Housing inequality and how fiscal policy shapes it: Evidence from Belgian real estate

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Why looking at housing to study inequality?

- Housing matters
  - Wealth: main component of HH assets & debt portfolios
    ▸ HFCS
  - Expenditures: households spend 25% of their income on housing in Belgium
  - Opportunities: "door of entry" to neighbourhoods

- Homogeneity of cadastral data
  - Ideal to replicate and compare estimates across countries

- Geolocation: housing is independent to administrative boundaries
  - Ideal to analyse within-country heterogeneity

- Analysis over time
  - Based on the year of construction

Research questions and preview of results

1. **What is the level of housing inequality in Belgium? Is heterogeneity across and within regions significant?**
   - Housing inequality in Belgium: Gini index of 0.25 in terms of housing value
   - Housing inequality: Wallonia (0.26) $>$ Brussels (0.23) $>$ Flanders (0.21)
   - Significant heterogeneity across and within municipalities

2. **Can fiscal policies shape housing inequality? Is the impact on inequality heterogeneous across and within regions?**
   - Effect of reducing property registration fees on housing inequality
   - House prices increased, in particular for houses below the median value
   - Housing inequality decreased in Flanders overall (1%)

Contribution to the literature

1. Measuring inequality: Piketty and Saez 2003; Piketty and Saez 2006; Piketty and Zucman 2014; Blanco, Bauluz, and Martínez-Toledano 2021; Fuchs-Schündeln, Krueger, and Sommer 2010; André and Meslin 2021; Decancq, Decoster, and Schokkaert 2009; Glaeser, Resseger, and Tobio 2009; Albouy and Zabek 2016; Fogli and Guerrieri 2019; Domènech-Arumí 2022

2. Effect of fiscal policies on housing accessibility: Davis et al. 2021; Autor, Palmer, and Pathak 2014; Favilukis, Mabille, and Van Nieuwerburgh 2022; Poterba 1992; Kopczuk and Munroe 2015; Best and Kleven 2018; Sommer and Sullivan 2018; Diamond and McQuade 2019; Chapelle, Vignolles, and Wolf 2018; Favilukis, Mabille, and Van Nieuwerburgh 2022; Kaas et al. 2020; Damen and Goeyvaerts 2021

Road map

1. Introduction
2. Data
3. Housing inequality in Belgium
4. The effect of a reduction in registration fees on housing inequality
5. Conclusions

The Belgian cadastre

1. The transactions dataset
   - Price and date of each real estate transaction from January 2006 - July 2022.
   - Real estate characteristics
   - Focus on apartments and houses: 2.0 million transactions over 16 years

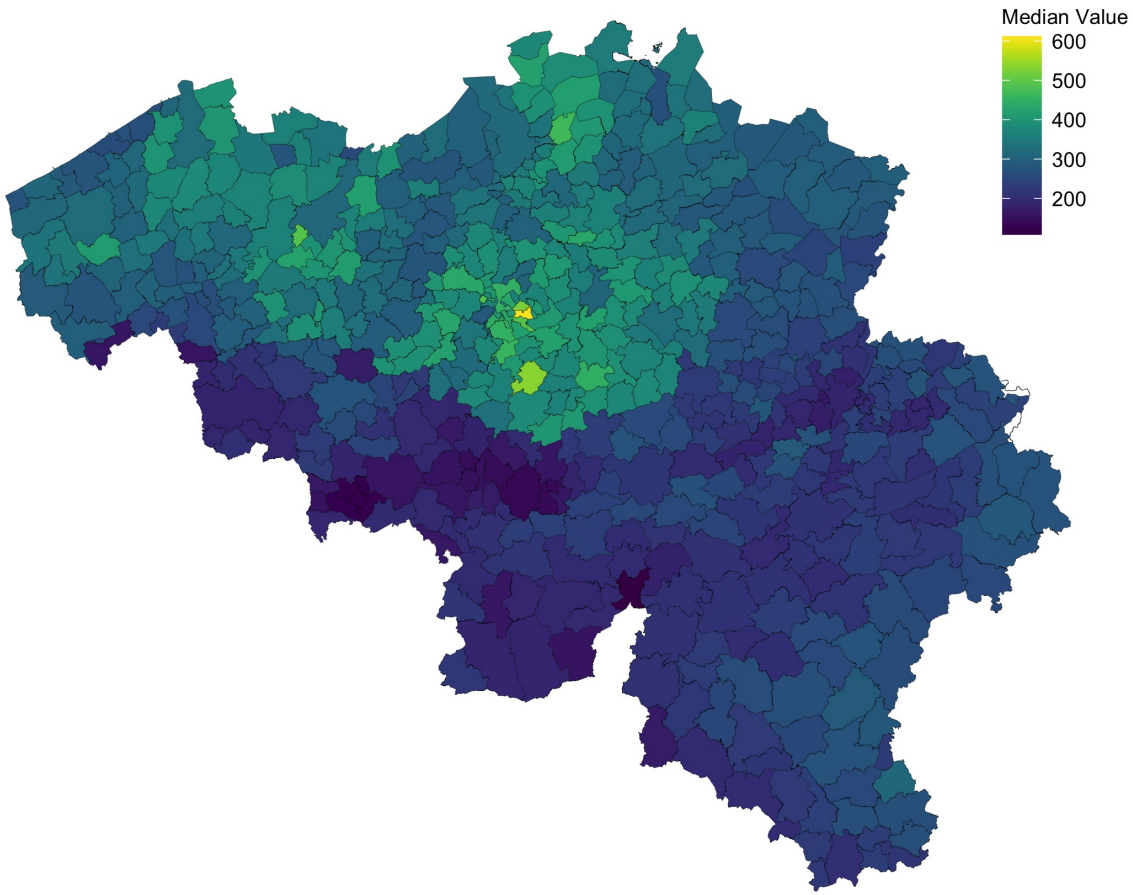
2. The parcels database
   - Universe of real estate in Belgium as of July 2022
   - Keep 4.2 million dwelling units

Summary statistics

Variable	*transactions* database Mean	SD	*parcels* database Mean	SD
Sale price (1000s EUR)	262.379	3555.733		
Surface (m^2)	150.100	151.644	163.325	90.256
Share of houses	0.870	0.336	0.869	0.337
Share of apartments	0.130	0.336	0.131	0.337
Number of rooms	5.781	8.795	5.544	3.514
Number of bathrooms	0.838	0.623	0.955	0.754
Number of garages	0.559	0.721	0.661	0.705
Cellar	0.300	0.458	0.328	0.470
Floor number	0.973	0.829	1.411	0.800
Central heating	0.511	0.500	0.709	0.454
Construction year	1939.3	40.317	1954.8	46.317
Last renovation (years)	57.921	42.149	44.128	41.437
Detached dwelling	0.276	0.447	0.343	0.475
Normal quality	0.985	0.122	0.988	0.110
Number of observations	2,012,145		4,255,457	

