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The Impact of Ukrainian War Refugees on Rental Prices in Europe: A Panel Data Analysis

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Presentation outline

1. Motivation
2. Data description
3. Estimation method
4. Main findings
5. Conclusions

Motivation

- Deepen initial research (Trojanek and Gluszak 2022; Wojdat and Cywiński 2022; Poliaková and Kameníková 2023).
- Disentangle the effects of overlapping shocks on rental prices:
 - **inflow of Ukrainian refugees,**
 - rise in inflation rate,
 - restrictive monetary policy,
 - post-pandemic recovery,
 - house price boom.
- Provide more evidence for drafting housing policies addressing the provision of accommodation for refugees.
- Corroborate to former research on the effects of immigration on rental prices (Cochrane and Poot 2021; Pourcelot et al.2020).

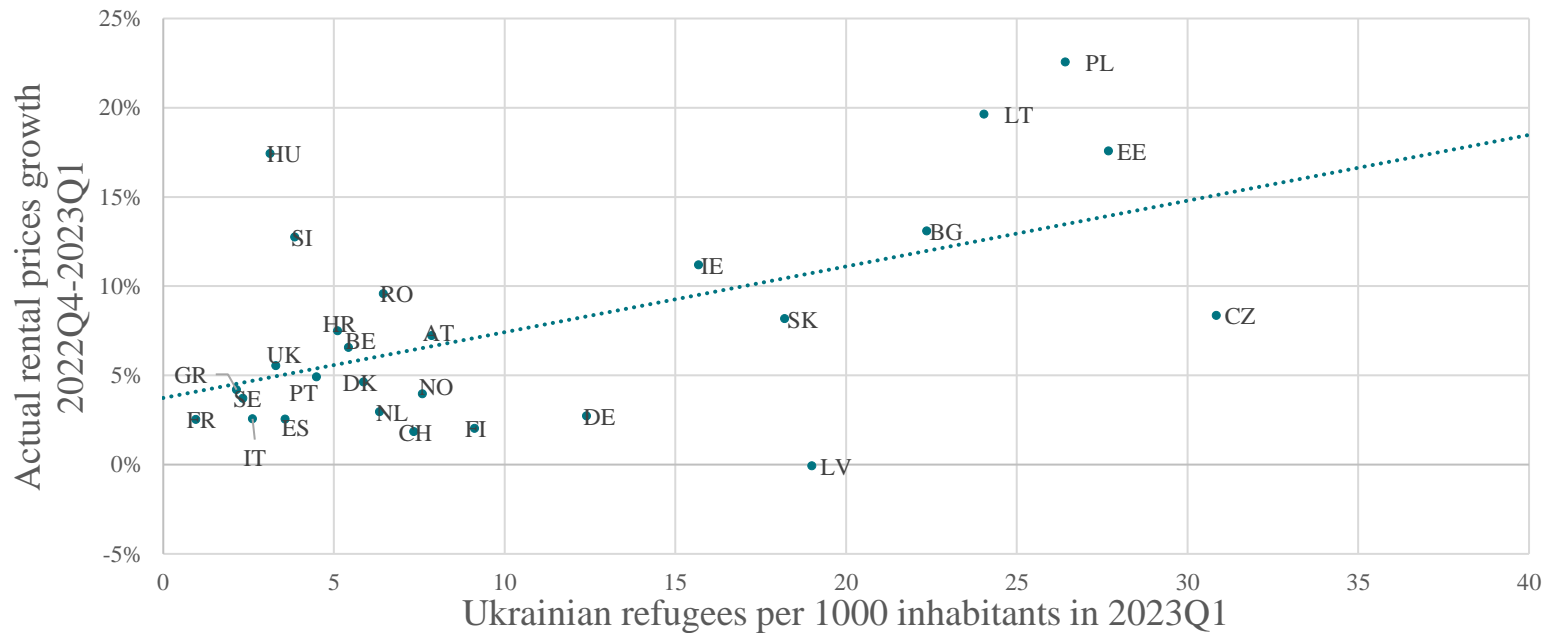
Data description (1)

- **Dependent variable:**
 - Actual rental prices (HICP 04.1.1 component), quarterly growth rate.
- **Main independent variable:**
 - Number of Ukrainian refugees registered for temporary protection per 1000 inhabitants as of 1st January 2022.
- **Control variables:**
 - quarterly HICP index growth rate,
 - quarterly growth rate of house prices (HPI definition),
 - quarterly growth rate of median equivalised net income (interpolated from EU-SILC annual data),
 - average interest rates on new housing loans.

Data description (2)

- Interaction variables:
 - share of owner-occupied houses in the housing stock,
 - index measuring the stringency of rent controls (Kholodilin et al. 2018).
- Geographic coverage:
 - 27 European countries, incl. 24 EU largest member states, Norway, Switzerland, UK.
- Time span:
 - 2017Q1-2023Q1 (quarterly data).
- Data sources:
 - Eurostat, ONS, UNHCR, UK Home Office, EBC, Swiss BFS, Swiss National Bank, Bank of England, and Statistics Norway.

