Discussion of "A Housing Channel of QE Transmission"

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Overview

The perennial question

- How does monetary policy affect the economy?
- Effect of change in the short rates on long rates is central to conventional monetary policy
  - Long rate = $\sum$ E[short rates] + term premium
- Expansionary unconventional monetary policy $\Rightarrow$ long rates fall more than $\sum$ E[short rates]
  - Flatten the yield curve
  - Boost credit supply and aggregate demand

Overview

- On the theory side
  - Standard rep. agent models: negligible effects

    "*QE works in practice, but it doesn't work in theory*" – Bernanke (2014)
  - Recent emphasis on the role of financial intermediaries and the frictions faced (i.e., Gabaix & Maggiori 2015, Koijen & Yogo 2020)
  - Revives an old literature on portfolio-balance theory (Tobin 1958, Modigliani and Sutch 1966)
- This paper: propose a novel housing portfolio channel of QE transmission
  - Introduce risk averse "arbitrageurs" able to invest in both markets of bond and housing
  - Two-asset version of Vayanos & Vila (2021)

Summary

- Theory
  - QE transmission through the housing markets
  - Key mechanism: Household portfolio rebalancing (from bond to housing) in response to the decline in (expected) return
- Empirical results
  - Combine Diff-in-Diff with PHF survey dataset to estimate the effect

    10% higher bond share $\Rightarrow$ Second home share $\uparrow$ by 1.78–1.95%
  - Price and quantity impact on regional housing market

    $\downarrow$ rental yields and $\uparrow$ house prices

Theoretical Framework

Investors in the model

- Classical preferred-habitat view of MP
  - Friction that leads to market segmentation (i.e., bond investor clientele)
    - Pension funds & insurance firms demand for long-maturity bond to match their liabilities
    - Money-market funds are mandated to hold short-maturity bond

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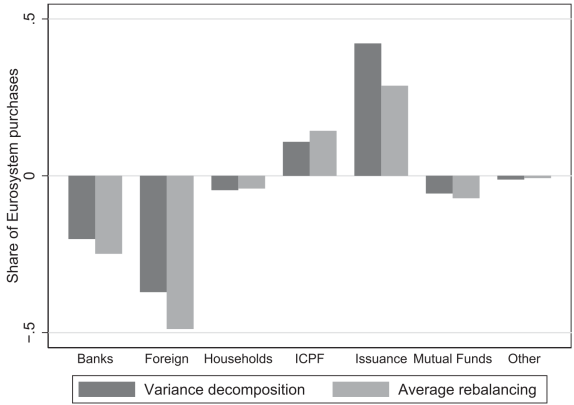
  - MP shocks have relatively larger effects on subset of investors (pricing the asset)
- Three types of investors in the paper
  - Preferred-habitat investors: local housing [real estate agent] and national bond [?]
  - Cross-market arbitrageurs [local household]
    - Are they more likely to be FIs (i.e., banks, funds)?

Investors: ballpark estimate in Koijen et al. (2021)

- For each euro of gov. bonds purchased by ECB
  - Net Buyer ↑: insurance and pension
  - Net Seller ↓: foreign investors, bank and mutual funds



NOTE. The second bar represents average rebalancing of eligible government bond.

Arbitrageurs' risk-bearing capacity

- Can the arbitrageur borrow on long-term to make the arbitrage (in response to fall in yields) $\Rightarrow h < 0$
- Or they are faced with certain borrowing constraints (i.e., lack of capital)? $\Rightarrow h >= \bar{h}$

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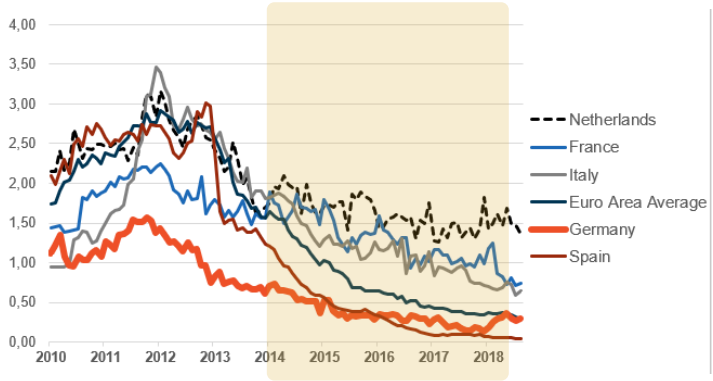
- Endogenize the wealth of arbitrageurs that crucially determines the risk-bearing capacity
  - Beyond the trade-off between mean and variance
  - i.e., CRRA utility so that their risk aversion depends on their current level of wealth (Kekre et al. 2022)
- An integrated framework to study the joint dynamics of bond and housing pricing without explicitly assuming $\sigma_{1,2} > 0$

Household decision

- The declining and positive (short-term) deposit interest rate (NIRP introduced in June 2014)
  - Having non-zero short rate helps quantify the impact of QE vs rate policy



NOTE. Average interest rate for new deposits, private households, maturities <= 1 year, ECB data, in percent.

Housing decision

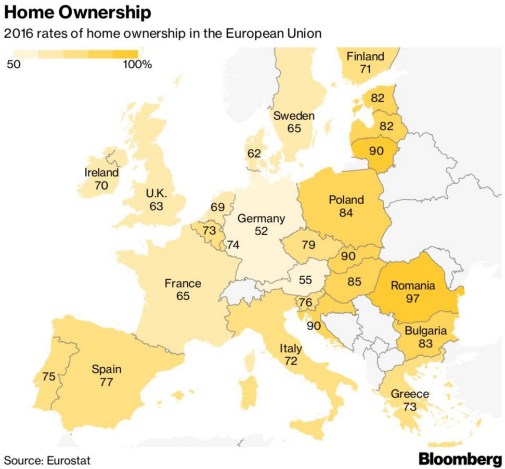
Table 2: ($\Delta house_{it}$)	(6)
Bonds (×) Post	0.121***
	(0.047)
Deposits (×) Post	0.128***
	(0.027)

Similar magnitude

- Durable goods purchase tend to be lumpy with large adjustment costs
  Haurin and Gill (2002), Lu (2008), McKay and Wieland (2021), ...
- Portfolio implications
  - House investment crowds out holding of other fin. assets
  - Alternative ways to invest in real estate: real estate stock, crowdfunding, or REITs?

