

“What a fix we’re in”
Monetary Policy Shocks and Mortgage Fixation
Lengths

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Motivation

⇒ **Rise in popularity of fixed rate mortgages (FRMs) since the GFC.**

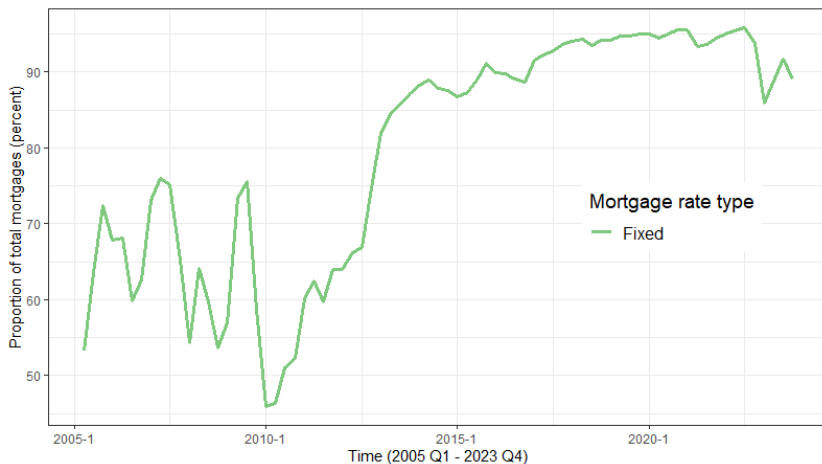


Figure 1: Proportion of fixed versus variable rate mortgages over time

Motivation

⇒ Within FRMs, rise in share of longer dated FRMs.

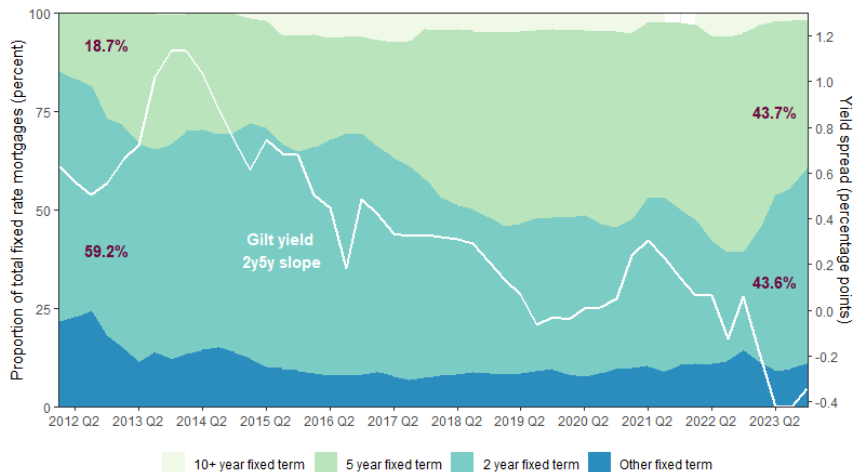


Figure 2: Relative popularity of fixation lengths over time

This Paper

Research Question

- Do **monetary policy actions** play a role in determining fixation choices for new mortgage lending?

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Approach in a Nutshell

- **Exploit granular mortgage data** to estimate causal effects of changes in **yield curve steepness** on mortgage supply conditions at **different fixation lengths**
- IV approach making use of **high-frequency surprises** of treasury yield curve rates around MPC announcements
- These capture **exogenous policy-driven variation** in yield curve steepness

Key Findings

⇒ We provide **causal estimates** of the effect of **monetary policy (MP)** on **mortgage fixation lengths** via yield curve (YC) slope changes.

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⇒ We find that a MP-induced **increase in the slope of the YC** make **longer-fixation mortgages relatively more attractive** and more abundant compared to similar shorter-fixation mortgages.

