Gentrifying Neighborhoods and Local Retail Prices

Fernando Borraz\textsuperscript{1} Felipe Carozzi\textsuperscript{2} Nicolás González-Pampillón\textsuperscript{3}  
Leandro Zipitría\textsuperscript{4}

October 2019 - Banco de España

XXIV Meeting of the Central Bank Researchers Network

\textsuperscript{1}Banco Central del Uruguay, dECON - FCS - UdelaR and UM  
\textsuperscript{2}London School of Economics and Political Science  
\textsuperscript{3}WhatWorks Centre for Local Economic Growth (LSE) & IEB  
\textsuperscript{4}dECON - FCS - UdelaR
Motivation

- The availability of local retail options (grocery stores/supermarkets) is not homogenous within cities.

- Neighbourhoods differ in the retail access opportunities they provide.

- Local retail prices/varieties are likely to depend on local demand characteristics

- Changes in the retail options may have different implications for different types of households
Motivation

Figure 1: Retail Prices, Housing Price and Neighbourhood Composition
Motivation

Figure 2: Retail Prices, Housing Price and Neighbourhood Composition
Motivation

- The introduction or replacement of new housing stock affects the consumer base:
  - Durable housing can partly explain the dynamic of neighbourhoods economic status (Rosenthal, 2008; Brueckner and Rosenthal, 2009)
  - Newly built housing generally attracts high-income residents (Brueckner, 2011)

- Neighbourhood targeted by new housing developments may experience an increase in the demand for goods and also the demand for variety

**Question:** Do local retailers respond to the increase demand as well as to the inflow of less price-sensitive household by increasing prices?
In this paper

- We study how changes in neighbourhood economic status affects local retail prices (*in Montevideo, UY*)

*How we do it?*

- We use a major housing policy as an arguably exogenous driver of the spatial distribution of residential construction
  - The policy induced gentrification of certain neighbourhoods as a result of large investments in residential stock (González-Pampillón, 2019)

- We test whether the introduction of new stock had an influence on local retail prices → DiD strategy
  - Reduced-form specification using different policy-derived intensity measures

*Causation chain*: major housing policy -> neighbourhood economic status -> local retail prices?
Preliminary findings

- We find evidence that the introduction of new stock resulted in an increase in grocery prices at the local level
  - Effects are significant at conventional levels but modest in size
  - Local grocery prices increase by 2% in areas highly exposed to the policy relative to less (not) exposed areas

Why retail prices change?

- Local costs of grocery stores↑: local rental prices/land values↑
- Mark-ups↑ as response to an increase in the local demand
Related literature & contribution

- Residential mobility patterns in gentrifying tracts (Vigdor, 2002; Freeman, 2005; McKinnish et al., 2010; Ellen and O’Regan, 2011a,b; Ding and Hwang, 2016; Freeman et al., 2015; Waight, 2018; Aron-Dine and Bunet, 2019; Brummet and Reed, 2019)
  - Vigdor (2010) empirically test if WTP ≤ change in local retail prices
  - Autor et al. (2017) analyse the effect on crime
  - Brummet and Reed (2019) analyse the benefits for stayers (home-owners)

- Literature on urban consumption (Glaeser et al., 2001)
  - Local amenities and neighbourhood composition (Guerrieri et al., 2013; Diamond, 2016)
  - Couture et al. (2018) provides a model in which increasing inequality can interact with local consumption amenities and spatial sorting to make the poor worse off

- The effect of changes in house prices (at the MSA level) on local retail prices (Stroebel and Vavra, 2019)
  - They argue that their estimates are not driven by changes in gentrification patterns
Outline

- Institutional setting
- Data
- Empirical strategy
- Preliminary results & discussion
In August 2011, the Uruguayan government introduced tax benefits for private investments in housing by law (Law nbr. 18,975)
  ▶ Developers end up producing housing affordable for middle-high/high income households

▶ Total amount investment (% GDP): 1.5%

▶ We focus on projects in Montevideo (1.9M inhabitants in the metro area)
  ▶ 70% of the total projects
  ▶ Projects between 2011 and 2013: almost 100 new construction projects
    ≈ 3.3MUSD per project
  ▶ Place-based scheme for new construction
Figure 3: Place-based scheme for new construction projects in Montevideo (Uruguay)
Figure 4: House prices pre-policy
The boundaries of area $S$:

- Defined by the Ministry of Housing + Ministry of Economics and Finance + the Local Government of Montevideo

- No official document describing how they were chosen

- Clear intention of excluding high-income areas of the city

- Overall, it follows a number of natural city divisions provided by its main avenues and streets.

