

# Consumption and House Prices in the Great Recession

by G. Kaplan, K. Mittman, G. Violante

## Discussion

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# The topic

- ▶ Understand the housing market bubble and crash of the Great Recession.
  1. Productivity shocks? Paper: “no”.
  2. Financial deregulation? Paper: “no”.
  3. Belief shocks? Paper: “yes”!
- ▶ Housing boom-bust can explain half of consumption boom-bust.
- ▶ Massive mortgage forgiveness policy? Would not have prevented house price dynamics.
- ▶ Sufficient statistics approach? May not work.
- ▶ “Housing and Credit Markets: Bubbles and Crashes”, Handbook-Chapter, Guerrieri-Uhlig

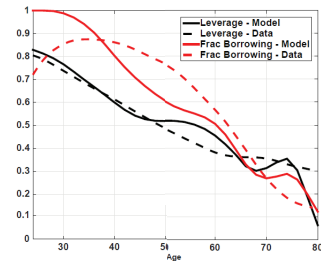
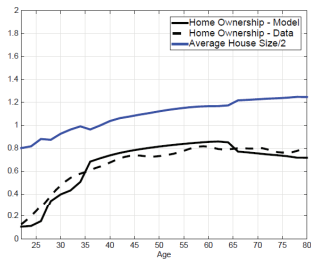
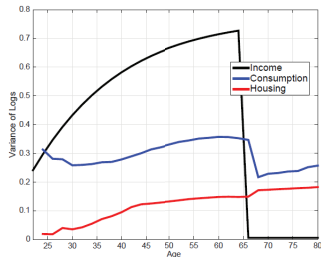
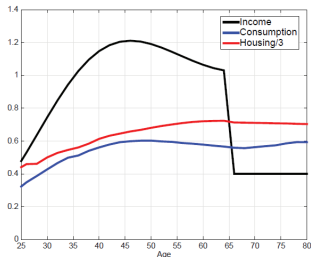
# The approach

- ▶ Three aggregate shocks. Idiosyncratic shocks.
- ▶ Long-term mortgages. Yes!! See Handbook-Chapter...
- ▶ Details, details, details!
  - ▶ Household utility depends on size, bequests.
  - ▶ Marginal utility of  $c$  **changes** with house pref shock  $\phi$ .
  - ▶ Households can own or rent. Owned houses come in 6 different sizes. Rented houses come in 3 different sizes.
  - ▶ Mortgage terms depend on remaining life time of the household.
  - ▶ Owning households can
    1. pay
    2. sell
    3. refinance
    4. default
  - ▶ ...
- ▶ “Realistic” appears at many times in the paper. Please...
- ▶ Equilibrium definition, section 2.6, before analysis. Yes!!! Very Minnesota.

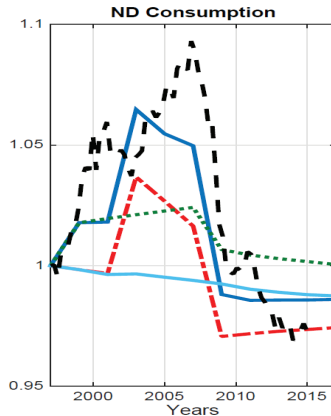
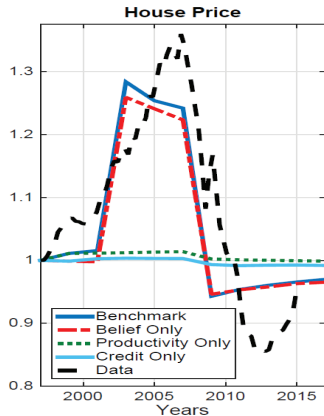
# Score Card

- ▶ Micro: excellent model of life-cycle behavior.
- ▶ Macro: a model of the boom-bust? Not convinced.

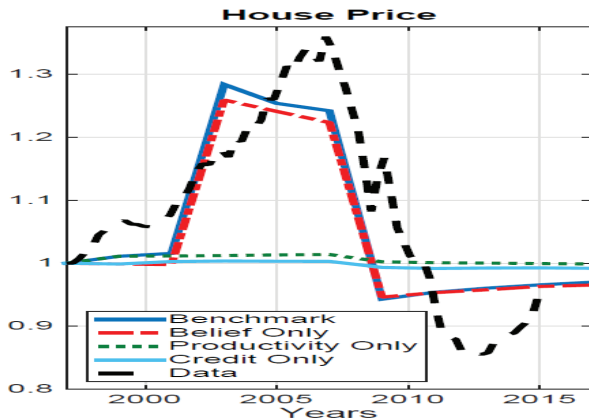
# Micro: Model vs Facts



# Macro: Model vs Facts



# Macro: Model vs Facts: House Prices



## A much simpler version of their model

- ▶ Risk-neutral households, discount with  $\beta = 0.9$ .
- ▶ Asset with dividend stream  $d_t = d(s_t)$ ,  $s_t \in \{L, L^*, H\}$ .
- ▶ Say:  $d(L) = d(L^*) = 1$ ,  $d(H) = 3$ .
- ▶ Markov transition and prices:

$$\begin{array}{c|ccc} & s' = L & s' = L^* & s' = H \\ \hline s = L : & 8/9 & 1/9 & 0 \\ s = L^* : & \approx 0 & 8/9 & 1/9 \\ s = H : & 0 & 0 & 1 \end{array}$$

