

Great Moderation or Great Mistake: Can rising confidence in low macro-risk explain the boom in asset prices?

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What is the paper about?

- ▶ Simple model with assets pricing under **incomplete information**
- ▶ EZ preferences + exogenous dividend process (random walk with drift)
- ▶ **Two regimes** for volatility, but same drift. Two realized switches:
 - ▶ \approx 1984: high to low
 - ▶ \approx 2007: low to high
- ▶ For given regime, probability of switch **i.i.d.**
- ▶ Complete information on:
 - ▶ Drift in growth rate of dividends
 - ▶ Levels of volatility in two regimes
 - ▶ History of realizations of regime switches (and dividends)
- ▶ Incomplete information **"only"** on the probability of regime switch
- ▶ Bayesian learning through history of realizations of regimes

What are the results of the paper?

Learning about the persistence explains **part of** post-84 boom in asset prices:

▶ PD

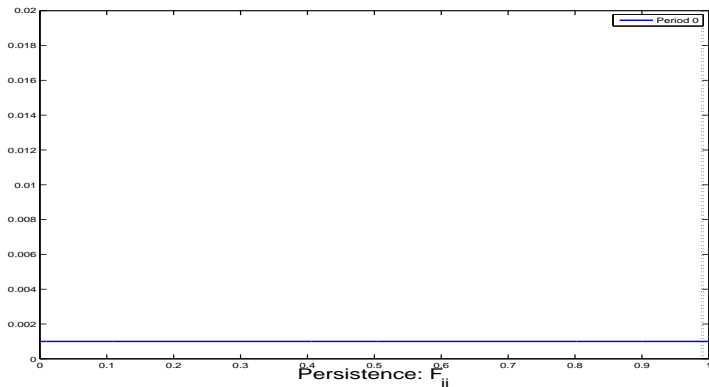
- ▶ Learning implies "gradual" increase in asset prices:
 - ▶ More probability mass on "permanent" low volatility regime
 - ▶ Asset prices **highly non-linear** convex function of persistence

▶ Posterior

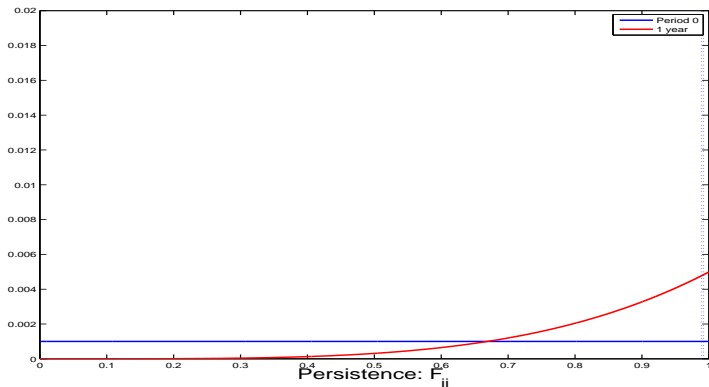
Complete information model cannot explain post-84 increase in asset prices:

- ▶ Increase in asset prices at the switch to low-volatility regime:
 - ▶ too low
 - ▶ too fast

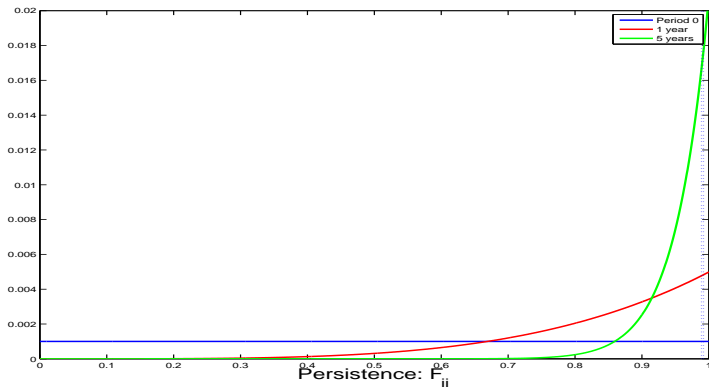
Posterior distribution of "persistence" of regime i after x years of regime i



