Associate Instructor – Full Teaching Responsibility

Statistical Analysis for Business and Economics (E370; undergraduate) Fall 2024

Econometrics II (M514/E472) Spring 2024

Master's and advanced undergraduate, co-listed

Teaching Assistant

Econometrics I (E571; graduate) Fall 2025, 2026

Econometrics II (E572; graduate) Spring 2026

Macroeconometrics (E672; graduate) Fall 2022, 2023, 2024, 2025

Econometrics III (E671; graduate) Fall 2023

Fundamentals of Economics for Business II (B252) Spring 2022, 2023

Fundamentals of Economics I (E251) Fall 2022

Fundamentals of Economics for Business I (B251) Fall 2021

Graduate Assistant

Fundamentals of Economics for Business I (B251) Spring 2021

Statistical Analysis for Business and Economics (E370) Fall 2020

Teaching notes and computational materials

Research Experience

Research Assistant, Indiana University Bloomington

Selected research projects:

Oil prices uncertainty, endogenous regime switching, and inflation anchoring

Yoosoon Chang, Ana María Herrera, and Elena Pesavento. *Journal of Applied Econometrics*, 38(6), 820–839, 2023.

Unraveling Dynamic Interactions of Economic Activity and Climate Change

Yoosoon Chang, J. Isaac Miller, and Joon Y. Park.

How Do Macroaggregates and Income Distribution Interact Dynamically? A Novel Structural Mixed Autoregression with Aggregate and Functional Variables

Yoosoon Chang, Soyoung Kim, and Joon Y. Park.

Oil and the Stock Market Revisited: A Mixed Functional VAR Approach

Hilde C. Bjørnland, Yoosoon Chang, and Jamie L. Cross. *Quantitative Economics*, 17(2), 541–589, 2026.

Fellowships, Honors, and Awards

Lloyd Orr Dissertation Fellowship	Fall 2024–Spring 2025
Class of 2020 Best Third Year Paper Award	2023
Department of Economics, Indiana University Bloomington	

Presentations

36th Midwest Econometrics Group Meeting	October 10, 2026
<i>University of Cincinnati. Estimating Heterogeneous Teacher Effects with Grouped Three-Way Interactive Fixed Effects.</i>	

35th Midwest Econometrics Group Meeting	October 4, 2025
<i>University of Illinois at Urbana-Champaign. Analyzing Global Economy using Tensor Factor Model, with Yoosoon Chang and Joon Y. Park.</i>	

Advances in Empirical and Theoretical Econometrics	August 16, 2025
<i>Sungkyunkwan University. Analysis of Global Yield Curve Using Functional Factor Model with Tensor Structure, with Yoosoon Chang and Joon Y. Park.</i>	

19th International Symposium on Econometric Theory and Applications	June 1–3, 2025
<i>University of Macau. Analysis of Global Yield Curve Using Functional Factor Model with Tensor Structure, with Yoosoon Chang and Joon Y. Park.</i>	

Workshop on Applied Econometrics and Data Analysis	December 2024
<i>City St George's, University of London. Analysis of Global Yield Curve Using Functional Factor Model with Tensor Structure, with Yoosoon Chang and Joon Y. Park.</i>	

34th Midwest Econometrics Group Meeting	November 1–2, 2024
<i>University of Kentucky. Analysis of Global Yield Curve Using Functional Factor Model with Tensor Structure, with Yoosoon Chang and Joon Y. Park.</i>	

18th International Symposium on Econometric Theory and Applications	May 29–30, 2024
<i>Academia Sinica. Estimation of Dynamic Factor Models in Time Domain.</i>	

33rd Midwest Econometrics Group Meeting	October 12–13, 2023
<i>Federal Reserve Bank of Cleveland. Estimation of Dynamic Factor Models in Time Domain.</i>	

Professional Service

Referee: *Journal of Business & Economic Statistics* (JBES)

Skills

Programming: MATLAB, Python, R, Julia

Languages: English (fluent), Korean (native)