Predicting house values for all Belgium

- Train random forest model using all information available from the transaction dataset to predict housing values for all dwellings in Belgium
- Values comparable to what is known from `www.notaire.be`: mean $\approx$ 315k, median $\approx$ 290k



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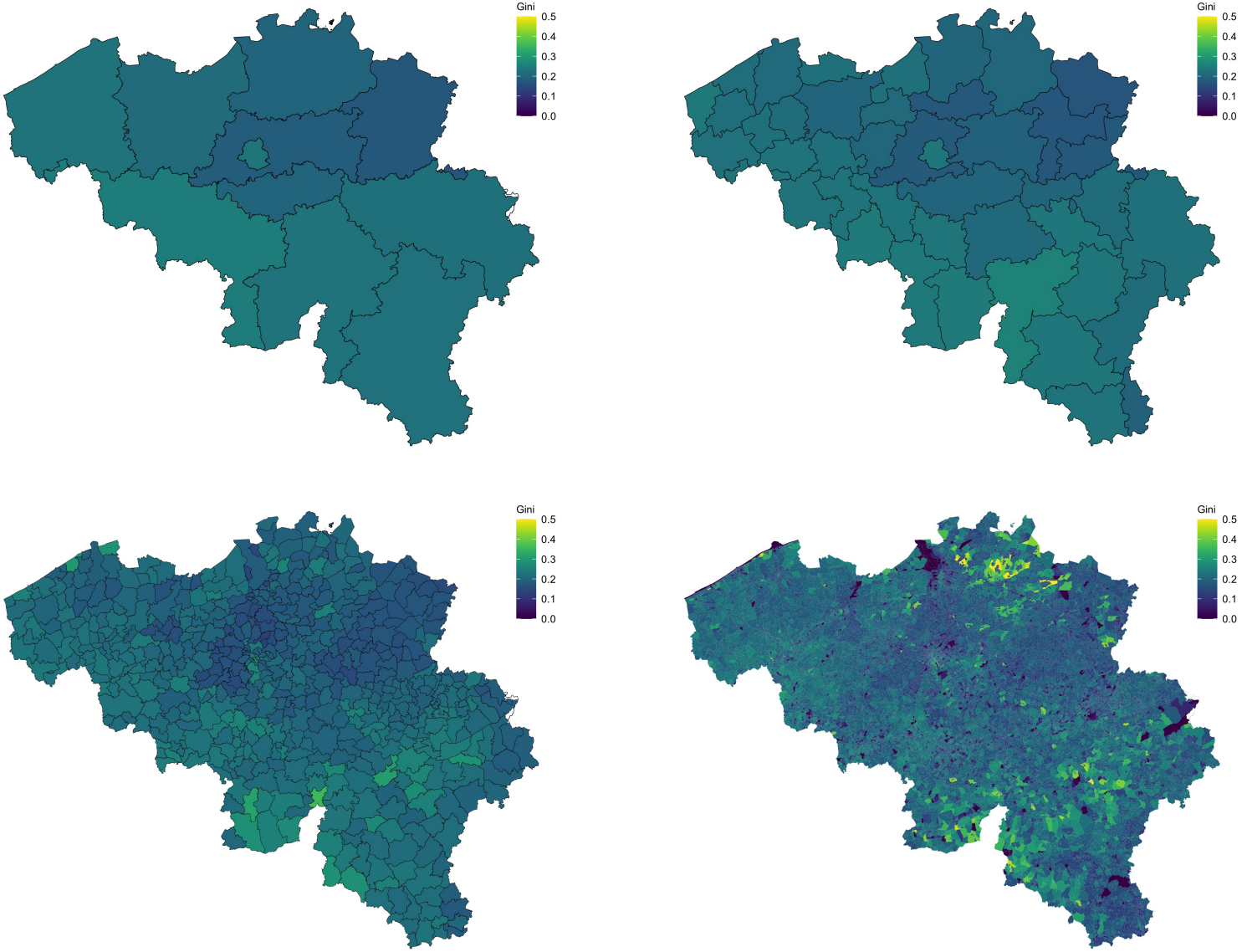
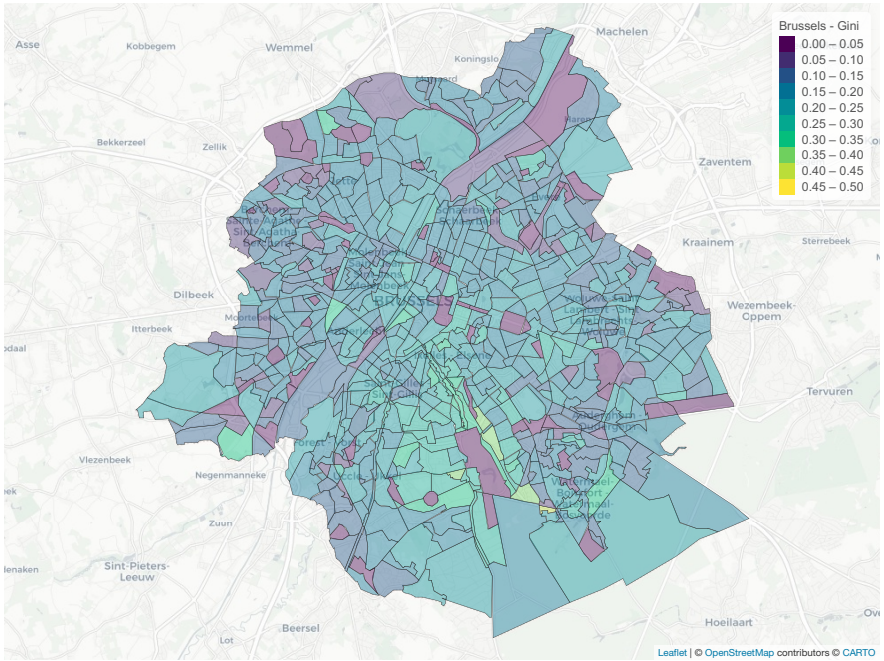
Housing (value) inequality in 2022 – aggregate estimates

