Air pollution and Hedonic Prices Model

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- Hedonic model's appeal has always been the simple relationship between hedonic prices and consumer demand.

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- Estimating the effect of a policy that influences the value of a parcel on that land's price may be different from estimating what an individual would be willing to pay to obtain the policy.

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- Hedonic price function adjustment: shocks to the spatial distribution of public goods and changes in market fundamentals

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- Using a quasi experiment approach, with a pollution change, I show results may be different whether we consider different segments.
- Using France as an example, I show in a paper the difficulty to give welfare measures when hedonic equilibria may not be stable across segments after a shock.

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- Looking at the causal relationship between a closure in the refining activity, local pollution levels for sulfur dioxide (SO2) and the property prices in the North of France, at a census tract level, for a panel data from 2008 to 2011.

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- Potential factors that affect both health outcomes and pollution⇒ We exploit exogenous variation in pollution due to an oil refinery closure in Dunkirk in France, in 2010.

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- Unique and really rich dataset coming from the chambre des notaires, PERVAL from 2008 to 2011: the property prices, the number of floors, the number of rooms, the year of construction, the type of flat or house, the property surface, the presence of a terrace, an attic, a parking, a balcony, a pool or a garden.

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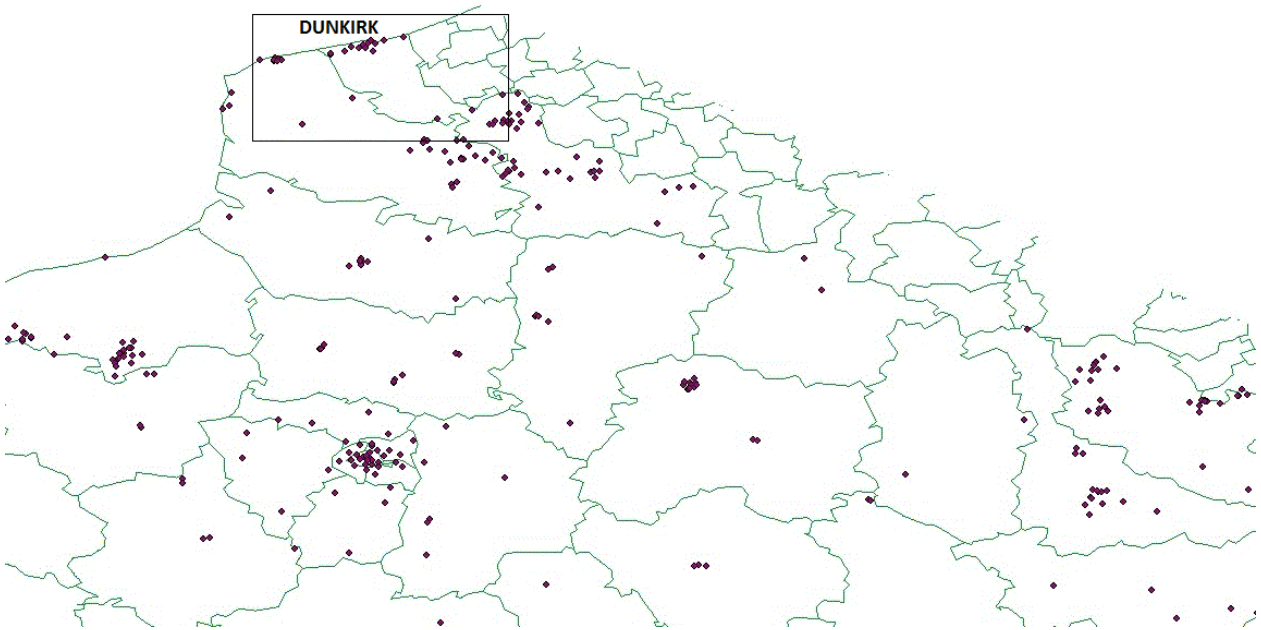
Distribution of monitoring stations



Empirical model

Purpose: to estimate the impact of the refining closure $post\_closure_{cmy}$ on pollution concentration or property prices Y_{cmy}

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$$Y_{cmy} = \beta_0 + \beta_1 post\_closure_{cmy} + X_{cmy} + \theta_m + \omega_y + \phi_c + \epsilon_{cmy} \quad (1)$$