Key Findings

- ⇒ We provide **causal estimates** of the effect of **monetary policy (MP)** on **mortgage fixation lengths** via yield curve (YC) slope changes.
- ⇒ We find that a MP-induced **increase in the slope of the YC** make **longer-fixation mortgages relatively more attractive** and more abundant compared to similar shorter-fixation mortgages.
- ⇒ These **results are state-dependent**: expansionary vs. contractionary shocks

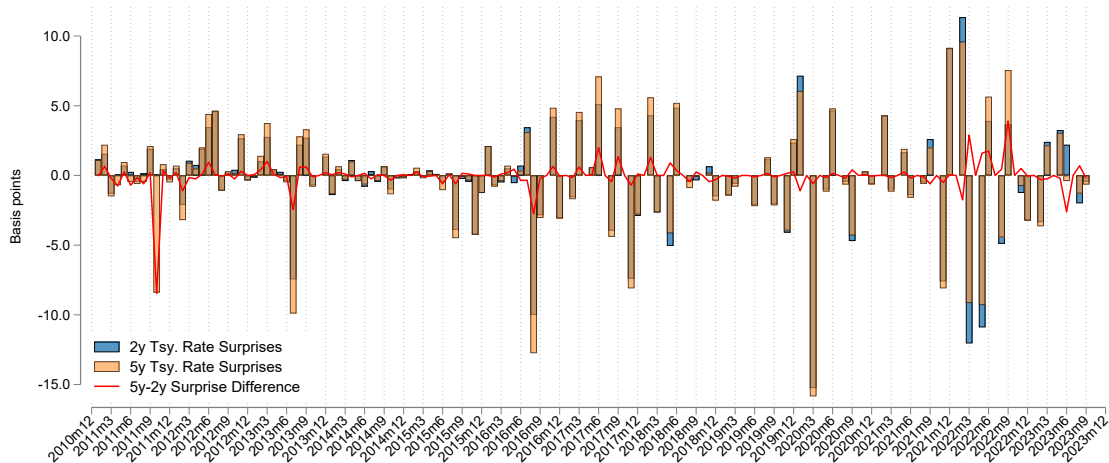
Data and empirical approach

Data sources

- **Refinitiv Tick Data**

- ▶ High frequency minute-by-minute data on UK gilt yields at different maturities
- ▶ Used to construct measures of MP announcement-induced yield curve surprises

High-Frequency Treasury Surprises



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- **Product Sales Data (PSD001)**

- ▶ Repeated cross-section of transaction-level data on new mortgage issuance
- ▶ Covers a wide range of loan, product and borrower characteristics

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- This can occur months after a mortgage is agreed in principle with a lender

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Solution

- Match PSD with **MoneyFacts** product data on **quoted mortgage rates**

Estimated lags between 'agreement' and 'completion'

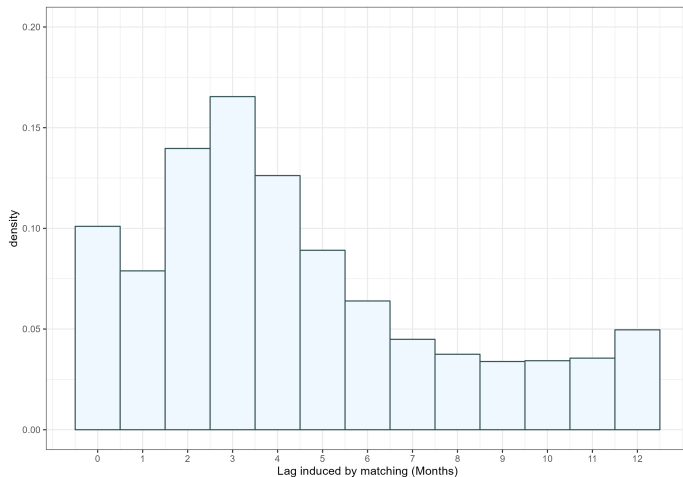
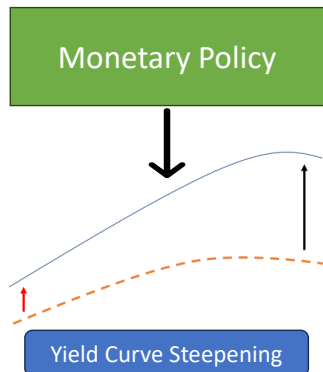


Figure 3: Histogram of timing difference between PSD transaction date and matched MoneyFacts product

- Our algorithm matches around **60% of transactions** with MoneyFacts products (c. 3.2M observations)
- Most transactions match MoneyFacts products provided 0-6 months prior to the transaction date