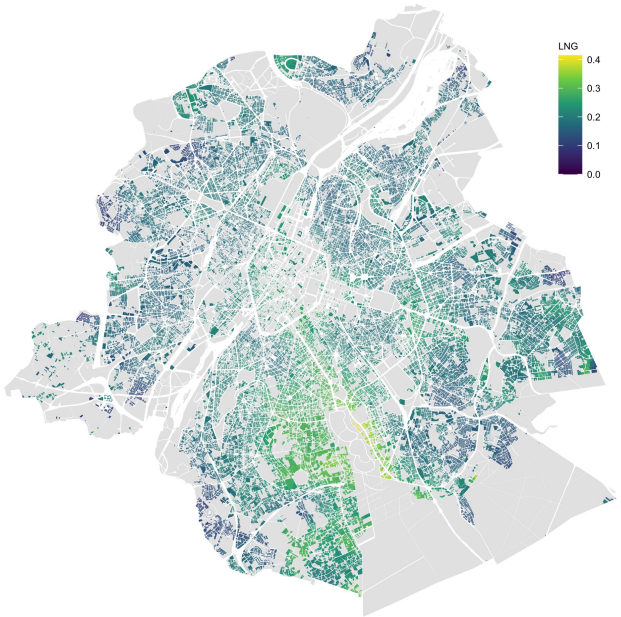


▸ Housing (space) inequality

Housing (value) inequality in 2022 – local estimates



Statistical sectors in Brussels

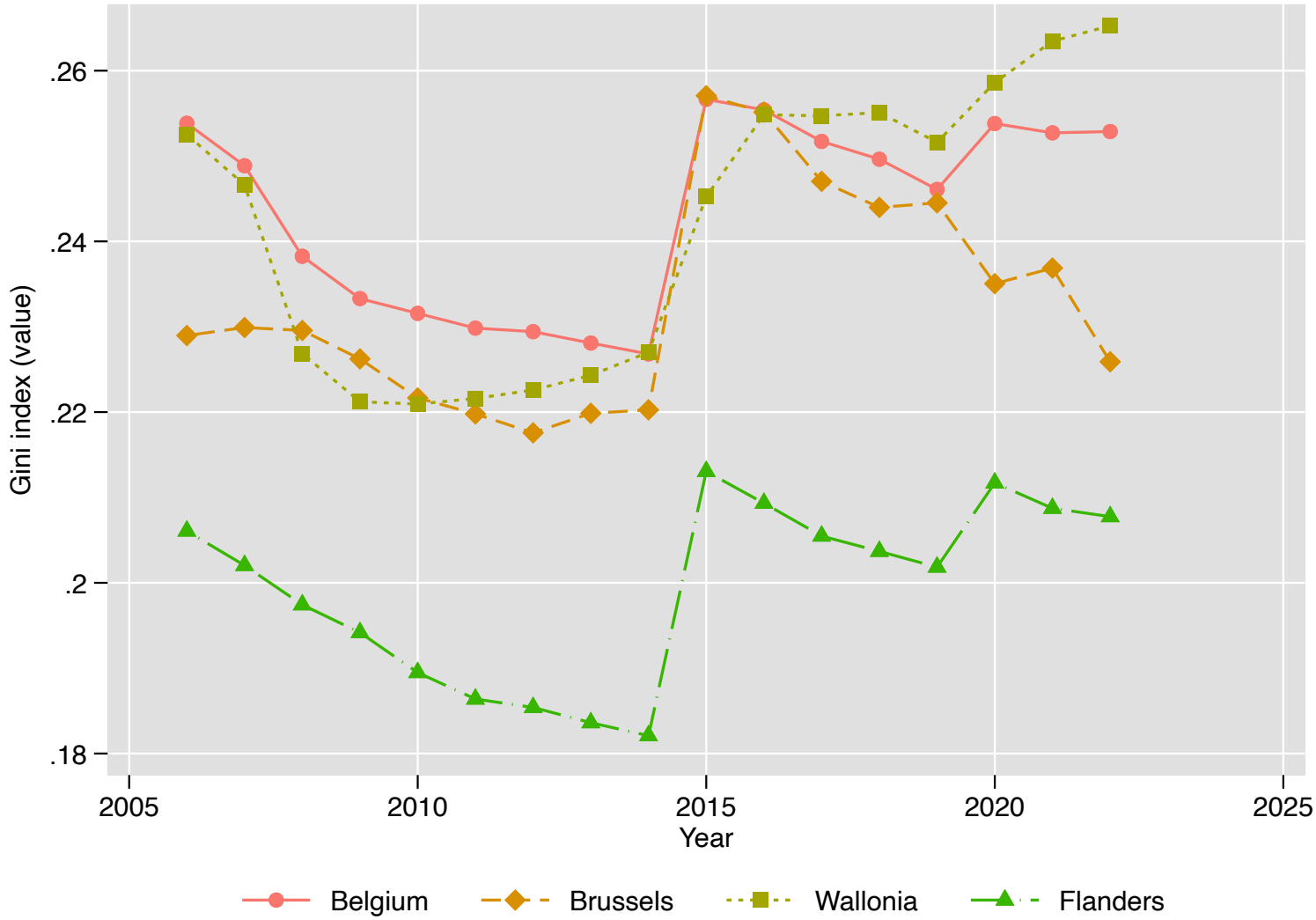


Local Neighborhood Gini ($r = 500m$)

▸ Local Neighborhood Gini

▸ Housing (space) inequality

Housing (value) inequality over time



▸ Housing (space) inequality

Income and housing value inequality in Belgium (2018)

	Income IQR	IQR	Gini	LNG200	LNG500
Income IQR	1				
IQR	0.5402	1			
Gini	0.2094	0.5742	1		
LNG200	0.1408	0.4588	0.8094	1	
LNG500	0.2009	0.4758	0.748	0.8689	1

Notes:

- Correlations between different inequality estimates at the statistical sector level
- Taxable income Inter-quartile range (IQR) for the year 2018 from Statbel

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Policy: reduction in registration fees (from 6% to 3%)

- September 27 2021: the Flemish government announces a reduction in registration fees from 6% to 3%
  - Implemented on January 1, 2022
  - The rest of the country maintains the baseline rate at 12.5%
  - Differential rates depend on housing characteristics (low value or not, energy efficiency)

- Hypothesis: Reduction in registration fees should increase housing prices if housing supply is inelastic (realistic in the short run)

