ANLONG QIN

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EDUCATION

Ph.D., Economics, Boston University, Boston MA, January 2022 (expected)
Dissertation Title: *Essays on state-space and regime-switching models in a high-dimensional setting*
Dissertation Committee: Zhongjun Qu, Pierre Perron, and Hiroaki Kaido

M.S., Quantitative Economics, Renmin University of China, Beijing, China, 2014

B.A., Economics, Renmin University of China, Beijing, China, 2011

FIELDS OF INTEREST

Econometrics, Time Series Econometrics, Financial Econometrics

WORKING PAPERS

"Modeling Regime Switching in High Dimensional Data with Applications to U.S. Business Cycles" (joint with Zhongjun Qu), Job Market Paper

WORK IN PROGRESS

"Inference on State Variables and Predictions in Linear Gaussian State Space Models with Aggregate and Disaggregate Data"
"High Dimensional Regime Switching Models for Mixed-frequency Data"
"Statistical Analysis of High Dimensional Autoregressive Markov Regime Switching Models"
"Asymptotic Properties of the Maximum Likelihood Estimator for Continuous-Time Markov Regime Switching Models" (joint with Guang Zhang and Li Chen)

FELLOWSHIPS AND AWARDS

Dean's Fellowship, Boston University, 2014-2019
Outstanding Graduate Students Awards, Renmin University, 2013
National Encouragement Scholarship, Renmin University, 2009-2010

TEACHING EXPERIENCE

Teaching Assistant, Advanced Econometrics I (Ph.D.), Department of Economics, Boston University, Spring 2018 - 2019
Teaching Assistant, Advanced Econometrics II (Ph.D.), Department of Economics, Boston University, Fall 2017 - 2018

Teaching Assistant, Empirical Economics Analysis I (Undergraduate), Department of Economics, Boston University, Spring 2016 - 2017
Teaching Assistant, Empirical Economics II and Financial Economics (Undergraduate), Department of Economics, Boston University, Fall 2016
Teaching Assistant, Intermediate Microeconomics (Undergraduate), Department of Economics, Boston University, Fall 2015
Teaching Assistant, Advanced Microeconomics (Master), Renmin University, Fall 2013

WORK EXPERIENCE

Research Assistant for Pierre Perron, Department of Economics, Boston University, 2018-2019, Spring 2021

LANGUAGES

English (fluent), Chinese (native)

COMPUTER SKILLS: MATLAB, LaTeX, Python

CITIZENSHIP/VISA STATUS: China/F1

REFERENCES

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Modeling Regime Switching in High Dimensional Data with Applications to U.S. Business Cycles *(with Zhongjun Qu), Job Market Paper*

This chapter develops a modeling framework and inference methods for large-dimensional datasets affected by regime switching. A leading application is the identification of U.S. business cycles using disaggregated data, although broader applications need not involve aggregation. We show that the proposed model dominates its aggregate counterpart for estimating the latent state variables (i.e., recessions) under certain conditions. This result follows because the information for latent states can average out, while noises can accumulate during aggregation. The model also produces forecasts for subseries that the aggregate model can not offer. Due to the high dimensionality of the parameter space, the standard maximum likelihood estimator fails to converge; we address this issue by developing a Gibbs sampling algorithm for estimation, inference, and forecasting. In the empirical application, we consider a dataset of four sets of variables: industrial production, capacity utilization, employment, and hours worked, and obtain two findings. First, the proposed model can produce lower mean squared forecasting errors than the conventional aggregate model. Second, it delivers sharp estimates of recession probabilities that closely mirror the NBER's dating results; in contrast, the estimates of the aggregate model are much less conclusive. Finally, using simulations, we demonstrate that the methods can extract regime-switching information from large datasets, e.g., one that contains a thousand variables, within reasonable computational time.

Inference on State Variables and Predictions in Linear Gaussian State Space Models with Aggregate and Disaggregate Data

This chapter studies several econometric issues related to data aggregation for linear Gaussian state space models. In particular, it presents conditions under which the disaggregate model dominates its aggregate counterpart for inference on state variables and forecasting aggregate observables in terms of mean squared errors. From a methodological point of view, there are two contributions. First, it generalizes the aggregation results from autoregressive moving average (ARMA) models to linear Gaussian state space models. Second, it provides new theoretical results for inference on state variables, teasing out the channels through which the disaggregate model achieves better inference than the aggregate model. Monte Carlo simulations confirm the theoretical results. An empirical application to aggregate and disaggregate unemployment data reveals the extent of the information loss caused by aggregation.