

Hoi Dinh

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EDUCATION

Ph.D. in Economics, North Carolina State University, Raleigh, NC 2020 – 2025

- Dissertation: “*Essays on High-Dimensional Financial Economics*”
- Committee: Profs. Mehmet Caner (Advisor), Denis Pelletier, Zheng Li & Ilze Kalnina

M.S. in Statistics, North Carolina State, Raleigh, NC 2023 – 2024

RESEARCH FIELDS

High-Dimensional Econometrics, Financial Economics, Time Series Analysis

JOB MARKET PAPER

“*Residual-Based Nodewise Regression in mis-measured Factor Models with Ultra-High Dimensions: Analysis of Mean-Variance Portfolio Efficiency and Estimation of Out-of-Sample and Constrained Maximum Sharpe Ratios,*” with Mehmet Caner

- **Abstract:** We examine the case where asset returns are estimated from factors measured with errors. First, we introduce a novel methodology using Instrumental Variables and Residual-Based Nodewise Regression within the Factor Model framework introduced by Caner et al.(2023) to consistently estimate the precision matrix of returns for large portfolios, where the number of assets is larger than their time span. We then apply these results to obtain consistent estimates of the Sharpe Ratio for both the Global Minimum Variance portfolio and Markowitz’s (1952) Mean Variance portfolio. Simulation and out-of-sample forecasting exercises demonstrate that our method outperforms factors- and shrinkage-based methods.

WORK IN PROGRESS

“*Online Investing,*” with Mehmet Caner

“*General Liner Class of High Dimensional-Hidden Factor Estimators For Precision Matrix Estimation,*” with Mehmet Caner, Agostino Capponi, & Mihailo Stojnic

INDUSTRY EXPERIENCE

Economist Intern, Amazon Summer 2024

- Developed two new models to forecast weekly Consumer Instock Value (CIV) for all Amazon products (ASINs), significantly enhancing forecasting accuracy
- Matching Model for new ASINs: Used embedding space to find the closest existing products to new ASINs, and then generate forward-looking CIV for new products one year ahead, improving forecast accuracy by 20 %
- DeepAR Prototype for both new and existing ASINs: Achieved a 23 % improvement in forecastin accuracy compared to the current production model

Economist Intern, Amazon Summer 2023

- Developed deep learning models, including DeepAR, Transformer, and Temporal Fusion Transformer, for directly forecasting weekly contribution profit per unit (CPPU) for all Amazon products, increasing forecasting accuracy by 15%.
- Experimented with online learning in forecasting CPPU, increasing forecasting accuracy by 20% for high-demand selling ASINs.

Machine Learning Engineer, Momo

2021-2022

- Developed machine learning models for a real-time account take over (ATO) fraud detection of 28+ million active users: implemented XGBoost classifier with new features to detect abnormal users' behavior, improving the recall by 0.45 to 0.71 while maintaining precision at 0.25
- Built automatic dashboard to detect data shift in MoMo users' credit scores and to alert potential issues for all features

Lead Business Analyst, FPT.AI R&D HEADQUARTERS, Vietnam

2019-2021

- Built and managed chatbots – 200K+ daily active users of top 10 largest companies in Vietnam (Honda, FE Credits, Vietnam Airlines), reducing customer support requests by 80%
- Built automatic dashboard to detect data shift in MoMo users' credit scores and to alert potential issues for all features
- Received Best Employee (of staff of 150) in 2020 by CTO for outstanding performance, winning contracts worth \$ 1.2M and delivering chatbot projects to Fortune 100 companies

RESEARCH EXPERIENCE

Research Assistant to Professor John Luke Gallup, Portland State University, Portland, OR

2018 – 2019

- * Implemented Monte Carlo simulations for new multiple inequality test implemented in Stata to be applied to a new test for structural breaks in repeated survey data

Research Assistant for Prof. Melissa Appleyard, Portland State University, Portland, OR

2018 – 2019

- * Improving Outcomes from Interdisciplinary R&D

TEACHING EXPERIENCE

Independent Instructor, NC State University

2021 – 2022

- * Fundamentals of Economics: Fall 2021, Spring 2022

SERVICE

Review of Journal of International Economics and Management

2023

OTHER INFORMATION

Programming: Python, R, STATA, MATLAB

Language: English(fluent), Vietnamese(native)

REFERENCES

Prof. Mehmet Caner (Advisor)
Thurman-Raytheon Distinguished Professor of Economics
Dept. of Economics
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