

Data Analysis Project Flat Flats and Schooling

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Introduction

Motivation

- Decreasing rate of owner occupied Flats in Germany & NRW
Sagner and Voigtländer (2025)
- Measuring the difference in owner occupied flats and rented flats like Kholodilin, Mense, and Michelsen (2016) for energy efficiency
- Emphasizing the value of school choice related to living in flats
- Comparison to the choice of schooling for houses like Hörnig and Schäfer (2025)

Introduction

Research Question

- Has distance to school an impact on prices per squaremeter for flats as it has for houses?

Data

Data for Primary Schools and Flats

- Data from the RWI Data RWI and Immobilienscout24 (2024) including variable explanation and description
- Apartments in NRW that are owner occupied and rented
- Schooling Data for NRW with School Social Index and Distance to School by the Ministry for Schools in NRW

Data

Descriptive Statistics

Table 1: Summary statistics for Flat Characteristics

	Flat buy		Flat rent	
	Mean	Std. Dev.	Mean	Std.Dev
Garden	0.177	-	0.185	-
Parking	0.586	-	0.664	-
Balcony	0.807	-	0.800	-
Cellar	0.716	-	0.693	-
Elevator	0.379	-	0.369	-
furnished				
basic	0.009	-	0.017	-
normal	0.285	-	0.275	-
sophisticated	0.033	-	0.034	-
Deluxe	0.000	-	0.000	-
missing	0.673	-	0.674	-
Year of Construction				
1970-1979	0.253	-	0.345	-
1980-1989	0.161	-	0.196	-
1990-1999	0.221	-	0.200	-
2000-2009	0.088	-	0.080	-
2010-2021	0.277	-	0.179	-
Residential Space	71.733	23.971	81.892	29.701
No. of Rooms	2.492	0.866	2.797	0.993
No. of Floors	1.845	1.637	2.279	2.449
Price				
rent_sqm	9.561	3.152	-	-
rent_sqm_log	2.207	0.315	-	-
price_sqm	-	-	3633.227	1779.282
price_sqm_log	-	-	8.083	0.487

Empirical Strategy

OLS Regression

- Measuring the difference for rented and for bought apartments
- Using of a Hedonic Price Index like Black (1999) Black and Machin (2011) for characteristic for flats
- Treatment group for the radius of one kilometer for the closest school
- Estimating semi logs for owner occupied and rented flats per squaremeter Kholodilin, Mense, and Michelsen (2016)

Methodology

Regression

$$Pricesqm_{log} = \text{beta}_{Treat} + X_{Fur} + SSI_{Factor}$$

- beta_{Treat} : Equals 1 for treatment group

- X_{Fur} : Vector for Dummy Variables for Furnishing of Apartments

- SSI_{fak} : Factor variable for Social School index

Methodology

OLS Regression table

Table 2: OLS Regression Flats

	OLS_buy	OLS_rent
	1	2
distance to school	0.126 (0.013)***	0.056 (0.006)***
Observations	6767	16090
R ²	0.3341	0.2737
Adj. R ²	0.3317	0.2730

Parentheses shows robust standard errors.

