Discussion of Boz and Mendoza's Paper
NBER/CRIW conference @ FRB

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Timely, Well-Written and Ambitious Paper

Basic message is that **never-seen-before financing innovation** caused the credit boom and bust of the last decade.

1997, June 8: First time the word subprime appeared in the NYT

The Core of the Model

Small open economy model, representative agent, R fixed

$$\max \sum \beta^t u\left(c_t\right)$$

$$c_t = z_t g\left(l_{t-1}\right) - q_t\left(l_t - l_{t-1}\right) + \frac{d_t}{R} - d_{t-1}$$

$$\frac{d_t}{R} \leq \kappa_t q_t l_t$$

κ_t is a two state Markov process

As they see κ_t, agents learn about it using Bayesian methods

The Model Workings

1. If κ shocks are purely transitory
   Changes in κ do not affect debt and asset prices much, because agents are afraid these changes might be reversed

2. If κ shocks are permanent
   Changes in κ have larger effects on debt and asset prices, since agents expect the new state to persist forever.
   To convey this intuition, it would be nice to provide impulse responses or to show some transitional dynamics

The Authors' Experiment

1. Economy is in steady state with low κ. Debt and asset prices are low. True process for κ is persistent shocks, not transitory, not permanent. Agents ignore true process for κ, and form beliefs over it.

2. 1997: κ jumps, agents initially are cautious, since they believe these changes are transitory and might be reversed

3. 1998 onwards: as κ stays high, optimism builds up, agents believe change in κ is quasi-permanent, and debt and asset prices overshoot

4. 2007: Reality sinks in, κ falls, boom is reversed

The Model Quantitative Findings

	Debt/GDP			Asset Prices/GDP		
	Data	Model	RE Mod.	Data	Model	RE Mod.
1996-2006	+0.35	+0.26	+0.08	+0.28	+0.15	−0.02
2006-2008	−0.02	−0.28	−0.12	−0.15	−0.15	0.01

- 1996 to 2006: Model captures the rise in debt, half of the rise in asset prices
- 2007 to 2008: Model overpredicts the fall in debt, captures the drop in asset prices

Comment 1: The debt and housing boom and alternative stories (aka "one minute of shameless self-promotion")

1. Here: debt/housing boom was the outcome of financial innovation coupled with gradual learning

2. Alternative views (well, my views):Rise in debt reflects increased demand for credit market access, rather than a supply-driven boom (JMCB, 2008)
   Rise in house prices reflects a collective shift in preferences towards housing goods (AEJ Macro 2010)

The rise in debt (data)

Income Inequality (left scale) and HH Debt (right scale)
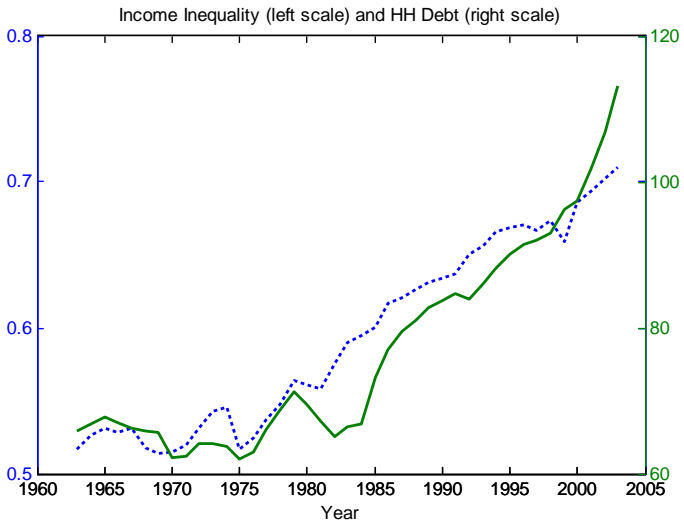
The rise in debt (my JMCB story)
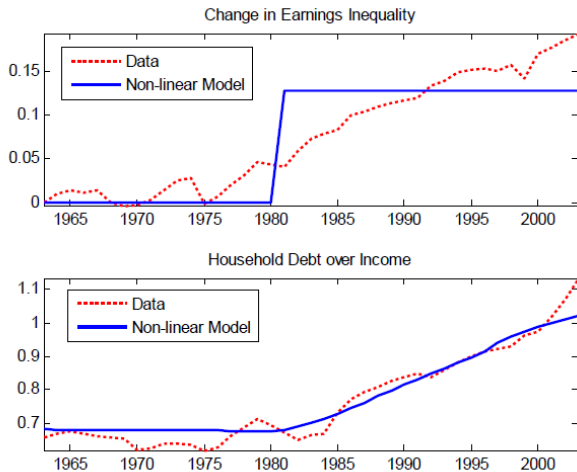
The rise in asset prices (my AEJ Macro story plus NYT evidence)

is well worth it.

Ms. White, along with 6-year-old Jasmine, lived in a Queens high-rise complex with her parents after moving back to New York from Columbus, Ohio, three years ago. "I had always rented," she said.

