

Consumption and House Prices in the Great Recession: Model Meets Evidence

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Economic Fluctuations & Growth Research Meeting

NBER Summer Institute – July 16, 2016

Four questions

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3. Could a debt-forgiveness policy have cushioned the bust?
 - Study large-scale **Principal Reduction** program
4. What do we learn about the macro elasticity of C to p_h ?
 - **Sufficient statistic** approach

Methodology

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- Parameterize: match **cross-sectional and lifecycle micro data**
- Simulate boom-bust
- Compare against **aggregate time-series data**
 - House prices
 - Consumption
 - Rent-price ratio
 - Home ownership
 - Leverage
 - Foreclosures
- Compare against **micro data**

Model

Model

Demographics

- OLG lifecycle economy with work & retirement

Endowments

- Workers face uninsurable risk in individual earnings y

Preferences

- Utility over nondurable c and housing services h

Housing

- Households can **buy** a unit of h at price p_h , or **rent** it at rate ρ
- Linear **transaction cost** $\kappa_h \cdot (p_h h)$ for sellers

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- **Price schedule** $q_j(h, m, b, y)$ competitively determined
- Refinancing option available (cash-out)
- Max Loan-to-Value **constraint binds at origination only** $m \leq \lambda^m p_h h$

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HELOCs ($b < 0$)

- One-period borrowing, non-defaultable
- Collateralized by housing, $b \geq -\lambda^b p_h h$

Closing the model

Final good sector

- $Y = Z\bar{N} \rightarrow w = Z$

Construction sector

- Determines aggregate housing investments

Rental sector

- Buys housing from sellers and rents them out, or vice-versa, sells rental units to home buyers
- Zero-profit condition yields **equilibrium rental rate ρ**

Government

- Taxes workers (with mortgage interest deduction) and properties, and pays SS benefits to retirees

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3. **Beliefs / News** about future housing demand:

Three regimes for ϕ (share of housing services in u):

- (a) ϕ_L : low housing share and **unlikely** transition to ϕ_H
- (b) ϕ_L^* : low housing share and **likely** transition to ϕ_H
- (c) ϕ_H : high housing share

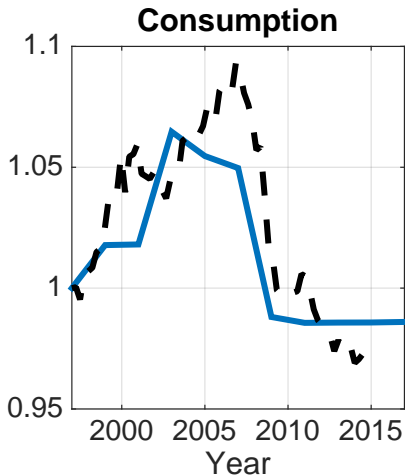
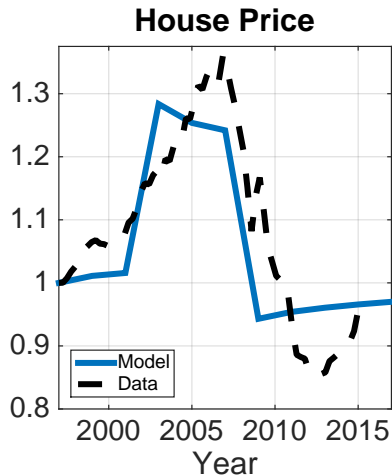
Boom-Bust: shift from (a) to (b), and back to (a)

Analyze **IRFs** of the model economy to these realized shocks

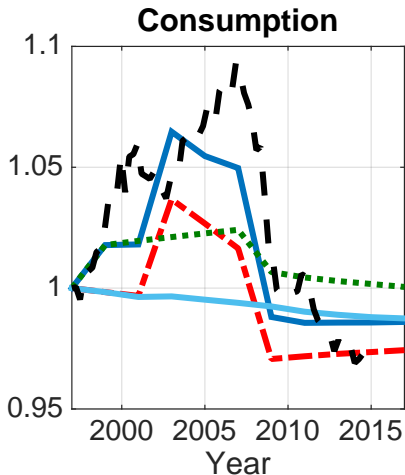
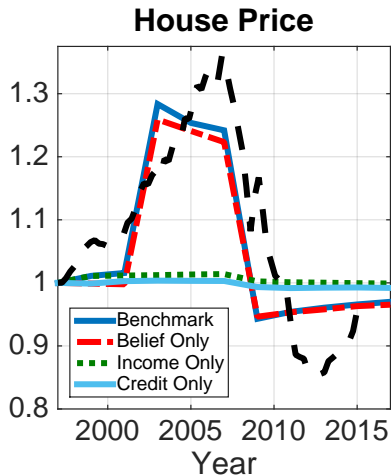
Q1

