

Buy-to-Live vs. Buy-to-Let: The Impact of Real Estate Investors on Housing Costs and Neighborhoods

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Have you seen these signs in Rotterdam?



What is the effect of rental investors on housing costs and neighborhoods?

- 2022 Dutch policy reform allowed local governments to ban buy-to-let investment for a subset of the local housing stock.
 - Resulted in an exogenous shift in buyer composition and residents
- Exploit variation to measure the effect of owner-occupancy ('buy-to-live') vs. investor-ownership ('buy-to-let') on:
 - House prices
 - Composition of residents
- Look both at Rotterdam (within-city) and all major Dutch cities with a policy

- **Impact of home-ownership / rent-own transitions:** Coulson & Li (2013), Ihlanfeldt & Yang (2021), Hausman et al. (2022), Sodini et al. (2023)
 - Recent literature: social housing sales, resident does not change
 - This paper: rent-own transitions based on market transactions, so the policy changes who lives in the property
- **Growth and price impact of rental investors:** Allen et al. (2018), Mills et al. (2019), Bracke (2019), Lambie-Hanson et al. (2022), Ater et al. (2021), Austin (2022), Gargano & Giacoletti (2022), Garriga et al. (2023), Gurun et al. (2023); NL: Hochstenbach (2022), Thiel & Zaunbrecher (2023), Rouwendal et al. (2024)
 - Our policy experiment and data allows for precise measurement
 - We also look at the impact of investors on residential composition

The “Opkoopbescherming” Investor Ban

- From January 1, 2022 Dutch municipalities *can* introduce regulation that prohibits renting out any purchased property that was vacant or leased for less than six months on the day of sale
- Basic idea: existing property put on the market without a sitting long-term tenant should be bought by an owner-occupier instead of an investor
 - Policy motivation: to 'combat the scarcity of affordable owner-occupied housing' or 'to improve the livability of the local environment'
- Implementation requires designating an introduction date and an area and tax value limit below which buy-to-let is banned
 - Significant variation in policy coverage and introduction dates
 - All large cities and most mid-sized cities have a ban.
 - Most apply the ban in the entire city and to the bottom 50-60% of properties. 90% of investor activity takes places in this segment.

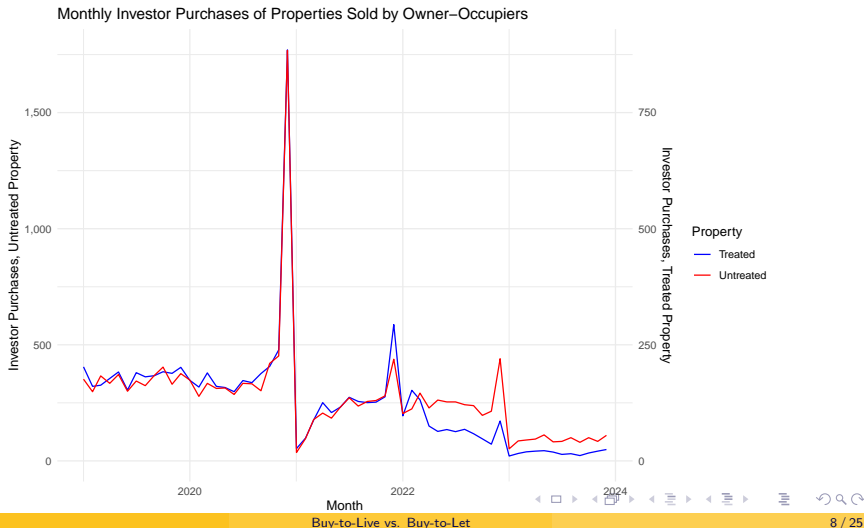
- Linked administrative data from Kadaster and Statistics Netherlands
 - All Dutch housing transactions (2009-dec 2023; focus on 2021 and 2022)
 - Focus on properties sold by owner-occupiers
 - Details on individual transactions, properties, buyers, sellers
 - Hedonic characteristics of properties
 - Property tax values
 - Personal characteristics, income and residency for the entire Dutch population (up to December 31, 2023)
- For all properties, we observe whether they are bought by investors or not, whether they are subject to an investor ban and what residents end up living in these properties.

