

# *Advancing Metropolitan Modeling for the Analysis of Urban Sustainability Policies*

**Land supply effects and drivers of town planning choices.**

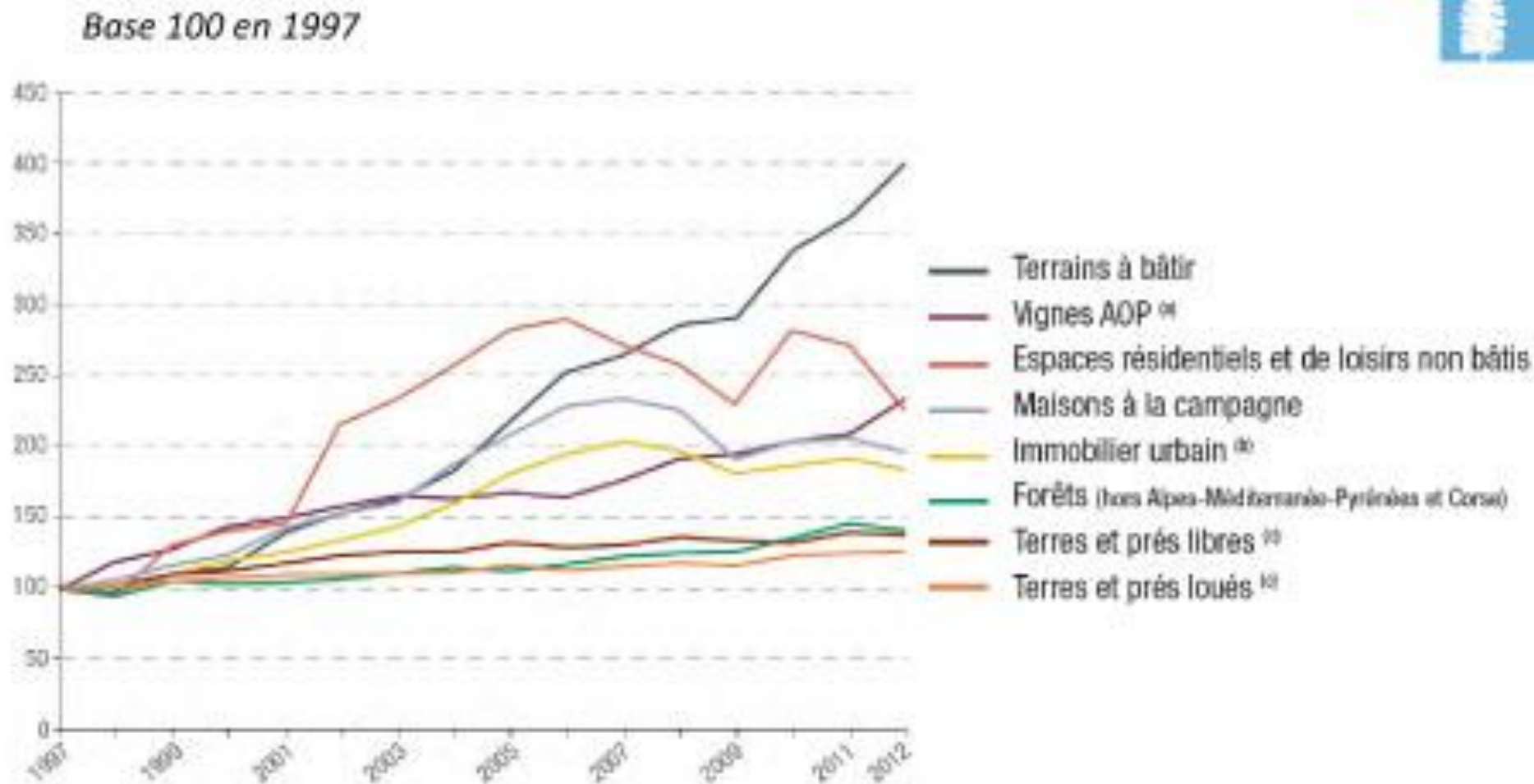
**Some empirical observations in a metropolitan modeling perspective.**

