Optimal macroprudential policy and asset price bubbles 
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Overview

How should macroprudential policy react to asset price bubbles?

This paper:

- Develop macro model with financial constraints and bubbles.
- Explore optimal macroprudential policy.
A bird’s eye view of macropru

- Simple world: Today agents are unconstrained but potential crisis Tomorrow
  - e.g. low productivity, tight financial constraints

- Agents are rational: anticipate likelihood of crisis

- But do not fully internalize effects of their choices on the severity of the crisis
  - Deleveraging $\rightarrow$ fall in AD $\rightarrow$ fall in output (AD externalities)
  - Capital sales $\rightarrow$ fall in price of capital $\rightarrow$ tight financial constraints (pecuniary externalities)

- Too much borrowing ex ante $\rightarrow$ need for macropru!
What changes when we introduce (rational) bubbles?

Firms borrow against market value: fundamental and bubbly components

\[ V_t = q_t \cdot k_t + b_t \]

Main effects:

- *Extensive margin*: bubbles provide collateral but can burst
- *Intensive margin*: bubble valuation itself endogenous

Conceptual/quantitative implications for optimal macroprudential tax
Skeleton of framework

- Key (simplified) equations:
  - SOE, financing (intra- and inter-period) subject to constraints:

\[
financing_t \leq m_t \cdot \left[ \beta \cdot E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot ([F_{k,t+1} + q_{t+1}] \cdot k_t + b_{t+1}) \right) \right]
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  - Pricing of capital:
    \[ q_t = E_t \left[ \frac{U_{c,t+1}}{U_{c,t}} \cdot (F_{k,t+1} + q_{t+1}) \right] \]

where \( \mu_t \) is multiplier on borrowing constraint, \( \mu_t > 0 \), \( b_t > \beta E_t U_{c,t+1} U_{c,t} \).
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  - Pricing of bubble:
    \[ b_t = (1 + m_t \cdot \mu_t) \cdot \beta \cdot E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot b_{t+1} \right) \]
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Rationale for macropru and the bubble

- **Standard effect in literature**
  - When deciding $t-1$ borrowing, agents do not internalize effect on $U_{c,t}$ and thus on $q_t$:
    \[ \downarrow q_t = E_t \left[ \frac{U_{c,t+1}}{U_{c,t}} \cdot (F_{k,t+1} + q_{t+1}) \right] \]
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- **Intensive margin:**
  - When deciding $t-1$ borrowing, agents do not internalize effect on $U_{c,t}$ and $\mu_t$, and thus on $E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot b_{t+1} \right)$:
    \[
    b_t = (1 + m_t \cdot \mu_t) \cdot \beta \cdot E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot b_{t+1} \right)
    \]
Quantitative implications

- Net effect of bubbles on macroprudential tax depends on debt level
Welcome connection between bubbles and macroprudential literatures

- We live in a world of asset price booms and busts
- Important to understand implications for macropru

My comments:

- Paper is not an easy read
- Focus on general/robust insights
- Do they apply only to bubbles?
United States: Household Net Worth / GDP

Sources: BEA, Board of Governors
fred.stlouisfed.org
Paper is not always easy to follow

- Combines complex frameworks (Mendoza-Bianchi/Miao-Wang)
  - Occasionally binding financial constraints, rational bubbles, etc...
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"Ohhhhh... Look at that, Schuster... Dogs are so cute when they try to comprehend quantum mechanics."
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- My advice: sharpen robust insights/messages
What I fully buy: extensive margin

- Bubbles...
  - provide collateral: relax constraints, reduce need for macropru
  - but they can burst!: source of crises, increase need for macropru

- Very natural result, extends beyond specific modeling of bubbles
  - Natural interaction between bubbles and stock of debt
  - Bubble correlation to productivity and/or financial shocks

- Questions:
  - To what extent are quantitative results driven by extensive margin?
    - Decompose tax into intensive and extensive margin
  - Does it rely on bubbles? (e.g. what changes if these are Lucas trees?)
What I buy (understand) less

- Results in this literature tend to be sensitive to *borrowing constraint*:

\[
financing_t \leq m_t \cdot \left[ q_t \cdot k_t + \beta \cdot E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot b_{t+1} \right) \right]
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- **Rationale**: if default, lenders seize firm and resell it next period
- But borrowing is from foreigners (interest rate \( R \))
  - Why use domestic SDF to discount future value of firm?
- What would change is borrowing is backed by current value of firm?
What I buy (understand) less

- **Intensive margin**: externality on $b_t$ similar to traditional one on $q_t$
  - But $b_t$ is a state variable
  - Not sure why $E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot b_{t+1} \right)$ changes with $U_{c,t}$
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    b_t = (1 + m_t \cdot \mu_t) \cdot \beta \cdot E_t \left( \frac{U_{c,t+1}}{U_{c,t}} \cdot b_{t+1} \right)
    \]
  - Crucial difference between bubble and fundamental assets (e.g. trees)
  - Of course, $U_{c,t}$ also affects growth between $t - 1$ and $t$
    - But for this, equilibrium selection is key
Final remarks

- We live in a world of asset price booms and busts
- How do they shape optimal macroprudential policy?
  - Asset booms provide collateral (↓ macropru) but they may end (↑ macropru)
  - Extensive margin very convincing, intensive margin less so...
- Does it matter whether booms/busts are driven by bubbles or not?