

# Discussion of “Financial Instability via Adaptive Learning”

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June 2013

# Research question and motivation

- What explains recurrent booms and busts in asset prices?
- Attempt to formalize Minsky's "financial instability hypothesis"
- Attempt to bring learning to mainstream macro without introducing too many free parameters

# Methodology

- A variation of a Lucas tree model
- Two assets: stocks and bonds (unlike Adam and Marcet, 2012)
- Bonds have a fixed return  $R$
- Stocks are in fixed supply

# Methodology

- Dividend growth is log-normal
- Agents are identical, have power utility over consumption
- Choose how much to consume and portfolio of stocks and bonds

# Methodology

- Borrowing constraint to prevent negative stock prices
- Key feature: adaptive learning about the mean  $m$  and standard deviation  $s$  of stock returns
- Paper studies both decreasing-gain and constant-gain learning with focus on the latter

# Main findings

- With decreasing-gain learning, after initial volatility, beliefs converge to a Self Confirming Equilibrium (SCE)
- Effects of learning vanish over time
- P/D ratio exhibits i.i.d. fluctuations around a constant mean

# Main findings

- In contrast, with constant gain learning the P/D ratio exhibits recurrent booms and busts
- Driven by substantial fluctuations in beliefs
- Beliefs drawn towards SCE but there are occasional “escapes”

# Overall assessment

- Very interesting paper and promising line of research
- Illustrates how adaptive learning may lead to recurrent booms and busts in asset prices, similar to Minsky's hypothesis
- Intuitive mechanism: returns affect beliefs, and beliefs affect returns. Hence momentum
- The model is simple, with few free parameters
- Explores a relatively "small" deviation from full rationality



# Comments

- How general is the result?
- To what extent does it depend on the particular learning scheme?

# Comments

- Implicit free parameter: which variable is the learning about?
- What if learning is about prices or dividends instead of returns?
- Would the main results go through?

# Comments

- Agents do not take into account that they learn and that their beliefs will change over time
- Borrowing constraint not taken into account by agents
- How to solve the model with occasionally binding borrowing constraint?

# Comments

- Quantitative results: how well can the model match the observed behavior of stock prices and P/D ratio?
- Can it match the P/D volatility and persistence?
- If one feeds the historical returns, would the model predict the time series evolution of P/D?
- Are expected returns predicted by the model in line with available survey evidence (Vissing-Jorgensen, 2003)?

# Comments

- What are the policy implications?
- How far are we from a well-confirmed quantitative model of bubbles?
- Can and should policymakers try to moderate boom and bust cycles?