Thus:

$$p_H = 3 + 0.9p_H \quad \text{or} \quad p_H = 30$$

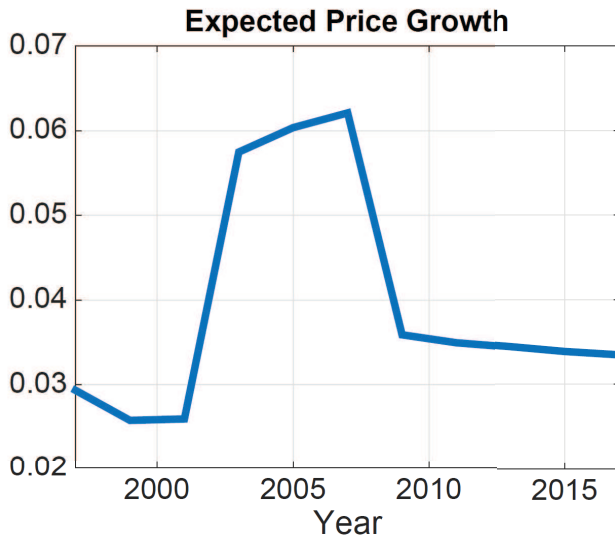
$$p_L^* = 1 + 0.8p_L^* + 0.1p_H \quad \text{or} \quad p_L^* = 5(1 + 0.1 * 30) = 20$$

$$p_L = 1 + 0.8p_L + 0.1p_L^* \quad \text{or} \quad p_L = 5(1 + 0.1 * 20) = 15$$

- ▶ Sequence  $\dots, L, L^*, \dots, L^*, L, \dots$ , price sequence is  $\dots, 15, 20, \dots, 20, 15, \dots$ . Boom, bust? Very static.
- ▶ Expected price increase in  $s = L^*$  is 15% ... but: price growth never happens.



# Macro: Price Growth Expectations



## Alternative story

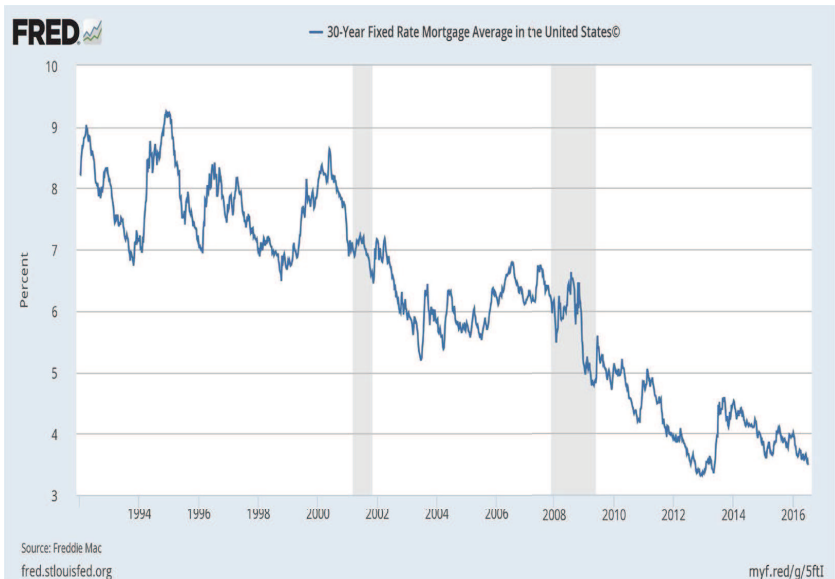
- ▶ Let's say, households take out 30-year mortgages.
- ▶ Their income is constant.
- ▶ “Largest house they can reasonably afford”: they spend a fixed amount  $x$  on the interest rate service.
- ▶ One house per household.
- ▶ Before 2008: price = NPV of  $x, x, x, \dots$ , discounted at 30 year mortgage rate  $r$ :