Results

Boxplots for distance to school for bought apartments

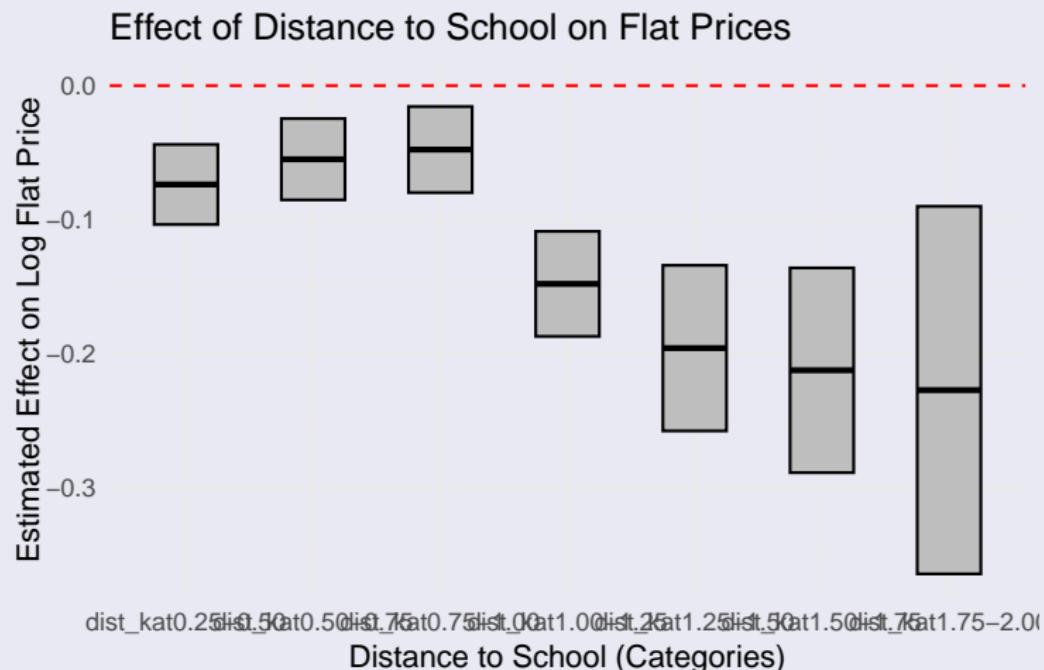


Figure 1: Results for treated Flats bought

Boxplots for distance to school for rented apartments

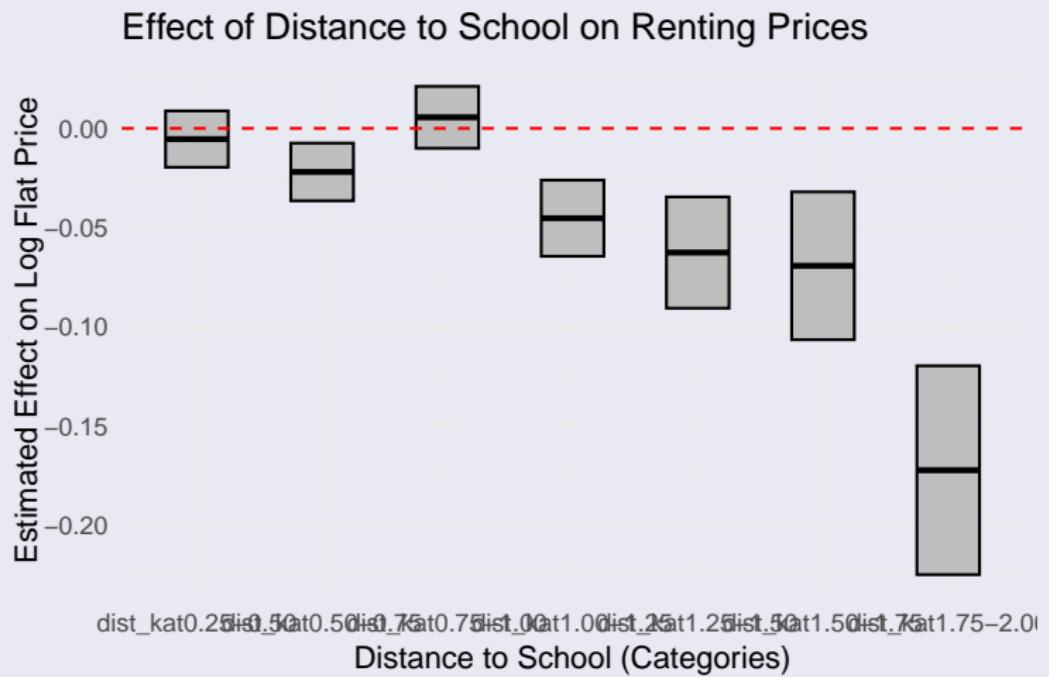


Figure 2: Results for treated Flats rented

Conclusion

Key Takeaways

- Treatment effect has an impact on prices for rented and bought flats
- Higher impact for bought apartments
- School Social Index is positive correlated with the distance to school by the average treatment effect

Conclusion

Limitations of our approach

- Omitted variable bias and measurement problems for some specific variables
- Limitations due to missing data
- Multicollinearity between flat characteristics

References I

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