

Discussion of "Credit Supply and the Housing Boom" by Alejandro Justiniano, Giorgio Primiceri and Andrea Tambalotti

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## Summary

- why did banks increase their mortgage supply during the boom?
- closed economy with housing trees, exog. endowments

some households are more patient than others  $\beta_L < \beta_B$

borrowers have utility  $c + v(h)$

lenders have inelastic demand for  $h$

- two constraints on lending

1. collateral constraint  $D_t \leq \theta p_t h_{t+1}$

2. supply constraint  $-D_t \leq \bar{L}$

- higher  $\theta$ : higher house price interest rate — counterfactual

higher  $\bar{L}$ : higher house price, lower interest rate!

# Discussion

1. closed economy assumption
2. what caused credit supply to increase? why so gradually?
3. changes in mortgage quality in addition to quantity
4. boom-bust mostly in cheap homes (unlike in other episodes)

# 1. Closed economy

- borrowing constraints generate excessive interest rate volatility

Alvarez & Jerman 2001

Lustig 2002 with collateral asset

Lustig & Van Nieuwerburgh 2005 with housing as collateral asset  
wrong mechanism for asset price volatility

- this paper: laxer borrowing constraints imply higher interest rates
- US = open economy, small?

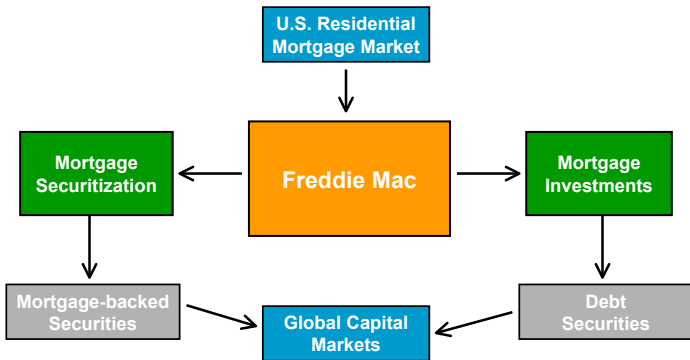
global savings glut (Bernanke and others)

foreign demand for highly rated bonds keeps interest rates low

# 1. Closed economy ctd.



**Congress created Freddie Mac to provide stability, liquidity, and affordability to the U.S. residential mortgage market**



*"A primary purpose is to provide stability in the secondary market for home mortgages including mortgages securing housing for low and moderate income families. This can be accomplished through both portfolio purchasing and selling activities, as well as through the securitization of home mortgages."<sup>1</sup>*

<sup>1</sup>House of Representatives report on FIRREA, No. 54, 101<sup>st</sup> Congress, 1<sup>st</sup> Session, Part 3 at 2 (1989).

# 1. Closed economy ctd.

## U.S. securities outstanding, 2003 and 2007

Billions of dollars

	Total Securities (1)	Treasury securities (2)	Agency debt (3)	Corporate AAA (4)	ABS/MBS AAA (5)	Corporate Non-AAA (6)	ABS/MBS Non-AAA (7)	Equity (8)
1. Total U.S. securities outstanding, 2003	29,757	3,342	5,969	393	1,439	4,093	254	14,266
2. Held by foreign investors	5,239	1,477	571	157	162	1,003	29	1,839
3. Of which: Europe	2,182	345	192	74	86	496	15	974
4. Of which: GSGs	870	449	198	5	11	33	2	172
5. Held by U.S. residents	24,518	1,864	5,398	236	1,277	3,090	225	12,427
6. Total U.S. securities outstanding, 2007	40,169	4,113	6,786	425	3,154	5,286	458	19,947
7. Held by foreign investors	9,796	2,384	1,384	214	788	1,679	114	3,232
8. Of which: Europe	3,978	399	308	126	487	993	71	1,594
9. Of which: GSGs	2,082	905	656	9	44	72	6	389
10. Held by U.S. residents	30,373	1,729	5,402	210	2,366	3,607	344	16,715
Memo:								
11. Change in foreign held / change in value outstanding (%)	43.8	117.5	99.6	182.0	36.5	56.7	42.0	24.5

Note: Changes in holdings and securities outstanding include valuation changes. Global saving glut (GSG) countries include Asia (excluding Japan) and the Middle East. ABS: asset-backed securities (excluding MBS); MBS: mortgage-backed securities.

