

Monetary Policy and Bubbles in a New Keynesian Model with Overlapping Generations

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The new macroeconomics of aggregate fluctuations and stabilisation policy

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Quiz

- ▶ Ask a French for the capital of bubbles:



- ▶ Ask a Spaniard for the capital of bubbles:



- ▶ (Don't) Ask Donald Trump for the capital of bubbles:



- ▶ Ask a Catalan for the capital of bubbles:





- ▶ But ask any economist in the world for the capital of bubbles:





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Roadmap

1. (Short) Summary
2. Four Comments

Roadmap

1. Summary
2. Four Comments

1. Summary

- ▶ Once again a paper that will become a classic
- ▶ Take an OLG structure so that bubbles can exist
- ▶ In order to be closer to standard infinite horizon models, BLANCHARD-YAARI structure + probability $1 - v$ to fall permanently in non activity
- ▶ If v is small enough,
 - × retirement period is long,
 - × supply of loanable funds is large,
 - × the real interest rate is low,
 - × bubbles can exist
 - × and does not violate the transversality condition of households because of the OLG structure
- ▶ The N and S condition for the existence of a bubbly BGP is

$$v < \beta$$

1. Summary

- ▶ Assume on top of this a NK supply side

- × Calvo setting,
- × $Y_t(i) = N_t(i)$
- × Taylor rule

$$i_t = \phi_\pi \pi_t + \underbrace{\phi_q q_t^B}_{\text{bubble}}$$

- ▶ A whole set of new results are obtained

- × Bubbleless economy : *reinforced* Taylor principle if prices are flexible enough
- × Bubbleless economy and flex prices: The bubble does not affect real quantities
- × Bubbly economy:
 - ▶ Bubbles effect on y and π , can be offset for one particular ϕ_q^* – *i.e.* by properly leaning against the bubble...
 - ▶ ... but choosing a wrong ϕ_q^* can be destabilizing.

Roadmap

1. Summary
2. Four Comments

2. Comment #1

- ▶ I am most of the time happy with Rational Expectations as a working assumption,
- ▶ Rational bubbles is one thing for which results might heavily depend on the RE assumption
- ▶ Jordi former AER paper first section example is a good illustration.

2. Comment #1

- ▶ Take a partial equilibrium example
- ▶ Deterministic economy with linear utility investors
- ▶ Exogenous (constant) gross interest rate $R > 1$.
- ▶ Asset that pays constant dividend D and with ex dividend price in period t denoted by Q_t
- ▶ By arbitrage:

$$RQ_t = D + Q_{t+1}^e,$$

- ▶ The asset price can be split into two terms, a fundamental value Q^F and a bubble Q_t^B .

$$Q^F = \sum_{j=1}^{\infty} R^{-j} D = \frac{D}{R-1},$$

- ▶ The bubble component is defined as

$$Q_t^B = Q_t - Q^F.$$

2. Comment #1

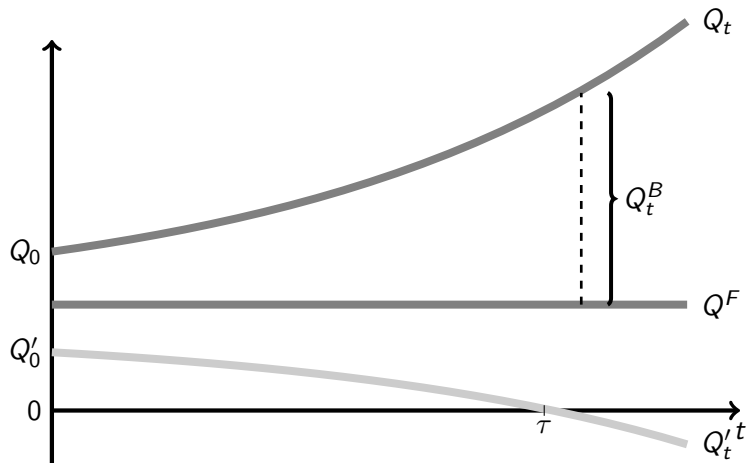
- ▶ With rational expectations (perfect foresight) : $Q_{t+1}^e = Q_{t+1}$, we have:

