Discussion of "Unlocking Mortgage Lock-In: Evidence From A Spatial Housing Model" by Fonseca, Liu & Mabille

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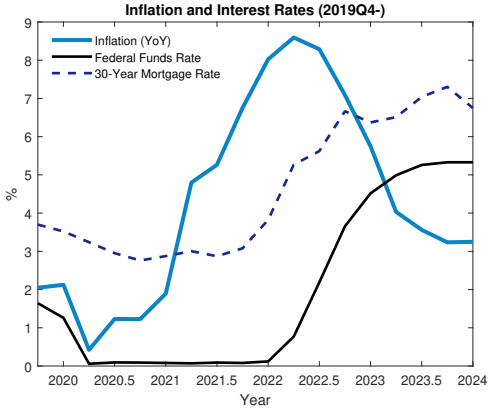
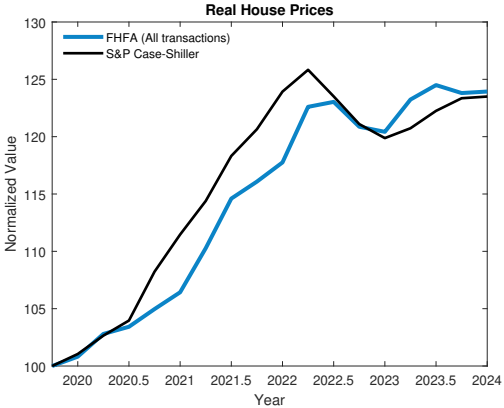
Discussion roadmap

1. Motivation and overview of the paper
2. Comment(s)
3. Conclusion

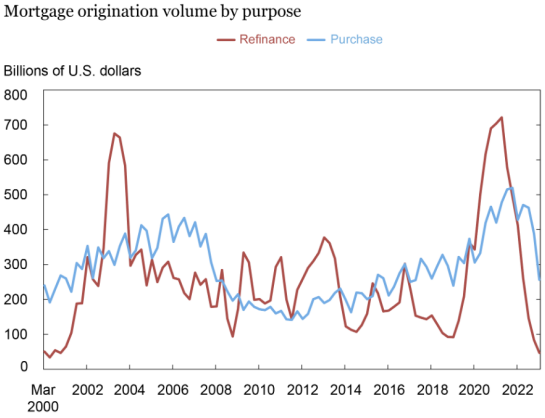
Unprecedented interest rate (r) and inflation (π) swings since 2020.





- Shifting Fed policy stance and beliefs about inflation persistence.
- House prices skyrocketed in 2020 and 2021, but have since softened.

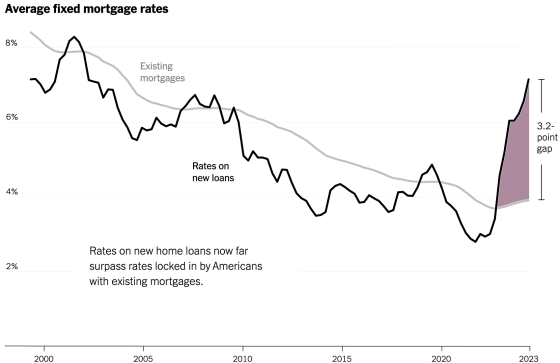
Historically low mortgage rates led to wave of refinancing

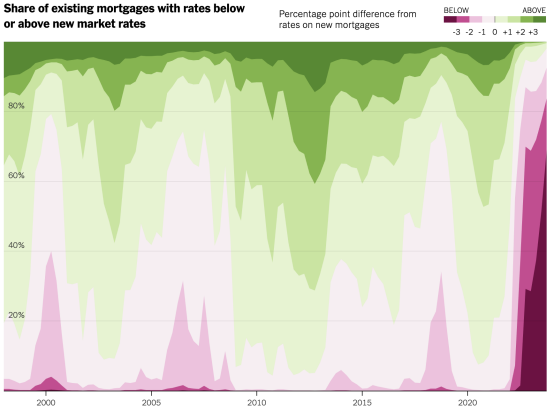


Source: New York Fed Consumer Credit Panel / Equifax.