Housing Statistics

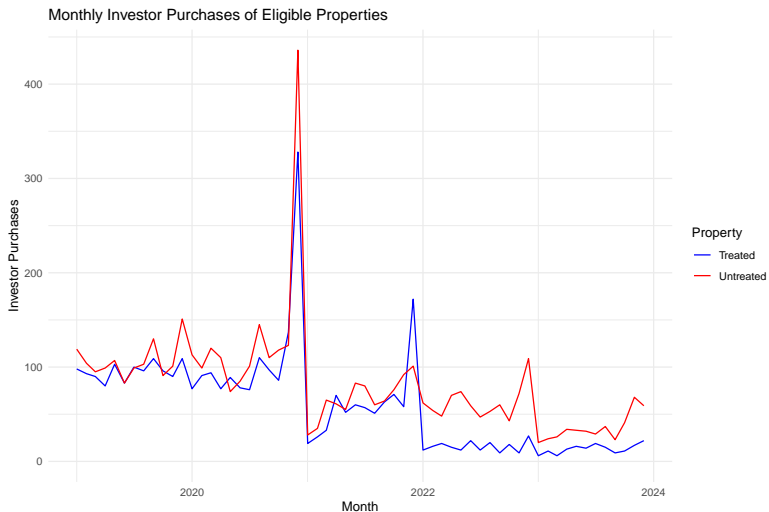
Category	Owner-occ.	Social housing	Private rentals	Buy-to-let
Share of housing stock (%)	57%	28%	15%	-
Median house value	€385,000	€235,000	€279,000	€267,000
Adult residents	2.03	1.54	1.7	1.90
Children	0.49	0.30	0.21	0.30
Median personal income	€32,000	€19,000	€25,000	€24,000
Average household income	€80,000	€32,000	€43,000	€41,000
Median household income	€66,000	€26,000	€33,000	€31,000
Foreign-born residents (%)	8.7%	25.4%	30.8%	41.7%
Average age adult residents	50.83	52.39	42.91	36.48
Young adults, 18-25, (%)	8.8%	9.8%	16.9%	21.1%
Resident moved in 2023 (%)	6.7%	9.9%	25.7%	31.9%

Trends in Investor Purchases, treated vs. untreated

The decline in investor purchases of affordable properties in large cities is specific to treated properties in 2022. In 2023 untreated properties are also not purchased anymore by investors.

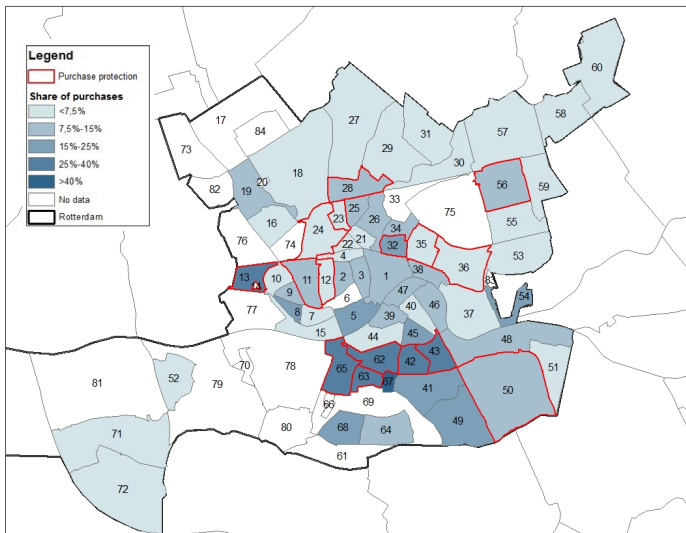


Focus: Rotterdam



Notes: This figure plots investor purchases over time in Rotterdam of eligible properties in both regulated (in red) and unregulated properties (in blue). The spikes in December 2020 and 2022 reflects anticipation of increasing stamp-duty for investors.

Focus: Rotterdam, Spatial Coverage



Notes: Share in 2021, the share in the figure excludes private investors with two properties

Identifying the Effect of the Ban: Rotterdam

- Ban applied if a neighborhood (roughly) satisfied 2 out of 3 criteria:
 - **The number of private rental properties exceeds 1,000**
 - The fraction of properties that is privately rented exceeds 24%.
 - The growth of the private rental stock exceeds 20% (2015-2021).
- Main concern: ban introduction correlates strongly with investor activity
- Idea: compare neighborhoods with similar predicted levels of investor purchases but no investor ban
 - Within Rotterdam and Schiedam + Vlaardingen
 - Schiedam + Vlaardingen introduce ban in Nov-22 and Jan-23
 - Upper bound: unregulated neighborhood with most of investor activity
 - Lower bound: regulated neighborhood with least investor activity
- 12 treated neighborhoods and 57 control neighborhoods (30 in Rotterdam)
 - Control neighborhoods small due to the size criterion
 - No relation between investor activity and treatment in selected neighborhoods

