

Uneven Transmission of Monetary Policy to the Euro Area Real Estate Market

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HNB¹

19th South-Eastern European Economic Research Workshop

7 November 2025

¹The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Croatian National Bank. ▶

Outline

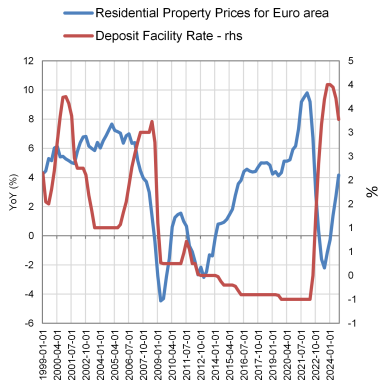
- 1 Introduction
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- 5 Conclusion
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Introduction (1)

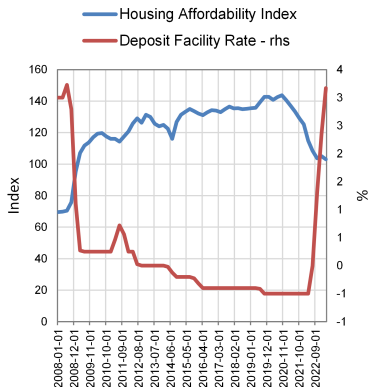
- **Expansionary monetary policy** typically leads to increased demand for housing and rising prices; however, **the impact of monetary policy is not necessarily uniform across countries.**
- **The structural characteristics of countries** can significantly shape the intensity and direction of monetary transmission.
- In theory, expansionary monetary policy reduces interest rates lowering borrowing costs and **improving housing affordability.**
- However, if house **prices rise much faster than household incomes, housing affordability can significantly deteriorate.**

Introduction (2)

- After the GFC, ultra-low interest rates and QE pushed up house prices in the EA.
- Housing affordability improved until the end of 2020; since then, it has deteriorated significantly.



Sources: FRED, ECB.



Source: Biljanovska, N., Fu, M. C., Igan, M. D. O.

(2023). Housing affordability: A new dataset. IMF.

- **Aim of the paper:**
- to empirically examine how the impact of expansionary MP on house prices (HPI) differs across Euro Area countries depending on:
 - price elasticity of housing supply
 - level of household indebtedness
 - share of fixed-rate mortgages
- to test whether expansionary MP can serve as a tool to improve housing affordability (HAI)

Methodology (1)

To assess the **transmission of MP to HPI and HAI** we apply the local projections methodology (Jordà, 2005) to a panel of EA20 countries:

$$y_{j,t+h} - y_{j,t-1} = \alpha_j^h + \beta_1^h l_{j,t} MP_{j,t} + \sum_{l=1}^2 \beta_2^h X_{j,t-l} + \varepsilon_{j,t+h} \quad (1)$$

- $y_{j,t+h} - y_{j,t-1}$ is the cumulative change in the log of the HPI or HAI
- α_j^h is a country fixed effect
- β_1^h are plotted as IRFs
- $MP_{j,t}$ are Jarociński and Karadi (2020)'s monetary policy surprise shocks
- $l_{j,t}$ represents a vector of indicator variables that sort EA countries based on price elasticity of housing supply, level of household indebtedness and the share of mortgage loans with an IRF of over ten years
- $X_{j,t-l}$ is a set of country-specific controls which includes two lags of the dependent variable, real GDP, consumer prices (HICP), rent prices, and long-term interest rates.

Interaction variable $I_{j,t}MP_{j,t}$ consists of:

- $I_{j,t}$ is a vector of indicator variables, which classifies EA countries based on whether they have:
 - high or low housing supply elasticity (estimated by time-varying parameter Bayesian VAR model)
 - high or low level of household indebtedness (defined as the ratio of total household debt to GDP)
 - high or low share of loans (new business) to households for house purchase with an IRF (period of initial interest rate fixing) of over ten years
- $MP_{j,t}$ the first principal component (PC1) shock series from Jarociński and Karadi (2020)
 - To focus solely on expansionary monetary policy shocks, we take only negative surprises and set positive shocks to zero.