- Huge wave of refinancing when mortgage rates fell.
- Significant increase in new purchases too.

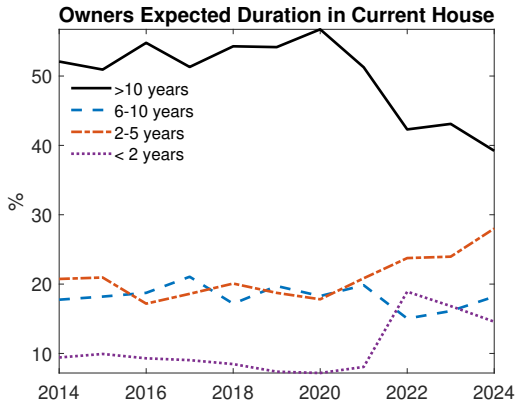
First time in 30 years majority of mortgagors have negative gaps





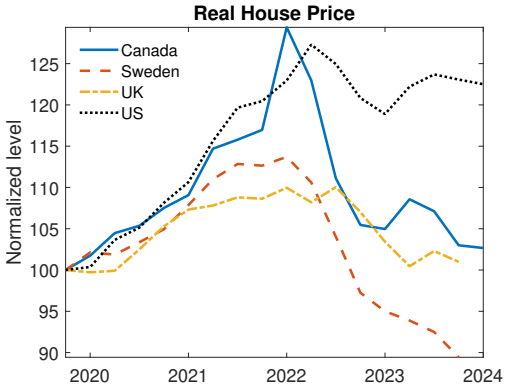
- Rates have been falling over time usually existing mortgages higher rate than prevailing.
- By 2023 more than half of mortgagors have rates more than 3pp below current rates .

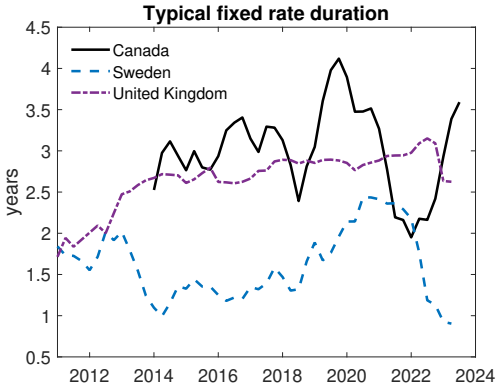
Evidence on lock-in from household expectations?



- NY Fed Survey of Consumer Expectations asks expected duration in current house.
- Big shift to shorter durations after COVID.

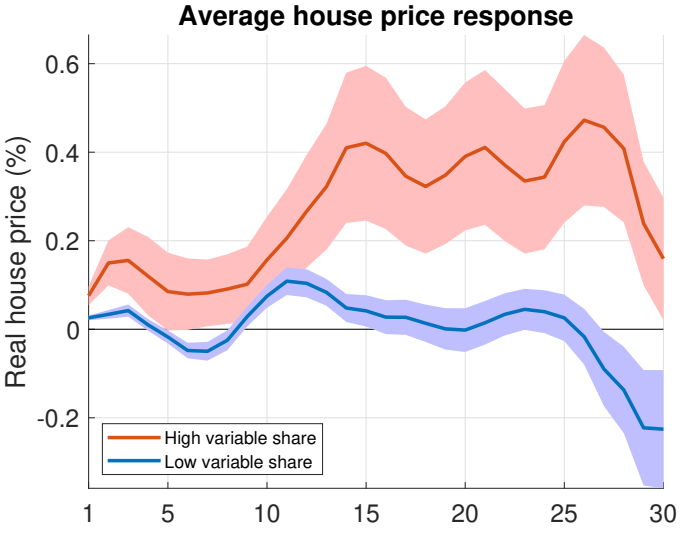
Can FRMs and lock-in explain the resilience in U.S. house prices?





