CES Lectures:
Heterogeneous Agent Models in Macroeconomics

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- Lecture 1: Some Important Heterogeneous Agent Models
- Lecture 2: Solution Methods I: Linearization and Model Reduction
- Lecture 3: Solution Methods II: Nonlinear Solutions

Heterogeneous agent models are becoming more and more important in macroeconomics, both because they allow to study the distributional impact of fiscal and monetary policy, and because heterogeneity affects the aggregate response to these policies. However, the solution and empirical estimation of these models poses substantial computational problems. I will discuss the most widely used numerical solution methods as well as some new approaches. Participants can solve many of these models themselves with a toolkit that I have developed, which provides an easy-to-use syntax for heterogeneous agent models DSGE models.

References

Bayer, C., R. Luetticke, L. Pham-Dao, and V. Tjaden (2019, January). Precautionary Savings, Illiquid Assets, and the Aggregate Consequences of Shocks to Household Income Risk. *Econometrica 87*(1), 255–290.

Chang, Y. and S.-B. Kim (2007). Heterogeneity and aggregation: Implications for labor-market fluctuations. *American Economic Review 97*(5), 1939–1956.

Kaplan, G., B. Moll, and G. L. Violante (2018, March). Monetary policy according to hank. *American Economic Review 108*(3), 697–743.

Khan, A. and J. K. Thomas (2008). Idiosyncratic shocks and the role of noncenvixities in plant and aggregate investment dynamics. *Econometrica 76*(2), 395–436.

Krusell, P. and A. A. Smith (1998). Income and wealth heterogeneity in the macroeconomy. *Journal of Political Economy 106*(5), 867–96.

Reiter, M. (2009). Solving heterogenous agent models by projection and perturbation. *Journal of Economic Dynamics and Control 33*(3), 649–665.

Reiter, M. (2010a). Approximate and almost-exact aggregation in dynamic stochastic heterogeneous-agent models. IHS Working Paper 258.

Reiter, M. (2010b). Solving the incomplete markets model with aggregate uncertainty by backward induction. *Journal of Economic Dynamics and Control 34*(1), 28–35.

Reiter, M. (2019). Solving heterogeneous agent models with non-convex optimization problems: Linearization and beyond. Manuscript.