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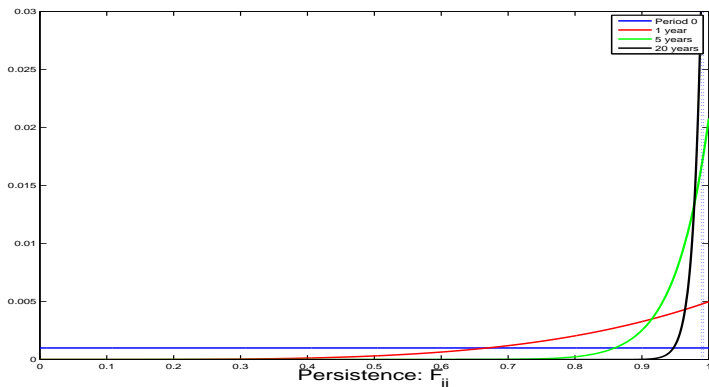
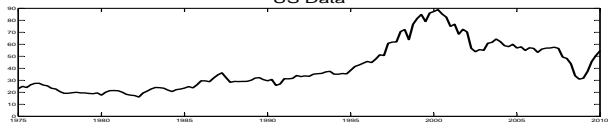
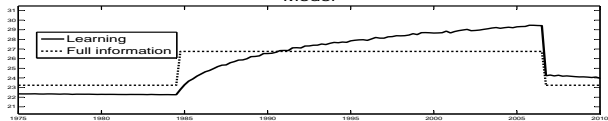


Figure 5: Price-Dividend Ratios: Benchmark Model
US Data



Model



The figure plots the price dividend ratio in US data (upper Panel), and in the model (lower panel), for the benchmark calibration of the model.

Comment #1: post-2007 vs pre-1984

- ▶ Assumption: New high volatility regime equal to pre-1984's regime.
- ▶ Duration of pre-1984's high volatility regime: 31 years!
 - ▶ During post-1984, switching from low to high volatility is really "bad news".
 - ▶ During post-1984, higher persistence of low volatility is really "good news".
- ▶ Interaction between persistences of low and high volatility regime
 - ▶ Convexity on persistence of low volatility larger with (belief of) larger persistence of high volatility?
- ▶ **Next high volatility regime possibly different from pre-1984**
 - ▶ Draw a new persistence parameter?
 - ▶ Impact on the boom/bust in asset prices predicted by the model?

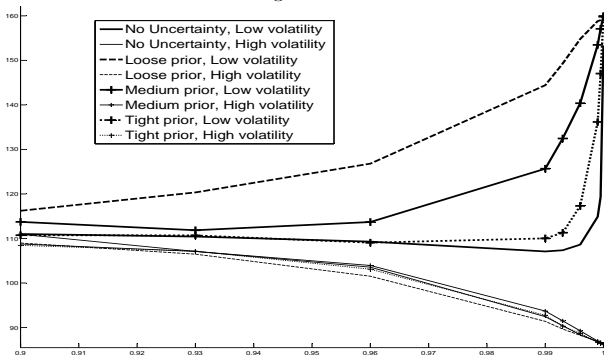
Comment #2: Posterior uncertainty about volatility?

- ▶ Agents in the model know **when** and to which **value** volatility changes
- ▶ In reality, agents only observe realization of asset prices and dividends
 - ▶ Swing in price/dividend may be due to change in regime or large innovation.
 - ▶ May take time to reduce uncertainty about level of volatility as well.
- ▶ Does it matter? Would convexity apply to level of volatility as well?
- ▶ Is learning persistence more relevant? Is persistence "harder" to learn?

Other comments and concluding remarks

- ▶ What is path of model predicted P/D during 1955-1975?
- ▶ Peak of P/D in 2000 (data) vs 2007 (model)?
- ▶ "State dependent" hazard of regime change?
- ▶ Overall, paper studies a relevant and topical question. I found it very interesting!

Figure 8: Price-Dividend Ratios as a Function of Persistence and Prior Tightness



For the simplified case of symmetric transition probabilities ($F_{ll} = F_{hh}$), the figure plots the price dividend ratio as a function of persistence for different values of the tightness of priors for the benchmark calibration of the model.