Methodology (3)

To estimate the **time-varying price elasticity of housing supply** in the EA, we employ a TVP-BVAR model following Banerjee et al. (2024):

$$y_t = C_t + \sum_{p=1}^4 B_{p,t} y_{t-p} + \varepsilon_t \quad (2)$$

- y_t is a vector of endogenous variables that consists of q-o-q rates of residential property prices, the number of building permits issued and real GDP
- C_t is a vector of time-varying country-specific intercepts
- $B_{p,t}$ is a matrix of time-varying coefficients
- ε_t is an error term that is normally distributed with a zero mean and a time-varying covariance matrix

Methodology (4)

Shock	HPI	Building Permits	GDP
Aggregate demand shock	+	+	+
Housing preference shock	+	+	-
Housing supply shock	+	-	-

Table: Sign restrictions in TVP-BVAR

- Short-run price elasticity of housing supply is defined as:

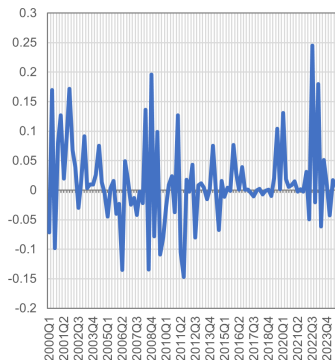
$$E_t = \frac{\% \Delta \text{Building Permits}_t}{\% \Delta \text{Housing Price}_t} \quad (3)$$

Methodology (5)

- The classification is based on a comparison with the median cross-section elasticity for each observed decade (2000s, 2010s, and 2020s).
- Countries with mean elasticity above (below) the cross-section median in a given decade are classified to having a high (low) price elasticity of housing supply.
- Similar approach is used for the classification of countries w.r.t. level of household indebtedness.
- We classify EA countries as having a high share of fixed-rate mortgages if the share of loans with IRF above 10 years exceeds 50% of total loans.

- The dataset covers 20 EA countries and is based on quarterly data from 2004q1 to 2023q4

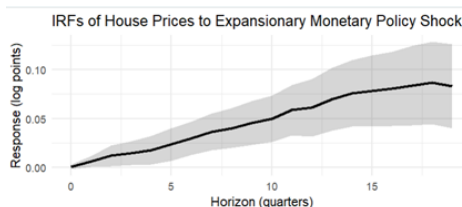
Figure: Monetary policy shocks series (PC1)



Source: Jarociński, M., Karadi, P. (2020)

Main findings (1)

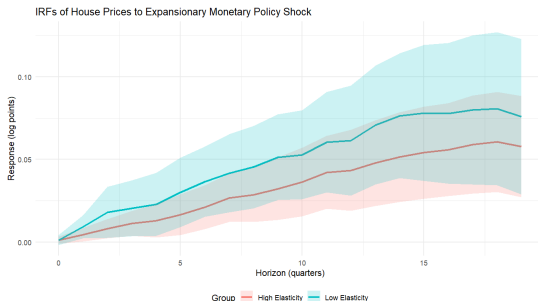
- Following a one-unit expansionary monetary policy shock, house prices rise by approximately 1.8% after one year, peaking at slightly above 8% after four years.



Note: With 95% confidence bands. We use Driscoll and Kraay (1998)'s standard error to correct for heteroskedasticity, serial correlation, and cross-sectional dependence in panel data. Source: authors' calculations.

Main findings (2)

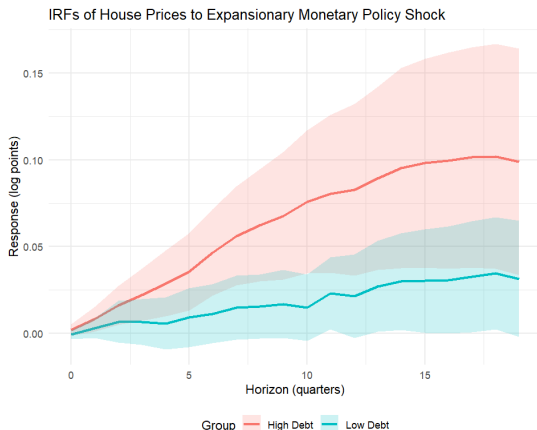
- Results from local projections confirm that supply elasticity matters for monetary policy transmission to house prices.



Note: With 95% confidence bands. We use Driscoll and Kraay (1998)'s standard error to correct for heteroskedasticity, serial correlation, and cross-sectional dependence in panel data. Source: authors' calculations.

