

Advanced Techniques in Macroeconomics III

2021-22 Academic Year

Master of Research in Economics, Finance and Management

Description of the subject

Advanced Techniques in Macroeconomics III

Total credits: 3 ECTS

Type of subject: Optative

Department of Economics and Business

Teaching team: Katerina P

Code: 32708

Workload: 75 hours

Term: 3rd

Prerequisites to Enroll

Advanced Econometrics I, II and III are prerequisites for this course.

Overview and Objectives

This is an advanced course in time series econometrics with emphasis on the models and econometric techniques used in macroeconomics applications.

The course has two 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 and discuss practical implementation of the theory.

Required Activities

The course comprises of four hours of lecture each week. In addition, students will complete weekly problem sets and hand them in before the TA-sessions. The problem sets will have a theoretical component and an applied component. For the applied part students will need to use Matlab extensively.

Assessment and Grading System

Grades will be based on the problem sets (10%), midterm exam (40%) and the final exam (50%).

Textbooks:

- Hamilton, J., 1994. Time series econometrics. Princeton: Princeton University Press.
- Johansen, S. Likelihood-Based Inference in Cointegrated Vector Autoregressive Models, 1995, Oxford: Oxford University Press
- Francq, C. and Zakoian, J.M. GARCH Models: Structure, Statistical Inference and Financial Applications, 2nd Edition, London: Wiley
- Hayashi, F., 2000. Econometrics. Princeton: Princeton University Press.
- Canova, F., 2007. Methods for applied macroeconomic research. Princeton: Princeton University Press.
- White, H., 2000. Asymptotic theory for econometricians. Revised ed. Orlando: Academic Press.
- Harvey, H, 1991. Forecasting structural time series models and the Kalman Filter, 2 nd edition, Cambridge: Cambridge University Press
- DeJong, D. and Dave, C. 2011. Structural Macroeconometrics, 2 nd Edition, Princeton: Princeton University Press.
- Kilian and Lutkepohl, 2018. Structural VAR Analysis, Cambridge
- Lütkepohl, H. (2005) New Introduction to Multiple Time Series. Springer-Verlag.
- Reinsel (2003) Elements of Multivariate Time Series Analysis. Springer.
- Abadir, K.M. and J. R. Magnus (2005). Matrix Algebra. Econometric Exercises, vol.1. Cambridge University Press.

Course Outline

Part I: Estimation and inference for univariate time series processes: further extensions

- Near-stationary and mildly explosive processes: asymptotics
- Local-to-Unity asymptotics, estimation and inference in predictive regressions with local-to-unity regressors
- Long memory and fractionally integrated processes (if time permits)

Part II: Multivariate time series models and applications

- Stationary VAR models: Structural VARs identification
- Large Stationary VAR models: Bayesian Estimation and forecasting
- Cointegrated VARs and VECM: estimation and inference (if time permits)
- Kalman Filter and Linear Gaussian State Space Models
- Solution algorithms for linearised rational expectation Dynamic Stochastic General
- Equilibrium models
- Estimation of linearised Dynamic Stochastic General Equilibrium models: MLE with Kalman Filter and Bayesian estimation with the Metropolis-Hastings algorithm

Part III: Univariate and Multivariate volatility modelling and estimation (if time permits)

- ARCH and GARCH models, stochastic volatility and multivariate extensions