Difference-in-differences results on housing prices

$$\ln(p_{itz}) = \beta post_t \times Flanders_i + \gamma X'_{it} + \delta_z + \epsilon_{itz}$$

	log Price				
	(1)	(2)	(3)	(4)	(5)
After × Flanders	0.042***	0.035**	0.031**	0.027**	0.033***
	(0.015)	(0.014)	(0.014)	(0.014)	(0.007)
R2	0.037	0.139	0.154	0.269	0.275
N	254721	254721	254721	254721	219023
District FE		X	X	X	X
N'hood Income			X	X	X
Dwelling Controls				X	X
Exclude Pre-implem					X

Reduction in registration fees increased housing prices by app. 3% (10,200 euros). ▸ Pre-trends

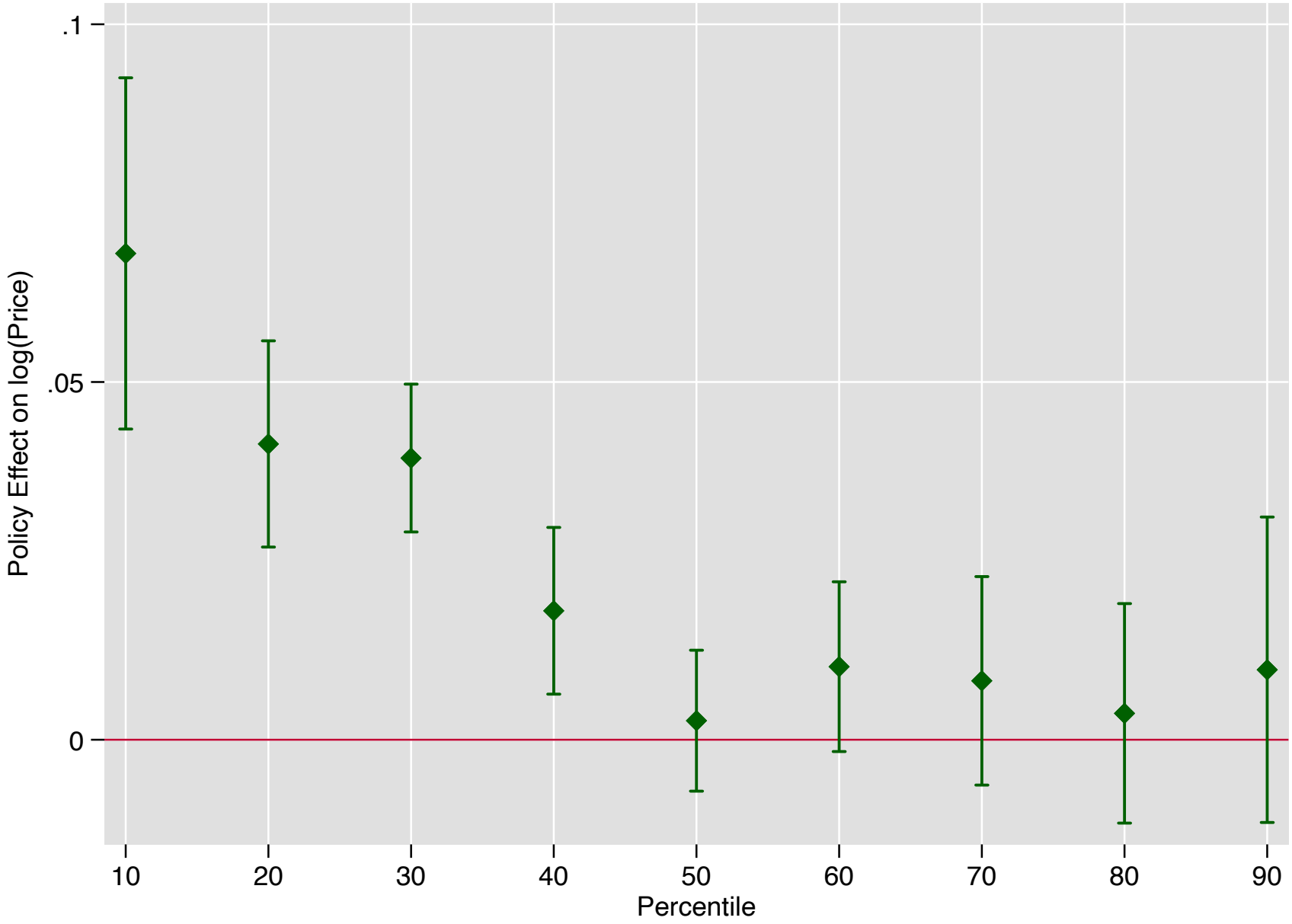
Results on housing inequality (1/3)

Quantile regression:

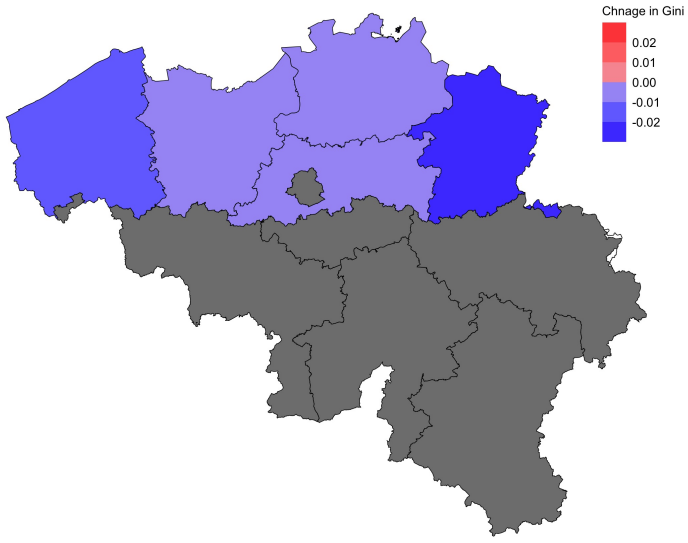
$$\ln(p_{it}) = \beta_\tau post_t \times Flanders_i + \gamma_z X'_{it} + \epsilon_{it}$$