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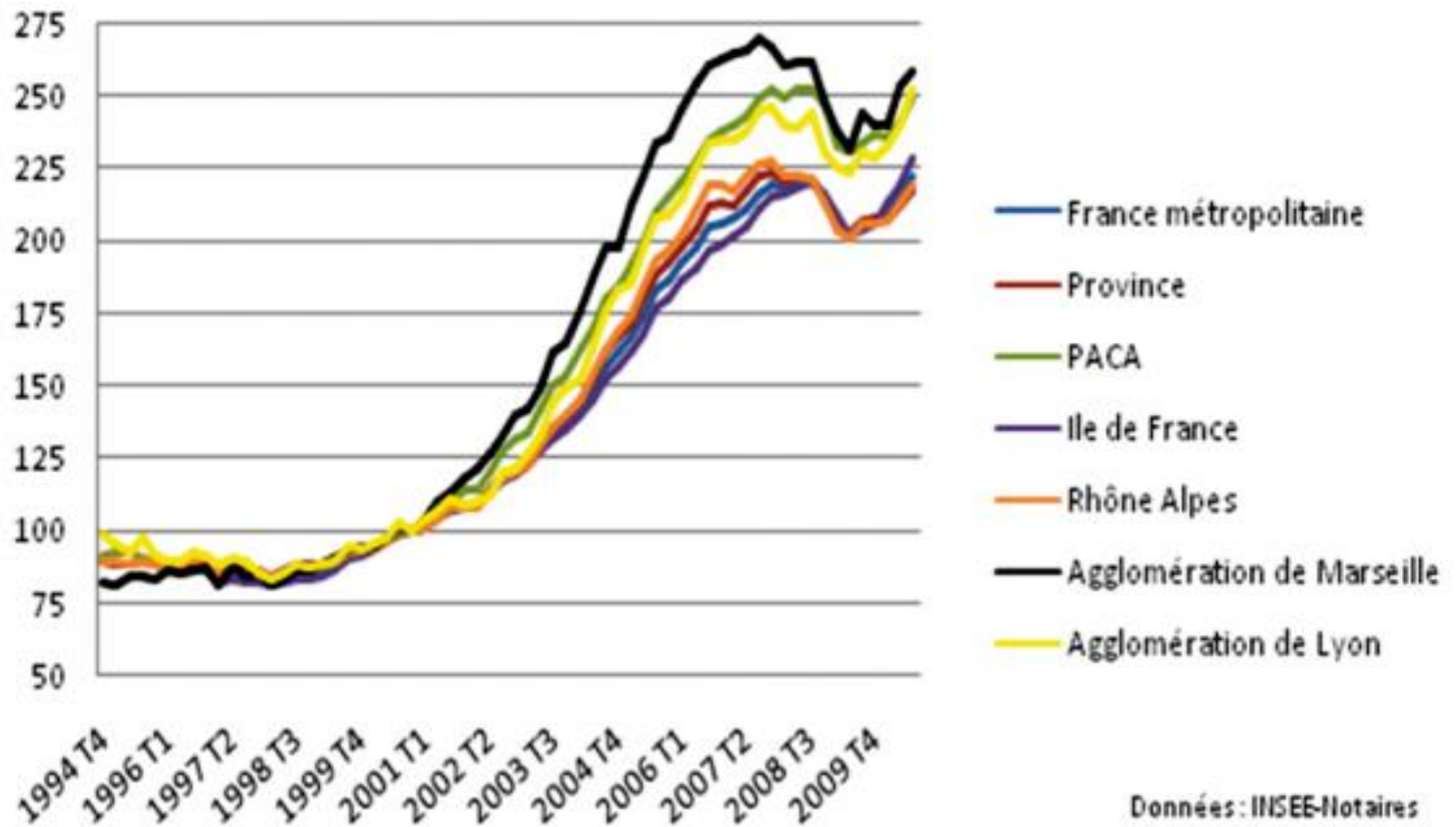
# Facts



Source : Terres d'Europe-Scafr d'après Safer  
 sauf (a) Safer-SSP-Terres d'Europe-Scafr,  
 (b) Maisons anciennes d'après la série INSEE-Notaires,  
 et (c) Safer-SSP-Terres d'Europe-Scafr -INRA

