RoME: Dynamic Macroeconomics

Syllabus

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1 Course Description

This is a class on computational methods for heterogenous agents models. Heterogenous agents models can be used to analyze a wide range of questions related to the business cycle, income distribution, consumption insurance, labor supply, asset pricing, the effects of monetary and fiscal policy... In this class you will learn how to solve numerically and analyze this important class of macroeconomic models. The aim is that at the end of the course you will be able to use these models and methods in your own research.

2 Lectures Plan

Solving household problems with liquidity constraints

Weeks 1-2: Introduction. We learn numerical techniques to solve a consumption and savings model with exogenously incomplete markets and liquidity constraints.
– Value and policy function iteration. Discretization; grid generation; quadrature; interpolation. Speeding up computations. The curse of dimensionality.

General equilibrium, transitions and welfare

Week 3: We analyze the equilibrium of heterogeneous agents models with incomplete markets. We learn how to compute the transitional dynamics and how to measure correctly the welfare changes associated to policy reforms.

– The Aiyagari model. Solving for the steady state. Unexpected aggregate shocks, impulse response functions, and transitional dynamics. Efficient computation of transition paths. Welfare analysis.

Adding aggregate risk

Weeks 4-5: We extend the model to add aggregate fluctuations. We learn how to solve and use this model. We discuss recent advances in computational methods.

– Aggregate risk and keeping track of the wealth distribution. Boppart-Krusell-Mitman method to simulate economies with aggregate risk. Krusell-Smith method to simulate economies with aggregate risk. Discrete vs Continuous time. Overview of recent advances in computational methods.

Topics: Inequality and the business cycle

Week 6: We illustrate how to use this class of models to analyze questions related to income and wealth inequality and to fiscal policy. Topics may be updated depending on the interests of the class.

– Provisional topics: Wealth inequality and the amplification of recessions. Earnings risk over the business cycle. The distributional effects of recessions. The role of unemployment and social insurance programs in stabilizing aggregate demand and output. Optimal policies with heterogeneous agents.