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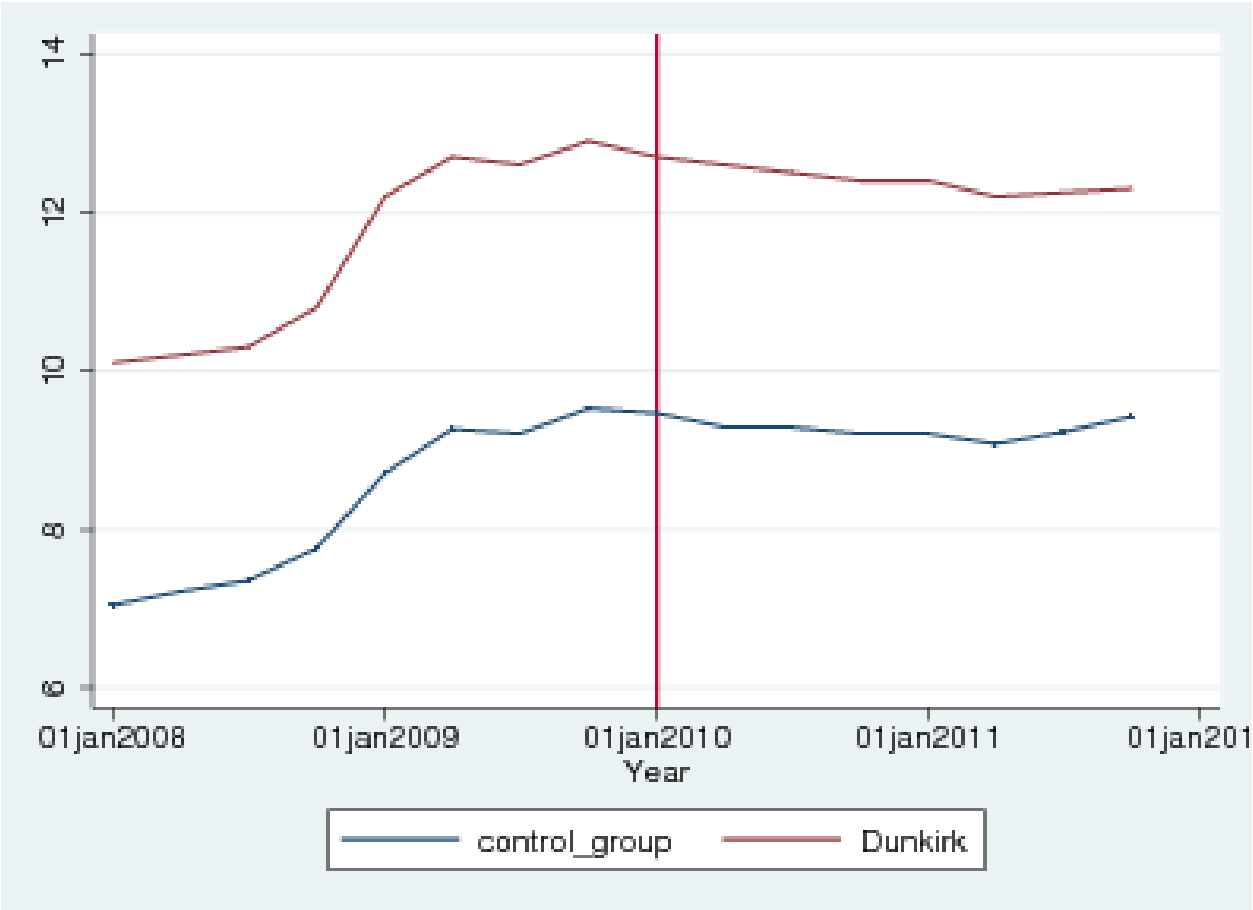
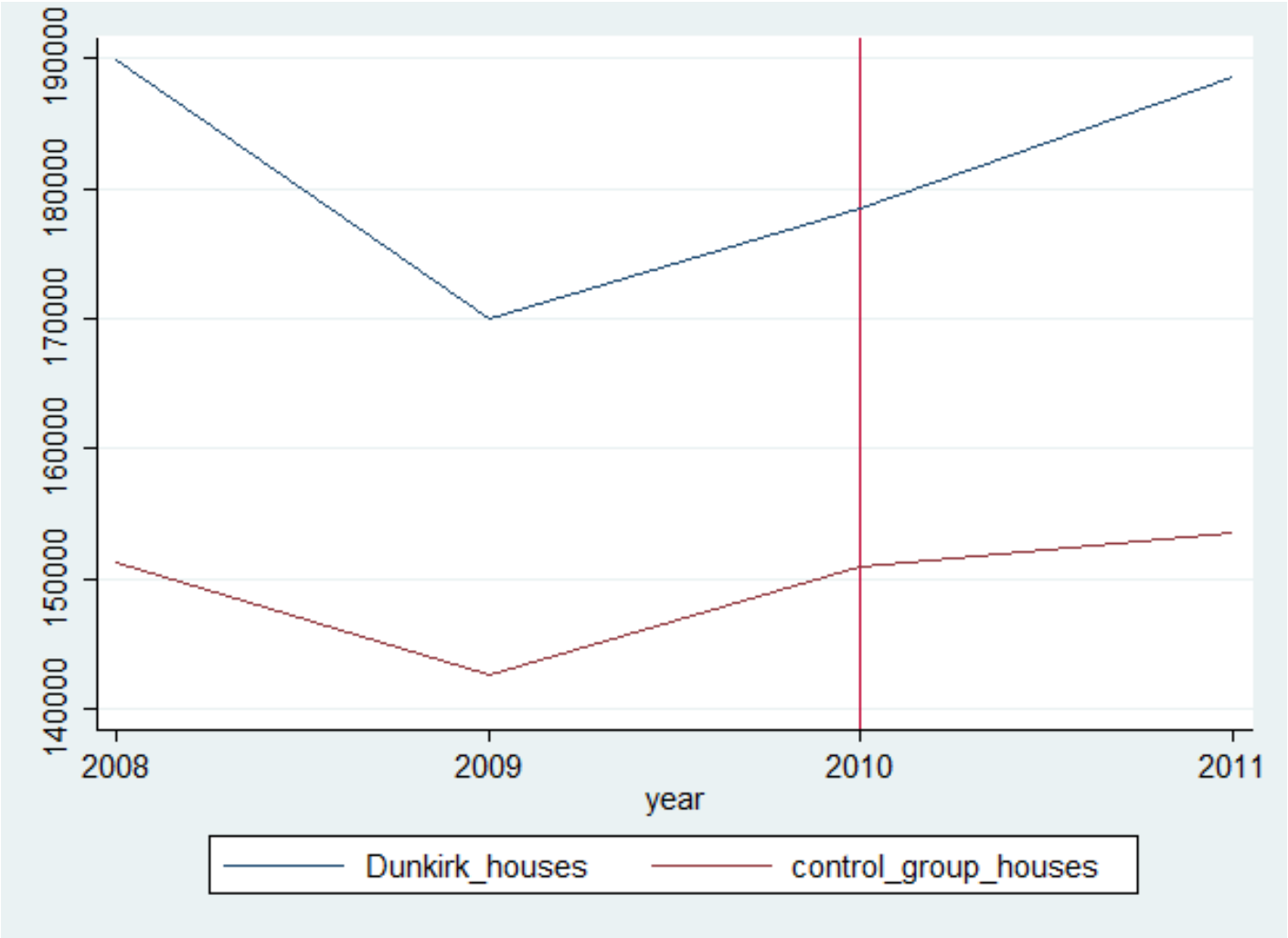
Unemployment evolution