$$Q_{t+1}^B = RQ_t^B.$$

- ▶ The bubble grow at the interest rate
- ▶ It cannot be negative

2. Comment #1

Figure 1: A rational bubble

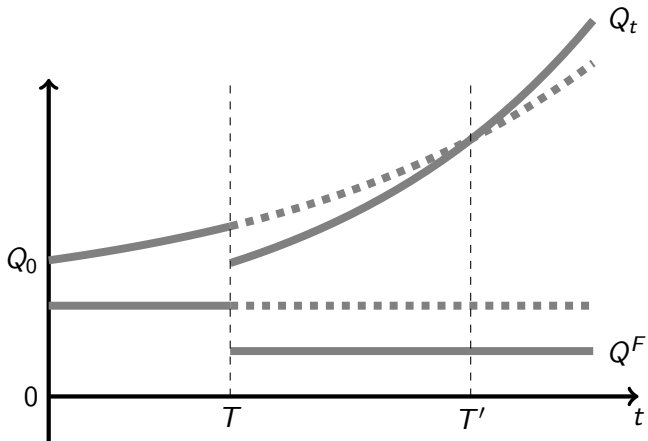


2. Comment #1

- ▶ Galì: *“ Contrary to the conventional wisdom a stronger interest rate response to bubble fluctuations (i.e. a “leaning against the wind policy”) may raise the volatility of asset prices and of their bubble component.”*

2. Comment #1

Figure 2: An increase in the interest rate in period T with rational bubble



2. Comment #1

- ▶ This set of results relies heavily of the RE assumption.
- ▶ Assume instead extrapolative expectations:

$$Q_{t+1}^e = Q_{t-1}$$

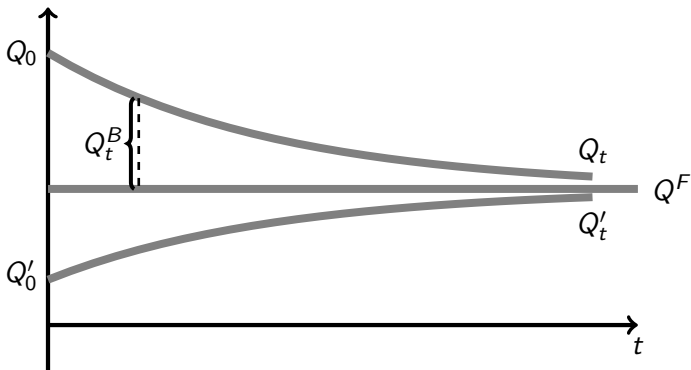
- ▶ Take initial level of bubble as given the Q_{-1}^B , as given.
- ▶

$$Q_t^B = \frac{Q_{t-1}}{R} - \frac{D}{R(R-1)}$$

- ▶ Then
 - × negative bubbles can occur

2. Comment #1

Figure 3: A bubble with extrapolative expectations



2. Comment #1

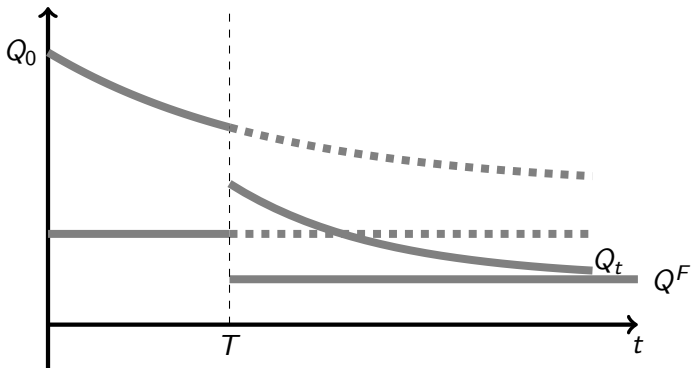
- ▶ This set of results relies heavily of the RE assumption.
- ▶ Assume instead extrapolative expectations:

$$Q_{t+1}^e = Q_{t-1}$$

- ▶ Take initial level of bubble as given the Q_{-1}^B , as given.
- ▶ Then
 - × negative bubbles can occur
 - × Increasing R reduces the size of the bubble

2. Comment #1

Figure 4: An increase in the interest rate in period T with extrapolative expectations



2. Comment #1

- ▶ I am not able to do a quick-and-dirty check of this paper results robustness to non-rational expectations
- ▶ and it is not clear what is the best alternative to RE
- ▶ But it would be worse doing a long-and-clean inspection of it.

