Advanced Techniques in Macroeconomics II

2017-2018 Academic Year
Master of Research in Economics, Finance and Management

1. Description of the subject

- Advanced Techniques in Macroeconomics II       Code: 31805
- Total credits: 6 ECTS       Workload: 150 hours
  Term: 2nd
- Type of subject: Optative
- Department of Economics and Business
- Teaching team: Barbara Rossi (TA assistant: TBA)
2. Teaching guide

Introduction
This course examines the models and econometric techniques used to study time series data with a special emphasis to applications in macroeconomics.

The course has three specific objectives. The first is to equip students who anticipate using time series data in their Ph.D. research with the tools they need for state-of-the-art empirical research. The second objective is to lay out the econometric theory of time series analysis, with an emphasis on recent developments. The third objective is to analyze selected recent works in theoretical macroeconomic modeling with an emphasis on their empirical implications and analysis. The course is built so that for each topic the econometric tool is presented first, followed by the relevant empirical applications.

Pre-requisites: The course builds and extends “Advanced Econometric Methods I, II and III”, which are therefore pre-requisites. Alternatively, students should obtain the Professor's special permission to take the course.

The course meets regularly on Mondays and Wednesdays, 9:00-11:00am in room TBA. Attendance to class is mandatory. A few classes may need to be re-scheduled, the changes will be announced in class. When needed, some lectures will be rescheduled on a day/time TBA.

My email is: barbara.rossi@upf.edu and my office is Jaume I (building 20), n. 207. My office hours will be on Monday morning, from 11:00 to 12:00. The TA for the class is TBA and his email is: TBA. TA sessions are scheduled on a day/time TBA.

General references:


Important: this syllabus is preliminary and the contents of the course may change during the semester; in particular, some of the discussion papers might be updated later on –please come to classes to keep up with the contents! Also, it is very comprehensive, not all papers/topics may be discussed in class.

Also important: the department offers an Econometrics Seminar as well as the Barcelona GSE Time Series Summer Forum, both of which are open to students, and complement the course with frontier research on the topics. Attendance is strongly recommended. These activities are really part of the course and will help you integrate with the research done in the time-series / applied macro literature! And they will be fun!

Link to previous years’ BGSE Summer Forum: http://barbararossi.eu/Conferences
Short presentations by students:

One of the objectives of the class is to teach students to critically read and understand papers, both theoretical and applied. We will devote some time each week to your reading and presentation of papers related to the course. On Wednesdays, all students should come with 5 slides prepared on a paper I will select, and be prepared to discuss the following 5 points (one per slide):

1. Background: what did the previous related literature do?
2. What is the main contribution of this paper and why does it advance the literature in 1?
3-4. Main results, findings (both theoretical and empirical) – include intuition
5. Your thoughts: criticisms, improvements, open questions, etc.

One student will be randomly picked for presentation. Be prepared to answer questions.

Contents

LIST OF TOPICS

1. Filters and business cycle estimation
   a. Application: Description of time series data
      - Census X-11 Seasonal adjustment.
   b. Econometric theory
      - Hayashi. Ch. 6.
   c. Discussion papers:
      - Hamilton, Why you should never use the Hodrick Prescott filter, mimeo

2. Heteroskedasticity and autocorrelation consistent (HAC) variance estimation
   a. Theory

b. Discussion paper:

3. Models with Stochastic Time Variation: Structural Breaks and Instabilities

a. Motivation and Empirical Examples

b. Asymptotics: Beveridge-Nelson decomposition, shortcuts to time series asymptotics and convergence to stochastic integrals
- Hall and Heyde. Chs. 3, 4, and 5 and the Appendix.
- Hamilton. Ch. 17.

c. Testing and Estimation

d. Discussion papers:
4. The Kalman filter, Nonlinear Models, Threshold Models, STAR, Markov Switching and applications

a. Motivation and Applications

b. Theory
- Hamilton. Ch. 22.

c. Discussion paper:

5. GMM and Weak Instruments/Weak Identification, Many Instruments

a. Motivation

b. Methods
- Hall, A.R. Chs. 4 and 5.
- Hayashi. Chs. 3 and 4.

c. Discussion paper:

6. Vector Autoregression and SVARs

a. Motivation and Empirical applications

b. Impulse response functions, variance decompositions, inference

c. Structural VARs: identification schemes

d. Long-run restrictions
e. Inference for impulse responses

f. Bayesian VARs

g. Discussion papers:

7. Modeling of and inference for persistent time series

a. Univariate unit roots: estimation, testing, and local to unity theory

b. Multivariate unit roots and cointegration
and Control, 12(2-3), pp. 231-54.

c. Predictive regression with persistent regressors

d. Long memory and fractional integration

e. Discussion paper:

8. Big data: Dynamic Factor Models, FAVAR, Combinations, Bayesian Model Averaging, BVARs

a. Motivation and Applications

b. Econometric Methods

9. Model Evaluation and Forecast Comparison

a. Motivation and Empirical Applications

b. Tests of Forecast Comparison
c. Special Issues: Nested Models, Null Hypotheses, Instabilities…


**f. Discussion paper:**

**10. Estimation and Inference of Linearized DSGEs (if time permits)**
- DeJong and Dave. Chs. 2-4.

**Discussion paper:**
- Inoue, Kuo and Rossi (2016), Identifying the Sources of Model Misspecification, *mimeo*.

**Assessment and Grading System**

There will be two exams: a midterm exam and a final exam. The exams will be in class. The midterm exam will be on February 12 at the regular class time. The final exam is on the last day of class (March 14) in class.

There should be various problem sets during the course and short presentations of discussion papers by students.

**Please note:** I reserve the right to change the information in this syllabus at any time.