

# Advancing Macro Finance University of Chicago

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## Session 2: Household Balance Sheets

- 1 What are the financial constraints that households face?  
Adam Guren
- 2 How do households form beliefs, for example about income and house prices, and what are their implications?  
Eduardo Davila
- 3 What are household assets and liabilities? How do household choices matter for macro outcomes?  
Anthony DeFusco

# Research before global financial crisis

- Households face financial constraints?
  - ▶ mostly simple borrowing constraints
- How do households form beliefs?
  - ▶ rational expectations
- What are household assets and liabilities?
  - ▶ assets: savings at "the" real rate
  - ▶ liabilities: small amount of uncollateralized borrowing

# Bewley 1986, Aiyagari 1994

- with only idiosyncratic shocks, **single asset**
  - ▶ no interesting asset pricing implications, no business cycles etc.
  - ▶ individuals maximize

$$E \left[ \sum_{t=0}^{\infty} \beta^t U(c_t) \right]$$

$$c_t + a_t = w l_t + (1 + r) a_{t-1}$$

$$a_t \geq -b$$

labor endowment  $l_t$  is iid

# Aggregate shocks

Telmer 1993: two agents, **one asset: safe short bond**

- same **borrowing constraint  $b$**
- individual endowments are shares of aggregate endowment
  - ▶ Mehra & Prescott (1995)

$$Y_t = \lambda_t Y_{t-1}$$

$$\lambda_t = \begin{cases} \lambda_1 & \text{with probability } \pi_{i1} \\ \lambda_2 & \text{with probability } \pi_{i2} \end{cases}$$

2 state Markov chain for aggregate growth: business cycle

- ▶ stochastic pie-sharing for individuals

$$Y_t^i = Q_t^i Y_t$$

$$Q_t^1 = \begin{cases} \text{in high state: } 1/2 \\ \text{in low state } \gamma \text{ with probability } 1/2, \\ (1 - \gamma) \text{ with probability } 1/2 \end{cases}$$

$$Q_t^2 = 1 - Q_t^1$$

with  $\gamma = 1/2$  back to representative agent

Constantinides and Duffie 1996: pie-sharing with **permanent shocks**

# Aggregate shocks

Krusell and Smith 1998: many agents, **one asset: capital**

- same **borrowing constraint**  $k \geq 0 = b$
- Cobb Douglas production function

$$y_t = z_t k_t^\alpha l_t^{1-\alpha}$$

- ▶ aggregate shocks 2 state Markov chain for  $z$ : business cycles
- ▶ mass one of agents, each could work  $\bar{l}$ , actually works  $\varepsilon \bar{l}$   
 $\varepsilon = 1$  works or unemployed  $\varepsilon = 0$
- ▶ high state: fraction  $u_b$  doesn't work  
low state: fraction  $u_g < u_b$  doesn't work
- complicated: endogenous state variable is high-dimensional object!
- assume: agents are boundedly rational
  - ▶ agents believe that law of motion is simpler, characterized by few moments

# Housing boom —> global financial crisis

- Looser constraints
  - ▶ mostly more collateralized borrowing, also some uncollateralized
  - ▶ housing as collateral: need more than one asset, portfolio choice
  - ▶ housing is tricky asset: illiquid, little room to get experience in trading
  - ▶ seniors use their houses as ATMs – refis, second mortgages, Helocs
  - ▶ long-term borrowing with possibility to refi, how easy is that?
  - ▶ stocks recovered before houses did, are they also illiquid assets?
  - ▶ measures of constraints – want MPCs over time
  - ▶ home buyers (few people) have crazy expectations
  - ▶ other crazy people buy many houses and flip them
- Banks loosened the constraints – connection to this morning
- Remember Winston Churchill's advice
  - ▶ Never let a good crisis go to waste!
  - ▶ Many first year PhD students are interested after pandemic