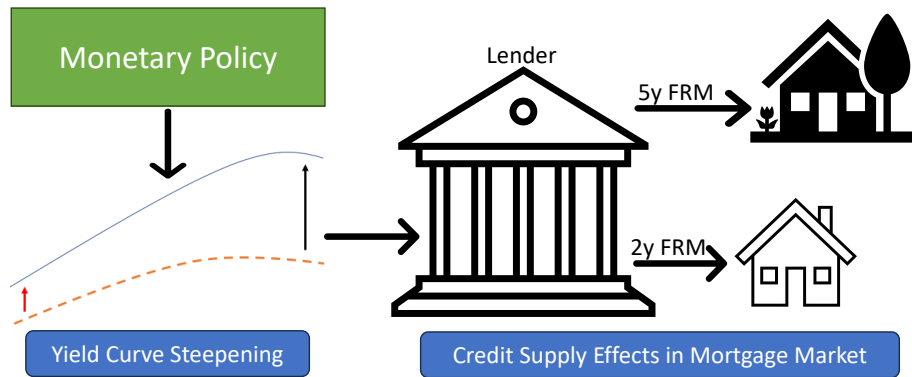
Empirical Approach Intuition

Goal: isolate supply-side dynamic effects.



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Approach: estimate dynamic responses of similar products capturing causal effects.

Empirical Approach

The **dynamic average cumulative response** of the variable of interest Y_t at horizon h , i.e. $\Delta_h Y_{i,b,p,L,t} \equiv Y_{i,b,p,L,t+h} - Y_{i,b,p,L,t-1}$, is computed by estimating

$$\Delta_h Y_{i,b,p,L,t} = \beta_h^{IV} \left(\Delta Y C_t^{5y2y} \times \mathbb{1}_t^{5y} \right) + X'_{i,b,p,t-1} \phi + \mathbf{FE} + \varepsilon_{i,b,p,L,t} \quad (1)$$

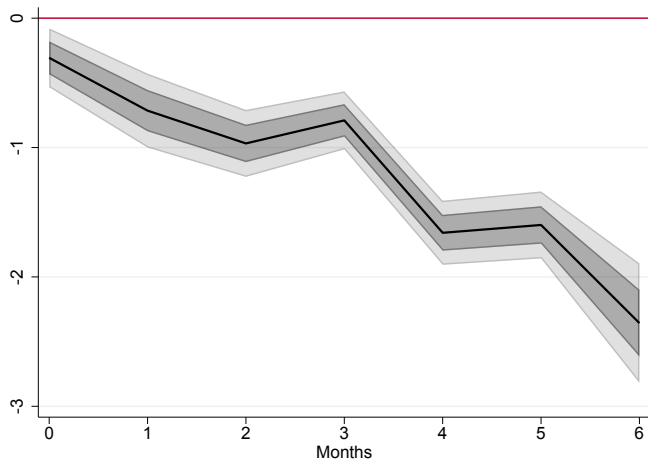
for $h = 0, 1, 2, \dots, H$, and where:

- $Y_{i,b,p,L,t}$: Interest rate (%), log no. of loans, share of loans (%)
- $\Delta Y C_t^{5y2y}$: Change in yield curve slope (instrumented by MP surprises)
- $\mathbb{1}_t^{5y}$: Indicator variable equal to one if fixation length is five year and equal to zero if two year
- $X_{i,b,p,t-1}$: Vector of loan and borrower risk characteristics

Coefficient $\{\beta_h^{IV}\}_{h=0}^H$ trace out the differential response of the dependent variable to a +1pp shock between the 2 year and 5 year fixations.

Monetary Policy Affects the Supply of Mortgages

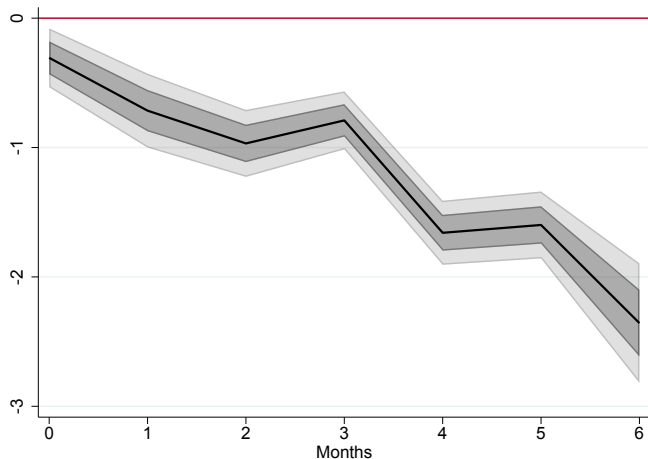
Relative 5y-mortgage price response to a 1pp increase in YC slope.



