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 $\beta$, (constr) borrowers have low $\beta$

- interest rate is determined by high $\beta$ unconstrained Euler equation
How do mortgage rates respond? ctd.

- log utility + no funky consumption dynamics
  \[ \implies \text{expectations hypothesis holds} \]
- 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

\[ MRS_{h,c} = \xi c_t / h_t \]

- Euler equations for savers and borrowers

\[
p_t^h = MRS^S_{h,c} + (1 - \delta) E_t \left[ \Lambda^S_{t+1} p^h_{t+1} \right]
\]

\[
p_t^h = MRS^B_{h,c} + (1 - \delta) E_t \left[ \Lambda^B_{t+1} p^h_{t+1} \right] + \text{collateral value}
\]

- only Euler equations of borrowers are evaluated

\[ \rightarrow \text{markets for borrower and saver houses are segmented} \]
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
  \[ \rightarrow \text{higher collateral values} \]

- how to think about 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
  \[ \rightarrow \text{higher house prices} \]

- consistent with cross sectional patterns in
  Landvoigt, Piazzesi & Schneider 2015 AER
Repeat sales 2000 - 2005; San Diego County, CA

House Value in 2000 (thousands of dollars)

Repeat sales
fitted value

capital gain 2000-5, % p.a.
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?