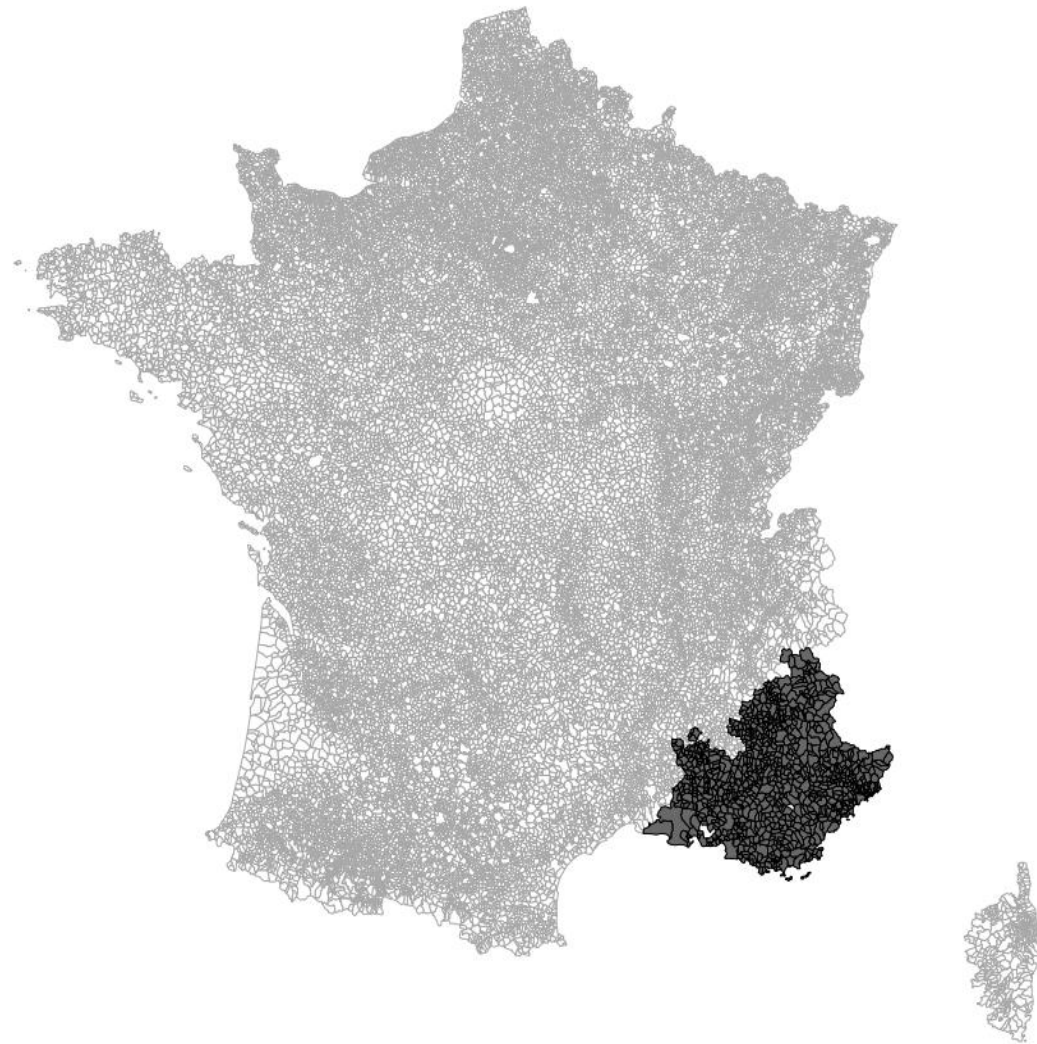
# Facts

**Evolution de l'indice de prix des logements INSEE-Notaires  
(1994-2010, appartements, base 100 : 2000, 4ème trimestre)**



Données : INSEE-Notaires  
Réalisation : G. Boulay, 2011

# Facts



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# Facts



# Issue

What is the impact of land use regulations on these prices?

Regulations make prices increase?

- increased scarcity (reduced supply);
- amenity effect (increased demand);
- spillover effect (shifted demand);

Empirical observations show this impact, in accordance with theoretical analysis of a pure competitive market.

*Jaeger and Platinga (2007), Ihlanfeldt (2007), Glaeser and Gyourko (2006), Saiz (2010), McMillen and McDonald (2002), Tse (2001), Lecat (2006)...*

# Issue

Does developable land supply increase (restriction ) inevitably lead to developable land and housing price decrease (increase), as usually assumed?



