

# Xiaobin Liu

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## EDUCATION

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|-------------|--|------------|
| 2013 - 2018 | Singapore Management University<br>Ph.D. in Economics and Finance<br>(Interdisciplinary Doctoral Program)<br>Dissertation Committee: Jun Yu (Chair)<br>Peter C. B. Phillips<br>Thomas J. Sargent | Singapore  |
| 2011 - 2013 | Sun Yat-sen University<br>Master in Finance  | P.R. China |
| 2007 - 2011 | Sun Yat-sen University<br>B.S. in Information and Computational Science  | P.R. China |

## RESEARCH INTERESTS

Econometrics, Asset Pricing, Bayesian Econometrics, Financial Econometrics, Microeconometrics

## PUBLICATIONS

1. **A Bayesian chi-squared test for hypothesis testing**, *Journal of Econometrics*, 2015, 189(1), pp.54-69 (with Yong Li and Jun Yu).
2. **Bayesian testing volatility persistence in stochastic volatility models with jumps**, *Quantitative Finance*, 2014, 14(8), pp.1415-1426 (with Yong Li).

## WORKING PAPERS

1. **Estimating the life-cycle models: a quasi-Bayesian approach** (*Job market paper*).  
This paper proposes a quasi-Bayesian approach for structural parameters in the finite-horizon life-cycle models. This approach circumvents the numerical evaluation of the gradient of the objective function and alleviates the local optimum problem. The asymptotic normality of the estimators for model with and without approximation errors is derived. The proposed estimators reach the semiparametric efficiency bound in the general methods of moment (GMM) framework. Both the estimators and the corresponding

asymptotic covariance are readily computable. The estimation procedure is easy to parallel so that the graphic process unit (GPU) can be used to enhance the computational speed. The estimation procedure is illustrated using a variant of the model in Gourinchas and Parker (2002).

**2. The Wald test based on MCMC outputs** (with Yong Li, Tao Zeng and Jun Yu).

In this paper, a new  $\chi^2$  test based on Markov Chain Monte Carlo (MCMC) is proposed for hypothesis testing. The new statistic can be explained as Bayesian version of the Wald test and has several important advantages that make it very convenient in practical applications. First, it is well-defined under improper prior distributions and avoids Jeffrey-Lindley's paradox. Second, its asymptotic distribution can be proved to follow the  $\chi^2$  distribution so that the threshold values can be easily calibrated from this distribution. Third, its statistical error can be derived using the MCMC approach. Fourth, most importantly, it is only based on the posterior MCMC random samples drawn from the posterior distribution. Hence, it is only the by-product of the posterior outputs and very easy to compute. The usefulness of the test is illustrated with several applications to latent variable models widely used in economics and finance.

## WORK IN PROGRESS

1. **An MCMC approach to classical hypothesis testing** (with Yong Li, Tao Zeng and Jun Yu).
2. **EM algorithm, Euler equation and stochastic problems** (with Jun Yu).
3. **A power enhanced specification test** (with Yong Li, Tao Zeng and Jun Yu).
4. **Nonparametric three-pass filter: forecasting with time-varying factor loadings and many predictors**(with Jun Yu, Yonghui Zhang and Tao Zeng).

## CONFERENCES AND WORKSHOP PRESENTATIONS

- China Meeting of Econometric Society, Wuhan University, June 2017
- Singapore Management University Ph.D. Econometrics Workshop, Singapore Management University, April 2017
- Sargent's Brownbag Seminar, Singapore Management University, February 2017
- YEAP Conference, Renmin University, January 2017
- Singapore Ph.D. Conference in Economics, Nanyang Technology University, April 2016

## HONORS AND AWARDS

- Interdisciplinary Doctoral Program Scholarship (Ph.D.), Singapore Management University, 2013 - 2017
- Master Scholarship, Sun Yat-sen University, 2012 - 2013
- National Scholarship for Encouragement, Sun Yat-sen University, 2010

## TEACHING EXPERIENCE

- Lecturer
  - Math Camp (Graduate), Linear Algebra & Probability Theory, Singapore Management University, August 2015.
  - Math Camp (Graduate), Linear Algebra & Probability Theory, Singapore Management University, August 2016.
- Teaching Assistant
  - Econometrics II (Graduate), Singapore Management University, 2015
  - Introduction to Econometrics (Undergraduate), Singapore Management University, 2015
  - Mathematical Economics (Undergraduate), Singapore Management University, 2017

## PROFESSIONAL AFFILIATIONS

- Member of Econometric Society

## SOFTWARE AND LANGUAGE

- Computer Software:  $\text{\LaTeX}$ , Python, MATLAB, R, Julia, C/C++.
- Language: English (fluent), Cantonese (fluent), Mandarin (native), Teochew (native).