

Discussion of “Monetary Policy and Bubbles in a New Keynesian Model with Overlapping Generations”, by Jordi Galí

Oscar Arce
Banco de España

31st August 2017

1st Banco de España Annual Research Conference

Madrid

What the paper does

- **Provide a DSGE model with an OLG structure à la Blanchard-Yaari with:**

- Stochastic retirement \Rightarrow balanced growth paths with rational bubbles
- Nominal price rigidities \Rightarrow real effects of monetary policy (MP)

\Rightarrow A rigorous and novel framework to analyze the conditions for the existence and the effects of rational bubbles within the workhorse model of MP

- **Analyze the role of MP to stabilize output and inflation in the presence of bubbles:**

- Monetary policies that lean against a bubble are shown to be potentially destabilizing, and likely to be dominated by inflation targeting

\Rightarrow A suggestive contribution to the current intellectual and policy debate about the role of MP in safeguarding macrofinancial stability

This discussion

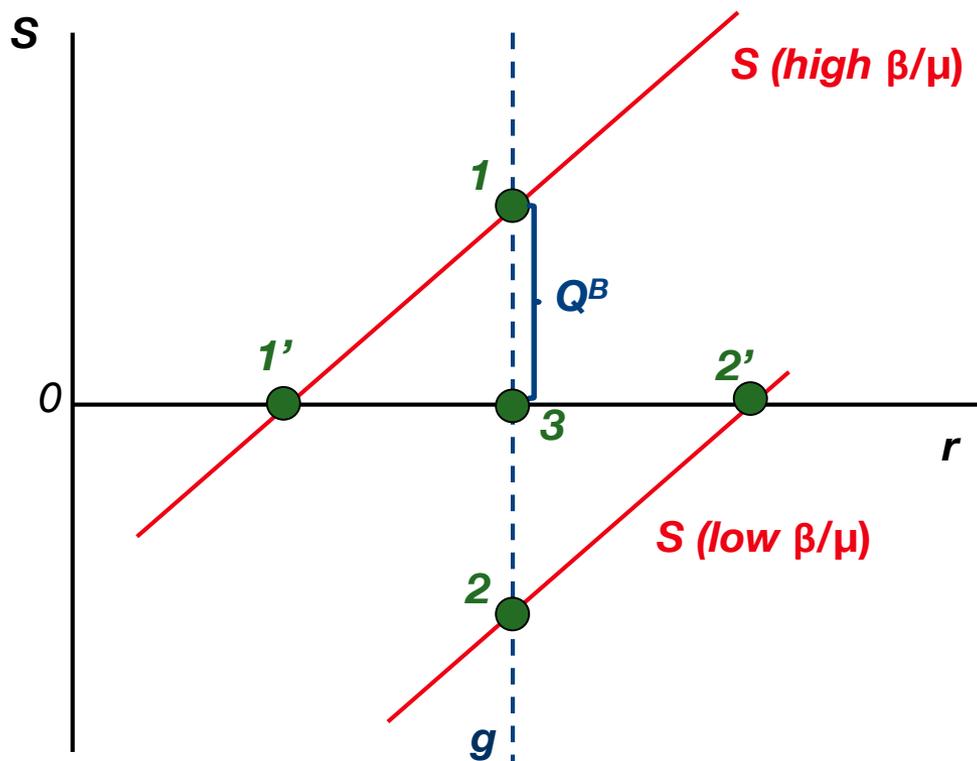
- **A brief description of the bubble-generating mechanism**
- **A critical reading of policy prescriptions**
- **I leave out other interesting issues (local determinacy, “reinforced Taylor principle”, etc.)**

Bubbles along a deterministic balanced growth path (BGP)

- Three necessary conditions for a BGP with a bubble [henceforth, **assume $u = 0$**]:
 - 1) Non-arbitrage: $\Delta Q^B/Q^B = r$
 - 2) Stationarity: $\Delta Q^B/Q^B = \Delta Y/Y \equiv g$
 - 3) Non-negativity: $Q^B > 0$
- Market clearing: $A = Q^F + Q^B$.

A: the aggregate demand for assets (savings supply);
Q^F : the supply of non-bubbly assets (firms' stocks).
- $S \equiv A - Q^F$ the gap between the supply of savings and the supply of non-bubbly assets.
- Hence, nec & suf conditions for a bubble in a BGP: **1') $r = g$, and 2') $S > 0$** .
- **S** satisfies $S_r > 0$, and $S_{\beta/\mu} > 0$, around a BGP:
 - Both a low discount factor (high β) and high probability of retirement (low μ) raise the supply of savings relative to the supply of non-bubbly assets.