Source: Staff estimates based on Flow of Funds and Treasury International Capital system.

## 1. Closed economy ctd.

- change market clearing condition for bonds

$$D_{B,t} + D_{L,t} = 0$$

to

$$D_{B,t} + D_{L,t} + \bar{D}_t = 0$$

where  $\bar{D}_t$  is demand by foreigners

- measure  $\bar{D}_t$  from data on foreign purchases, solve model again
- Piazzesi & Schneider 2012,  
Favilukis, Ludvigson & Van Nieuwerburgh 2013

## 2. Causes of changes in credit supply

- vary  $\bar{L}$  in supply constraint  $-D_t \leq \bar{L}$
- appendix derives  $\bar{L} = \chi \bar{E}$  from
  - capital requirements  $D_t \leq \chi E_t$
  - infinite adjustment costs for equity around  $\bar{E}$

$$f\left(\frac{E_t}{\bar{E}}\right) = \left(\frac{E_t}{\bar{E}}\right)^\gamma$$

where  $\gamma \rightarrow \infty$



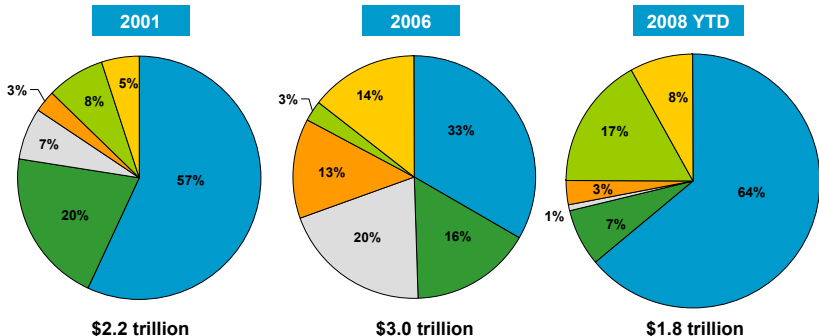
## 2. Causes of changes in credit supply ctd.

- vary  $\bar{L} = \chi \bar{E}$ 
  - vary cap requirements  $\chi$
  - vary  $\bar{E}$  that enters equity issuance costs.
- direct evidence for these changes?
- equity issuance costs are symmetric. retained earnings?
- financial accelerator model:  
equity adjustment costs are asymmetric: downward not upward  
earnings gradually increase bank net worth, lending expands
- gradual learning about subprime lending and hybrid mortgages

### 3. Subprime and hybrids



**Subprime and Alt-A shares of the market quintupled between 2001 and 2006, then declined sharply**



■ Conventional, Conforming Prime   ■ Jumbo Prime   ■ Subprime   ■ Alt-A   ■ FHA & VA   ■ Home Equity Loans

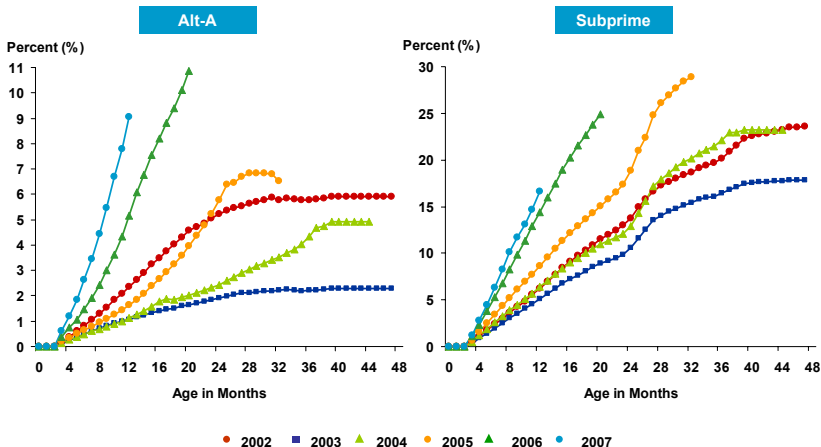
Source: Inside Mortgage Finance (by dollar amount) and Freddie Mac. 2008 data is as of September 30, 2008.