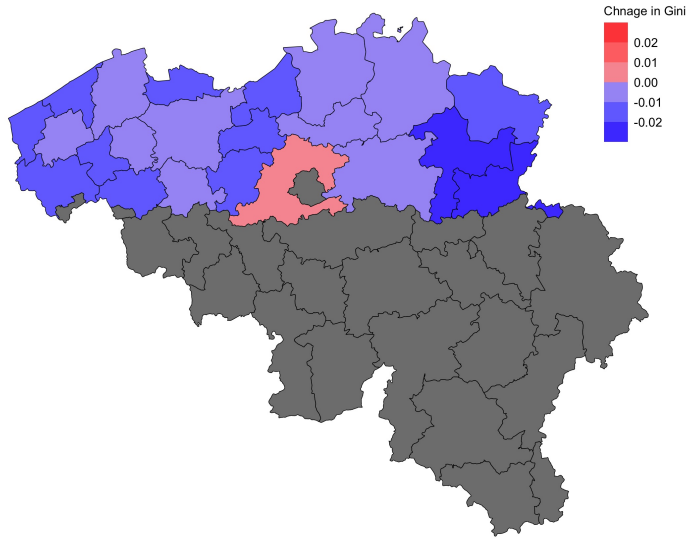
- β_τ: average effect of the policy on the τ-th percentile

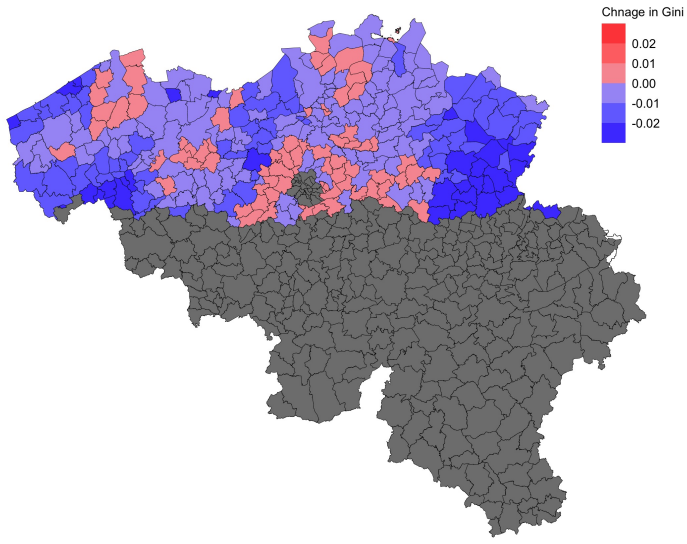
Results on housing inequality (2/3)

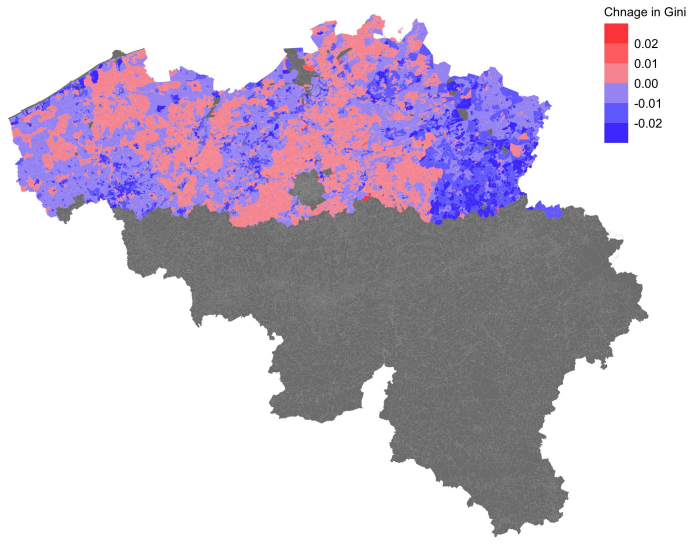


Predicted change in housing inequality (3/3)









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Conclusions

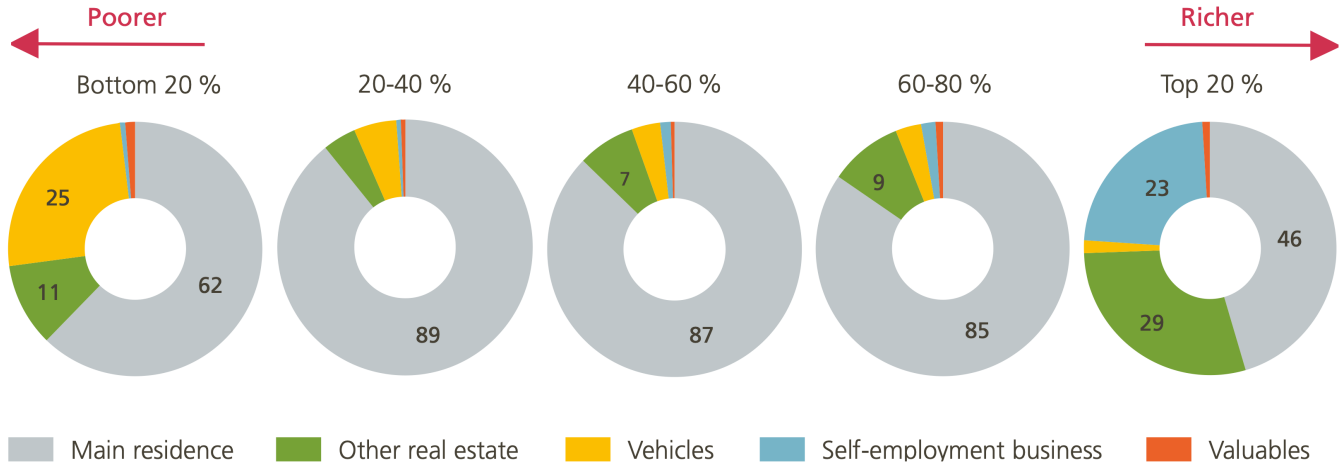
- Novel estimates for housing inequality in Belgium
  - Aggregation masks local inequalities

- Effect of reduction in registration fees on housing prices value distribution
  - increased price of low-value dwellings by 5-7%
  - decreased housing value inequality
  - significant spatial heterogeneity