- Policy-induced **increases in the slope of the YC** make longer-fixation mortgages more attractive.

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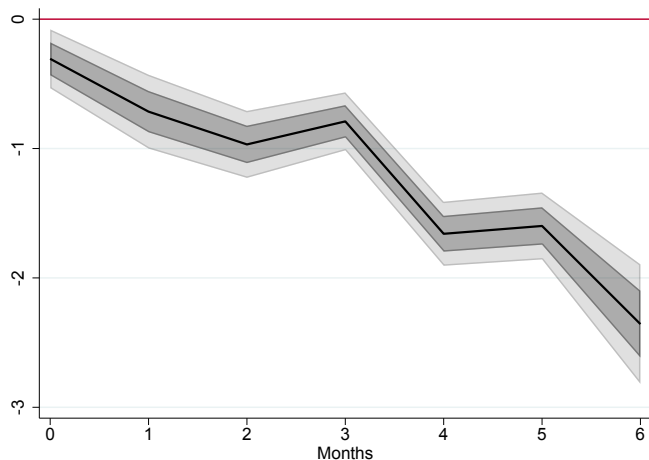
Relative 5y-mortgage price response to a 1pp increase in YC slope.



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- **5y mortgages become relatively cheaper**, compared to 2y mortgages.

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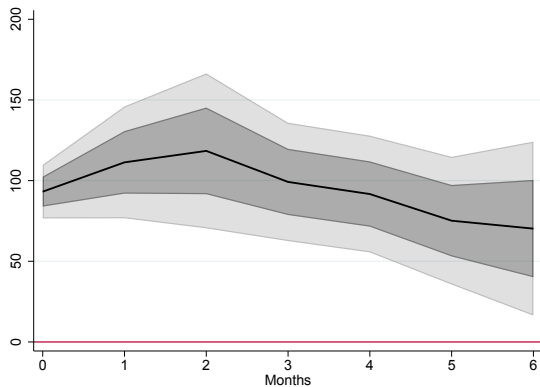
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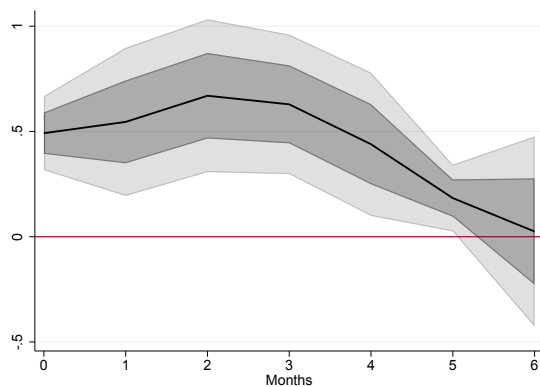
- Policy-induced **increases in the slope of the YC** make longer-fixation mortgages more attractive.
- **5y mortgages become relatively cheaper**, compared to 2y mortgages.
- **Exposure to duration risk** (ARMs' back book share) may be a driver.

Monetary Policy Affects the Supply of Mortgages

⇒ **Loan quantities move in opposite direction to prices** consistent with a supply-side effect.



(a) Differential in loan shares

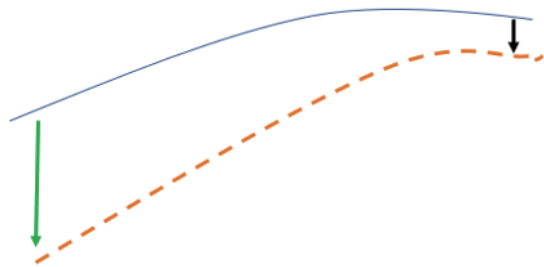


(b) Differential in average loan values

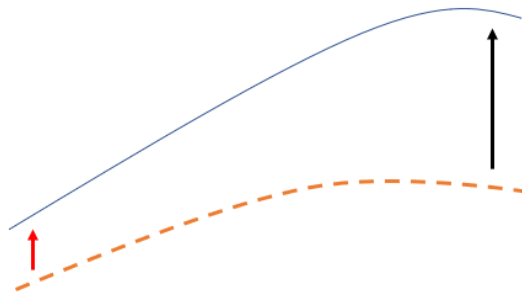
Robustness

- Different combinations of fixed effects and controls ✓
- Inherent variation in the matching algorithm ✓
- Potential information effects embedded in MP surprises ✓
- Proximity to the effective lower bound ✓
- Level of the yield curve ✓