Identification

$$y_i = \alpha_0 + \alpha_1 Post_i + \beta_1 Treated_i + \beta_2 Treated_i \times Post_i + \chi' z_i + \epsilon_i \quad (1)$$

- $Post_i=1$ for transactions after introduction of policy (defined locally)
- $Treated_i=1$ for properties subject to the ban
- i is a set of transactions
 - For Rotterdam: properties below the tax limit, regulated vs. control neighborhoods (incl. Schiedam + Vlaardingen)
 - Nationally: sample includes treated properties only, Effect identified based on variation in introduction dates across municipalities
- In specifications with controls, we include the 2022 tax value, square meters, fixed effects for building age, property type, label, neighborhood and time.
- We use a sample with a narrow window around the introduction of the ban (2021-2022) and a longer sample to check for parallel trends (2019-2023).
- Dependent variables: investor or first-time buyer dummy and $\log(\text{price})$

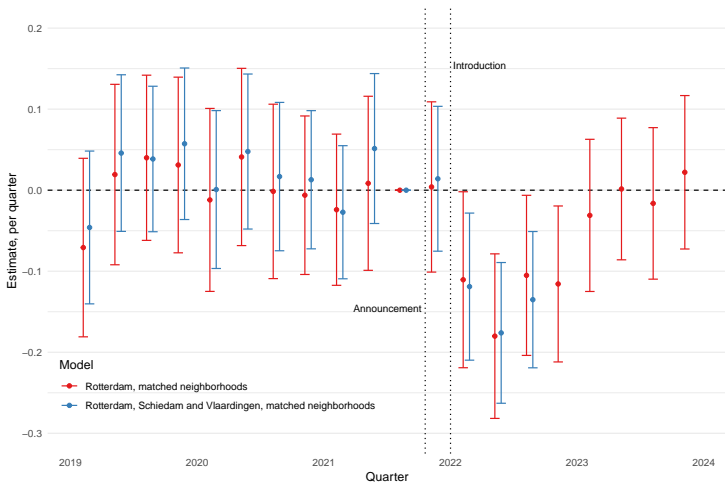
Impact on Investor Purchases

<i>Dependent variable: Investor</i>			
<i>Sample area:</i>	Matched R'dam	Matched R'dam	National
<i>Sample period:</i>	21Q2-22Q3	21Q2-22Q3	21Q2-22Q4
Treated × Post	-0.171*** (0.028)	-0.163*** (0.026)	-0.124*** (0.006)
Treated	0.036 (0.019)		
Post	-0.056** (0.021)		
log(Tax Value)	No	Yes	Yes
Property controls	No	Yes	Yes
Neighborhood FE	No	Yes	Yes
Time FE	No	Yes	Yes
Observations	3,771	3,771	52,474
R ²	0.037	0.203	0.181

* p<0.1; ** p<0.05; *** p<0.01. SEs clustered at property-level

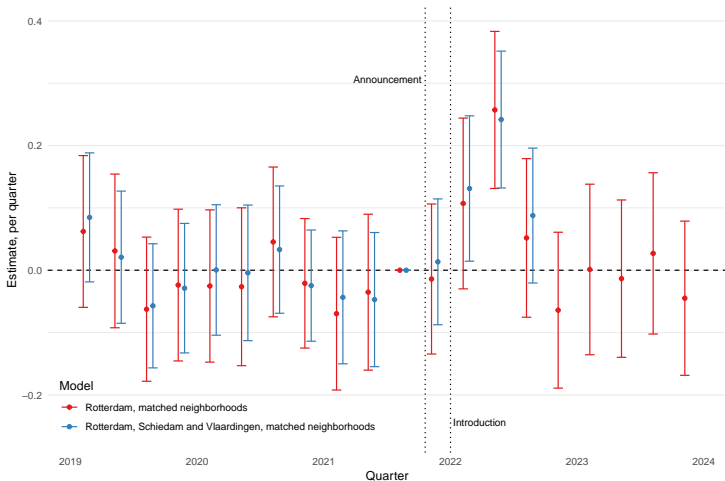
In Rotterdam, 25.2% of matched-treated properties were investor-bought between Apr - Dec 2021, nationally this was 16.6%.