- Divergent experience in house price growth and decline across countries.
- 30-year fixed rate for ~95% of mortgages in US vs
  1–3.5 years for Canada, United Kingdom and Sweden.

House prices respond more to MP shocks when variable mortgage share high



(Hedlund, Larkin, Mitman, & Ozkan 2025)

- FRM vs ARM many effects, e.g. cash flows.
- How much can we attribute to lock-in?
- Would be useful to know:
  - Who is locked in?
  - And why?

Their paper in a nutshell

- Fonseca & Liu (2024) meets Mabille (2023)
- Empirical analysis following Fonseca & Liu (2024) showing:
  - Interest rate gaps reduce moves
  - Interest rate gaps lead to higher house prices
  - Missing downsizers from trade-up homes in high price areas

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- ...but I have some thoughts

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- Policy experiment carefully done, but they could be more ambitious
- More work on #1 and #2 would help guide reasoned work on #3.
- Now: I'll use a simple model to try to understand who is locked in and why.
- This is important both for the answers to positive and normative questions.

A simple model of housing lock-in

- Consider a simple model of housing in steady state
- Households have preferences over consumption c, housing services h and bequests b, given by

$$\log f(c_0, h_0) + \beta \log f(c_1, h_1) + \beta^2 \log(b)$$

  where f is C^2 and CRS.
- Start with initial wealth w, and have stochastic income y_1 in the first period.
- Can borrow with a mortgage m at gross rate R.
- We can write the budget constraints as:

$$\begin{aligned} c_0 + p_h h_0 - m_0 &= w \\ c_1 + p_h h_1 - m_1 &= y_1 + p h_h h_0 - R m_0 \\ b &= p_h h_1 - R m_1 \end{aligned}$$

Characterization of intratemporal choices

- Substituting the mortgage across time periods, you derive the user cost of housing

$$\left(1-\frac{1}{R}\right)p_h \approx rp_h$$

where $R = 1+r$.

- With CES preferences and elasticity of substitution ω,

$$f(c,h) = \left(\omega^{\frac{1}{\sigma}} h^{\frac{\sigma-1}{\sigma}} + (1-\omega)^{\frac{1}{\sigma}} c^{\frac{\sigma-1}{\sigma}}\right)^{\frac{\sigma}{\sigma-1}} \tag{1}$$

intraperiod optimality implies:

$$\frac{rp_h h}{c} = \frac{\omega}{1-\omega}(rp_h)^{1-\sigma}. \tag{2}$$

Characterization of consumption & housing demand

- For a given level of expenditure $E = c + rp_h h$,

$$c = \frac{E}{1 + \frac{\omega}{1-\omega}(rp_h)^{1-\sigma}} \qquad h = \frac{E}{\frac{\omega-1}{\omega}(rp_h)^{\sigma} + rp_h}$$

- In steady state this gives policy functions $c_0^*, c_1^*(y_1), h_0^*, h_1^*(y_1)$.
- $dh/dr < 0$, and if consumption and housing are complements, then $dc/dr < 0$
- If interest rates increase, housing demand necessarily decreases

Characterization of period 1 intertemporal choice

- Households enter period with home equity $a_1 = p_h h_0 - R m_0$,
- Households optimally save a share $s_1^* = \frac{\beta}{1+\beta}$ (given log, independent of R).
- Optimal expenditure in period 1 is $(1 - s_1^*)(a_1 + y_1)$, expenditure shares from the intratemporal problem.
- $\exists$ threshold y_1^* s.t. $y_1 > y_1^*$ means upsizing $h_1^*(y_1) > h_0^*$ (and vice versa)
- The change in housing demand $h_1^*(y_1) - h_0^* = (1 - s_1^*)(y_1 - y_1^*)(1 - \omega)/(r p_h)$
- If $y_1 \sim F$, then $F(y_1^*)$ is the probability that a household downsizes.
- Lock-in is about the change in that probability when r changes unexpectedly.

