Financial Technology and the 1990s Housing Boom?

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Summary

- **Question:** what role did changing mortgage underwriting technology play in the 1990s (and 2000s) housing boom?
- **Approach:** empirical exercise exploiting differences in automated underwriting timing and standards
- **Main Findings:** large effects of "statistically-informed" underwriting rules
  - Explain 44%-77% of the increase in house prices from 1993 to 2002
- **This discussion:**
  - Brief evaluation and suggestions
  - Are the estimates plausible?
  - Broader lessons for macroprudential policy

Background: what's new?

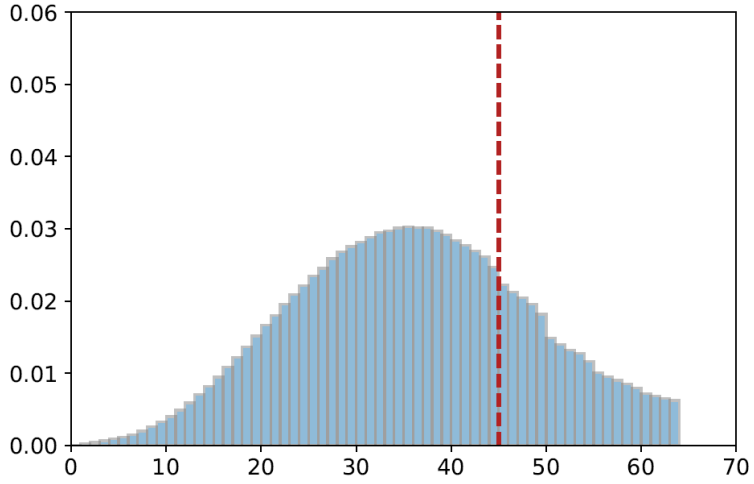
- Foote, Loewenstein and Willen (2020) also exploit timing of automated underwriting, but finds small role for house prices
  - Treated regions have larger share of early adopter lenders
  - Mechanisms: **change in credit standards** + **automation** + **selection**
  - **Selection into early adoption** could be biasing results
- This paper instead compares two types of lenders who **both adopt early**
  - **Freddie Mac lenders** select into automation and **change credit standards**
  - **Fannie Mae lenders** select into automation but **do not change credit standards**
  - Differencing the two isolates (large) effect of credit standards
- Would be nice to show you recover Foote et al results without LP vs. DU diff

Evaluation

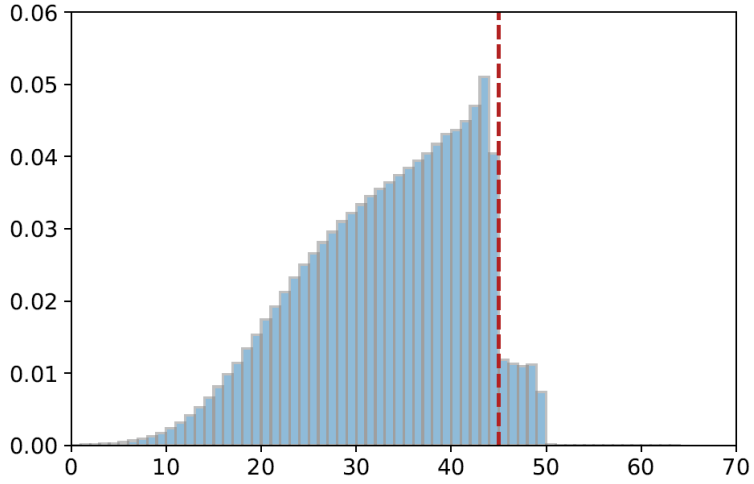
- Overall I find the results very compelling
  - Great solution to tricky identification problem using subtle institutional details
  - HMDA data is complete, avoids concerns about substitution
- A few potential identification concerns remain (likely unavoidable)
  - Initial assignment to Freddie Mac is nonrandom (e.g., specialized in thrifts)
  - Incentives to adopt are different for Loan Prospector (includes change in credit standards) and Desktop Underwriter (does not)
- One (optional) suggestion:
  - Could instrument for early LP adoption with (early adoption $\times$ Freddie share)

Are the estimates plausible? Yes!

- Authors find that adoption of automated underwriting explains 44%-77% of rise in house prices from 1993 to 2002
  - How could the effect be so large?
  - Massive change in payment-to-income distributions from historical limit (36%)
  - Greenwald (2018): large effect of PTI relaxations on house prices



(c) PTI Ratios: Boom



(d) PTI Ratios: Bust

Source: Fannie Mae

Are the estimates plausible? Yes!

- Can also compare to estimates from structural models
  - Greenwald and Guren (2024) find that **loosening credit standards** (PTI limits) explains ~1/3 of the rise in house prices from 1998 - 2006
  - Falling interest rates explain additional ~1/3
  - Remaining ~1/3 is a **residual** that we believe reflects **expectations**
- Matches nicely with this paper's structural model of adaptive expectations
  - 44% - 77% may be a bit large for the direct effect
  - But if rising prices triggered adaptive expectations, ~2/3 seems about right
  - Could decompose model effects into "direct" and "indirect" effects

Policy implications

- Why did automated underwriting allow such high PTI ratios?
- My understanding: essentially using fitted value from default regression
  - In the cross-section, high PTI ratios are not a good predictor of default (see e.g., DeFusco, Johnson, and Mondragon (2020))
  - Instead, default mostly occurs when a property is **underwater (value < debt)** and the owner receives a **large shock (e.g., unemployment, divorce)**
- This paper shows "statistically-informed" approach ignored key externality
  - In partial equilibrium, PTI ratios may not be important for default
  - But in general equilibrium, loosening these ratios caused a huge boom in house prices → **many households underwater in crash** → many defaults
- Demonstrates importance of GE price effects for macroprudential policy

Conclusion

- Highly compelling paper showing that technology relaxing credit standards had large effect on lending and house prices
  - Innovative comparison of LP and DU isolates role of credit standards
  - Back of the envelope: 44%-77% of rise in house prices from 1993 – 2002
- Are these effects plausible?
  - Yes, led to massive change in PTI limits, which strongly affect house prices
  - Likely include both direct effect and indirect effect through expectations
- Important lessons for macroprudential policy
  - Variables that are poor predictors of default in the cross-section (like PTI ratios) can indirectly drive default through house prices