Main findings (3)

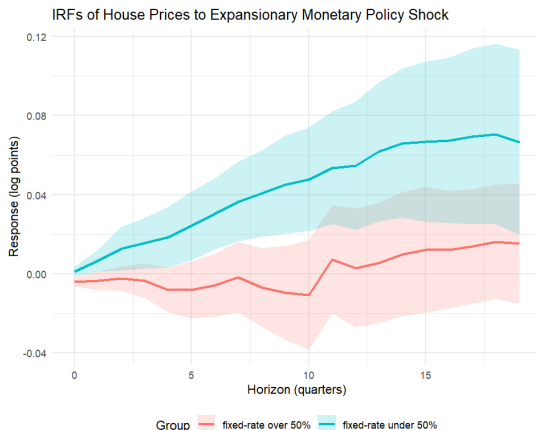
- Results from local projections confirm that level of household indebtedness matters for monetary policy transmission to house prices.



Note: With 95% confidence bands. We use Driscoll and Kraay (1998)'s standard error to correct for heteroskedasticity, serial correlation, and cross-sectional dependence in panel data. Source: authors' calculations.

Main findings (4)

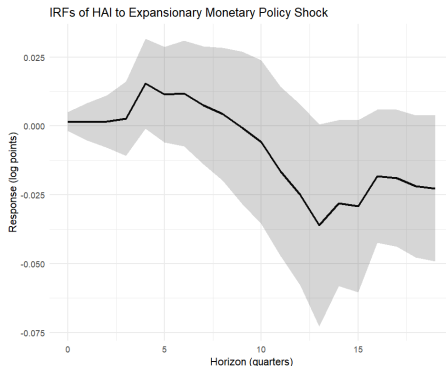
- Results from local projections confirm that the share of fixed-rate mortgages matters for monetary policy transmission to house prices.



Note: With 95% confidence bands. We use Driscoll and Kraay (1998)'s standard error to correct for heteroskedasticity, serial correlation, and cross-sectional dependence in panel data. Source: authors' calculations.

Main findings (5)

- Following a one-unit expansionary monetary policy shock, there is no statistically significant effect on total housing affordability.



Note: With 95% confidence bands. We use Driscoll and Kraay (1998)'s standard error to correct for heteroskedasticity, serial correlation, and cross-sectional dependence in panel data. Source: authors' calculations.

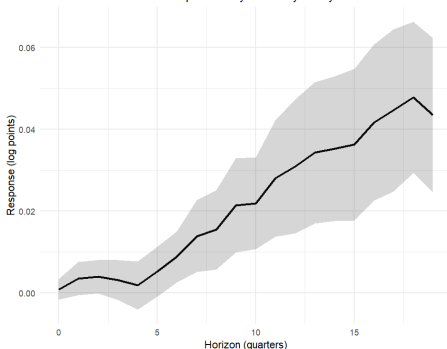
Conclusion

- We examine whether expansionary monetary policy can improve housing affordability, with the aim of identifying the channels that drive smoother transmission.
- Our results suggest that expansionary monetary shocks generally lead to an increase in real housing prices, but the intensity of this increase significantly depends on
 - the supply elasticity
 - the level of household debt
 - the share of fixed-rate mortgages
- To test the impact of monetary loosening on housing affordability, we use a novel dataset on housing affordability by Biljanovska et al. (2023).
- However, we do not find evidence that unexpected loosening of monetary policy can improve housing affordability; fiscal or macroprudential policies, may be more effective.

Appendix (1)

Figure A1: IRF of the HPI to an
Altavilla et al. (2019)'s Expansionary
Monetary Policy Shock

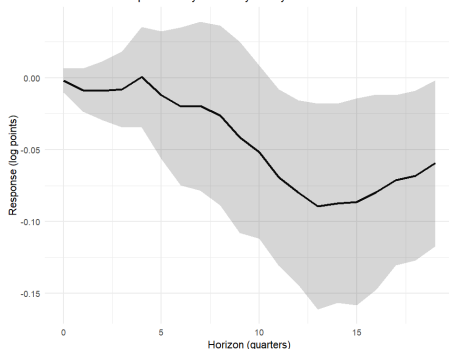
IRFs of House Prices to Expansionary Monetary Policy Shock



Source: authors' calculations.