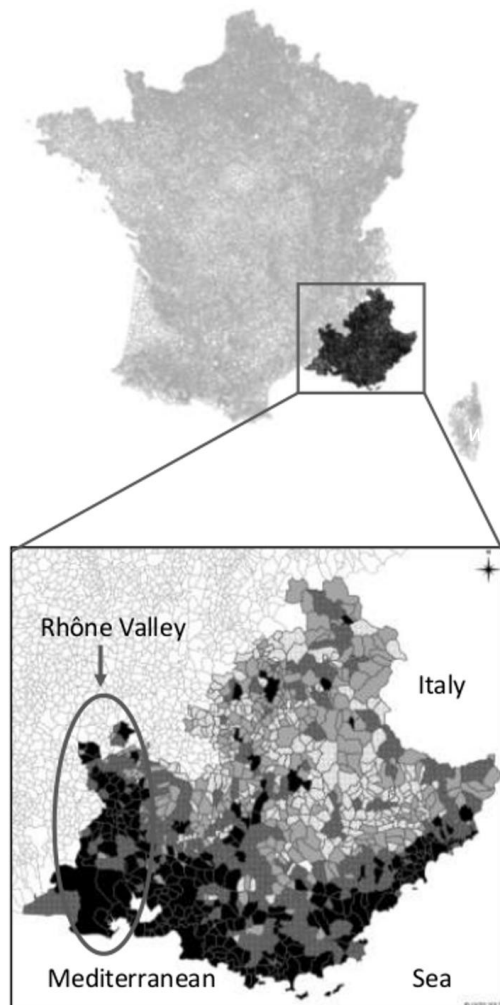
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- Materials and methods
- Results
- Implications and discussion

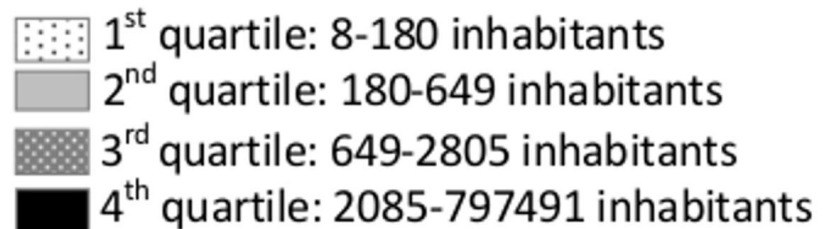
# Materials and methods

Materials: Study area = The Provence Alpes Côte d'Azur région



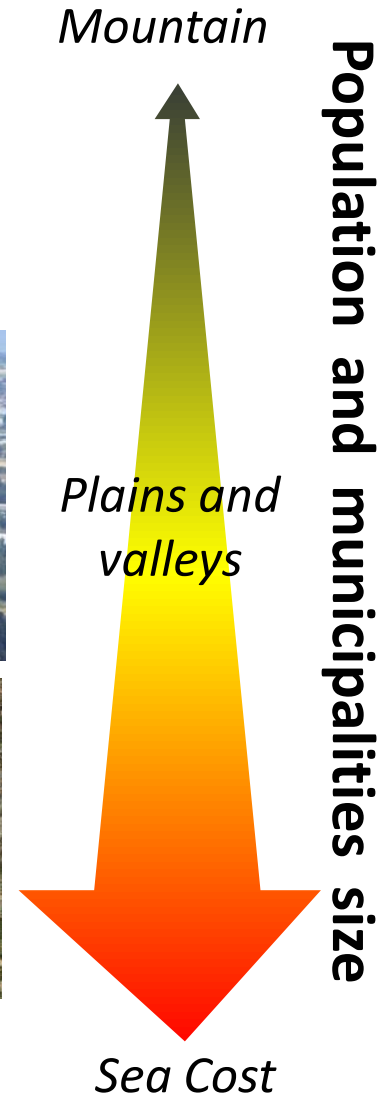
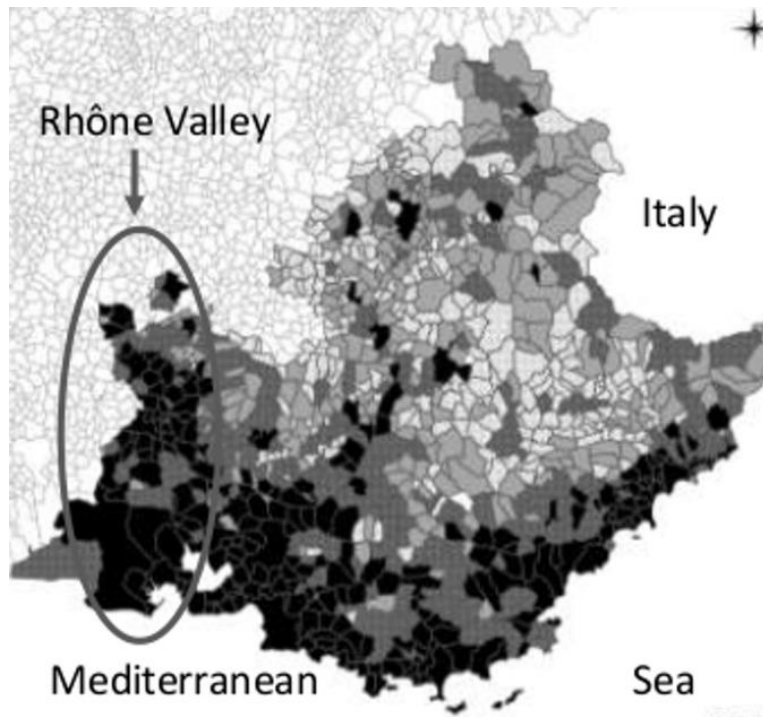
31 400 km<sup>2</sup> (2.8 times smaller than Greater LA), 5 million inhabitants spread over 963 municipalities