3. Comment #2

- ▶ Exogenous fluctuations in the bubble (like a bubble burst) seems like a very nice new theory for demand shocks.
- ▶ Is the NK framework a good framework to think of demand shocks?
- ▶ In this paper, if price stickiness goes to zero, the bubble becomes irrelevant
- ▶ Best policy is still to replicate flex price \rightsquigarrow be super aggressive against inflation.
- ▶ What if one works with models where demand matter absent of sticky prices?
- ▶ BEAUDRY & PORTIER (2017) "*Real Keynesian Models and Sticky Prices*" explore this question.

3. Comment #2

- ▶ BEAUDRY & PORTIER (2017) *“Real Keynesian Models and Sticky Prices”*:
- ▶ In NK (New/Nominal Keynesian) models, the effect of demand shocks (say shocks to β) goes to zero when prices tend to be fully flexible
- ▶ There is an old literature on Keynesian effect of demand shocks in flex price economies (COOPER & JOHN, MURPHY, SHLEIFER & VISHNY, KIYOTAKI, DIAMOND...)
- ▶ We develop a generalized model that embeds the NK model and a RK model in which demand shocks matter even when price are fully flexible.
- ▶ RK is favoured by the data
- ▶ An RK model with sticky price has very different implications in terms of monetary policy:
 - × Determinacy with a fixed nominal rate rule
 - × Therefore very different behavior at the ZLB
 - × Unpleasant tradeoff between inflation and output stabilization with demand shocks

3. Comment #2

- ▶ An RK model is likely to have quite different implications in terms of the impact of monetary policy with bubbles
- ▶ Too difficult to do it in a few hours...

4. Comment #3

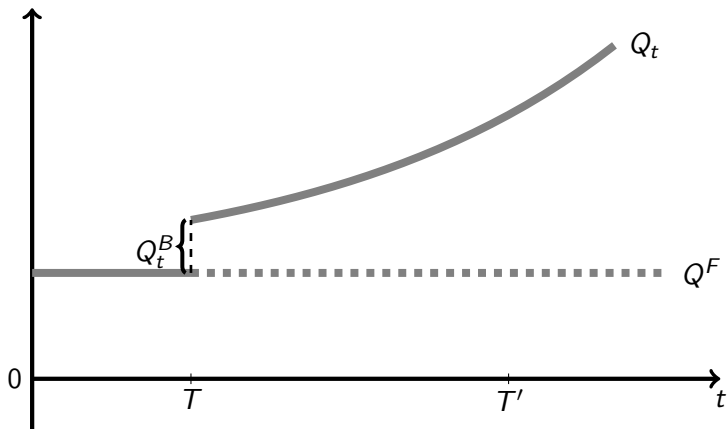
- ▶ OLG models are ideal models for monetary theory
- ▶ Money as a bubble
- ▶ Let's have money being a bubble instead of being in a cashless economy
- ▶ Now prices are sticky, but they are denominated in units of the bubble
- ▶ How does that effect monetary policy? Shall we get rid of the bubbles? which ones?

5. Comment #4

- ▶ Galì: *“[In the model,] the rise and fall of an aggregate bubble is likely to have small quantitative effects on aggregate demand and, hence, on output and inflation. To the extent that the historical evidence points to a larger macro impact of bubbles, there may be additional channels through which that impact operates.”*
- ▶ Do we know that? Are asset prices boom-busts episodes clearly rational bubbles?
- ▶ Are there not other stories with similar predications?

5. Comment #4

Figure 5: A rational bubble that starts in period T



5. Comment #4

Figure 6: A news in T that is realized in T'

