Monetary Policy and the Mortgage Market

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What role do mortgages and housing play in the transmission of monetary policy?

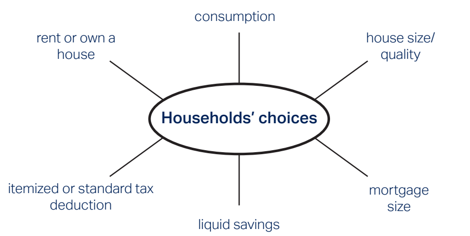
- How do changes in mortgage interest rates and house prices affect aggregate demand?
- Do aggregate responses depend on the type of mortgages that are used?
  Fixed-rate vs adjustable-rate mortgages (FRM vs ARM)

Method

A heterogeneous-agent life-cycle model to trace out aggregate consumption demand as a function of a real interest rate path

Key model features

- Incomplete markets
  - Idiosyncratic earnings risk
  - Savings in liquid bonds or housing equity, and no unsecured borrowing
  - 30-year mortgages: down-payment and payment-to-income requirements (LTV & PTI)
- Illiquid housing equity: transaction costs in the housing market, refinancing costs, and borrowing requirements



Model successfully replicates

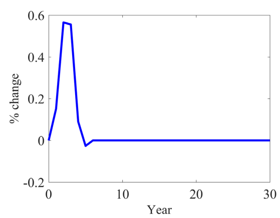
- Share of homeowners with low liquid savings
- Negative correlation between debt and liquid assets
- Life-cycle patterns of mortgages and housing wealth

The experiment

- Start from steady state with an invariant distribution over households
- Study non-linear impulse response functions to a probability zero shock to the real interest rate

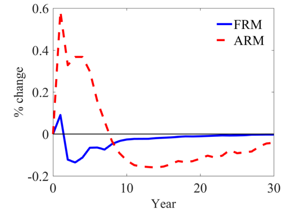
Interest-rate paths

Aggregate income

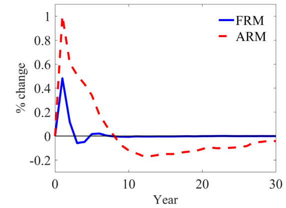


- 100bp expansionary monetary policy shock
- Empirically estimated path of the real interest rate, from Auclert, Rognlie, and Straub (2020)

Responses of consumption



... including effect on earnings



- The initial response of consumption is significantly larger under ARMs
- Consistent with empirical findings (see, e.g., Calza et al. (2013))

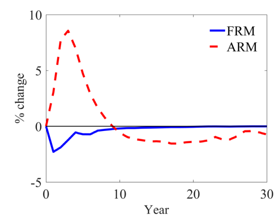
Dissecting the role of changes in house prices and mortgage rates

First period of the transition, Δ consumption (%):

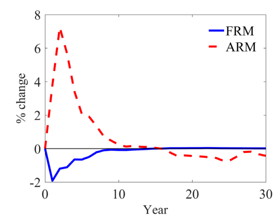
	Overall	Buyers	Refinancers	Stayers	Renters
Fixed-rate mortgages					
p_h & r_m adjust	**0.09**	**0.03**	**0.37**	0.02	0.31
fixed p_h	0.06	-0.48	0.04	0.08	0.17
fixed r_m	0.06	-0.18	0.09	0.05	0.18
fixed p_h & r_m	0.06	-0.29	-0.07	0.08	0.17
Adjustable-rate mortgages					
p_h & r_m adjust	**0.58**	**1.42**	**5.78**	-0.34	0.90
fixed p_h	0.33	-2.69	4.48	0.22	-0.02

- The interaction of lower mortgage interest rates and higher house prices leads to amplification
- Constrained homeowners
  - Use cash-out refinancing to smooth consumption, or
  - Move to a new house to access their housing equity
- Some renters postpone buying a house when house prices increase

Liquid savings

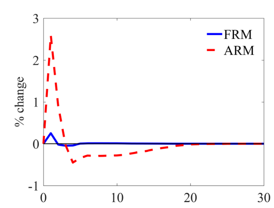


Mortgages



- Savings in liquid bonds actually increase under ARMs…
- … While the mortgage balance increases
- Under FRMs it becomes relatively more favorable to save by paying off a mortgage

House prices



- Consistent with empirical findings house prices respond much stronger in more flexible mortgage markets
- Marginal buyers value the lower short-term mortgage rates under ARMs significantly higher than the long-term mortgage rates that decrease less in the near term, under FRMs
- The higher house prices enable larger cash-outs among refinancers

Conclusions

- The interaction of changes in mortgage interest rates and house prices amplifies the response in aggregate consumption to an expansionary monetary policy shock
- The amplification is largely driven by
  - Constrained homeowners who take up a new mortgage or use cash-out refinancing to smooth consumption
  - Renters who postpone their house purchase due to higher house prices
- When mortgages have adjustable interest rates, as opposed to fixed rates
  - House prices increase substantially more
  - The aggregate response of consumption is more than six times as large