YANG LIU

Department of Economics, 8000 York Road ▪ Towson, MD 21252
▪ (732) 485-7011 ▪ yangliu@towson.edu

EMPLOYMENT

Assistant Professor, Department of Economics, Towson University, Towson, MD August 2024 –

EDUCATION

Department of Economics, Rutgers University, New Brunswick, NJ May 2024
Ph.D. in Econometrics and Quantitative Economics
PhD Dissertation: Methods for Forecasting Using High Dimension and High Frequency Data
Committee: Norman R. Swanson (Chair), John Chao, John Landon-Lane, Xiye Yang

Robert H. Smith School of Business, University of Maryland, College Park, MD May 2018
Masters of Quantitative Finance: Asset Management and Risk Management

Capital University of Economics and Business, Beijing, China June 2016
Bachelor of Management: International Human Resources Management

FIELDS OF INTEREST

- **Applied Econometrics, Financial Economics, Machine Learning, Big Data Forecasting, Asset Pricing**
- **Concentration: high-dimensional data, time series data, real-time data, factor model, variable selection**

PUBLICATIONS

"An Assessment of the Marginal Predictive Content of Economic Uncertainty Indexes and Business Conditions Predictors", with Norman R. Swanson, *International Journal of Forecasting*, Volume 40, Issue 4, October–December 2024, Pages 1391-1409

WORKING PAPERS

"Selecting the Relevant Variables for Factor Estimation in FAVAR Models" (Submitted)

- (with John C. Chao and Norman R. Swanson)

▪ *Abstract*: In this paper, we propose a new variable selection method that allows researchers to distinguish between variables that are relevant in the sense that they provide useful information for estimating underlying latent factors and variables that are irrelevant in the sense that they do not load on underlying factors, in an FAVAR model. In our context, variable selection methods are needed because using too many irrelevant variables may lead to inconsistency in factor estimation. Our procedure is designed to facilitate consistent factor estimation and can be viewed as the factor model analog of the type of multiple hypothesis testing or variable selection procedures that people use to select regressors when specifying linear regression. One key difference between our method and the typical multiple hypothesis testing procedure used in the literature is that rather than controlling the overall Type I error at some fixed non-zero level, our procedure is completely consistent in the sense that the probability of both Type I and Type II errors goes to zero asymptotically as sample sizes approach infinity. Monte Carlo evidence indicates that our method has very good finite sample properties. Additionally, we analyze a real-time macroeconomic dataset, where it is shown that our method delivers factors that result in improved marginal predictive content, relative to cases where standard principal components as well as hard-thresholding methods are used in factor estimation.

"Spillover Effect for Nine Sector ETFs in Bad News and Good News Conditions"

▪ *Abstract*: Macroeconomic news announcements affect financial markets in multiple different ways. In this paper, I use a factor-augmented vector autoregressive model (FAVAR model) to examine spillover effects associated with three

liquidity measures, including quoted spread, effective spread and market depth. This is done for nine sector ETFs under bad news and good news scenarios during the Covid-19 pandemic period. In order to carry out this analysis, I use high-frequency data from the well-known TAQ database. I find that there are stronger and clearer spillover effects for quoted spread and some spillover effects associated with the market depth. However, there are no clear and strong spillover effects for effective spreads. Also, spillover effects in bad news scenarios are larger and stronger than that in good news scenarios for all of these three liquidity measures.

WORK IN PROGRESS

"Can Stock Characteristics Lead the Forecasting for High-frequency Volatilities?"

TEACHING EXPERIENCE

Assistant Professor, Department of Economics, Towson University, Towson, MD Fall 2024

- **Macroeconomic Principles (Econ 202) – Undergraduate course** (Fall 2024)
- **Computational Economics (Econ 431) – Undergraduate course** (Fall 2024)
- **Computational Economics (Econ 631)** – **Master's Program course** (Fall 2024)

Lecturer, Department of Economics, Rutgers University, New Brunswick, NJ Summer 2021, 2022, 2023

- **Intermediate Microeconomics – Undergraduate course** (Summer 2021)
- **Econometrics – Undergraduate course** (Summer 2022)
- Prepared teaching notes, assignments, two exams and two review sessions for each of above two courses.
- Received the final overall evaluation as 4/5 for both of above two courses.
- **Introduction to R** (one-day workshop for the **first-year Ph.D. students** in Summer 2022 and Summer 2023).

