

Specificites of explanatory dimensions of luxury real estate

The social dimension of luxury housing

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1 What is luxury real estate ?

2 Research question

3 Data

4 Methodology

5 Results

What is luxury real estate ?

Luxury housing is a little-explored subject in real estate literature

Generally defined by price (Lauer mann, 2022)

“By simply analyzing things from a one-dimensional price angle, we find ourselves in a state of confusion” (Bastien and Kapferer, 2012)

- 1 Super gentrification (Butler and Lees, 2006; Lees, 2003; Halasz, 2018):
 - **Intensification** through redevelopment in already affluent neighborhood
 - Expansion of global capital injected in housing in international cities (N-Y, Paris, London), “superstar cities” (Gyourko et al., 2013)
 - Fixing large quantities of capital: “safe deposit box” (Fernandez and Aalbers, 2016)

What is luxury real estate ?

2 Research of social grouping:

- High social grouping in affluent neighborhoods like Paris 16, Neuilly-sur-Seine (Bouzols, 2019) or in affluent neighborhoods in London (Burrows and Knowles, 2019) ⇒ **Intensity**
 - Desire of control of social reproduction by frequenting best schools (Bouzols, 2019; Fack and Grenet, 2010; Oberti, 2005)
 - Desire of access to prestigious communities (Chevalier and Carballo, 2004; Choon-Piew, 2011; Grant and Mittelsteadt, 2004)

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Research question

Is intensity of luxury housing market a key factor in determining luxury housing?

⇒ Does social grouping increase financial value of luxury housing?

Testing social grouping significance on luxury housing value

- Contributing to the thin literature about luxury real estate
- Contributing to its definition by testing the importance of market intensity (social grouping) on luxury housing value

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Data

1 Transaction data set:

- Exhaustive database of all transactions in Île-de-France (12.21 inhabitants)
- Between 2010 and 2021
- 404,654 observations
- French notaries, CEREMA

2 Other data:

- DRAC
- Île-de-France region
- Open Street Map

Selecting luxury housing by a nominal price of €800,001 (french “mansion tax”): **69,631 transactions**

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Methodology

Clustering

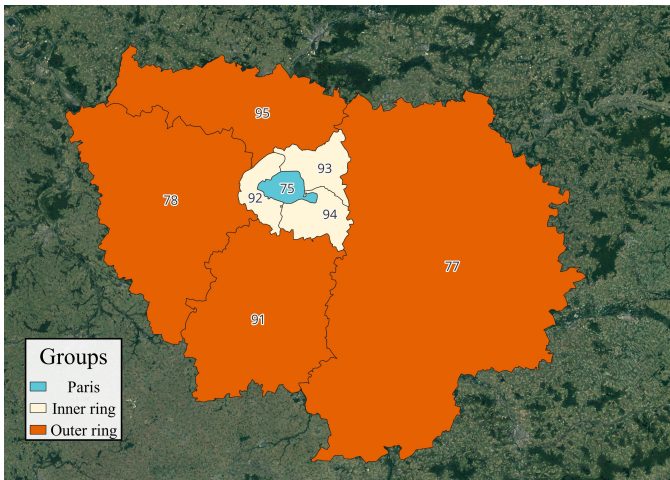


Figure 1: 3 rings in Île-de-France



Methodology

Clustering

Using *density based spatial clustering of applications with noise* (DBSCAN) algorithm

Modelling intensity by **social grouping**:

- Housing in high density areas are considered as "grouped" (test group)
- Remaining housing are considered as noise (control group)

Tuning hyper-parameters by cross validation

Clustering in each sub market:

- Paris
- Inner ring
- Outer ring

Methodology

Clustering

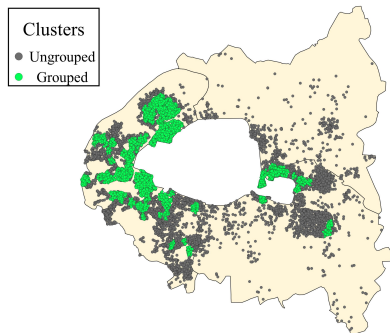


Figure 2: Example of clusters for inner ring

Methodology

Formulating assumptions

Assumption: Intensity influences positively financial value of luxury housing

⇒ **Social grouping**

Methodology

Hedonic modelling

Using hedonic modelling:

- Implicit market theory (Lancaster, 1966)
- Formalizes the price of the dwelling as the sum of its characteristics (Rosen, 1974)
- Quantifies the marginal contribution of each dwelling characteristic to price (Freeman, 1979; Goodman, 1978; Sheppard, 1999)

$$P(i) = \sum_k^K f(k, i) \quad (1)$$

Methodology

Variables

Including variables in our hedonic model:

- **Intensity** \Rightarrow **Social grouping**
- Control variables:
 - Housing characteristics
 - Quality of local high school

Methodology

Econometric modelling

Using Elhorst (2010) approach for spatial modelling, we compute spatial Durbin models (SDM, LeSage and Pace (2009)):

$$y_{it} = W\rho + \sum_{k=1}^K \beta_k X_{k,i} + W \sum_{k=1}^K \theta_k X_{k,i} + D_i + \gamma_t + \varepsilon_{it} \quad (2)$$

W is a contiguity weight matrix defined by zones of 2,000 inhabitants segmented by INSEE (french national statistics institute)

Interaction between hedonic and spatial models allows us to remove housing characteristics and spatial effects on prices