Housing evolution



First stage regressions

VARIABLES	(1) SO_2	(2) SO_2	(3) SO_2
post_closure	-4.951**	-4.993**	-5.072**
	(2.166)	(2.188)	(2.214)
Un		-0.327	-0.317
		(0.251)	(0.253)
Weather controls	x	x	x
Year FE	x	x	x
Month FE	x	x	x
municipalities FE	x	x	x
Distance $<$ 2km			x
Observations	185,687	185,687	175,212
R-squared	0.503	0.504	0.504

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Reduced form regressions

Is the positive effect of a decrease in toxic concentration reflected in the willingness to pay ?

VARIABLES	(1) price <median	(2)	(3) price >median	(4)	(5) price>75% percentiles	(6)	(7) price>90% percentiles	(8)
post_treatment	-0.000767	-0.00293	0.0171***	0.0134**	0.0413***	0.0392***	0.0679***	0.0702***
	(0.0152)	(0.0124)	(0.00477)	(0.00459)	(0.00940)	(0.0108)	(0.0170)	(0.0192)
Un		-0.0332*		-0.0144*		-0.00670		-0.0240
		(0.0152)		(0.00735)		(0.00697)		(0.0189)
Year FE	x	x	x	x	x	x	x	x
municipality FE	x	x	x	x	x	x	x	x
Observations	5,488	5,289	5,425	5,338	2,679	2,665	1,025	1,023
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- Positive effect of an improvement in air pollution on expensive properties prices.

Conclusion

- While buyers of expensive dwellings may have a relative stable hedonic equilibria to pollution, poorer home owners may suffer more of a relative income shock.
- Interpreting capitalization effects as welfare measures may not hold in every market segment.