Bubbles along a deterministic BGP: A graphical illustration



nec & suf conditions for $Q^B > 0$:

1') $r = g$, and 2') $S > 0$

1: Bubble BGP

1': No-bubble BGP

2: No-equilibrium ($S < 0$)

2': Unique no-bubble BGP

3: Unique no-bubble BGP
when $\beta = \mu$, with $r = g$

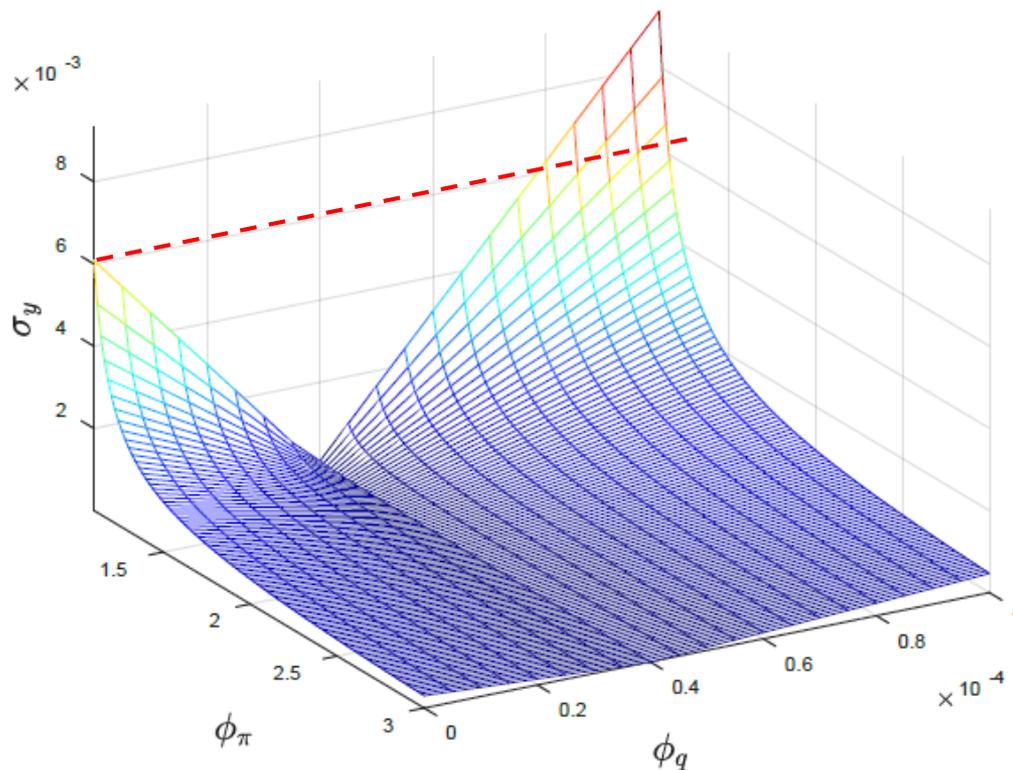
- There is a BGP with a bubble iff $\beta/\mu > 1$, hence the necessity of the **retirement assumption** for a BGP with a bubble ($\beta < 1$, prob retirement: $1 - \mu$)

The role of retirement

- Retirement makes possible a **disconnection between the supply of savings and the supply of non-bubbly assets**, the gap being filled by the bubble.
- Hence, a bubble here is a symptom (and a remedy) for:
 - Too much saving chasing too few non-bubbly assets - “*savings glut*”, Bernanke (2005); or...
 - Too few assets chasing too much saving - “*asset scarcity*”, Caballero (2006), Caballero and Krishnamurthy (2006).
- **Is retirement a realistic driver of $S > 0$? YES**
- **Plausible calibrations of the model allow for bubbly BGP.**

The main policy message

“**[1]** Monetary policies that lean against a bubble are shown to be potentially destabilizing, and **[2]** likely to be dominated by inflation targeting policies”



[2] A bubble here is much like an exogenous demand shock
 \Rightarrow IT is effective in stabilizing output.
 \Rightarrow No trade-off

[1] Not responding to the bubble at all may be preferable to responding too much (especially, when ϕ_π is low)

Figure 3, Galí (2017)

My reading of policy conclusion [1]

- The region where leaning against the bubble is destabilizing (versus $\varphi_q = 0$) is such that:
 - A positive shock to the bubble would trigger a large rise in r and a fall in y and π
 - A strong response to the bubble would eventually increase the magnitude of the bubble fluctuations around a bubbly BGP (Galí 2014)
 - **without the possibility of pricking the bubble.**

