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Housing Finance, Boom-Bust Episodes, and Macroeconomic Fragility

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Workshop on Housing, Credit and Heterogeneity:
New Challenges for Stabilization Policy

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A quantitative analysis of the roles played by mortgage contracts in propagating housing "booms" and "busts" in a setting with incomplete markets and heterogeneous homeowners who invest in illiquid housing and are exposed to idiosyncratic risk.

- Heterogeneity amongst both buyers and sellers and both endogenous default risk and housing market liquidity.

- Several policy relevant issues are addressed:
  - The effects of several mortgage characteristics (FRM vs. ARM, short-term vs. long-term contracts, refinancing and roll-over provisions) on a boom-bust period calibrated to match recent U.S. experience.
  - The implications of macro-prudential policies consisting of LTV and payment-to-income constraints given these mortgage characteristics.

Overview

- Infinitely lived households face idiosyncratic labour income risk.
- Consume goods and housing; rent small houses, must buy larger ones (housing ladder).
- House sales take place via directed search.
  Middlemen structure facilitates heterogeneity on both sides of the market.
- Construction of new houses; modification of older ones by middlemen
- Purchases financed by defaultable mortgages (various types considered)
- Home buyers face leverage and (possibly) payment-income constraints.

In a calibrated version of the economy, a "boom-bust" episode can be thought of as a particular sequences of shocks jointly affecting both labour income (productivity) and credit conditions (the LTV constraint).

1. The baseline model is argued to account well for the responses of consumption, home-ownership, leverage and default observed in the U.S. boom-bust.

2. The contributions of several specific mortgage characteristics are isolated.

3. The implications of using LTV and/or payment-to-income constraints as macro-prudential policies are studied.

This is not a study of either optimal mortgage design or optimal policy.

The main take-aways are:

1. Relaxed credit is *necessary* to account for the boom. It magnifies the responses of prices and consumption and induces households to move up the housing ladder.

2. The *new narrative*: Increases in borrowing, consumption and home-ownership occur throughout the income distribution.

3. Movements in housing liquidity result in asymmetries. Specifically, a drop in the selling probability magnifies the bust.

4. Mortgage structure matters:
   - The ability to refinance FRM's exacerbates fragility
   - ARM's increase foreclosures in the bust (by a lot).
   - roll-over risk has similar effects (but limits debt).

Overall...

The paper (which, at least in the form I read it, is still preliminary) shows that both:

1. Mortgage contract details
2. Housing liquidity (measured by movements in time-to-sell)

play substantial roles in accounting for booms and busts.

Given these, a combination of LTV and payment-to-income constraints can serve to mitigate the effects of the boom-bust on prices, consumption, foreclosures, etc..

The model has a lot of structure—and the extent to which particular assumptions drive the results is of interest.

Comments

I. *Theory*

What exactly are the frictions in environment?

There is limited commitment, as mortgagors can default.

In this case, (state-varying) limits on LTV and payment-to-income will arise endogenously.

Tightening these (*i.e.* imposing additional frictions) improves the outcome?

It must be then that they are helping to alleviate (a) different friction(s):

- The (imposed) structure of the mortgage contract
- Incentive problems for lenders (moral hazard; "too big to fail" etc.)

If it's the former, why not just change the nature of the contract?

For example, raising interest rates (ARM's) *increases* the incentive to default.

Similarly, when prices fall, LTV's rise. De-leveraging requirements go in the wrong direction, reducing the insurance provided by mortgage contracts.

Macro-prudential policy seems better aimed at the latter.

But, lenders aren't modeled here. There is effectively free-entry of loans.

This points to a need for a theory of mortgage lenders (*e.g.* banking)...

What are the micro implications for pricing?

Price distributions:

1. How does pricing with lender indebtedness?
   Genesove and Mayer (1997, 2002)
   Anenberg (2011)

2. What are the implications of the constraint that the sales price exceed the debt?
   The debt overhang implications seem bad (*i.e.* welfare-reducing) all around.

3. How does the "quality" distribution of prices move?

4. What are the implications for liquidity of the "repackaging" of houses by brokers?

Dynamics: In response to shocks, do house prices jump on impact?

I suspect that they do not display:

- "Momentum" (autocorrelated growth)
- Small effects on impact.

Directed search can act against momentum (Head, Lloyd-Ellis and Sun, 2014)

or it can enhance it in the presence of default risk (Head, Sun and Zhou, 2018).

(For now) directed search requires the broker mechanism—I suspect this is bad for modeling dynamics, which depend heavily in search models on the elasticity of supply (entry by sellers: construction, decisions to move etc.)

II. *Data*

How did the distribution of leverage evolve?

Large price movements on levered assets lead to

- big capital gains and losses for holders of existing (possibly quite old) mortgages
- associated *wealth* fluctuations.

If a borrower experiences a big change in wealth due to an investment their consumption should respond.

In the bust, at least early on, leverage must have risen.

Ending up "underwater" is to some extent just insurance working.

Is the flat rent assumption reasonable?

I'm skeptical of the idea that rents didn't fluctuate over the boom-bust.

Crone, Nakamura and Voith (2006):

Slow growing rents an artifact of the accounting for *quality improvements* in rental housing.

It has been argued that rents don't respond much to shocks. But,

- Davis and Ortalo-Magne (2011): Real rent growth of 1% per year 1980-2000.
- In BLS data they rose sharply at the end of the boom, and fell in the bust.

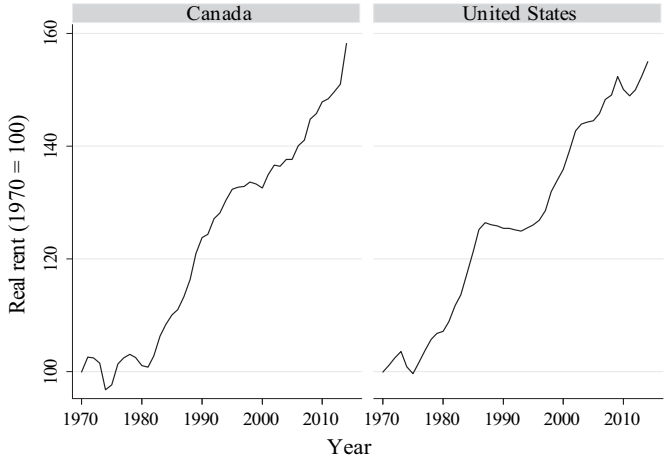

FIGURE 1 Real rents in Canada and the US

III. *Mortgage Contract Details...*

The paper makes a convincing argument that the particular characteristics of mortgage contracts matter for financial fragility.

So, how should mortgage contracts and rules be designed?

Mechanism design probably isn't all that useful.

- There are multiple frictions on both the lender and borrower sides and the optimal contract will be very sensitive both to the way these are modeled and to the specific values of parameters that govern their relative importance.

- Changing supply policies can render existing long-term contracts unprofitable and/or undesirable, altering their incentive effects.

What does the cross-market evidence tell us?

- U.S. MSA's experienced very different boom-busts, with similar mortgage rules?
- Different contracts and experiences across countries?

Mortgages in Canada differ from those in the U.S.:

- Few have term longer than five years
- Most are FRM's (The ARM's are mostly very short term)
- Pre-payment and refinancing options are very limited (expensive)
- LTV and payment-to-income requirements have been strengthened ("stress tests")

And yet, the boom has continued unabated (there has been no bust).