Kenwin Maung

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Education

Ph.D. in Economics, University of Rochester	2018 – 2023 (expected)
M.A. in Economics, University of Rochester	2020
B.A. in Global Political Economy, Waseda University	2014 – 2018

Research Fields

High-Dimensional Econometrics, Time Series, Big Data, Machine Learning, Causal Inference, Finance

Publications

(1) **Time-varying Forecast Combination for High-Dimensional Data** (with Chen, B.).

- *Accepted at Journal of Econometrics.*

Working Papers

(2) **Large Network Autoregressions with Unknown Adjacency Matrix** (Job market paper).

- *Presented at AMES China 2022, SETA 2022, Singapore Economic Review Conference 2022, Society of Economic Measurement Conference 2022, 2022 Rochester Conference in Econometrics, 24th Federal Forecasters Conference, 2022 Economics Graduate Student Conference at WUSTL, Midwest Econometrics Group 2022 Conference. Nanyang Technological University Economics Seminar Series.*

(3) **Estimating High-Dimensional Markov-Switching VARs**.

- *Best Ph.D. presentation at the 23rd Dynamic Econometrics conference; Under revision (submitted to Journal of Econometrics).*

Work in Progress

A Residual-based Test of Markov-Switching Cointegration: Pairs Trading with Regimes.

- *Presented at 2021 Economics Graduate Student Conference at WUSTL.*

Other Publications (Public Health)

(1) **Gender Differences in Countries' Adaptation to Societal Ageing: An International Cross-Sectional Comparison** (with Chen, C., Rowe, J. W., Research Network on an Ageing Society).

The Lancet Healthy Longevity (2021); Media coverage

(2) **Estimating the Direct and Spill-Over Impacts of Mass Gatherings on COVID-19 Transmission** (lead co-author with Lim, J. T., Tan, S. T., Suan, E. O., Lim, J. M., Koo, J. R., Sun, H., Park, M., Cook, R. A., Dickens, B. S. L).

PLoS Computational Biology (2021); Impact Factor: 4.8; Media coverage

Teaching Experience

University of Rochester, Department of Economics

Instructor for Econometrics camp (Ph.D.)	Summer 2021, 2022
Instructor for Economic Statistics	Summer 2021
TA for Econometrics II (Ph.D.) Instructor: Bin Chen	Spring 2021 (*4.94/5*), 2022 (*5/5*)
TA for Econometrics I (Ph.D.) Instructor: Nese Yildiz	Fall 2021 (*5/5*), 2022
TA for Economic Statistics Instructor: Bin Chen	Fall 2020

University of Rochester, Simon Business School

TA for Corporate Finance Instructor: Michael Gofman	Fall 2021, Spring 2022

Waseda University, School of Political Science and Economics

TA for Maximum Likelihood Estimation	Summer 2017

* Teaching evaluation in parenthesis where available.

Relevant Positions

2019-2020	RA for *Chen Bin*, Department of Economics, University of Rochester.
2018	RA for *Cynthia Chen*, Saw Swee Hock School of Public Health, National University of Singapore.
2017-2018	RA for *Fumio Hayashi*, National Graduate Institute for Policy Studies.
2016-2018	RA for *Junko Koeda*, Waseda University.

Professional Affiliation and Services

Member: Econometric Society, Society of Economic Measurement.

Referee: PLOS ONE.

Skills

Programming: R (main), Python, Stata, MATLAB.

Language: English (Native), Mandarin (Conversational), Japanese (Conversational).

Awards and Fellowships

Best PhD Presentation, 23rd Dynamic Econometrics conference

PEPR Grant, Wallis Institute of Political Economy, University of Rochester, 2018

Summer Research Grant, University of Rochester, 2018

Graduate Fellowship and Tuition Scholarship, University of Rochester, 2018-present

References

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Abstracts

Large Network Autoregressions with Unknown Adjacency Matrix

(Job market paper)

Many network econometric models rely on known adjacency matrices. This becomes a problem for investigations when the network structure is not readily accessed or constructed such as those typically observed in macroeconomics and finance. Furthermore, direct estimation may be cumbersome or infeasible if the number of units in the network is large. To deal with this, we propose a Structural Vector Autoregression (SVAR) data-driven approach to recover the network structure via matrix regression under a large N and T asymptotic framework. The high-dimensionality of the problem is dealt with by focusing on low-rank representations of the network - hub and authority centralities. We show, both theoretically and through simulations, that the reduced-form estimator is consistent and asymptotically normal, and suggest an identification strategy for the SVAR as implied by its network structure. In our empirical study, we extract volatility connectedness between major US financial institutions and find a greater degree of interconnectedness compared to Diebold and Yilmaz (2014, 2015). We further demonstrate the utility of the estimated network for systemic risk analysis by identifying key propagators of volatility spillovers in the financial sector.

Time-varying Forecast Combination for High-Dimensional Data

(with Chen B.)

Revise and resubmit at Journal of Econometrics (2nd Round)

In this paper, we propose a new nonparametric estimator of time-varying forecast combination weights. When the number of individual forecasts is small, we study the asymptotic properties of the local linear estimator. When the number of candidate forecasts exceeds or diverges with the sample size, we consider penalized local linear estimation with the group SCAD penalty. We show that the estimator exhibits the oracle property and correctly selects relevant forecasts with probability approaching one. Simulations indicate that the proposed estimators outperform existing combination schemes when structural changes exist. An empirical application on inflation and unemployment forecasting highlights the merits of our approach relative to other popular methods in the literature.

Estimating High-Dimensional Markov-switching VARs

Under revision (reject and resubmit at Journal of Econometrics)

Maximum likelihood estimation of large Markov-switching vector autoregressions (MS-VARs) can be challenging or infeasible due to parameter proliferation. To accommodate situations where dimensionality may be of comparable order to or exceeds the sample size, we adopt a sparse framework and propose two penalized maximum likelihood estimators with either the Lasso or the smoothly clipped absolute deviation (SCAD) penalty. We show that both estimators are estimation consistent, while the SCAD estimator also selects relevant parameters with probability approaching one. A modified EM-algorithm is developed for the case of Gaussian errors and simulations show that the algorithm exhibits desirable finite sample performance. In an application to short-horizon return predictability in the US, we estimate a 15 variable 2-state MS-VAR(1) and obtain the often reported counter-cyclicality in predictability. The variable selection property of our estimators helps to identify predictors that contribute strongly to predictability during economic contractions but are otherwise irrelevant in expansions. Furthermore, out-of-sample analyses indicate that large MS-VARs can significantly outperform "hard-to-beat" predictors like the historical average.

A Residual-based Test of Markov-Switching Cointegration: Pairs Trading with Regimes.

Pairs traders generate excess returns by capitalizing on the mispricing of a stock relative to another, for which an equilibrium relationship between them is known to exist. Cointegration is a natural framework to study the mean-reverting spreads of these stocks. Due to idiosyncratic shocks however, it is possible that the cointegrating relationship breaks down or changes, leading to regime-switching behavior in the spread. We conduct simulations and an empirical application to show that it is sub-optimal to ignore such dynamics and to trade with agnostic rules. To identify such situations, we propose a locally optimal residual-based test of Markov-switching cointegration, together with a finite-sample correction for power using the Cochrane-Orcutt procedure. We derive the asymptotic null distribution of the test statistic and show that a bootstrap-based inference is valid. Applying our test to the US stock market indicates that roughly 10% of within-industry pairs exhibit Markov-switching cointegration, which suggests that the scenario is not uncommon.