

# Yu Bai

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## Current Position

Researcher with Grant, BAFFI CAREFIN Centre, Bocconi University.

6th year PhD Candidate, PhD School, Bocconi University.

## Education

PhD in Economics and Finance, Bocconi University, 2022.1 (*expected*).

M.A. in Economics, Huazhong University of Science & Technology, 2016.

B.A. in Management, Shanxi University of Finance and Economics, 2012.

## Research Interests

Time series econometrics; Panel data models; Bayesian econometrics

## Research Grants

2020.9-2022.8. MIUR, "Hi-Di NET. Econometric Analysis of High Dimensional Models with Network Structures in Macroeconomics and Finance".

## Job Market Paper

1. [Time-varying GMM estimation, 2021.](#)

*Abstract:* I develop time-varying continuously updated GMM estimation and inferential theory for models whose parameters vary stochastically and smoothly over time. Then, I propose two structural stability tests in this context. After deriving the asymptotic properties of the estimators and test statistics, I assess their finite sample performance by an extensive Monte-Carlo study and illustrate their application by an empirical example on dynamic asset pricing models with stochastic discount factor (SDF) representation.

## Working Papers

1. [Macroeconomic Forecasting in a Multi-country Context](#), with A. Carriero, T. E. Clark and M. Marcellino, 2019. *R & R*

*Abstract:* In this paper we propose a hierarchical shrinkage approach for multi-country VAR models. To make the approach operational, we consider three different scale mixtures of Normals priors — specifically, Horseshoe, Normal-Gamma, and Normal-Gamma-Gamma priors. We provide new theoretical results for the Normal-Gamma prior. Empirically, we use a quarterly data set for G7 economies to examine how model specifications and prior choices affect the forecasting performance for GDP growth, inflation, and a short-term interest rate. We find that hierarchical shrinkage, particularly as implemented with the Horseshoe prior, is very useful in forecasting inflation. It also has the best density forecast performance for output growth and the interest rate. Adding foreign information yields benefits, as multi-country models generally improve on the forecast accuracy of single-country models.

2. [Estimation and inference in large heterogeneous panels with stochastic time-varying coefficients](#), with G. Kapetanios and M. Marcellino, 2021.

*Abstract:* We develop kernel-based non-parametric estimation and inferential theory for large heterogeneous panel data models with stochastic time-varying coefficients. We propose mean group and pooled estimators, derive asymptotic distributions and show the uniform consistency and asymptotic normality of path coefficients. We extend the procedures to the case with possibly endogenous regressors and propose a time-varying version of the Hausman exogeneity test. The finite sample performance of the proposed estimators is investigated through a Monte Carlo study. We also present two empirical applications, exploring the time-varying price elasticity of U.S. gasoline demand functions and estimating the panel version of time-varying backward-looking and forward-looking Phillips curves.

## Work in Progress

1. Specification testing in linear regression models with smooth structural change, with G. Kapetanios and M. Marcellino.
2. Forecasting stock market price: a new approach, with G. Graziani.
3. Bayesian proxy VARs: A new approach.

## Publications

1. A Monte Carlo comparison of GMM and QMLE estimators for short dynamic panel data models with spatial errors, with Shaofu Zhou and Zhaoyuan Fan, *Journal of Statistical Computation and Simulation*, 88(2), 376-409, 2018.

## Research Experiences

Research Assistant for Prof. M. Marcellino, Multiple times

- Provide and check existing Matlab code for large dimensional macroeconomic forecasting models
- Provide Matlab code to estimate proxy VAR models

## Teaching Experiences

Instructor:

- Econometrics III, Bocconi University, Spring 2020, 2021.

Teaching assistant:

- Econometrics, Bocconi University, Spring 2019, 2020, 2021.
- Time Series Analysis, Huazhong University of Science & Technology, Spring 2014, 2015.

## Conference Presentations

2021

- CMStatistics 2021, London, December 18-20 (*Scheduled*)
- 2021 IAAE Annual Conference, June 22-25
- Dongbei University of Finance and Economics, June 18
- 2021 North American Summer Meeting of the Econometric Society, June 10-13.

2020

- Capital University of Economics and Business, November 6
- The Econometric Society World Congress, August 17-21
- Strathclyde Business School, Brown Bag Seminar, January 30.

2019

- 2019 Asian Meeting of the Econometric Society, Xiamen, China, June 14-16.
- 25th International Panel Data Conference, Vilnius, Lithuania, July 4-5.

## Honors and Awards

Bocconi PhD fellowship, 2016-2020

## References

**Massimiliano Marcellino** (Main advisor)  
Professor of Econometrics  
Ettore Bocconi Department of Economics  
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