Lock-in experiment

- Household wakes up in period 1 and there's an unexpected change in $\tilde{r} > r$.
- Household has two options:
  1. Re-optimize $\tilde{h}_1(y_1)$, $\tilde{m}_1(y_1)$ taking into account the new higher interest rate $\tilde{r}$, or
  2. Keep the current house $h_1 = h_0^*$, and mortgage $m_1 \leq m_0^*$ at interest rate r.
- In case 1, expenditure unchanged relative to no-shock case, but $\tilde{h}_1(y_1) < h_1^*(y_1)$
- In case 2, can re-optimize $c_1(y_1)$, but $h_1 = h_0$, now s_1 may change .
- Household "locked-in" if

$$U(c_1, h_0) + \beta \log(a_1 + y_1 - c_1 - r p_h h_0) > U(\tilde{c}_1, \tilde{h}_1) + \beta \log(a_1 + y_1 - \tilde{c}_1 - \tilde{r} p_h \tilde{h}_1)$$

Lock-in characterization

- There exist thresholds $y_1^L < y_1^H$ such that the household is locked in if and only if $y_1 \in [y_1^L, y_1^H]$.
- $F(y_1^*) - F(y_1^L)$ are "missing downsizers", $F(y_1^H) - F(y_1^*)$ are "missing upsizers"
- The lock-in interval $[y_1^L, y_1^H]$ becomes wider (more lock-in) when:
  1. Rate shock increases: $\tilde{r} - r$ larger
  2. Initial house larger: h_0^* larger
- Directly in line with their empirical findings .
- BUT: lock-in is asymmetric, there are no "missing movers" when the rate gap is positive.
  - True also in the data.
  - Using McDash-CRISM data coefficient of 0.238 (linear) vs 0.566 (asymmetric)!
- Lots of interesting economics that gets a bit lost in their model.

Taking stock

- Identified a group of households in the "wrong house."
  - Relative to a world with portable mortgages
- Welfare costs are bounded, people with small loses are the ones that stay.
- Way to address those loses would be to make mortgages portable (e.g. in Sweden).
- But if we're in a second best world where we can't do that, what can or should we do?
- Option to move provides insurance (e.g. move to higher paying job).
  - lock-in reduces household ability to smooth consumption
  - may be a reason to provide insurance to households
- But there are no obvious externalities here that the government should correct.

Main counterfactual picks up more than lock-in, misses path dependence

- The way that they try to measure lock-in in the model is comparing FRM to ARM
  - That's a perfectly interesting and valid experiment to run (I do it in my paper!)
  - But it's going to include a host of other effects, it affects everyone, not just would-be movers
  - Then they could do a different counterfactual: assumable mortgages, or portable mortgages, or paying market value (as opposed to face) to isolate GE effect of lock-in

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  - Then they could do a different counterfactual: assumable mortgages, or portable mortgages, or paying market value (as opposed to face) to isolate GE effect of lock-in
- Doing the tightening experiment from steady state misses potential path dependence
  - Cut before the hike led to wave of refinancing and moves
  - Fixed costs of move/refi $\Rightarrow$ people who just moved/refi-ed less likely to move regardless of hike.
  - In McDash-CRISM data controlling for length of ownership attenuates coefficient on rate gap.
  - Could easily model the 2020-2021 mortgage rate fall before the hike.

What they could do in their model

- Show us in steady state who moves and why (you have 40 EV shocks, hard to figure out)
- Then you could do some partial eqm experiments to show who gets locked-in
- Then allow for the full GE effects and see how it changes further
- Are people moving because of income shocks? retirement? taste shocks? .
- Which move-inducing shocks are more or less effected by changes in R?

Concluding thoughts

- Thought-provoking and topical paper
- Sharp empirical analysis.
- Built an incredible laboratory to study lock-in and the housing ladder.
- I'm sure that they can realize the full potential in the next version of the paper.
- Looking forward to seeing what they do with it!