But in Columbus she watched a friend transform "flat land into a finished house" and realized, "that's what I want for my daughter."

"Apartment living is not conducive for a child with bikes and Barbie Beach Cruisers, those 5 miles-per-hour toy jeeps," Ms. White said. "Lugging those things down nine flights is not easy."

Eight years ago, after graduating from

Comment 2: Mapping Model to Data

The debt measure in the data is essentially gross household debt, but in the model it looks like external debt (net foreign liabilities)

1. Let b denote economy's financial liabilities (assets if negative), with cross-sectional distribution $f(b)$
   If financial innovation is the key, it should account for:
   – rise in domestic gross debt $E(b|b > 0)$: in the data, it went from 0.35 to 0.7 of GDP b/w 1997 and 2006
   – rise in external debt $E(b)$: in the data, from 0.09 to 0.16 of GDP
   The RA approach used here does not distingush the two

2. Also would be useful to compare results with a model without learning but where financial liberalization occurs gradually.

3. It would be nice to plot transitions in the model against data. Looks like transition in the model occurs too fast

Comment 3: Domestic and Foreign Debt (aka "the paper the discussant wishes he/you had written")

A continuum of agents in a small open economy:

$$c_t + q_t \left(l_t - l_{t-1} \right) + R b_{t-1} = b_t + a_t z_t g \left(l_{t-1} \right)$$
$$b_t \leq \kappa_t q_t l_t$$

a aggregate shocks
z could be idiosyncratic income shocks.
Relative to the representative agent setup of the paper, such a model could talk about domestic and foreign debt jointly (it would have a well-defined wealth distribution even if average assets were zero, e.g. $E\left(b \right) = 0$).
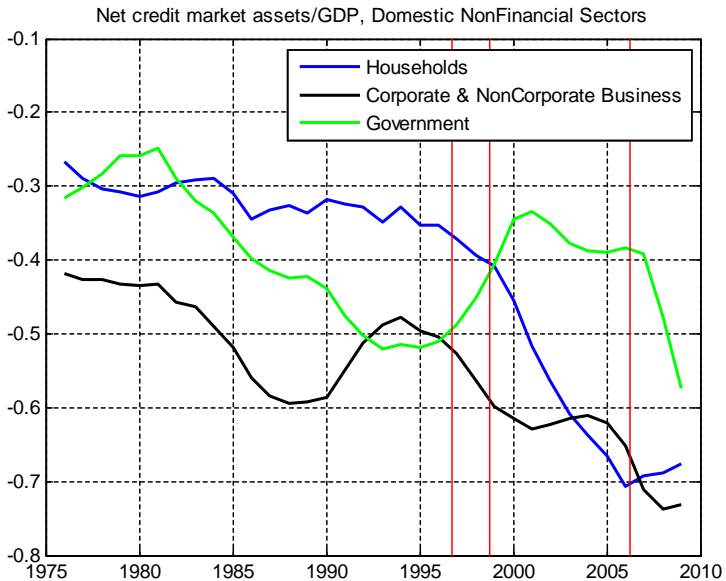Harder to solve, I know
It would get around the awkward issue where debt in the model looks like foreign debt, but is mapped to household debt in the calibration

Which debt?

Net credit market assets/GDP, Domestic NonFinancial Sectors
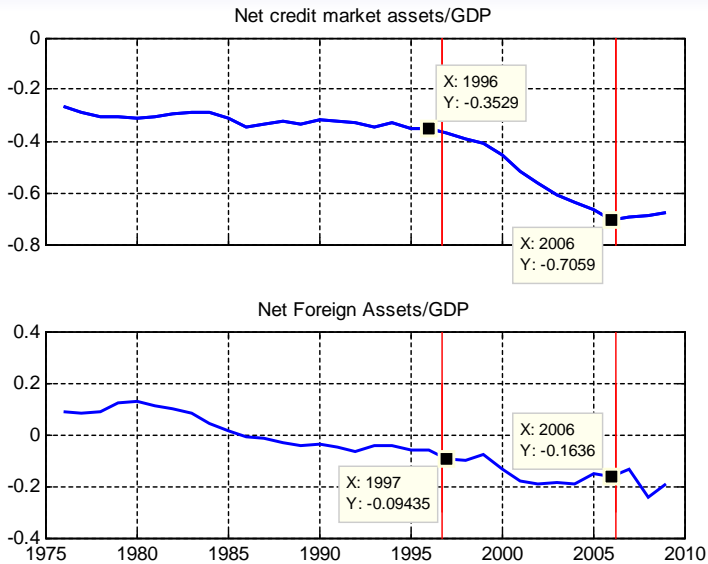
Final Remarks

Great paper, nice and compelling story

1. Suggestion 1: improve mapping data–model, closed vs open economy and calibration of the κ shock.

2. Suggestion 2: cut the discussion on CDOs, Fannie-Mae and Freddie Mac, focus more on other measures of financial innovation for households which is what the paper is about