Advancing Macro Finance
University of Chicago

Monika Piazzesi
Stanford University, NBER and CEPR

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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 \underline{borrowing constraints}

- How do households form beliefs?
  - \underline{rational expectations}

- What are household assets and liabilities?
  - assets: savings at "the" real rate
  - liabilities: small amount of \underline{uncollateralized borrowing}
with only idiosyncratic shocks, single asset

- no interesting asset pricing implications, no business cycles etc.
- individuals maximize

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

\[
c_t + a_t = wl_t + (1 + r) a_{t-1}
\]

\[
a_t \geq -b
\]

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

  \[
  Y^i_t = Q^i_t Y_t
  \]

  \[
  Q^1_t = \begin{cases} 
  \frac{1}{2} & \text{in high state: } 1/2 \\
  (1 - \gamma) & \text{in low state } \gamma \text{ with probability } 1/2, 
  \end{cases}
  \]

  \[
  Q^2_t = 1 - Q^1_t
  \]

  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 $\rightarrow$ 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 uses 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