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

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.
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  - Get its first-order impulse responses to aggregate shocks
  - Estimate the model based on macro data

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Applications of the heterogeneous agent modeling framework

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  • Price setting, financial frictions, firm dynamics, banking industry dynamics, search models of the labor market, the money market...
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• Instead, can focus on key new questions for the field, eg:
  → when does heterogeneity matter?
  → 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

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• 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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**Original DAG**

```
unknown p
shocks \( \epsilon^d, \epsilon^s \)
```

```
p, \( \epsilon^d \)  \rightarrow  Demand  \rightarrow  Q^d
```

```
p, \( \epsilon^s \)  \rightarrow  Supply  \rightarrow  Q^s
```

```
market clearing  \( Q^d = Q^s \)
```
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![Solved model diagram]

- shocks $\epsilon^d, \epsilon^s$
- $\epsilon^d, \epsilon^s$
- equilibrium $p, Q$
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!