Dependent vs. main independent variable



Estimation method

- Estimated basic panel regression model:

$$\Delta rents_{it} = \alpha_1 constant_{it} + \alpha_2 \Delta rents_{i,t-1} + \alpha_3 refugees_{it} + \beta control_{it} + \phi_i + \epsilon_{it}$$

- Estimated auxiliary panel regression model with interaction variables:

$$\Delta rents_{it} = \alpha_1 constant_{it} + \alpha_2 \Delta rents_{i,t-1} + \alpha_3 refugees_{it} + \beta control_{it} + \gamma inter_{it} + \phi_i + \epsilon_{it}$$

- Estimation procedures:
 - fixed-effects panel data regressions with a GLS estimation procedure and robust standard errors,
 - fixed-effects GLS estimator with bootstrap standard errors,
 - random effects GLS estimator with robust standard errors,
 - fixed-effects estimator corrected for the Nickel bias as proposed by Bruno,
 - first-difference instrumental variable estimator proposed by Anderson-Hsiao,
 - the Arellano-Bond GMM estimator,
 - the system-GMM Blundell-Bond procedure for dynamic panel-data estimation,
 - the system-GMM Blundell-Bond procedure for dynamic panel-data estimation with collapsed instruments.

Main findings (1)

VARIABLES	(1)	(2)	(3)	(4)	(5)
<i>Lagged dependent variable</i>	-0.0420 (0.0637)	-0.0766 (0.0662)	-0.0781 (0.0621)	-0.0789 (0.0623)	-0.0836 (0.0556)
<i>Refugees</i>	0.000639*** (0.000150)	0.000195 (0.000231)	0.000369* (0.000190)	0.000366* (0.000192)	0.000191 (0.000174)
<i>Inflation</i>		0.387** (0.158)	0.312** (0.132)	0.314** (0.133)	0.308** (0.134)
<i>House price growth</i>			0.186*** (0.0660)	0.190*** (0.0675)	0.222*** (0.0664)
<i>Income growth</i>				0.00497* (0.00257)	0.00390 (0.00237)
<i>Interest rates</i>					0.00248*** (0.000780)
<i>Constant</i>	0.00669*** (0.000558)	0.00387*** (0.00107)	0.00121 (0.00173)	0.00114 (0.00176)	-0.00497** (0.00223)
Observations	648	648	648	641	632
Number of countries	27	27	27	27	27
Adjusted R2	0.042	0.149	0.188	0.187	0.195
F-statistic	10.00	7.29	8.06	6.33	17.77
Log Likelihood	1808	1847	1863	1840	1814

Main findings (2)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
<i>Lagged dependent variable</i>	-0.0854 (0.0535)	-0.0872 (0.0546)	-0.163*** (0.0401)	-0.131** (0.0544)	-0.138** (0.0537)	-0.158*** (0.0420)
<i>Refugees</i>	-5.53e-05 (0.000796)	9.53e-05 (0.000180)	-8.66e-05 (0.000352)	8.25e-05 (0.000257)	-0.00365* (0.00188)	1.30e-05 (0.00175)
<i>Inflation</i>	0.308** (0.133)	0.311** (0.136)	0.541* (0.280)	0.500** (0.209)	0.495** (0.212)	0.537* (0.273)
<i>House price growth</i>	0.219*** (0.0697)	0.223*** (0.0658)	0.361*** (0.0964)	0.295** (0.101)	0.288** (0.0973)	0.359*** (0.104)
<i>Income growth</i>	0.00378 (0.00248)	0.00400* (0.00226)	0.0769 (0.0868)	0.00188 (0.00122)	0.169 (0.118)	0.00216 (0.00185)
<i>Interest rates</i>	0.00252*** (0.000749)	0.00246*** (0.000771)	0.00220 (0.00197)	0.157 (0.119)	0.00149 (0.00105)	0.0809 (0.0957)
<i>Owner-occupied housing share</i>	0.000350 (0.000486)				-0.000130 (0.000960)	0.000121 (0.00162)
<i>Rent control index</i>		-0.00669*** (0.00165)	-0.00859** (0.00344)	0.0539 (0.0555)		
<i>Interaction variable OOH</i>	2.99e-06 (1.03e-05)				0.000044* (0.000023)	6.94e-08 (2.23e-05)
<i>Interaction variable RCI</i>		0.000574*** (0.000164)	0.000632* (0.000298)	-0.000164 (0.000570)		
<i>Constant</i>	-0.0310 (0.0356)	-0.00321 (0.00228)	-0.00661 (0.00805)	-0.0176 (0.0112)	0.00386 (0.0803)	-0.0184 (0.126)
Observations	632	632	213	258	258	213
Number of countries	27	27	9	11	11	9
Sample	total	total	large inflow	CEE	CEE	large inflow
Adjusted R2	0.193	0.195	0.313	0.260	0.264	0.309

Conclusions

- The impact of Ukrainian war migration on rental prices was lower than commonly assumed:
 - an inflow of refugees equal to 1% of the host country's population translated into an increase in rental price growth of 0.2-0.3%,
 - it is smaller than the long-term impact of 1-1.5% indicated by other studies,
 - it is a statistically insignificant parameter.
- Inflation, housing boom, interest rate hikes were the most important factors standing behind the recent surge in rental prices.
- Further studies are needed to investigate the impact of Ukrainian refugees on long-term rental prices and at a city-level granularity.

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