Municipal population in 1999 :



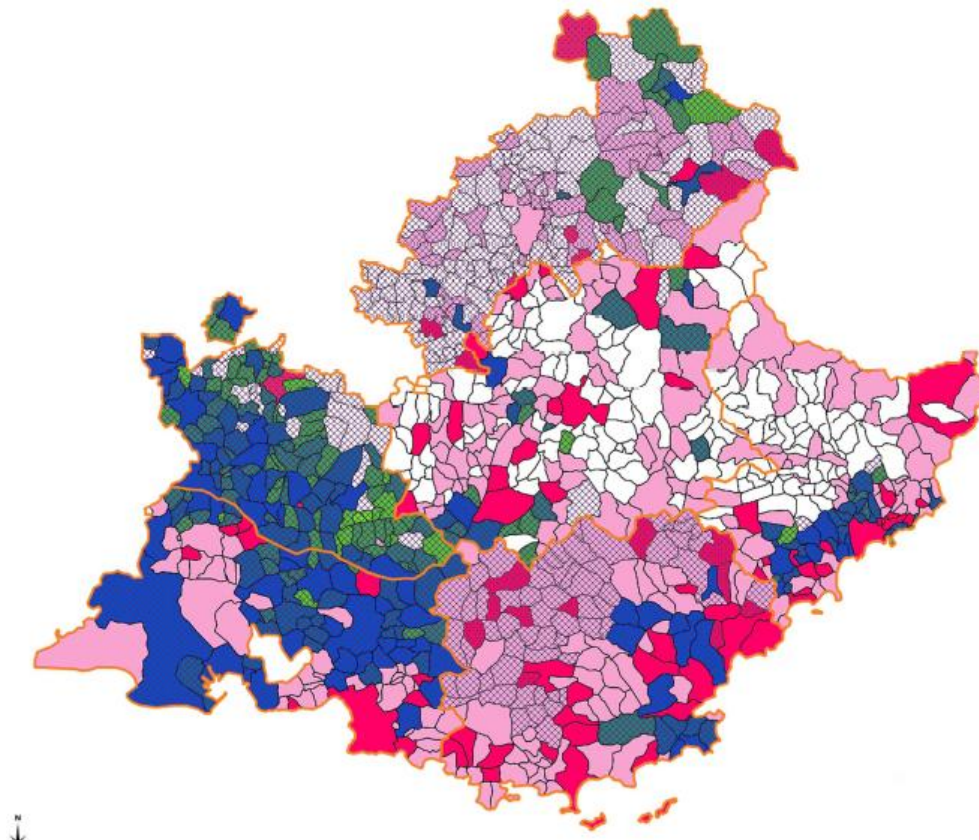
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358 municipalities



# Materials and methods

Methodology: Difference in Difference

Treatment group: the municipalities that had created the greatest number or the largest area of developable plots (different indexes), generating a high developable land supply.

A control group: the municipalities with the same characteristics regarding the likelihood of having high land supply but that had not created a lot of developable plots.

Counterfactual: average property price that would have been expected if municipalities wouldn't have benefited from this level of supply.



# Results

Options	N	n <sub>1</sub>	n <sub>0</sub>	ATT est.	Std. Dev.	T	p-val.	Effect cor. %	Balancing t-tests		
									dist. pole	population	area
GT1/NT1, M=1	53	12	12	0,24071	0,0665	3,6178	0,0003***	17,17	0,17	0,078	0,175
GT1/NT1, M=5	53	12	60	0,1943	0,0584	3,3265	0,0009***	16,40	0,21	0,003**	0,044*
GT2/NT, M=1	36	12	12	0,29136	0,0764	3,8125	0,0001***	18,05	0,66	0,051,	0,038*
GT2/NT2, M=5	36	12	60	0,22925	0,0615	3,7274	0,0002***	16,98	0,32	0,049*	0,031*
GT3/NT3, M=1	54	11	13	0,24172	0,0571	4,2302	2,3e-05***	17,20	0,79	0,113	
GT3/NT, M=5	54	11	55	0,22996	0,0383	5,997	2,0e-09***	17,02	0,94	0,070	
GT4/NT, M=1	29	9	9	0,33597	0,1009	3,3301	0,0009***	18,84	0,38	0,060	
GT4/NT, M=5	29	9	45	0,31122	0,0661	4,7094	2,5e-06***	18,43	0,76	0,048*	

# Implications and discussion

Higher developable land supply → higher prices.... upsloping demand curve.