Figure A2: IRF of the HAI to an
Altavilla et al. (2019)'s Expansionary
Monetary Policy Shock

IRFs of HAI to Expansionary Monetary Policy Shock

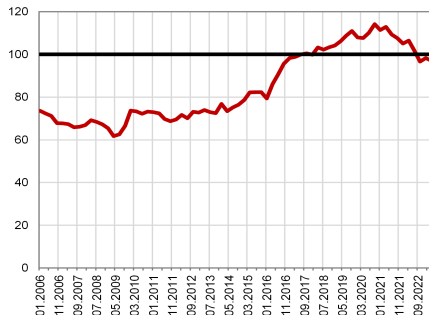


Source: authors' calculations.

Appendix (2)

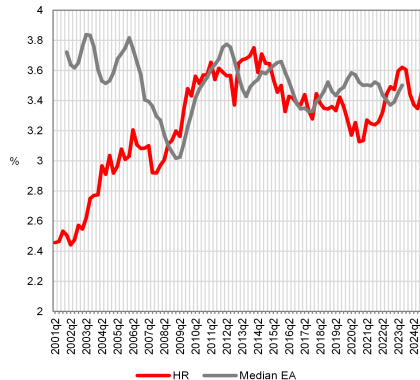
Figure A3: HAI in Croatia

HAI for HR



Source: Biljanovska, et a. (2023)

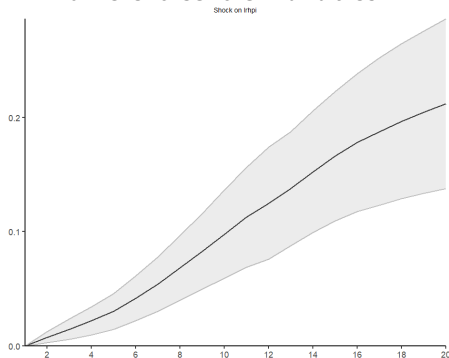
Figure A4: Time-varying supply elasticity in Croatia and the EA



Source: Eurostat, BIS, authors' calculations.

Appendix (3)

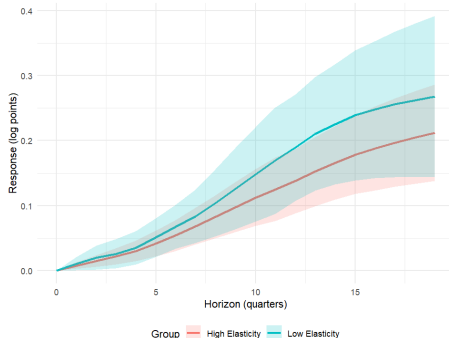
Figure A5: IRF of the HPI to an Expansionary Monetary Policy Shock, **different control variables**



Source: authors' calculations.

Figure A6: The role of elasticity, **different control variables**

IRFs of House Prices to Expansionary Monetary Policy Shock

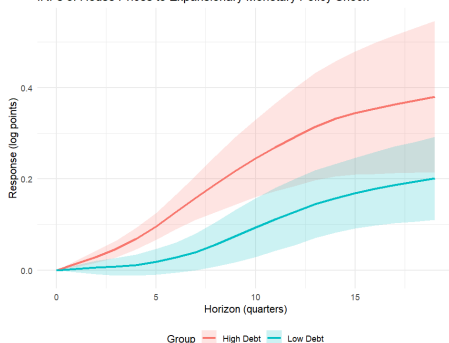


Source: authors' calculations.

Appendix (4)

Figure A7: The role of household's indebtedness level, **different control variables**

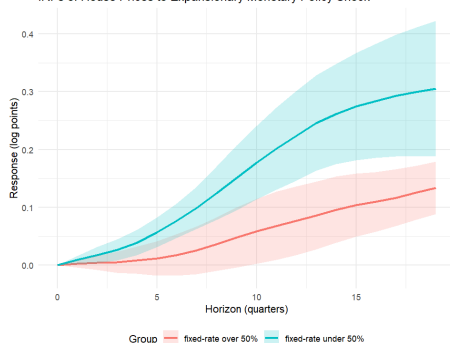
IRFs of House Prices to Expansionary Monetary Policy Shock



Source: authors' calculations.