What caused the boom-bust in p_h and C ?

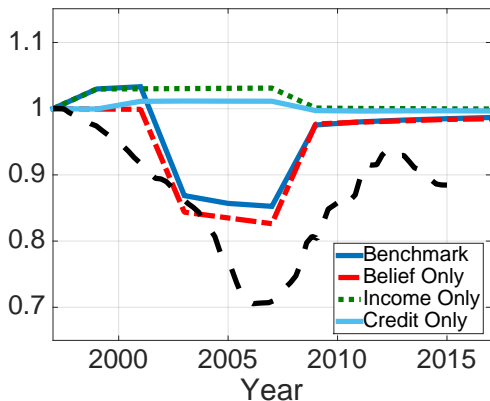
Consumption and house price dynamics



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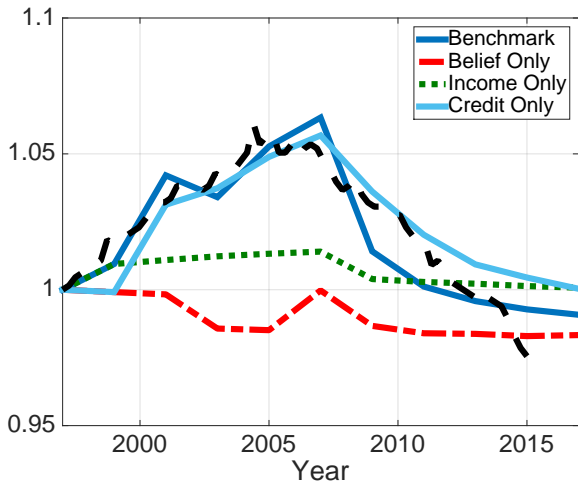
Dynamics of rent-price ratio



$$\rho = p_h - \left(\frac{1 - \delta_h}{1 + r^b} \right) \mathbb{E}_{p_h} [p'_h]$$

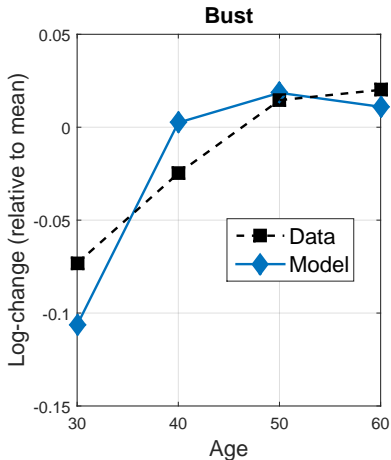
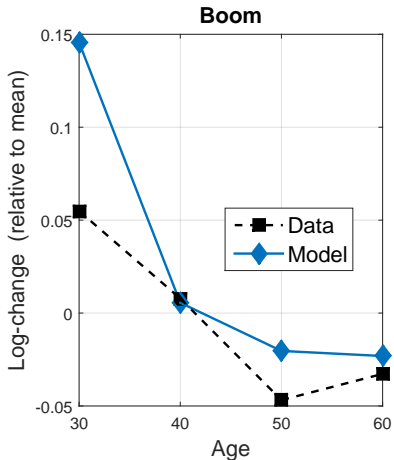
- Belief about **future appreciation** essential