### 3. Subprime and hybrids ctd.



**Recent Alt-A and subprime originations are performing far worse than earlier originations**

Cumulative 60-days or more delinquency rate as a share of the number of loans originated

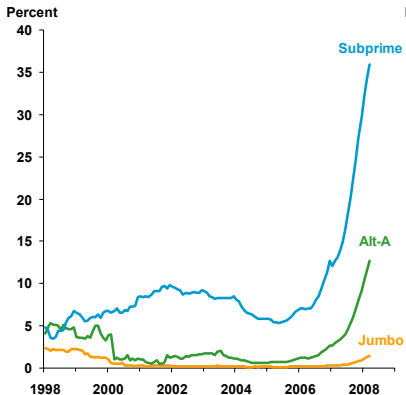


### 3. Subprime and hybrids ctd.

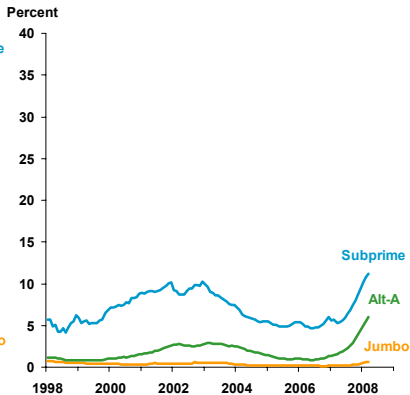


**Hybrid ARM mortgages are experiencing faster delinquency rates than fixed-rate mortgages**

Hybrid ARM Mortgages



Fixed-rate Mortgages

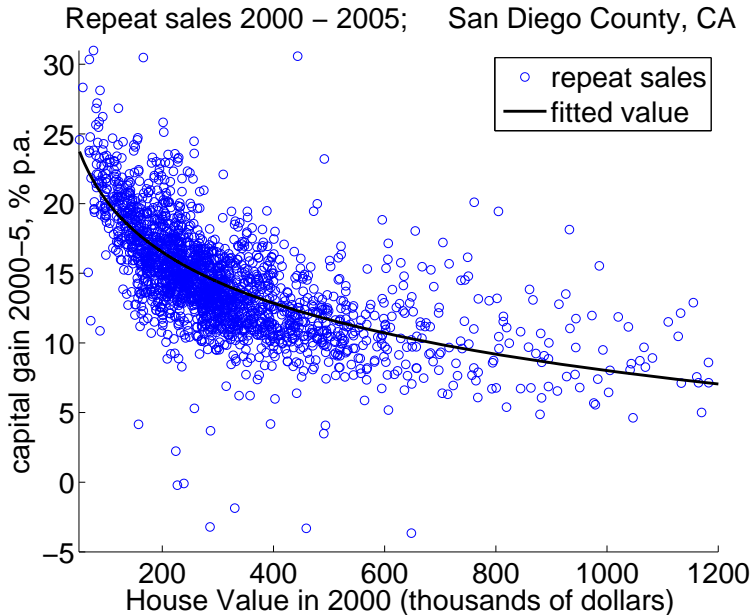


Source: Citigroup.

### 3. Subprime and hybrids ctd.

- not just quantity, but also quality adjusts
- subprime and hybrids are higher risk
- with risk-neutral banks, these are projects with lower expected returns (ambiguity or pessimism)
- gradual increase with financial accelerator:  
richer bank does projects with lower expected return
- gradual learning about risks

## 4. Boom-bust episode mostly in cheap homes



## 4. Boom-bust episode mostly in cheap homes ctd

- model with housing tree: all Euler eq hold including Bill Gates and poor households  
relaxing borrowing constraints cannot matter much
- model with distribution of house qualities  
Euler eq of marginal buyers hold  
relaxing borrowing constraints matters for low quality houses  
(Landvoigt, Piazzesi, Schneider 2013)
- this paper:  
Euler eq of constrained agents hold  
Euler eq of unconstrained agents do not hold (inel. demand)
- how to think about magnitudes, e.g. value of housing stock?  
model determines house price of constrained agent  
needs to rise more than US average in Figure 1
- should unconstrained agents buy different kind of house?