Teaching Assistant, Department of Economics, Rutgers University, New Brunswick, NJ 2019—2023

- Econometrics II (Ph.D. students), Advanced Statistics (Ph.D. students), Big Data Forecasting, Economics of Taxation, Capital Markets, Economics of Taxation, Introduction to Microeconomics, Introduction to Macroeconomics

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WORK EXPERIENCE

Internship (BNY Mellon)

- Data Modeler, Economic Forecasting Group, BNY Mellon, New York City, NY June 2022—Oct. 2022

- Re-estimated different models using updated new data for several financial assets or macroeconomic variables (such as ABS spreads variables, covered bonds and VIX) in order to find new drivers to improve their forecasting performances.
- Conducted CCAR stress tests for multiple macroeconomic variables in various aspects and recorded each of them in a complete document for model validation team.
- For each model: examined the coefficient stability, fitted in crisis era with calibration sample, conducted out-of-sample forecasting, plotted model fit condition in graph and conducted residual tests.
- Made a presentation for model development progresses in the weekly team meeting and explained different models in economic concepts.
- Prepared slides for financial market news update and macroeconomic overview in the quarterly company conference.

Research Assistant, Rutgers University, New Brunswick, NJ

R project - Developing A New R Package "LavaCvxr" March 2021—June 2021

- Developed and published "LavaCvxr" package **in R** using CVXR for Lava method, which is introduced in Chernozhukov et al. (2017).
- Paper for Lava method: Chernozhukov, V., Hansen, C., & Liao, Y. (2017). A lava attack on the recovery of sums of dense and sparse signals. Annals of Statistics, 45(1), 39-76.

Research Assistant, University of Maryland, College Park, MD

SAS project - Manufacturing Sector Oct. 2016—Dec. 2016

- Constructed linear regression with fixed effect to predict revenue growth for hundreds of companies within manufacturing sector to see the influences from firm level variables and macroeconomic variables.
- Did winsorization for outliers, used stepwise method and VIF results to select final regressors in the model.
- Did two sample T test to compare the results between public companies and private companies; checked heteroscedasticity.

MATLAB project - Consumer Nondurables Sector and S&P 500 Index Oct. 2016—Dec. 2016

- Forecast return of consumer nondurables sector by using financial and macroeconomic variables.
- Used Dickey Fuller test to check data stationary; did backward discard and forward selection for regressors selection.
- Durbin Watson test: check first-order-autocorrelation; White test: check heteroscedasticity; Jarque-Bera test: check normality.
- Forecast 1-step ahead variance for S&P 500 series by using GARCH(1,1) of 50 years daily data.

CONFERENCES, WORKSHOPS AND PRESENTATIONS

- The 7th International Conference on Econometrics and Statistics (EcoSta 2024) July 2024
- Econometrics Seminar, Rutgers University Nov. 2023
- 2023 Annual Meeting of the International Society for Data Science and Analytics (ISDSA) July 2023
- 2023 The 37th Annual Conference of the Pennsylvania Economic Association (PEA) June 2023
- 2023 The Chinese Economists Society China Annual Conference (CES) June 2023
- The 18th CIREQ PhD Students Annual Conference at Concordia University (accepted) May 2023

TECHNICAL SKILLS

- **Coding: R, MATLAB, Python** (Pandas, NumPy, Matplotlib, Scikit-Learn), **SQL, SAS**
- **Machine Learning: Lasso, PCA, Random Forest, Gradient Boosting, Neural Network, K-means clustering, SVM**
- **Passed CFA Level I Test**
- English (fluent), Mandarin (native)

HONORS AND AWARDS

- Alfred S. Eichner Economics Prize, Rutgers University Spring 2023
- Richard Lock Endowed Fund for Economics Award, Rutgers University Spring 2023
- Dorothy Rinaldi Fellowship, Rutgers University Spring 2023
- MMI Market Structure Research Fellowship, Modern Market Initiative Spring 2023
- Teaching Assistantship, Rutgers University 2019-2022
- 2nd award in 2014 China Undergraduate Mathematical Contest in Modeling (CUMCM) 2014