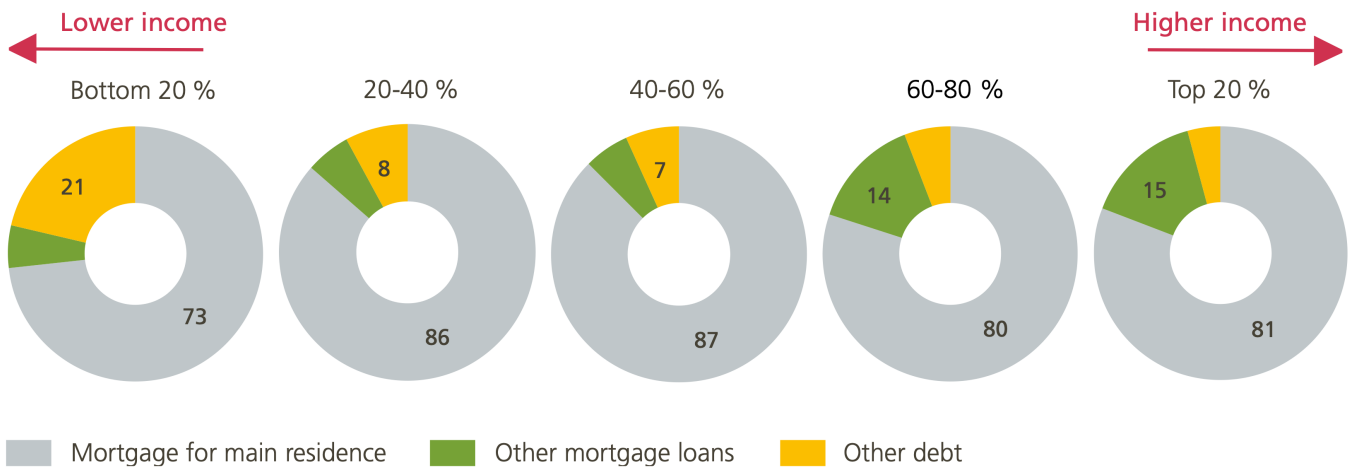
- Policy implications:
  1. Cadastral data is an ideal tool to study within-region/local heterogeneities
  2. Identify and compensate losers of the policy?

Housing: main component of HH assets & debt portfolios

- Holdings of real assets, by net wealth quintile (HFCS III).



- Holdings of debt, by income quintile (HFCS III).



Source: de Sola Perea (2020), NBB and HFCS

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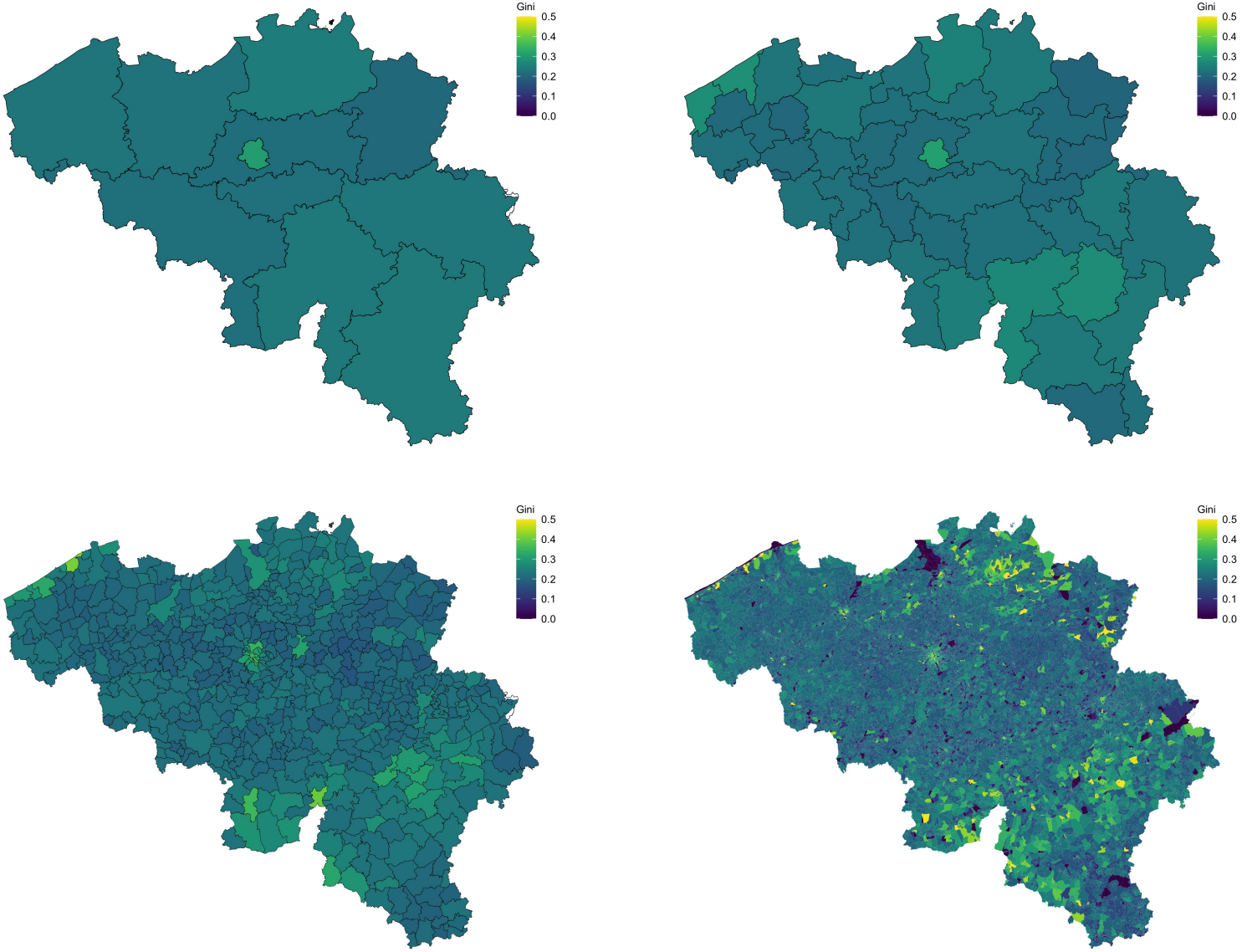
Housing (space) inequality in 2022 – aggregate estimates



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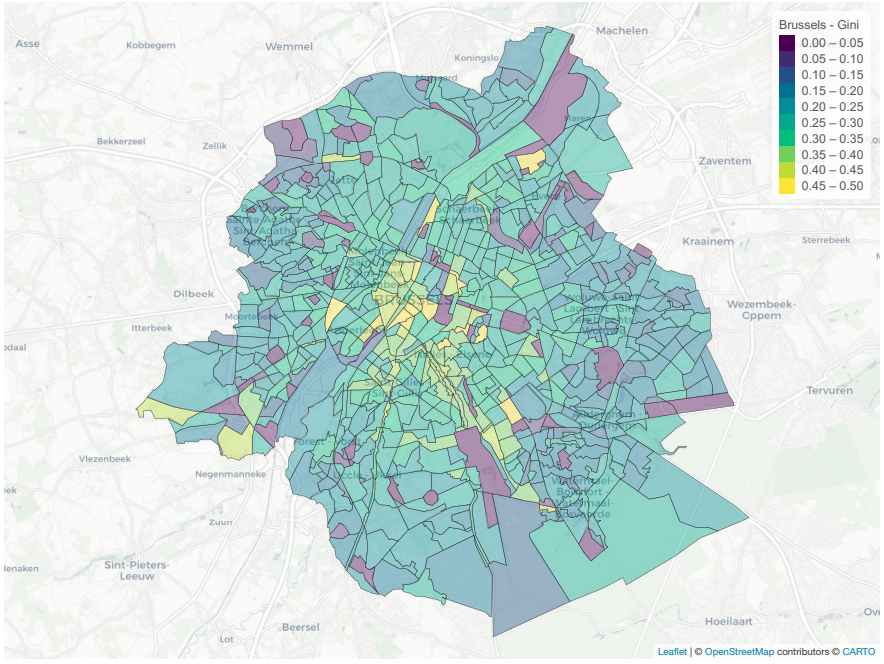
Housing (space) inequality in 2022 local estimates