Monetary Expansions vs. Contractions



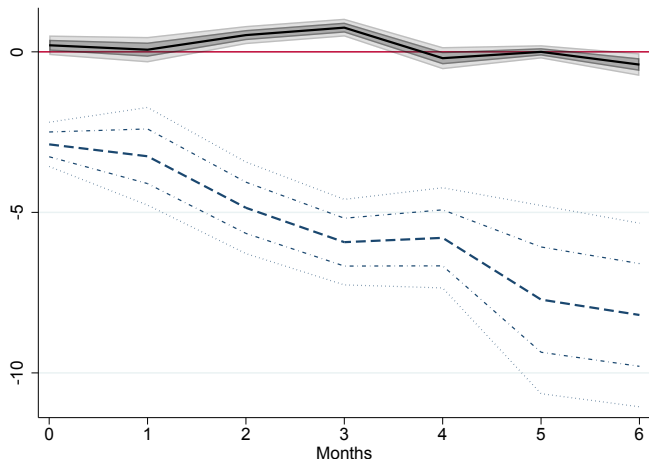
(a) Expansionary Surprises



(b) Contractionary Surprises

Heterogeneity in Policy Expansions vs. Contractions

Relative 5y-mortgage price response to a 1pp increase in YC slope.



- **Stronger effects during expansionary (blue) periods** compared to contractionary (black) ones.
- **Overall monetary policy stance matters** for the effects.

Conclusion

- **Monetary policy affects the fixation structure of the mortgage market, through supply-side channels.**
- Exposure to duration risk for banks may provide an explanation.
- Effects also depend on whether the **overall MP stance** is contractionary or expansionary.
- This means **policy actions today can alter the future effectiveness of the MTM.**

Appendix

Contribution

FRM vs. ARM:

- Campbell and Cocco (2003), Badarinsa, Campbell, and Ramadorai (2018), Liu (2022).

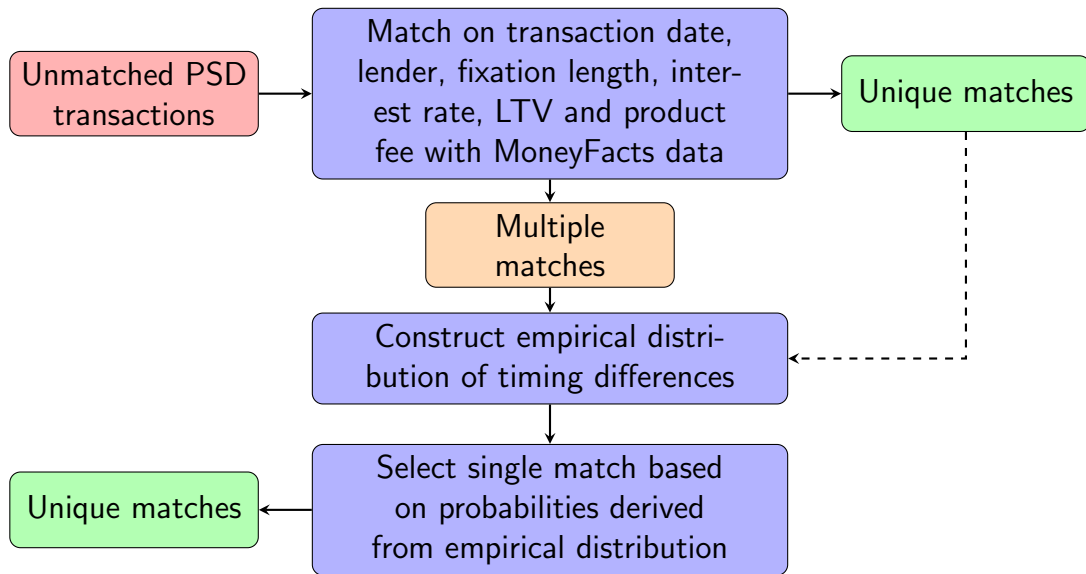
Mortgage pricing:

- Benetton et al. (2021), Benetton, Gavazza, and Surico (2021).

