



Training opportunity: Heterogeneous Agent Macroeconomic Models Skills Workshop

Instructed by Prof. Alexander Ludwig (European University Institute - EUI)
31 March to 2 April 2025

Key learning goal: This course is designed to teach students how to solve a plain vanilla deterministic multi-period OLG model along a transition of the economy (after a policy reform). They will also learn about extensions of this model (including endogenous labor supply decisions) and the modifications that those extensions require to the baseline model. Finally, they will learn important economic mechanisms that emerge in stochastic models.

A. Deterministic Multi-Period Life-Cycle Models

Economics: Endogenous labor supply responses over the life-cycle. Role of bequests for understanding life-cycle asset accumulation.

Techniques: Bridge recursive and sequential methods to implement in trivial numerical solutions. Simple univariate rootfinding problems.

Literature: Lecture Notes, Handouts.

B. Deterministic Multi-Period Overlapping Generations Models: Steady State and Transition

Economics: Role of social security in deterministic environments, tax reforms, macroeconomic feedback, transitional dynamics.

Techniques: Computational implementation of 1) steady state solution with rootfinding and fix point iterations., 2) simple calibration, 3) transitional dynamics (i) after unexpected policy reform with (ii) exogenous demographic transitions.

Literature: Lecture Notes, selected Papers.

C. Stochastic Two Period OLG Model (If time permits)

Economics: Precautionary savings, pecuniary externalities, social planner problem, optimal capital income taxation, equivalence of social security and government debt.

Techniques: compare closed form analytical with computational solution; learn how to solve simple models with first-order iteration and value function iteration, including Howard's improvement algorithm.

Literature: Lecture Notes, selected papers.