Do short-term rent platforms affect housing markets?
Evidence from Airbnb in Barcelona

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The Sharing Economy and Housing Affordability: What Impact, What Solutions?
Housing Solutions Platform
Brussels, January 22 2017
Short-terms rental platforms face neighbors’ opposition

When you book an apartment, think about the rising rent prices for locals, an increase in touristification and people going through social displacement. For each holiday apartment a local tenant has to leave their home.
Short-terms rental platforms face neighbors’ opposition

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Airbnb in Barcelona (1/4)

Table 1: Comparison of Airbnb densities

<table>
<thead>
<tr>
<th>2015</th>
<th>Barcelona</th>
<th>New York</th>
<th>Los Angeles</th>
<th>Paris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total buildings</td>
<td>823,709</td>
<td>3,447,978</td>
<td>3,504,348</td>
<td>1,366,438</td>
</tr>
<tr>
<td>Rented Dwellings</td>
<td>247,942</td>
<td>2,358,417</td>
<td>1,923,887</td>
<td>1,321,311</td>
</tr>
<tr>
<td>New Rent Contracts</td>
<td>40,623</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airbnb Listings</td>
<td>16,951</td>
<td>45,260</td>
<td>40,000</td>
<td>30,000</td>
</tr>
<tr>
<td>as % of total dwellings</td>
<td>2.06</td>
<td>1.31</td>
<td>0.86</td>
<td>2.09</td>
</tr>
<tr>
<td>as % of rented dwellings</td>
<td>6.84</td>
<td>1.92</td>
<td>1.56</td>
<td>3.30</td>
</tr>
<tr>
<td>as % of New Contracts</td>
<td>41.73</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Average Airbnb price/day (€) | 71 | 131 | 114 | 81 |
| Long term rent/month (€)      | 735 | 1,785 | 2,260 | 1,109 |
| Long-term rent/day (€)        | 24 | 59  | 75  | 37 |
| Days/month for same revenue   | 10 | 14  | 20  | 14 |

Notes: Data on Barcelona comes from Cadastral Records and INCASOL, data on New York and Los Angeles comes from US Census Bureau, Zillow Rent Index and airdna and data for Paris comes from INSEE and OLAP. All Airbnb data has been obtained through InsideAirbnb.
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(a) Airbnb Density in 2011

(b) Airbnb Density in 2017
Commercial vs. Casual listings

- Distinguish between using Airbnb sporadically and as a business.

A listing will be considered commercial if either:

- It is a multihosted property (entire apartments or private rooms property of a single host).

- It is a single-hosted entire apartment with an average of more than 5 reviews per quarter (during the active quarters).
Commercial vs. Casual listings

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What we do: Data (1/2)

Airbnb Data (webscrapped data)

- Inside Airbnb: 21 data points between April 2015 and February 2018. Includes price, room characteristics, date of each review and exact location.
  
  **Important:** With the reviews we can check the activity of any apartment/room back to the very beginning.

Measure of Airbnb density:

- We consider that a listing is active in a quarter if it has one review or more.
- Airbnb density is measured → dividing Airbnb listings by total housing units.
What we do: Data (2/2)

Rents and posted prices data

- All ads in Barcelona from the online real state site ”Idealista”, Each December, 2007 to 2017.
- Variables: Posted rent or price, exact location, size and a rich set of unit characteristics.
- Observations: 265,000

Transaction sales data (ITP)

- Universe of second-hand apartments sold between 2009 and 2016 from transaction tax records.
- Variables: price, exact location, surface, date, year of construction and a proxy for quality.
- Observations: 46,000
What we do: Method

Panel dataset (FE model) at the Individual level (1 and 2) and at the BSA level (3, 4 and 5). (BSA = 219 neighborhoods)

1. Regress log of prices/rents on unit characteristics and time dummies.

2. Average residuals at BSA/time level.

3. Regress the Residuals on Airbnb density, while controlling for BSA demography (age, education, nationality, pop density).

\[
\log(Y_{i,t}) = \beta_{\text{Airbnb}i,t} + \gamma X_{i,t} + \mu_i + \tau_t + \epsilon_{i,t} \tag{1}
\]

4. Others → Detrended residuals, BSA-specific time trends, ... Event study, DiD, ...

5. Next → Spatial heterogeneity, IV strategy to address endogeneity.
Results: Average (1/2)

- We find that 1 pp increase in Airbnb density leads to:
  
  increases in rents of 0.5-1%,

  increases in prices of 1-1.8%.
Results: Average (2/2)

• Is Airbnb causing a housing affordability problem in Barcelona? Not clear at the aggregated level!

Since Airbnb density grew on average a roughly 1.5 pp between 2011–2017, Airbnb on average increased

rents by $1.5\% \ (=1.5\times1.0)$ ... but on average rents increased aprox. 20%.

prices by $2.7\% \ (=1.5\times1.8)$... but on average prices increased aprox. 13%.
Results: Heterogeneity and Endogeneity (1/2)

HOWEVER ... these results are preliminary and there are at least two issues that need to be addressed ⇒ Spatial heterogeneity!

Figure: Rents

% of Rent Increase
- 0.03 Min
- 0.15 10p
- 0.32 25p
- 0.79 50p
- 2.07 75p
- 5.72 90p
- 11.42 Max
- Missing

Figure: Posted prices

% Increase in Prices (Id)
- 0.04 Min
- 0.25 10p
- 0.53 25p
- 1.27 50p
- 3.48 75p
- 6.33 90p
- 8.76 Max
- 13.05 99p
- 18.41 Max
- Missing

% Increase of Prices (ITP)
- 0.04 Min
- 0.19 10p
- 0.47 25p
- 1.29 50p
- 3.57 75p
- 6.69 90p
- 13.79 99p
- 20.55 Max
- Missing

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Do short-term rent platforms affect housing markets?
Results: Heterogeneity and Endogeneity (2/2)

HOWEVER ... these results are preliminary and there are at least two issues that need to be addressed ⇒ Endogeneity!

Measurement error.

Omitted variable problem.

Using instruments based on Supply factors (Young, Top-Income foreign residents, College Educated, and Rental Units) and Demand factors (hotels, touristic attractions) → Forthcoming!