

Comments on
“The Mortgage Credit Channel of Monetary
Transmission”
by Daniel Greenwald

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Summary

- What is the effect of monetary policy on heterogeneous households who buy houses with mortgages and save in short bonds?
- Mortgages are **long-term nominal** debt contracts
 - ▶ expansive monetary policy lowers mortgage rates
 - ▶ 2 key frictions: **LTV constraint**

downpayment at $t \geq 15\%$ of house value at t

PTI constraint

mortgage payment at $t \leq 36\%$ of income at t

- Literature on borrower-saver models has focused on LTV constraints
 - ▶ Iacoviello & Neri 2010: short-term mortgages
 - ▶ Garriga, Kydland, and Sustek 2015: long-term mortgages

How do results change when we also impose PTI constraint?

Nice paper

- many imperfections in housing markets
 - ▶ high transaction costs, search frictions, incomplete markets, unsophisticated traders, indivisibilities, supply adjusts slowly, market segmentation, government intervention (e.g., affordable housing)
- mortgage markets
 - ▶ some households have high costs to refinance, imperfect bank competition, mortgage subsidies...
- what matters? much more research on quantitative models is needed
- here: [study PTI constraints](#)

How do mortgage rates respond to monetary policy?

- 3 goods: (numeraire) consumption c , housing h and labor n
- utility function

$$E \left[\sum \beta^t u(c_t, h_t, n_t) \right]$$

where u is separable

$$u(c_t, h_t, n_t) = \log c_t + \zeta \log h - \pi \frac{n^{1+\varphi}}{1+\varphi}$$

- pricing kernel with log utility

$$\Lambda_{t+1} = \beta \frac{c_t}{c_{t+1}}$$

- (unconstr) savers have high β , (constr) borrowers have low β
- interest rate is determined by high β unconstrained Euler equation

How do mortgage rates respond? ctd.

- log utility + no funky consumption dynamics
⇒ **expectations hypothesis** holds
- monetary policy changes inflation target
Rudebusch & Svensson 1999, Gurkaynak, Sack and Swanson 2005
other changes in short rates don't affect long rates much
- future research: how does monetary policy affect long rates?
Nakamura & Steinsson 2016 inflation expectations not affected, Fed information effect
Hanson and Stein 2014 through risk premia

How do price-rent ratios respond?

- marginal rate of substitution between consumption and housing

$$MRS_{h,c} = \zeta c_t / h_t$$

- Euler equations for savers and borrowers

$$p_t^h = MRS_{h,c}^S + (1 - \delta) E_t \left[\Lambda_{t+1}^S p_{t+1}^h \right]$$

$$p_t^h = MRS_{h,c}^B + (1 - \delta) E_t \left[\Lambda_{t+1}^B p_{t+1}^h \right] + \text{collateral value}$$

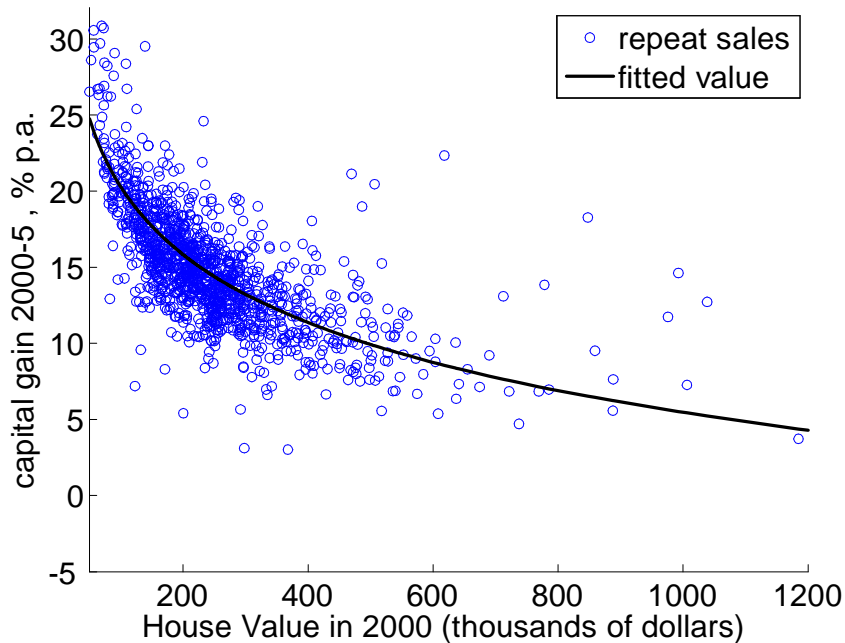
- only Euler equations of borrowers are evaluated

⇒ markets for borrower and saver houses are segmented

How do price-rent ratios respond? ctd.

- monetary policy affects the collateral value of housing:
expansionary monetary policy lowers mortgage rates
fewer borrowers are constrained by PTI,
more borrowers are constrained by LTV
⇒ higher collateral values
- how to think about overall magnitudes?
data should appreciate less than borrower houses in model,
because saver houses do not appreciate as much
- relaxation of PTI, LTV constraints
⇒ higher house prices
- consistent with cross sectional patterns in
Landvoigt, Piazzesi & Schneider 2015 AER

Repeat sales 2000 - 2005; San Diego County, CA



How do price-rent ratios respond ctd.

- borrowers are poor households, savers are rich households
- houses of poor households appreciated more in the data, as predicted by the model
- market segmentation is important
- no rental market, replace price/rent ratio with **price/MRS ratio**

More comparisons of model with data

- impulse response to 1% reduction in inflation target in various specifications of the model, how does it look like in data?
- response to change in LTV from 85% to 99%, PTI from 36% to 54% compared with boom data: 1997 to 2006

other shocks during this time? e.g, lower rates?

- borrowing constraints generate **excessive volatility in rates**

Alvarez & Jerman 2001, Chien & Lustig 2009,
Lustig & Van Nieuwerburgh 2005

what happens to rates in this model?