Impact on Investors: Parallel Trends



The effect of the policy disappears in 2023, as investors across the board have stopped buying properties.

Impact on First-Time Buyers: Parallel Trends

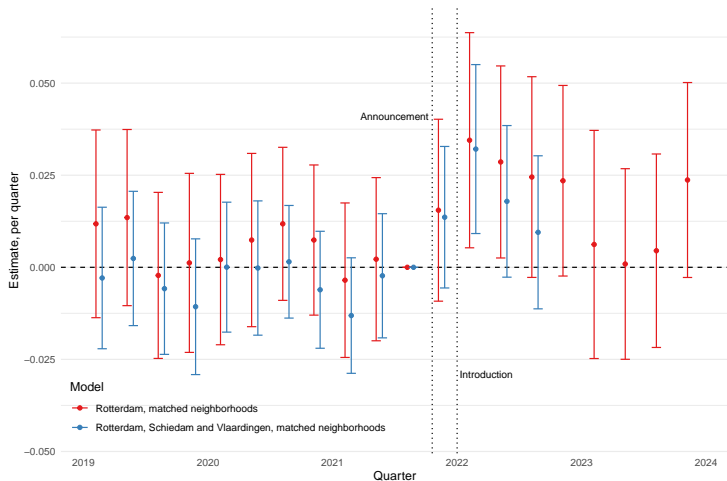


The reduction of investor activity (almost mechanically) results in a large increase in the proportion of first-time buyers.

How does the ban affect house prices locally?

- This is potentially ambiguous
- Investor demand for rental property increases demand for housing investments, so banning puts downward pressure on prices
- Local owner-occupiers could perceive buy-to-let property / residents as a disamenity, so banning these investors increases demand from owner-occupiers
 - Unregulated neighborhoods with sizable investor activity were lobbying the city council that buy-to-let property causes nuisances and that they want the ban too.

Impact on House Prices: Parallel Trends



Evidence for a short-lived positive price effect

Impact on House Prices

<i>Dependent variable: log(koopsom)</i>		
<i>Sample area:</i>	R'dam	National
<i>Sample period:</i>	21Q2-22Q3	21Q3-22Q4
Treated \times Post	0.016*** (0.006)	0.008*** (0.003)
log(Tax Value) \times Quarter	Yes	Yes
Property controls	Yes	Yes
Neighborhood FE	Yes	Yes
Time FE	Yes	Yes
Observations	3,661	43,475
R ²	0.849	0.877

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. SEs clustered at property-level

Note: this is measured around the introduction date. The price effect disappears in 2023, as investors stop buying altogether.

We cannot precisely identify an effect on rents.

The effect on residents

- What is the effect of investor ownership on type of residents?
- Two empirical strategies:
 - Rotterdam: compare properties below the tax limit in treated and control neighborhoods before and after implementation
 - Sample: residents of properties sold in 2021Q1-2022Q3
 - National: compare residents of treated properties that were sold just before and just after the ban (within 180 days)
 - Sample: cities with a ban introduced before 1-Jul-2022
 - Provides additional power and tests for external validity
- We include the set of property-level controls in all specifications, so $Treated \times Post$ measures the policy effect.

Impact on Income Composition

<i>Sample area:</i>	<i>Dependent variable:</i>							
	log(Personal income)				Personal income, percentile			
	R'dam	R'dam	Nat.	Nat.	R'dam	R'dam	Nat.	Nat.
Treated × Post	0.181*** (0.064)	0.089 (0.061)	0.065*** (0.015)	0.004 (0.014)	4.851*** (1.683)	1.985 (1.587)	1.998*** (0.407)	0.103 (0.384)
Investor-owned		-0.628*** (0.047)		-0.592*** (0.025)		-19.49*** (1.131)		-18.46*** (0.600)
log(Tax Value)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Purchase Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,018	6,018	37,627	37,627	6,018	6,018	37,627	37,627
R ²	0.065	0.112	0.118	0.148	0.075	0.141	0.137	0.175

*p<0.1; **p<0.05; ***p<0.01. SEs clustered at property-level

The investor ban leads to more high-income residents (in 2022) as investor-bought properties have more lower-income residents.

How many residents live in the property 1y post-purchase?