Housing decision

- Extensive vs intensive margin given the low home-ownership
  - Nest the own-or-rent decision in the household preference $U(\cdot)$



Housing decision - inflation (expectation) channel

- Impact on inflation
  - Higher money supply $\Rightarrow$ higher inflation
  - QE (size standardized to 1% of GDP) raises the price level by 1.42% (Fabo et al, 2021, ...)
- Impact on inflation expectation
  - Price inflation expectation $\uparrow$ by 0.22% in response to £ 50 billion of QE (Boneva et al, 2016, ...)
- Households adjust their investment portfolios to protect against inflation
  - Lower the overall propensity to save and erode bond portfolios
  - Portfolio shift towards housing (and equity)

Empirics

Degree of selection within the sample

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- What are characterized by higher vs low level of bond holding ex-ante?
  - liquidity constraints, preferences (i.e., risk appetite), beliefs (i.e., inflation/income, asset return)

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- What are characterized by higher vs low level of bond holding ex-ante?
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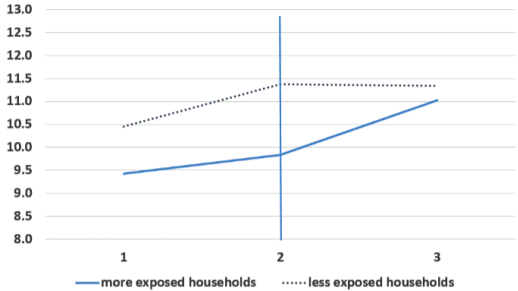
- Inferences are slightly difficult given the implausibility of testing the parallel trend assumption



Optimal bond share adjustment

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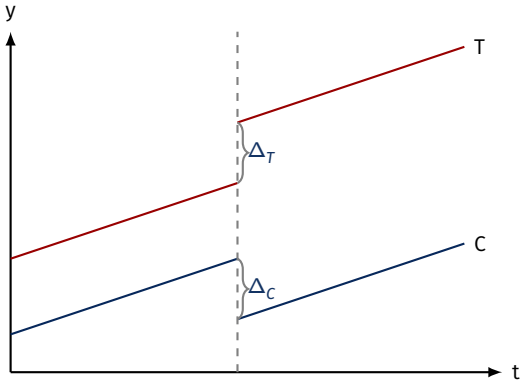
- Horse-race model with interaction of QE and household characteristics?
- Assumption: Higher the bond share ex-ante, larger the incentive to rebalance portfolio
- Model: Is it possible to show that the housing share adjustment (Δ) varies with ex-ante bond share? Dynamic setting?
  - Corollary 1: $\frac{d\alpha_h}{d\bar{b}} \leq 0$, $\frac{d(\alpha_x+\alpha_b)}{d\bar{b}} \geq 0$
- Empirical check

$$\Delta bond_t = \alpha_t + \alpha_h + \beta Post_t \times Bonds_{h,2014} + \epsilon_{h,t}$$

Potential spatial "spillover" effect

- Concern about the interaction between treated and control households
  - After QE, low-bond-share households sell their houses to high-bond-share neighbors
  - Housing share ↑ for the treated and ↓ for the control
- The existence of such "spillover" effects may violate the stable unit treatment value assumption (SUTVA) and bias the estimate



Regional outcome

- Additional exercises that might be useful
  - Compare treated and controls for which there is likely to be very little probability of transaction
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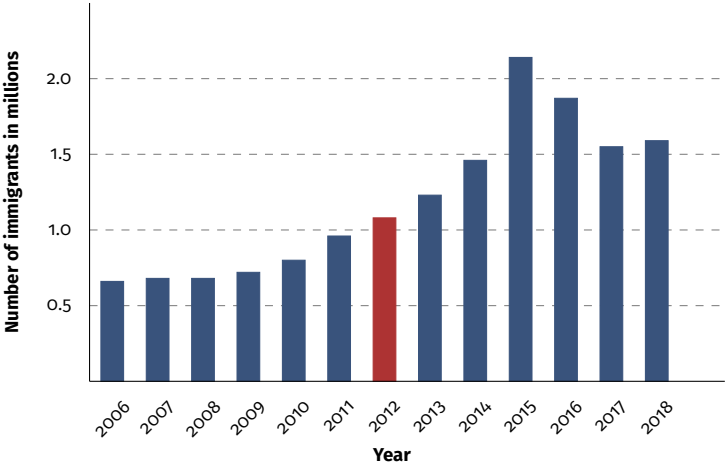
- (Differential) sorting by immigrants

  Population, job opp., cost of living, education, regulation, ...
- Exogenous instruments to characterize the local housing market
  - Physical (i.e., Saiz-type housing supply elasticity) or regulatory constraint
  - Echo the assumption in the model: fixed house supply

Regional outcome

- Evidence on housing transaction volume?
- The large wave of immigrants in Germany started from 2012
  - Would it make sense to exploit shares in later years (instead of 2008)



Summary

In sum

- Great paper furthering our understanding of QE transmission
- Very clear and carefully executed
- Open up many interesting new dimensions for research
- Recommend it to everyone and good luck with the publication!

Thank you!