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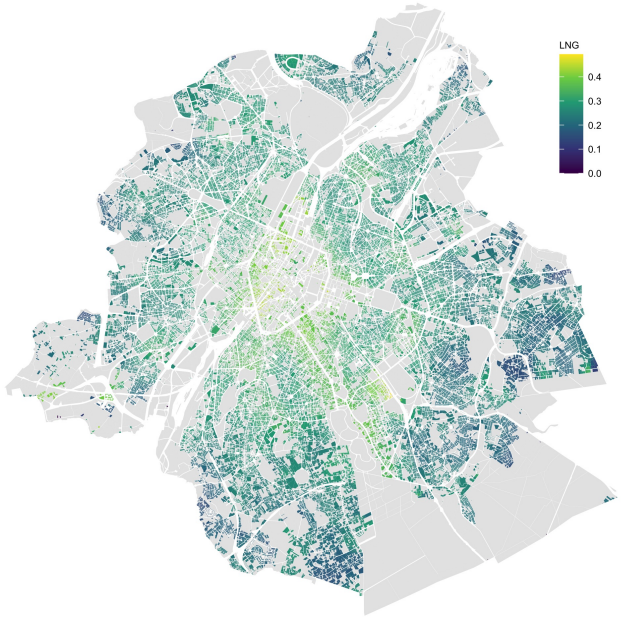

Local Neighborhood Gini

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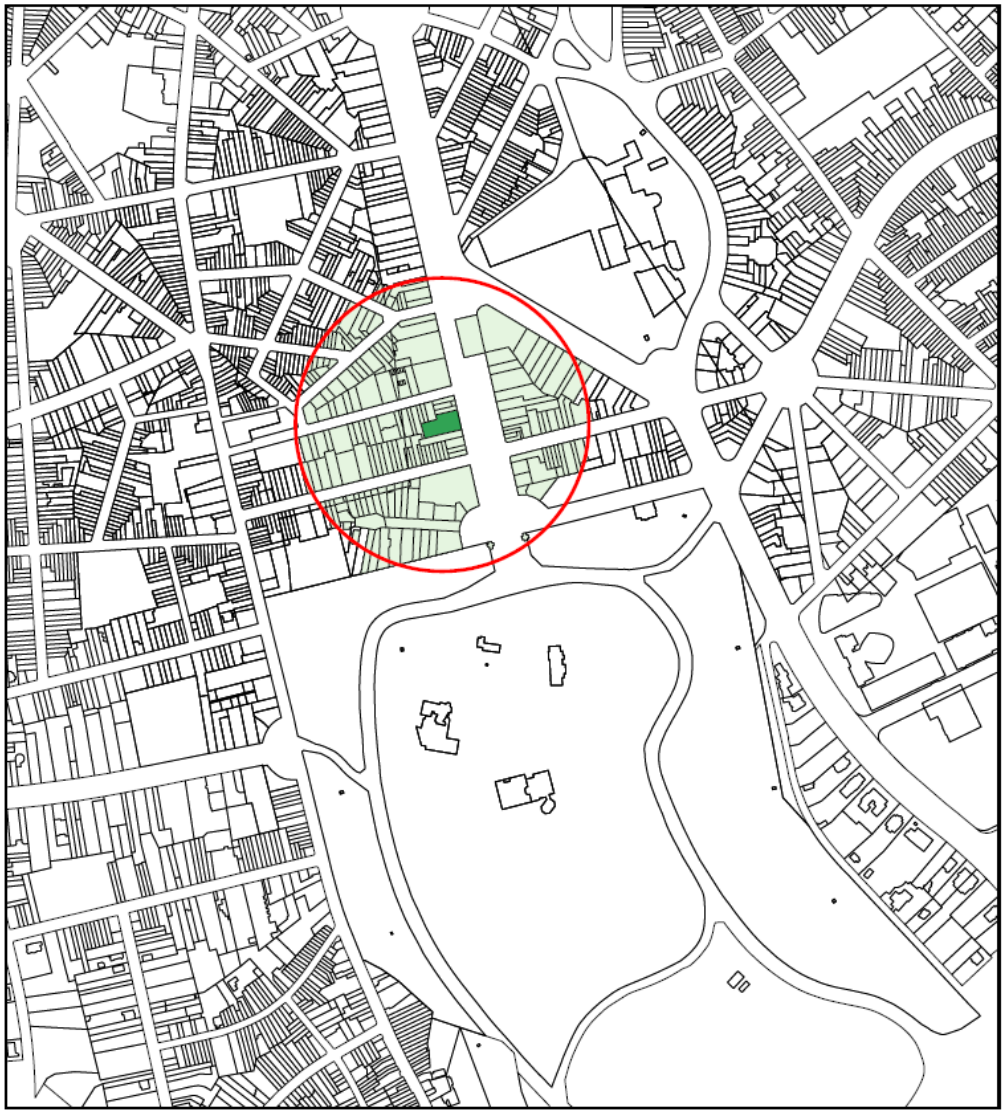
The Local Neighborhood Gini (LNG)



- the figure: defining the local neighborhood of a building ($r = 200$)
- LNG properties
  - granular
  - flexible
  - independent of administrative boundaries
  - replicable
- Introduced in Domènech-Arumí (2021)