<i>Sample area:</i>	<i>Dependent variable:</i>							
	Number of Residents (> 0)				No Registered Residents			
	R'dam	R'dam	Nat.	Nat.	R'dam	R'dam	Nat.	Nat.
Treated × Post	-0.070 (0.074)	-0.027 (0.073)	-0.056** (0.018)	-0.027 (0.018)	-0.0018 (0.016)	0.015 (0.016)	-0.012*** (0.004)	-0.003 (0.004)
Investor-owned		0.284*** (0.053)		0.249*** (0.025)		0.092*** (0.014)		0.078*** (0.007)
log(Tax Value)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Purchase Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,338	3,338	21,699	21,699	3,567	3,567	22,791	22,791
R ²	0.203	0.212	0.273	0.277	0.052	0.072	0.093	0.105

*p<0.1; **p<0.05; ***p<0.01. SEs clustered at property-level

Investor-owned properties have more residents when occupied but are more likely to be vacant one year after purchase. The former effect dominates.

Tenure length and distance to previous residence

<i>Sample area:</i>	<i>Dependent variable:</i>							
	Move within 1y (dummy)				log(distance) to previous residence			
	R'dam	R'dam	Nat.	Nat.	R'dam	R'dam	Nat.	Nat.
Treated × Post	-0.049** (0.025)	-0.011 (0.024)	-0.041*** (0.006)	-0.014* (0.005)	-0.025 (0.116)	0.041 (0.115)	-0.102*** (0.030)	-0.046 (0.030)
Investor-owned		0.203*** (0.019)		0.183*** (0.010)		0.398*** (0.072)		0.445*** (0.035)
log(Tax Value)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Purchase Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,379	7,379	46,358	46,358	7,381	7,381	47,937	47,937
R ²	0.084	0.126	0.122	0.149	0.072	0.080	0.128	0.134

*p<0.1; **p<0.05; ***p<0.01. SEs clustered at property-level

Residents of investor-owned properties are more likely to move out within one year, and more likely to move in from farther away.

Resident background and age

Sample area:	Dependent variable:							
	Resident born in NL (dummy)				Age of resident			
	R'dam	R'dam	Nat.	Nat.	R'dam	R'dam	Nat.	Nat.
Treated × Post	0.085*** (0.030)	0.034 (0.030)	0.025*** (0.008)	-0.001 (0.008)	0.289 (0.642)	-0.180 (0.640)	0.363* (0.187)	-0.045 (0.189)
Investor-owned		-0.252*** (0.018)		-0.173*** (0.009)		-2.324*** (0.374)		-2.669*** (0.210)
log(Tax Value)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Purchase Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,379	7,379	46,358	46,358	7,381	7,381	47,937	47,937
R ²	0.084	0.126	0.122	0.149	0.072	0.080	0.128	0.134

*p<0.1; ** p<0.05; ***p<0.01. SEs clustered at property-level

Residents of investor-owned properties are more likely to be foreign-born and slightly younger. The effect of the investor ban on age is only marginally significant.

Household changes of residents

Sample area:	Dependent variable:							
	Moved away from parental home				Moved away from partner			
	R'dam	R'dam	Nat.	Nat.	R'dam	R'dam	Nat.	Nat.
Treated × Post	0.006 (0.019)	0.013 (0.019)	-0.011** (0.005)	-0.003 (0.005)	0.005 (0.014)	0.009 (0.014)	-0.003 (0.003)	0.000 (0.003)
Investor-owned		0.043*** (0.013)		0.075*** (0.007)		0.022** (0.009)		0.027*** (0.005)
log(Tax Value)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Property controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Purchase Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,379	7,379	46,358	46,358	7,381	7,381	47,937	47,937
R ²	0.084	0.126	0.122	0.149	0.072	0.080	0.128	0.134

* p<0.1; ** p<0.05; *** p<0.01. SEs clustered at property-level

Residents of investor-owned properties are more likely to have moved out of their parental house or to have split from their partner. The treatment effect on the latter cannot be estimated precisely.

Conclusion

- A policy ban of buy-to-let investors increased chances for first-time home-buyers at the expense of renting households.
- Investor purchases alleviate shortages of (low-income) housing, as renters have much lower incomes than owner-occupiers in similar properties and occupy properties with more residents
- Investor-ownership relative to owner-occupancy has large effects on neighborhoods, and banning investors changes residential composition.
 - Homeowners tend to be native Dutch, local, upper middle-class and move less frequently, while renters tend have lower incomes, are young, more often immigrant and often moved out of their parental homes.
- Price effects indicate investors activity did not increase house prices in the period around the reform, and banning investors might increase prices even locally due to their effect on residential composition.