Sung Hoon Choi

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EDUCATION

Ph.D. Candidate, Economics, Rutgers University	May 2021 (Expected)
M.A., Applied Statistics, Yonsei University	2016
B.A., Statistics, University of California at Berkeley	2013

RESEARCH INTERESTS

Econometrics, Machine Learning, Forecasting, Financial Economics
Concentration: high-dimensional data, large panel data and factor models

PUBLICATIONS

"Standard Errors for Panel Data Models with Unknown Clusters," with Jushan Bai and Yuan Liao, Accepted, *Journal of Econometrics*. [PDF]

JOB MARKET PAPER

"Feasible Weighted Projected Principal Component Analysis for Factor Models with an Application to Bond Risk Premia" [PDF]

Abstract: This paper considers factor models in which observed characteristics partially explain the latent factors. I propose a feasible weighted projected principal component (FPPC) analysis, which relies on a high-dimensional weight matrix. By using a consistent estimator of the inverse error covariance matrix as the weight matrix, we can take into account both cross-sectional dependence and heteroskedasticity. The rates of convergence for the FPPC estimators are much faster than those from the conventional principal component analysis. Moreover, I suggest an FPPC-based diffusion index forecasting model. The limiting distribution of the parameter estimates and the rate of convergence for forecast errors are obtained. Using simulations and an empirical study with U.S. bond market data, I demonstrate that the proposed model outperforms benchmark models based on other principal component estimators. A substantial gain in predictive accuracy is achieved by (i) incorporating the characteristics and (ii) considering cross-sectional dependence and heteroskedasticity. Specifically, I forecast excess bond returns and find the proposed model performs well among a large group of machine learning techniques such as lasso, neural networks, and random forests.

WORKING PAPERS

"Feasible Generalized Least Squares for Panel Data with Cross-sectional and Serial Correlations," with Jushan Bai and Yuan Liao, *R&R at Empirical Economics*. [PDF]

Abstract: This paper considers generalized least squares (GLS) estimation for linear panel data models. By estimating the large error covariance matrix consistently, the proposed feasible GLS estimator is more efficient than the ordinary least squares in the presence of heteroskedasticity, serial and cross-sectional correlations. We establish the limiting distribution of the proposed estimator.

"Factor Augmented Neural Network for Forecasting Using Many Predictors" (Work in Progress)

TEACHING EXPERIENCE

Lecturer (for recitation), Rutgers University
- Advanced Economic Statistics – Graduate Course (Fall 2019)

Teaching Assistant, Rutgers University
- Introduction to Macroeconomics (Fall 2020)
- Advanced Cross-sectional and Panel Econometrics (Fall 2019)
- Financial Economics (Fall 2017, Spring 2018, Fall 2018)
- Introduction to Microeconomics (Fall 2018)

Teaching Assistant, Yonsei University
- Data Mining – Graduate course (Fall 2014, Fall 2015, Spring 2016)
- Introduction to Statistics – Graduate course (Fall 2014, Spring 2015)

RESEARCH EXPERIENCE

Research Assistant for Prof. John Landon-Lane, Rutgers University 2020
Research Assistant for Prof. Hyunjoong Kim, Yonsei University 2014 – 2016
KPMG Korea *(Summer Internship)* 2010
San Francisco Consulting Group *(Summer Internship)* 2009

HONORS AND AWARDS

Alfred S. Eichner Prize in Economics, Rutgers University 2020
- *In recognition of path-breaking and innovative dissertation research.*

Hiroki Tsurumi Graduate Dissertation Award, Rutgers University 2020
- *In recognition of excellence in PhD dissertation research in econometrics.*

Teaching Assistantship, Rutgers University 2017 – Present
TA/GA Professional Development Fund Award, Rutgers University 2018
Teaching Assistantship, Yonsei University 2014 – 2016
Research Assistantship, Yonsei University 2014 – 2016
Dean's List, University of California at Berkeley 2013

OTHER INFORMATION

Citizenship: Republic of Korea
Languages: English (fluent), Korean (native)
Software: Matlab, Python, R, Stata, Gauss and LaTeX
Military Service: Sergeant, Republic of Korea Army (2011 – 2013)
Certificates: Society of Actuary – P, FM, VEE ECON, VEE CORPFIN

REFERENCES

Professor Yuan Liao (Chair)
Rutgers University
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(848) 932-8621

Professor Jushan Bai
Columbia University
jb3064@columbia.edu
(212) 854-8033

Professor Norman Swanson
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Professor John Landon-Lane
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