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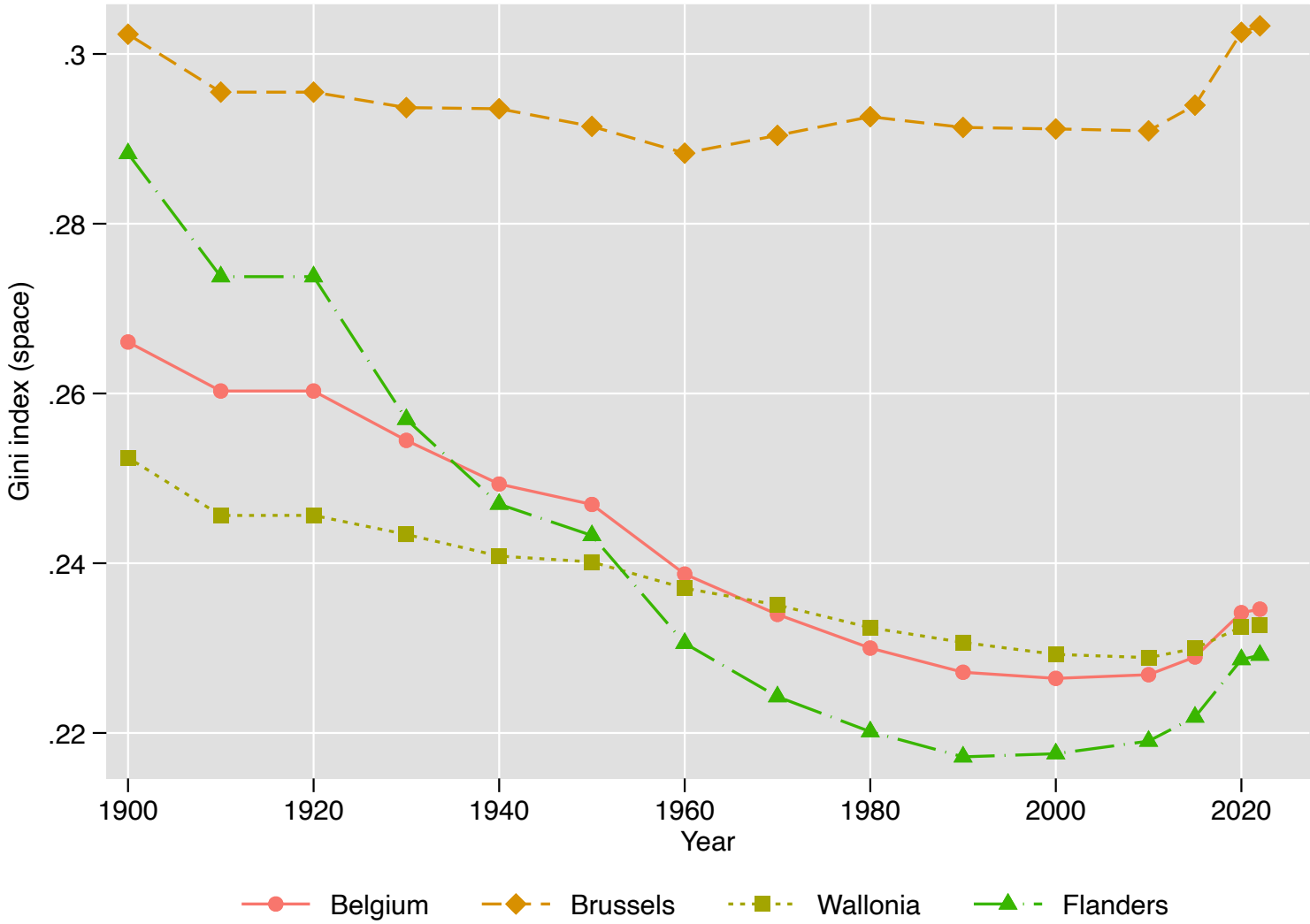
Housing (space) inequality over time



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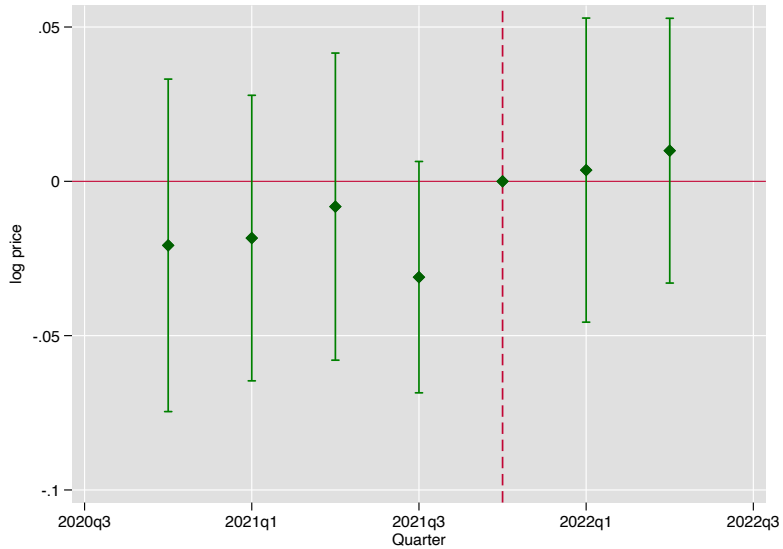
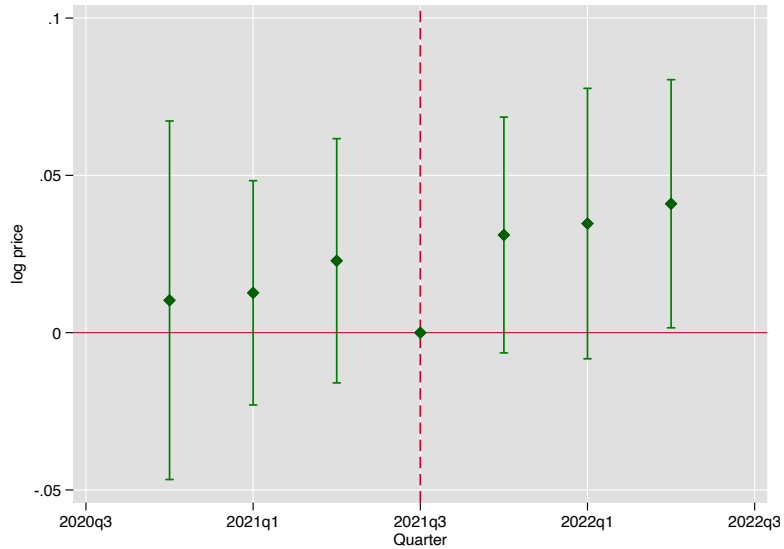
Trends in log prices in Flanders wrt Brussels and Wallonia



Relative to the policy implementation



Relative to the policy announcement

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