Figure A8: The role of prevalence of fixed-rate mortgages, **different control variables**

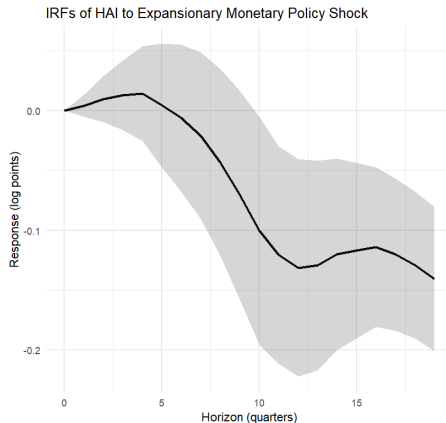
IRFs of House Prices to Expansionary Monetary Policy Shock



Source: authors' calculations.

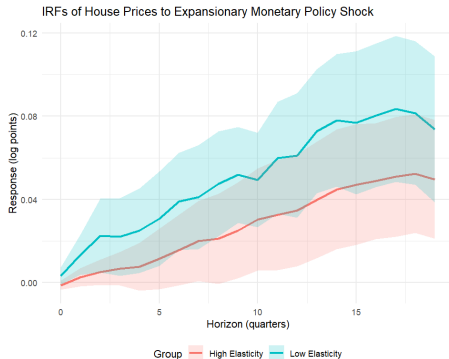
Appendix (5)

Figure A9: IRF of the HAI to an Expansionary Monetary Policy Shock, **different control variables**



Source: authors' calculations.

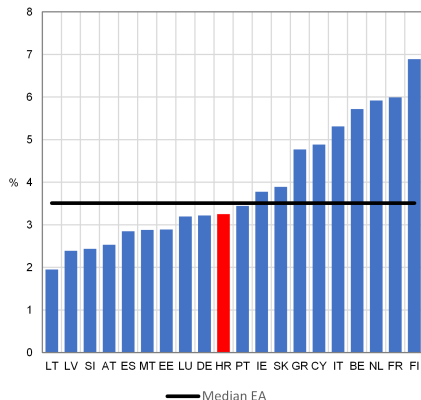
Figure A10: Elasticity below 25th or above 75th percentile



Source: authors' calculations.

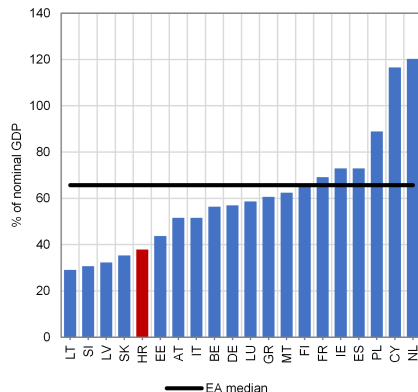
Appendix (7)

Figure A11: Supply elasticity in Euro Area countries



Source: Eurostat, BIS, authors' calculations.

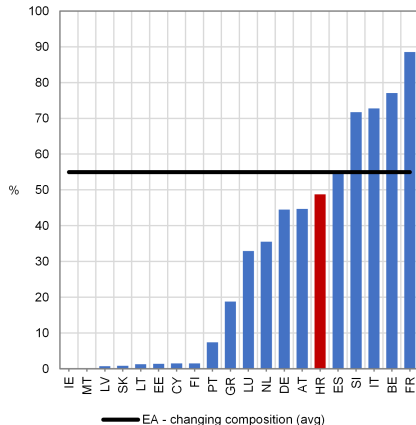
Figure A12: Level of household indebtedness in Euro Area



Note: The level of household indebtedness is calculated dividing the total household's financial liabilities in each quarter with the sum of last four quarters of nominal GDP. Source: Eurostat,

Appendix (8)

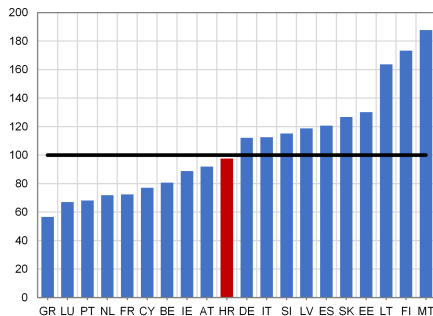
Figure A13: Average share of fixed-rate mortgages in Euro Area in the last 5 years



Note: Share of mortgage loans with an IRF > 10y, 2020 q1 – 2025 q2. Source: ECB data portal, authors' calculations.

Figure A14: Average HAI in Euro Area countries in the first half of 2023

Housing affordability index (HAI)



Source: Biljanovska, et a. (2023).