Welcome and Overview

NBER Heterogeneous-Agent Macro Workshop

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Spring 2022

Welcome

- This is the Heterogeneous-Agent Macro Workshop
- All taking place here in the Royal Sonesta Hotel
  - Lectures in Longfellow BC, lunches in Longfellow A, dinners in Parkview
- Generously funded by the NSF, fantastic planning help from the NBER staff
- 35 students from US & Europe selected from 230 outstanding applications
- Teaching material is collaboration between Adrien Auclert, Bence Bardóczy, Michael Cai, Rodolfo Rigato, Matt Rognlie, Martin Souchier & Ludwig Straub

Workshop objectives

- 10 lectures and 4 tutorials covering:

1. HANK: fiscal and monetary policy, in closed and open economies
2. Solution methods for GE models with heterogeneous agents

- By the end of the workshop, you should know how to:
  - Set up and calibrate the steady state of a heterogenous agent model
  - Get its first-order impulse responses to aggregate shocks
  - Estimate the model based on macro data
- We assume prior background in dynamic programming and NK models
- We'll use the sequence-space-jacobian toolbox to automate the hard steps. We'll teach you how to use it, as well as what's going on in the background.

Applications of the heterogeneous agent modeling framework

- Huge potential for het agent macro beyond HANK:
  - Price setting, financial frictions, firm dynamics, banking industry dynamics, search models of the labor market, the money market...
- Previous generation of these models have tended to:
  - focus on steady states
  - use tricks to "get rid of the distribution"

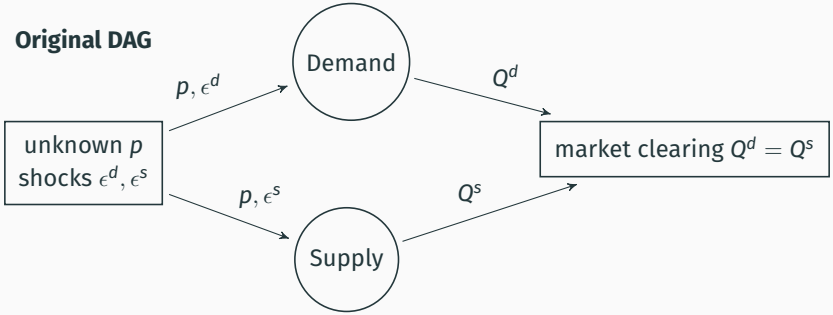
  $\rightarrow$ no longer any need to do either!
- Instead, can focus on key new questions for the field, eg:

  $\rightarrow$ when does heterogeneity matter?

  $\rightarrow$ what micro moments are important for aggregate outcomes?
- Exciting and fast growing literature. We're looking forward to your answers!

The sequence-space jacobian: a method and a philosophy

- SSJ is not just a solution method, but also a modeling philosophy
- Basic idea is to organize models into "blocks" that represent behavior of (possibly het.) agents, and interact in GE via small set of aggregates
- We'll often arrange these blocks into Directed Acyclic Graph ("DAG"). Helpful to solve model, think about causality in GE, do decompositions, etc



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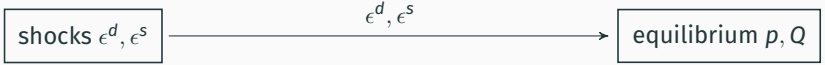
Solved model



Course material

- Schedule, syllabus, and lecture notes posted at:
  nber.org/conferences/heterogeneous-agent-macro-workshop-spring-2022
- Code for lecture notebooks and tutorials posted at:
  github.com/shade-econ/nber-workshop-2022
- Please come to tutorials with your laptops
- We are not recording these lectures to encourage class participation
- But we are planning to post videos at above link in the next few weeks

How can you get involved?

- Ask questions in class (but remember each class is short)
- Point our typos/errors in class material
- Raise issues with the code in the class repo
- After the workshop:
  - fill out our exit survey
  - contribute to our code replication archive (TBA)
- Talk to us if you want to get even more involved with developing SSJ!