

# FANGNING LI

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## Education

Ph.D. Candidate in Economics, University at Albany, New York	September 2013 - present
Master of Management, Xi'an Jiaotong University, Xi'an, China	July 2013
Bachelor of Management, Xi'an Jiaotong University, Xi'an, China	July 2009

## Research Interests

Fields: Econometric Theory, Applied Econometrics.

Topics: Model Averaging, Regularization Methods, High-Dimensional Data.

## Working Papers

### 1. *Consistent Model Averaging Using Elastic-Net* (Job Market Paper)

*Abstract:* This paper proposes a new model averaging method in the linear model setup named consistent model averaging (CMA) based on Tikhonov regularization. The CMA estimator is consistent in the sense that it converges to the infeasible optimal model weight that minimizes conditional risk in finite sample. Given the number of regressors  $p$ , first we show that ideally model averaging over the maximal collection of  $2^p$  models is equivalent to averaging over a subcollection of only singleton and pairwise models in the sense of achieving the same minimum risk, which reduces computational burden substantially. Then we propose the CMA estimator based on Tikhonov penalty. The Tikhonov penalty turns out to be essential for the consistency of the CMA estimator. We derived the  $\sqrt{n}$ -consistency and asymptotic normality of the CMA estimator in fixed- $p$  case, as well as its deterministic  $L^2$  error bound when  $p$  diverges with sample size  $n$ . Interestingly the CMA estimated model weight can be interpreted as probability amplitude. An additional elastic-net penalty is motivated in CMA estimation to stabilize solution and encourage sparsity. Further issues such as heteroscedasticity and sparse coefficients are addressed, so that CMA can handle heteroscedastic errors and cooperate nicely with variable selection procedures such as lasso and SIS. Simulation results show that CMA with elastic-net penalty performs better than the original elastic-net estimator and Mallows' model averaging estimator when population  $R^2$  is moderate. We also illustrate the better performance of CMA with an application of predicting wages.

### 2. *Oracle Properties of Consistent Model Averaging Using Adaptive Elastic-Net*

### 3. *Consistent Model Averaging for Time Series Forecasting*

## Employment Experience

- Teaching Assistant, University at Albany
  - Applied Econometrics, Time Series and Forecasting, Spring 2016
  - Macroeconomics (Ph.D. level), Tools of Economics, Fall 2015

- Instructor, University at Albany
  - Intermediate Macroeconomics (Fall 2016, Summer 2017, Fall 2017, Fall 2018)
  - Economic Statistics, Spring 2018
  - Money and Banking, Spring 2017
  - Principles of Microeconomics, Summer 2016
- Research Analyst, Rockefeller Institute of Government, Mar 2015 – June 2015
  - Web scrape with Python to collect and analyze GIS data of Indian Casinos in the U.S.
  - Create customized state-level GIS maps to visualize locations of Indian Casinos in the U.S. using QGIS.
- Data Analyst, New York State Department of Taxation and Finance, June 2014 – December 2014
  - Work with large tax datasets using SAS and SQL to examine tax returns and analyze income tax by county in New York.
  - Use Excel VBA to generate reports for historical income tax data in New York.

### Honors and Awards

- Helen Horowitz Teaching Award, Department of Economics, University at Albany, 2018.
- Thad Mirer Teaching Award, Department of Economics, University at Albany, 2017.
- Graduate Assistantship, Department of Economics, University at Albany, 2015 - 2017.
- Outstanding Performance on Preliminary Comprehensive Examinations, Department of Economics, University at Albany, 2014.

### Programming Skills

Languages: R, C/C++, Python, SQL, CUDA, Julia, Scheme, VBA.

Projects: I developed various elastic-net solvers for my research: (1) based on Coordinate Descent, using C/C++ with Armadillo/Eigen libraries and interfaced with R/Python/Julia; (2) based on ADMM (Alternating Direction Method of Multipliers), using CUDA for GPU computing and interfaced with Python/Julia.

### Personal Information

Citizenship and Visa Status: China (F-1 Visa)

Languages: Mandarin (native), English (fluent)

### References

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