$$x = rp \text{ or } p = \frac{x}{r}$$

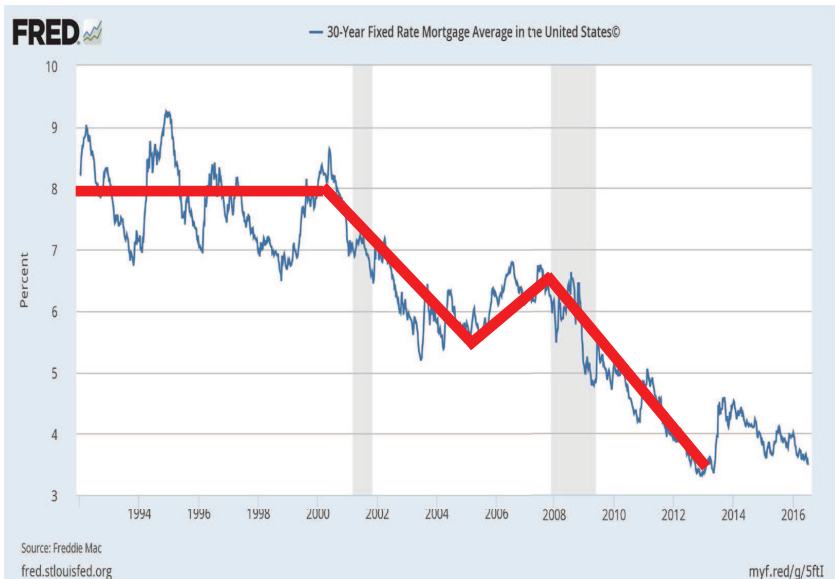
- ▶ Beyond 2008: difficult to get mortgage. House price “as if” mortgage rate is 9%,

$$p = \frac{x}{0.09}$$

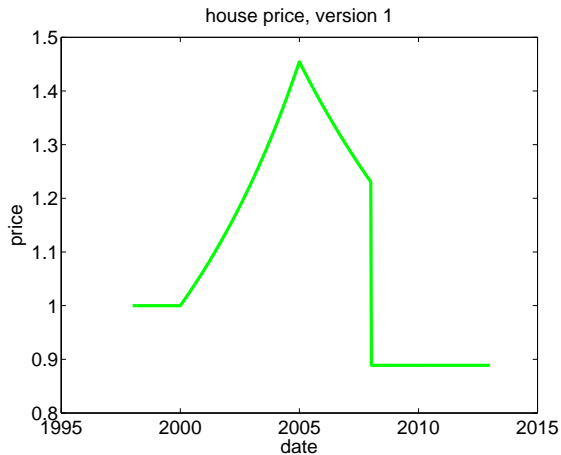
# 30 year mortgage rates



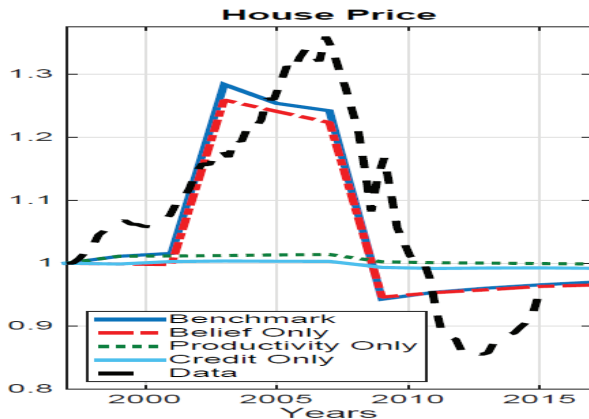
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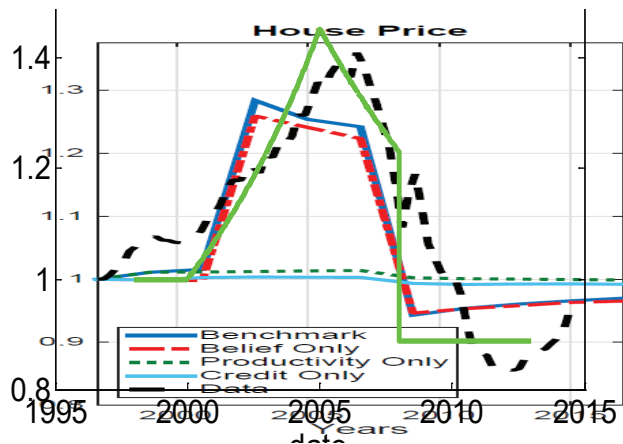
# House Prices



# Macro: Model vs Facts: House Prices



# Macro: Model vs Facts: House Prices



# Conclusion

- ▶ Important topic.
- ▶ Model: lots of detail, lots of work!
- ▶ Great as model for life cycle behaviour, micro.
- ▶ For macro? Not convinced.
- ▶ Basic macro story is very simple... but does not resonate.
- ▶ The model is not “realistic”.
- ▶ We need better explanations.
- ▶ Mortgage rates?