## Possible explanation

Local supply but local and non local-demand, not focused on a particular location

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Regulations (restrictions) could increase uncertainty and transaction costs, while zoning large new developable areas is a market signal for non-specific demand

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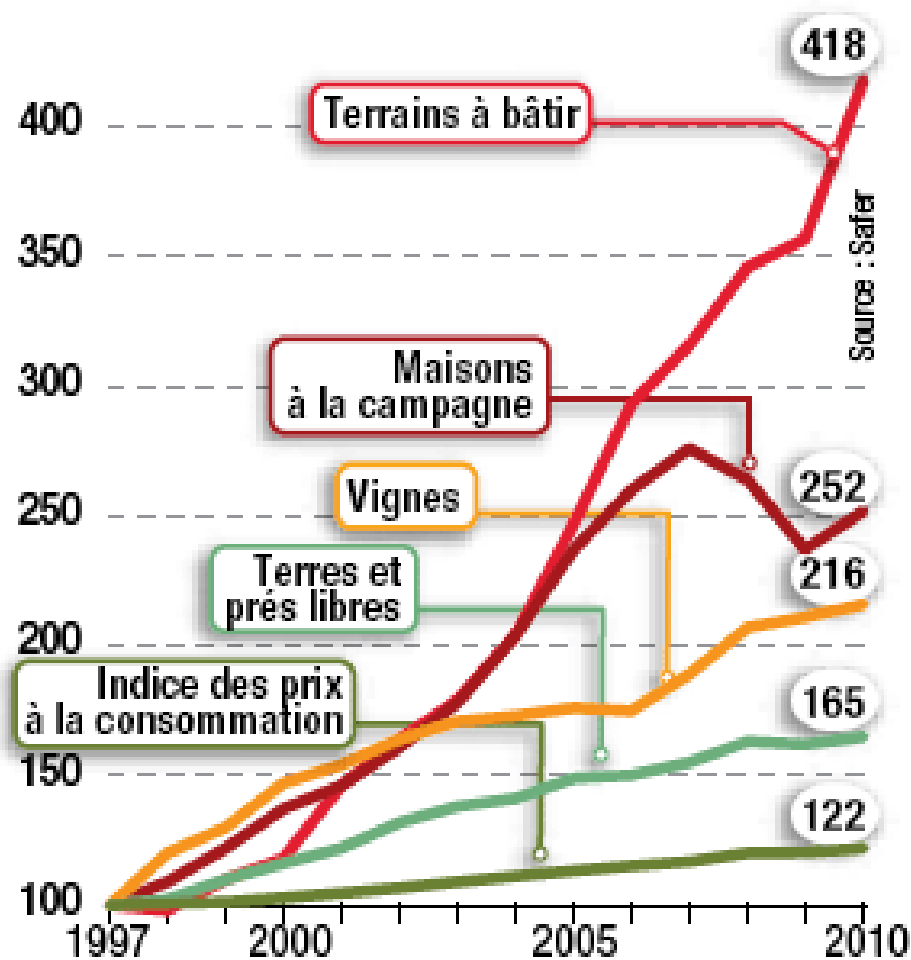
Impact on price at a regional level regardless of municipal characteristics

# Implications and discussion

- Connected/further research
  - Why do some municipalities keep increasing their developable area? → Drivers of land use policy decisions
  - Explanations previously mentioned → Theoretical model

Thank you for your attention!

# Facts



**Evolution des prix du foncier  
entre 1997 et 2010, par  
sous-marché, base 100 en 1997**



... land and housing markets can hardly be considered perfectly competitive (even when there are public regulations to address imperfections and failures)

- land and housing owners = monopolist? (Scotchmer and Thisse, 1993; Fujita and Thisse 2003).

- high level of uncertainty -> under- efficient speculative behaviors (Mills, 1981) and densities (Fujita and Kashiwadani, 1989)