Dynamics of home ownership



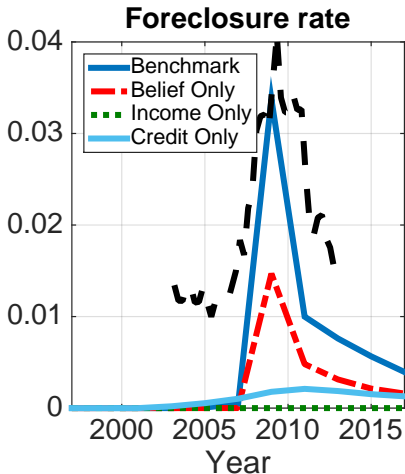
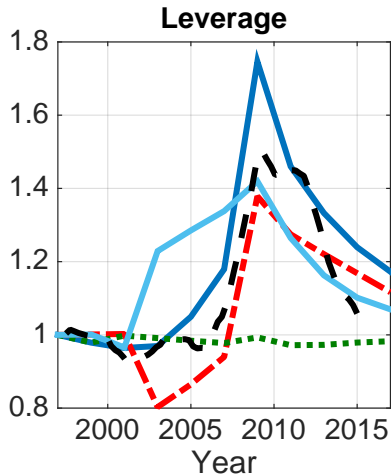
- **Financial deregulation** drives rise in home-ownership

Change in home ownership by age: data and model



- It's the young who go in/out of housing market

Dynamics of leverage and foreclosure



- Financial deregulation key for constant leverage pre-boom
- **Interaction** belief-deregulation important for foreclosure

Revisited narrative of the crisis

- **Original narrative:**
 - **Mian-Sufi:** credit growth and default concentrated in low-income and high-risk groups
- **New narrative based on refined micro data:**
 1. **Adelino et al.:** credit growth evenly distributed across risk-type
 2. **Foote et al.:** credit growth evenly distributed across income groups
 3. **Albanesi et al.:** default share increases for middle income
- **Model:**
 - Low-income hh go from rent to buy, high-income hh upsize
 - Findings consistent with **new narrative**, replicates facts 1.-3.

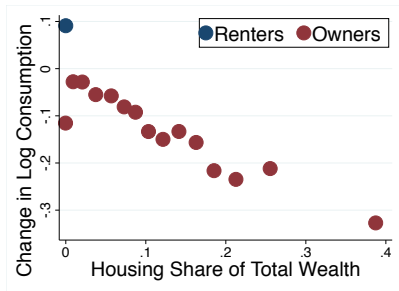
Q2

How does the fall in p_h transmit to C ?

Deleveraging or wealth effect in the bust?

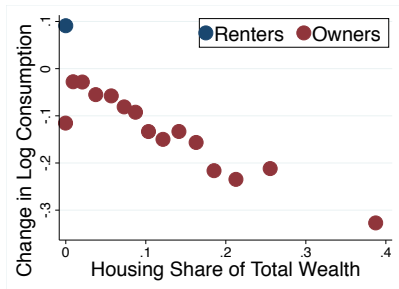


Deleveraging: WEAK



Wealth effect: STRONG

Deleveraging or wealth effect in the bust?



Deleveraging: WEAK

Wealth effect: STRONG

- Consistent with Kaplan-Mitman-Violante (2016): 'Non-durable Consumption and Housing Net Worth in the Great Recession: Evidence from Easily Accessible Data'

Q3

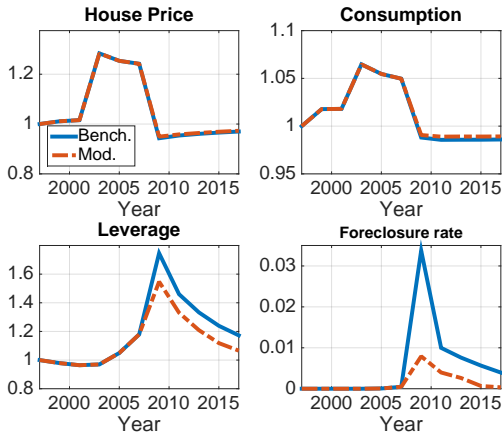
Could a massive debt forgiveness program
have cushioned the bust?

Counterfactual principal reduction program

All homeowners with LTV >95%: forgive excess debt

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- Beneficiaries account for small share of C + do not foreclose

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4. Two observations on the macro elasticity of C to p_h

- Magnitude depends strongly on the underlying shock
- Caution about the sufficient statistic approach

Thanks!