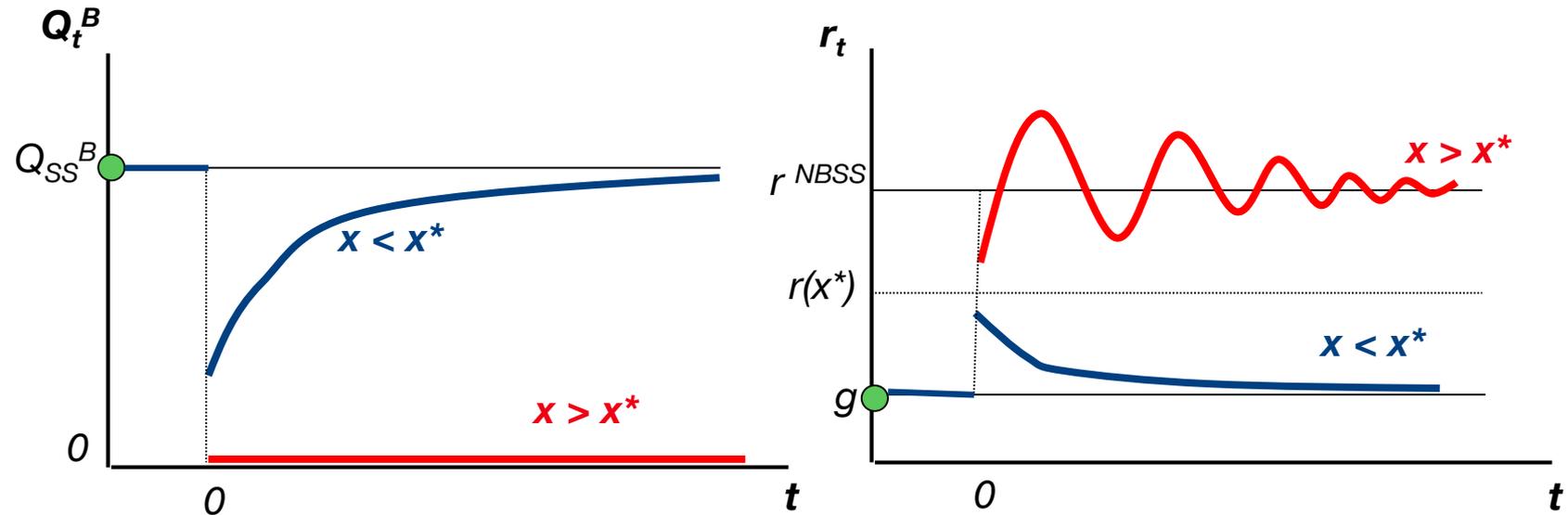
- **From a policy perspective, the possibility of pricking the bubble with a sufficiently aggressive policy is an interesting one (common wisdom?).**

Can monetary policy remove a bubble?

- **Does the model allow for this possibility?**
- The **local dynamic analysis** in the paper leaves this question answered.....
- E.g. assume initially there is a bubble around a bubbly BGP.
 - **Then, may a monetary policy tightening push the economy into a bubbleless region?**
- Recall: If there is a bubbly BGP, then there is always a bubbleless BGP.
 - **May a policy shock push $S_t < 0$?**

Pricking bubbles: A global analysis example

- In Arce and López-Salido (2011), a sufficiently large negative temporary shock on the supply of savings at $t = 0$, $x \geq x^*$, pricks the bubble (and raises r_t):



- The smallest shock that pricks the bubble, x^* , depends on a large number of parameters and on the initial condition (including the size of the bubble).
- A policy maker wishing to prick the bubble with limited knowledge could implement $x < x^*$, inducing extra volatility in the bubble and higher interest rates

➤ Hence, as in Galí (2017) an element of policy caution is warranted.

Global analysis?

- In Galí (2017), interesting to explore policy-driven regime changes.
- If policy-shocks could shift the economy from the vicinity of a bubbly BGP to a bubbleless one, then **policies of leaning against the bubble**:
 - **Could affect directly the dynamics of the bubble in a disruptive way** (not only via $\Delta Q_t^B / Q_t^B = r_t$)
 - **Would face non-trivial trade-offs**, e.g. raise the interest, prick the bubble and create a recession today with the expectation of avoiding future costs.
- **Also, may expansionary monetary policies create the conditions for bubbles?**
- Dong, Miao and Wang (2017) consider a DSGE à la Kiyotaki and Moore (2008) where a contractionary MP may remove bubbles (by altering the steady state due to non-superneutrality, no global analysis).

On the nature of the “appropriate” policy with bubbles (I): Individual heterogeneity?

- Inflation targeting is very effective in stabilizing output and inflation in the model, which is good for welfare in the typical NK rep-agent economy.
- **Heterogeneity?**
 - The model features a lot of individual heterogeneity (different ages, retired/active, bubble sellers/buyers, differences portfolio composition.....)
 - Deriving the optimal policy may be too complex....
 - ...but could look at how different policies of leaning against the bubble affect some prototypical agents (e.g. a retiree vs an active, bubble seller vs buyer, etc.)?

On the nature of the “appropriate” policy with bubbles (II): The case for bubbles on intrinsically useful assets

- **Welfare effects of bubbles?**
 - Some forms of bubbles may potentially favor welfare (Martín and Ventura 2012).
 - Others are likely to cause important **welfare costs if the bubble builds on intrinsically useful assets** (e.g. a housing bubble in Arce and López 2011).
 - In the last case, **there may be some value in policies that lean directly against the bubble**, even if the bubble does not cause extra volatility on y and π .

Final comments

- **A very elegant paper that will help discipline the old debate about the role of MP in environment of bubbles (long time due.....).**
- **Some relevant policy questions remain elusive in the current version**
 - e.g. can MP affect the conditions under which bubbles may emerge or explode?
 - What are the most relevant trade-offs when a contractionary MP may be used to prick a bubble?
 - If expansionary MP creates the conditions for bubbles, which tools can be used to avoid their unwanted effects?
- **Global analysis would help address some of these and other issues (non-conventional MP, ZLB, interaction between MP and macroprudential policies....).**