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Results

Table 1: SDM results: Paris

<i>Dependant variable: log(Price.sq.m)</i>				
	(1)	(2)	(3)	(4)
Intensity	0.014*** (0.003)	0.005*** (0.003)	0.015*** (0.005)	0.041*** (0.002)
ρ	0.348*** (0.005)	0.293*** (0.003)	0.401*** (0.003)	0.478*** (0.004)
Observations	38,562	38,562	38,562	38,562
Wald test	25.02***	31.36***	27.02***	36.18***

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Results

Table 2: SDM results: Inner ring

<i>Dependant variable: log(Price.sq.m)</i>				
	(1)	(2)	(3)	(4)
Intensity	0.051*** (0.008)	0.059*** (0.009)	0.074*** (0.008)	0.065*** (0.008)
ρ	0.590*** (0.004)	0.435*** (0.004)	0.512*** (0.005)	0.602*** (0.004)
Observations	22,086	22,086	22,086	22,086
Wald test	37.01***	31.36***	43.92***	49.65***

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Results

Table 3: SDM results: Outer ring

<i>Dependant variable: log(Price.sq.m)</i>				
	(1)	(2)	(3)	(4)
Intensity	0.058*** (0.008)	0.082*** (0.010)	0.057*** (0.009)	0.073*** (0.009)
ρ	0.318*** (0.057)	0.342*** (0.055)	0.410*** (0.057)	0.358*** (0.056)
Observations	8,455	8,455	8,455	8,455
Wald test	31.28***	38.41***	51.99***	41.38***

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Results

- **A: Intensity influences positively financial value of luxury housing**

Conclusion

Luxury housing is usually only defined by price

Demonstrated that intensity significantly influence luxury housing prices: there is a **premium** for intensity

This factor must be taken into account in the definition of luxury housing...

... but further researches are needed, especially in terms of clusters definitions:

- DBSCAN problem: **ad-hoc definition**
- \Rightarrow HDBSCAN? Gives us threshold effects

Thanks!

- V. Bastien and J.-N. Kapferer. *Luxe oblige*. Editions Eyrolles, 2012.
- L. Bouzols. Et si le luxe c'était l'espace ? le rôle de l'espace du logement dans la socialisation de classes supérieures du pôle privé. *Sociétés contemporaines*, 3(115):151–179, 2019.
- R. Burrows and C. Knowles. The “HAVES” and the “HAVE YACHTS”: Socio- spatial struggles in london between the “merely wealthy” and the “super- rich”. *Cultural Politics*, 15(1):72–87, 2019. ISSN 1743-2197. doi: 10.1215/17432197-7289528. URL <https://doi.org/10.1215/17432197-7289528>.
- T. Butler and L. Lees. Super-gentrification in barnsbury, london: globalization and gentrifying global elites at the neighbourhood level. *Royal Geographical Society (with The Institute of British Geographers)*, ISSN 0020-2754:467–487, 2006.
- J. Chevalier and C. Carballo. Fermetures résidentielles et quête de l'entre soi, entre nord et sud des amériques. *L'espace géographique*, 4(33):325–335, 2004.

- P. Choon-Piew. Living it up: Super-rich enclave and transnational elite urbanism in singapore. *Geoforum*, 42:382–393, 2011.
- J. P. Elhorst. Applied spatial econometrics: raising the bar. *Spatial economic analysis*, 5(1):9–28, 2010.
- G. Fack and J. Grenet. When do better schools raise housing prices? evidence from paris public and private schools. *Journal of Public Economics*, 94(1-2):59–77, 2010.
- R. Fernandez and M. B. Aalbers. *The Financialization of Housing: Between Globalization and Varieties of Capitalism*, volume 20. Competition change edition, 2016.
- A. M. Freeman. Hedonic prices, property values and measuring environmental benefits: A survey of the issues. *The Scandinavian Journal of Economics*, 81(2):154–173, 1979.
- A. Goodman. Hedonic prices, price indices and housing markets. *Journal of Urban Economics*, 5(4):471–484, 1978.

- J. Grant and L. Mittelsteadt. Types of gated communities. *Environment and planning B: Planning and Design*, 31(6):913–930, 2004.
- J. Gyourko, C. Mayer, and T. Sinai. Superstar cities. *American Economic Journal: Economic Policy*, 5(4):167–99, 2013.
- J. Halasz. The super-gentrification of park slope, brooklyn. *Urban Geography*, 39(9):1366–1390, 2018.
- K. J. Lancaster. A new approach to consumer theory. *Journal of Political Economy*, 74(2):132–157, 1966.
- J. Lauermann. Luxury housing and gentrification in new york city, 2010-2019. *Urban Geography*, 43(10):1683–1701, 2022.
- L. Lees. Super-gentrification: The case of brooklyn heights, new york city. *Urban Studies*, 12:2487–2509, 2003.
- J. P. LeSage and R. K. Pace. Spatial econometric models. In *Handbook of applied spatial analysis: Software tools, methods and applications*, pages 355–376. Springer, 2009.

- M. Oberti. Différenciation sociale et scolaire du territoire : inegalites et configurations locales. *Sociétés Contemporaines*, 3-4(59):13–42, 2005.
- S. Rosen. Hedonic prices and implicit markets : product differentiation in pure competition. *Journal of Political Economy*, 82(1):34–55, 1974.
- S. Sheppard. Hedonic analysis of housing markets. In *Handbook of Regional and Urban Economics*, volume 3, pages 1595–1635. Elsevier edition, 1999.