Discussion of

No-Bubble Condition: Model-Free Tests in Housing Markets

by S. Giglio, M. Maggiori, and J. Stroebel

Stefan Nagel

University of Michigan, NBER, CEPR

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Main idea

- Leasehold with expiration at T^L

$$P_t^L = \sum_{i=1}^{T^L} E_t\left[\xi_{t+i} D_{t+i}^L\right]$$

- Freehold

$$P_t^F = \sum_{i=1}^{T^L} E_t\left[\xi_{t+i} D_{t+i}^F\right] + \sum_{i=T^L+1}^{\infty} E_t\left[\xi_{t+i} D_{t+i}^F\right] + B_t$$

where

$$B_t \equiv \lim_{T\to\infty} E_t\left[\xi_T P_T\right]$$

- Because $\sum_{i=T^L+1}^{\infty} E_t\left[\xi_{t+i} D_{t+i}^F\right] \approx 0$ for $T^L = 700$, we get

$$P_t^F - P_t^L = B_t$$

if

$$E_t\left[D_{t+i}^F\right] = E_t\left[D_{t+i}^L\right]$$

Main idea

- Prominent example: Rational bubble

$$B_t = E_t\left[\xi_{t+1} B_{t+1}\right]$$

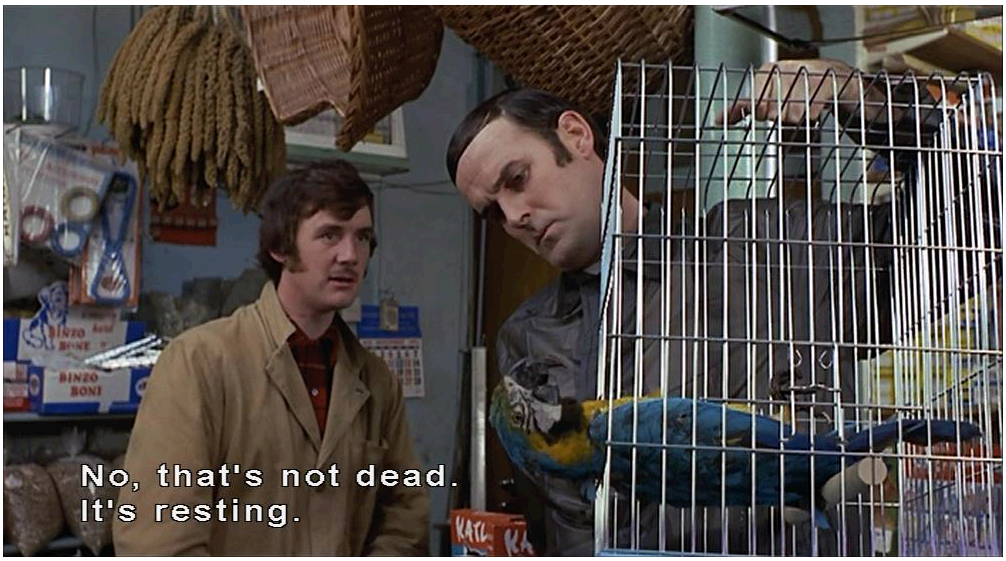
  where $E_t[.]$ denotes rational expectations.
- Special case: Rational bubble w/o systematic risk