Heterogeneous effects of monetary policy:

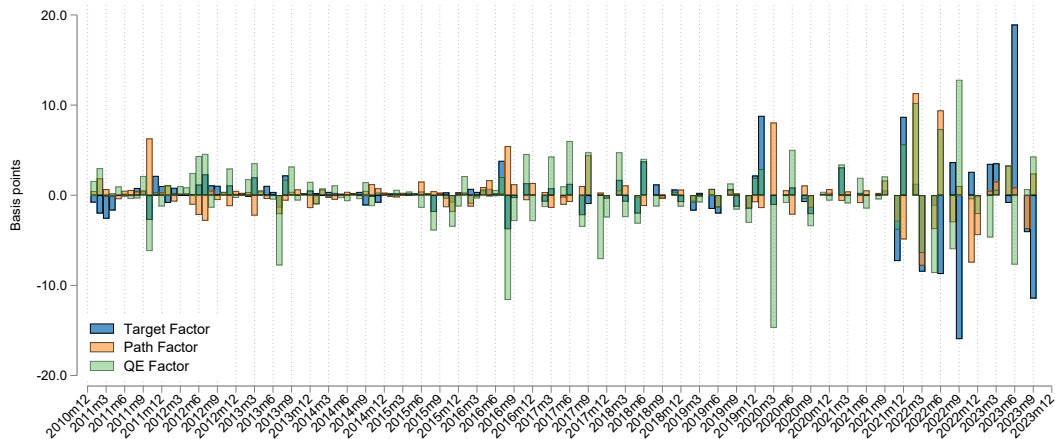
- Auclert (2019), Garriga, Kydland, and Šustek (2017).

Matching algorithm



Identified Monetary Policy Instruments

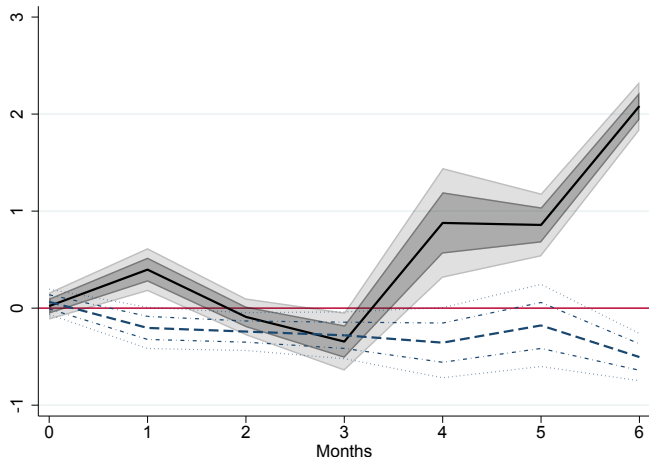
Use **identified tool-specific shocks** (Braun, Miranda-Agrippino, and Saha, 2023)



Tsy. Surprises

Monetary Policy Tool Heterogeneity

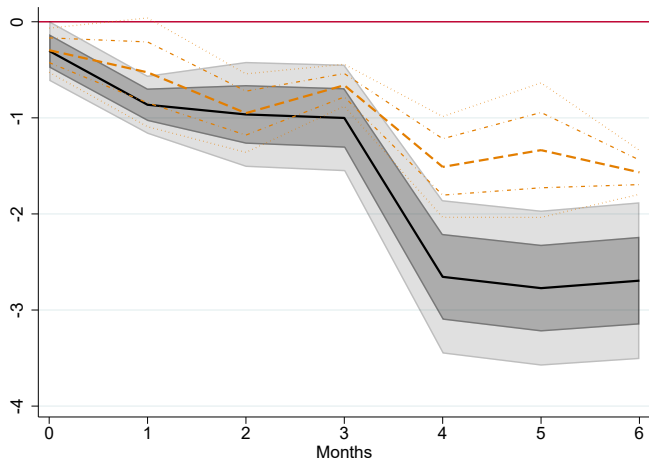
Relative 5y-mortgage price response to a 1pp contractionary shock



- A **target shock** (black) has **stronger and opposite effect than a QE shock** (blue), while path shocks (green) have a muted effect.
- **Why?** A contractionary target shock flattens the YC, while a contractionary QE shock steepens it.

Bank Heterogeneity: Duration risk exposure

Relative 5y-mortgage price response to a 1pp contractionary shock



- Banks' outstanding stock of adjustable rate mortgages used as a proxy for **mortgage market duration risk exposure**
- Banks' with a **higher share** of adjustable rate mortgages generate stronger responses.
- **Why?** These banks experience a smaller crystallisation of duration risk following a yield curve change