- It does not follow the borders of any other administrative division
Figure 5: Geographical distribution of subsidised projects
Figure 6: Geographical distribution of subsidised projects + grocery stores
Example of a project

(a) Before

(b) After
Data (I)

- Daily prices collected by DGC (General Directorate of Commerce) of the Ministry of Economy and Finance (April 2007, December 2018)
  http://www.precios.uy/

- Supermarkets shall report prices if:
  - 1. they sell > 70% of the products listed, and
  - 2. either have > 4 grocery stores under the same brand name, or have > 3 cashiers in a store

- Supermarkets: 312 in Montevideo, geographical location, chain, number of cashiers
Goods:
- 75 products, 25 markets/categories (3 most selling brands, after excluding supermarkets own brands)
- goods defined at the UPC code

- We calculate monthly mode prices (reference price)

- Our final database for the city of Montevideo has 1.4M observations
Data (III)

- Project’s official data from the National Housing Agency
  - Exact location of the project
  - Type of project; project size (large, medium and small); detailed budget information

- House prices - 2006-2017, with exact location.

- Household income p/c from the National Household Survey (2006-2018)
Empirical Strategy (I)

- We construct a measure that captures the exposure of each grocery store $s$ to subsidised investments.

- This variable is computed as the sum of the budgets of all projects (98 in total) multiplied by an exponential decay factor.

\[ Intense_s = \sum_{j=1}^{98} BT_j \times e^{-\lambda d_{sj}} \]

- where $BT_j$ is the budget of project $j$, $d_{sj}$ is the distance (in km) from the grocery store $s$ to project $j$, and $\lambda (< 0)$ is the parameter that rules the decaying rate of weights.

- $Intense_s$ measures the level of investment which each grocery store $s$ is exposed to.
Empirical Strategy (II)

- The variable $Intense_s$ is used as a continuous-treatment variable to estimate the following continuous difference-in-difference estimator

$$
Ln(p_{i,s,b,t}) = 
\alpha Ln(Intense_s) + \beta Ln(Intense_i) \times post_{2012-2018} + X'_s\theta + \delta_t + \nu_b + \delta_t \times \nu_b + \epsilon_{isbt}
$$

- where $Ln(p_{i,s,b,t})$ is the log of the price of product $i$, in grocery store $s$, and at time $t$, and $Ln(Intense_s)$ is the log of the intensity of the treatment for a given value of the parameter $\lambda$

- Length of the border: $\approx 12$ kilometers

- Split into six border-segments (denoted by $b$)
  $\rightarrow$ border-year fixed effects included
Preliminary Results
Major housing policy -> neighbourhood economic status

Figure 7: Yearly effects on house prices. Continuous difference-in-differences estimator.
Figure 8: Yearly effects on household income. Continuous difference-in-differences estimator.
Effect on local retail prices

**Figure 9:** Yearly effects on local retail prices using the policy exposure measure - within 250 meters of the border
Figure 10: Yearly effects on local retail prices using the policy exposure measure - within 500 meters of the border
Table 1: Impact of housing policy on retail (log) prices. Continuous treatment variable.

<table>
<thead>
<tr>
<th></th>
<th>500 meters</th>
<th></th>
<th>250 meters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>IV</td>
<td>OLS</td>
<td>IV</td>
</tr>
<tr>
<td>ln(intense) x Post</td>
<td>0.020***</td>
<td>0.019***</td>
<td>0.020***</td>
<td>0.028***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>N</td>
<td>209.040</td>
<td>209.040</td>
<td>109.233</td>
<td>109.233</td>
</tr>
<tr>
<td>F first stage</td>
<td>1.990</td>
<td></td>
<td>319</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

- We analyse how local retail prices are shaped by neighbourhood change using a rich dataset on local housing prices, store-level selling prices for a large set of grocery products and neighbourhood characteristics.

- We find that local retail prices increase in neighbourhoods that were highly exposed to subsidised units.

- This has clear implications for similar policies attempting to promote development or re-development in certain areas.

- There may be an additional channel through which gentrification can affect local residents beyond its well studied effects on rents.
Thank you for your attention!

fborraz@bcu.gub.uy