$$B_t = \frac{E_t[B_{t+1}]}{1+r}$$

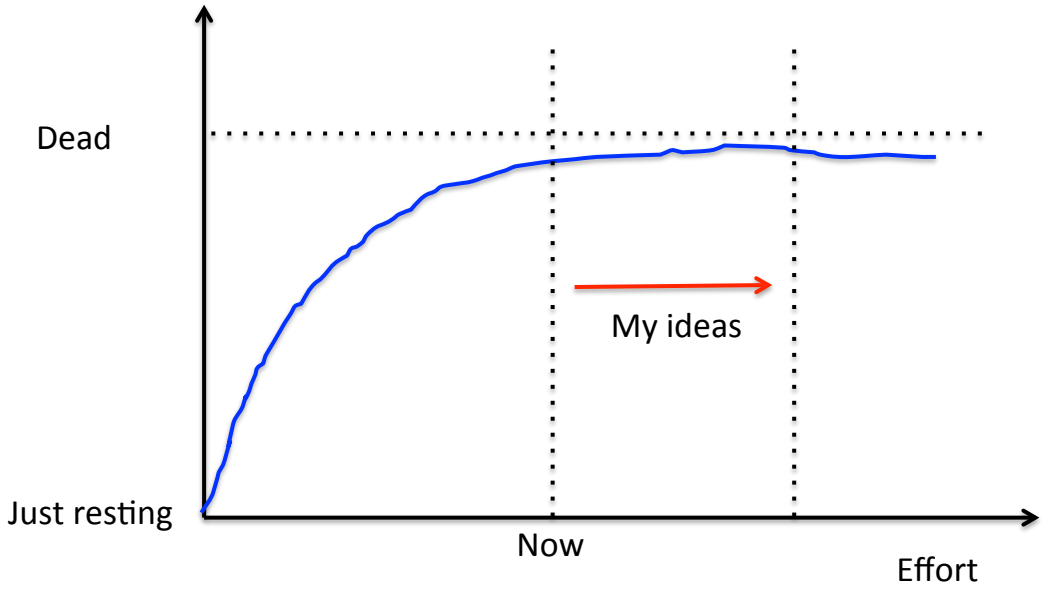
Stuff I am now probably expected to complain about

- "What about some unobservable characteristic X missing in the hedonic regression (that for some reason does not affect rents) that drives a wedge between $E_t\left[D^F_{t+i}\right]$ and $E_t\left[D^L_{t+i}\right]$?"
  - Paper is very careful in looking even at rather implausible causes of such a wedge
- "One day the world will end so freehold can't truly be infinite maturity"
  - Sure, but this just means that rational bubble can't exist in the first place
- ...

Rational bubble theory: Dead or just resting?



Marginal gains from further tests of the "just resting" case



Remaining open question: Exactly what is being rejected by the evidence in this paper?

- Evidence in the paper convincingly rejects failure of transversality condition
- But what does this rejection mean?
- Rational bubble just a convenient **modeling device** to approximate near-rational bubble (w/o failure of transversality condition) without substantive economic differences?
- Or is a rational bubble **substantively different** from near-rational bubble in terms of economic consequences, policy implications?

Remaining open question: Exactly what is being rejected by the evidence in this paper?

- Example in the paper: Comparative statistics of bubble size w.r.t. interest rate r
- Rational bubble:

$$B_{t+1} = B_t(1+r) + \eta_{t+1} \qquad \text{where} \quad E_t[\eta_{t+1}] = 0$$

  so (with B_0 fixed) **higher** r associated with **bigger bubble**.
  - NB: Comparative statics tricky when bubble size is actually indeterminate
- Opposite conclusion for other types of bubbles, e.g. resale option bubble (Harrison-Kreps, Scheinkman-Xiong)
- So, clearly **type of bubble** matters for policy implications.
- But does failure (or not) of **transversality condition** matter?

Near-rational bubbles

- Consider near-rational bubble

$$B_t = (1+\phi)\frac{E_t\left[B_{t+1}\right]}{1+r} \quad \text{with} \quad 0 < \phi < r$$

  where $E_t[.]$ denotes rational expectations and $\phi > 0$ represents small deviation from rational expectations.
- Transversality condition does **not** fail in this case

$$\lim_{T\to\infty} E_t\left[\frac{B_T}{(1+r)^T}\right] = \lim_{T\to\infty}\frac{B_t}{(1+\phi)^T} = 0$$

  i.e., empirical evidence in the paper does not rule out this kind of **near-rational bubble**
- But comparative statics w.r.t. to r are **qualitatively the same** as in rational bubble case
- Rational bubble with $\phi = 0$ may be OK as modeling device for near-rational bubble with $\phi > 0$

Is transversality condition the relevant issue?

- Real isssue for economic substance and policy implications is **not** whether transversality condition fails or not
- Real issues are
  - Common beliefs vs. heterogeneous beliefs
  - Dependence on beliefs on policy actions
  - Reaction of beliefs to fundamental shocks
  - ...

  where models with different assumptions on these dimensions produce different policy implications
- Evidence in this paper cannot sort these out

Conclusion

- Very strong evidence that transversality condition holds in the housing market
- Rules out pure rational bubble models
- But at this point not clear whether this has substantial implications for economic modeling and policy
  - Type of bubble can clearly matter, but it seems that failure (or not) of transversality condition does not make much of a difference
  - Rational bubble models may be fine as approximation of near-rational bubble models with similar policy implications