Bubbly Recessions

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Main Message

- Efficiency tradeoff: a bubble burst can cause negative effects exceeding the efficiency gains arising during the bubbly phase (ex-post inefficiency)

- The burst of a bubble can cause:
    a. Long-lasting unemployment spells
    b. Liquidity trap episodes

Key Features

1. Infinite Horizon model with Rational Bubbles

2. Downward Nominal Wage Rigidity + ZLB

3. Optimal Macro Prudential Policy

4. Focus on long run effects of bubbles: secular stagnation

Two Relevant Related Papers

- Schmitt-Grohé and Uribe (2017) + story (bubble) for liquidity trap

- Ikeda (2017) + long run effects

Downward Nominal Wage Rigidity

$$\frac{w_t}{w_{t-1}} \geq \frac{\Pi_0}{\Pi_t} L_t^{\gamma_1} \quad \Pi^* > \Pi_0 > \Pi_{trap} \tag{1}$$

Condition for existence of two steady states: nominal wages (under full employment) must grow at least at a rate Π_0 and $\gamma_1 > 0$.

1. Good bubbleless and bubble:

$$\underbrace{\frac{\Pi_0}{\Pi^*}}_{<1} \underbrace{L_t^{\gamma_1}}_{=1}, \text{ constraint not binding} \tag{2}$$

2. trap:

$$\underbrace{\frac{\Pi_0}{\Pi_{trap}}}_{>1}, \ L_t = \left(\frac{\Pi_{trap}}{\Pi_0}\right)^{\frac{1}{\gamma_1}} < 1, \text{ constraint binding} \tag{3}$$

Why a Large Bubble

- H-types would always like to borrow more (binding borrowing constraint)
- In the absence of a bubble the marginal investor is an L-type
- A small bubble mitigates the effects of the borrowing constraint but the marginal investor remains L-type
- A large bubble makes L-types want to lend H-types an amount larger than their wealth
- The $I_t^L \geq 0$ constraint binds
- The marginal investor becomes an H-type
- Return on capital decreases as more capital accumulates but is still higher than pre bubble
- The natural rate is too high for the ZLB to bind

Bubbly
Recessions

Intro
Key points
DNWR
Large Bubble
MP
Optimal Policy
Comments
Conclusions

Monetary Policy and the Marginal Investor

$$1 + i_{t,t+1} = \max \left\{ 0, R^f_{t,t+1} \left(\Pi_{t-1,t} \right)^{\zeta} \left(\Pi^* \right)^{1-\zeta} \right\} \quad (4)$$

$R^f_{t,t+1}$ is defined as the marginal product of capital at full employment and **given the bubble** (and consequently the marginal investor).

Key necessary conditions for the post-bubble slump:

❶ the intercept of the policy rule ($R^f_{t,t+1}\Pi^*$) be not constant

❷ the marginal investor switches

Natural Rate and ZLB
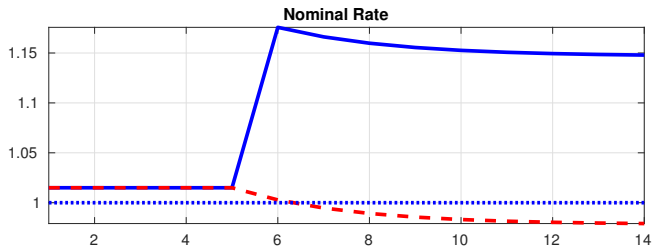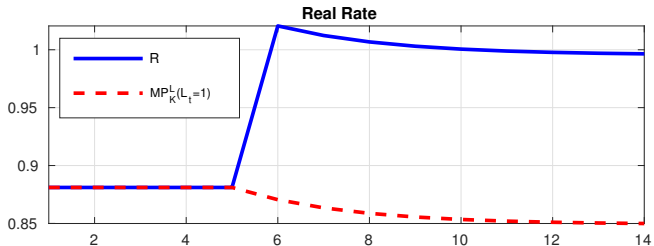
Figure:

Natural Rate over the Three Phases

❶ Pre Bubble
   a. $R^f_{t,t+1} = MP^L_K(L_t = 1) = a^L \alpha K^{\alpha-1}_{t+1}$
   b. $R^f_{t,t+1} \Pi^* > 1$

❷ Large Bubble
   a. $R^f_{t,t+1} > MP^L_K(L_t = 1)$ (marginal investor switch)
   b. $R^f_{t,t+1} \Pi^* > 1$
   c. $MP^L_K(L_t = 1)\Pi^*$ falls below one as K increases

❸ Post Bubble
   a. $R^f_{t,t+1} = MP^L_K(L_t = 1)$
   b. $R^f_{t,t+1} \Pi^* < 1$
   c. ZLB
   d. $R^f_{t,t+1} < R_{t,t+1}$ (as $L_t < 1$)

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Macroprudential Policy Goals

Ultimate Goal.
Maximizing the workers' welfare given full employment

Intermediate Goals.

1. Ensure slack ZLB, i.e. prevent excessive capital accumulation

2. Allow capital to increase so as to reap the benefits of the bubble

Solution.
τ s.t. capital is as high as possible short of making real rates falling to the point where the ZLB would bind.

Parametrization

1. there are two bubbleless steady states

2. credit constraint always binding

3. DNWR and ZLB not binding in the good bubbleless steady state and during the bubble

4. a bubbly steady state exists

5. a bubble can be large or small

6. a bubble is expansionary

7. after a large bubble bursts both constraints become binding and the economy converges to a liquidity trap with involuntary unemployment (implicitly also a condition on the duration of the bubble so that $R^f_{t,t+1}\Pi^* < 1$ when it bursts)

Monetary Policy

Macroprudential policy is more common in these models, but the nominal frictions allow a discussion of MP:

① The nature of the slump is such that standard lower-for-longer policies are not an option in this environment

② There exist parametrizations s.t. the ZLB binds during the bubble and this prevent the slump (without causing unemployment while at the ZLB):

- is it the case that policies that do not track the fall in the natural rate during the bubble are enough to prevent the slump? (Schmitt-Grohe and Uribe (2017) peg)

③ Policy over the bubbly period (Ikeda, 2017)

More generally, what conditions can help prevent a slump?

Conclusions

- Very valuable model to think about the tradeoffs bubbles can present

- Interesting insights into the possible causes of a prolonged slump