

LUISS PHD IN ECONOMICS

Second Year Courses for Academic Year 2019-20

1 Continuous-Time Modelling in Macroeconomics

- Period: October 28 – November 29, 2019
- Instructor: Paolo Porchia (LUISS)

The course focuses on dynamic general equilibrium macro models which use the continuous-time paradigm. After an overview of the theoretical concepts and techniques at the heart of the continuous-time framework – such as the Hamilton-Jacobi-Bellman equation stemming from dynamic optimization problems, the stochastic maximum principle, the Kolmogorov Forward equation describing the dynamics of distributions, the Feynman-Kac formula representing asset prices – the course analyzes results and solution approaches of important literature contributions, which exploit the analytical power of the paradigm. In particular, the list of topics includes:

- Income and Wealth Distribution in Macroeconomics: A Continuous Time Approach (Achdou, Han, Lasry, Lions and Moll)
- The Risk Channel of Monetary Policy (Silva)
- A Macroeconomic Model with a Financial Sector (Brunnemeier and Sannikov)
- Uncertainty Shocks and Balance Sheet Recessions (Di Tella)
- Financial Frictions and Wealth Distributions (Fernandez-Villaverde, Hurtado and Nuño)

In selected cases, the course also discusses the numerical implementation of the models on common software packages.

2 Heterogeneous Agents Models in Macroeconomics

- Period: TBC
- Instructor: Gianluca Violante (Princeton)

Syllabus TBA

3 Empirical Macroeconomics

- Period: TBC
- Instructors: Giorgio Primiceri (Northwestern)/Domenico Giannone (Fed NY)

The course will cover methods designed to deal with prediction with “big data” in macroeconomics, and to conduct structural and semi-structural analysis. The four main subjects of the course are: (i) predictive regressions with big data; (ii) Bayesian Vector Autoregressions (BVARs), as a popular example of big data multivariate models, used for unconditional and conditional forecasts and data description; (iii) Structural VARs, which represent a bridge between reduced-form and structural models; (iv) Dynamic Stochastic General Equilibrium (DSGE) models, which have become the most popular tool for structural and policy analysis. We will also touch upon several other topics, such as state-space models, Monte Carlo methods, model comparison and model choice. Along the way, we will discuss applications to forecasting economic activity with large datasets, scenario and counterfactual analysis, estimation of potential output, the natural rate of interest and unemployment. If appropriate to the context, we will also conduct some practical sessions, provide and go over MATLAB codes for inference in predictive regressions with big data, BVARs and DSGE models.

