

Local Economy, Housing Prices and Neighborhood Change

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Commercio, 100mila negozi chiusi negli ultimi 10 anni in Italia

di Caterina Maconi



Aumentano le aperture di ristoranti e alberghi, ma non riescono a compensare il deficit. Cresce la presenza straniera, sia come numero di imprese che di occupati

28 FEBBRAIO 2023 ALLE 12:50

1 MINUTI DI LETTURA

Translation: Commerce, 100,000 shops closed in the last 10 years in Italy.

EMPRESAS >

El cierre de empresas en España en 2022 batió récords: 26.207 disoluciones, un 10% más

Las disoluciones mercantiles superaron la cota más alta alcanzada hasta la fecha, de 2013

Translation: Company closures in Spain in 2022 hit a record: 26207 closures, a 10% more.

Retail industry

● This article is more than 3 years old

Thousands of UK shops left empty as high street crisis deepens

Data suggests closures of banks, pubs, estate agents and fashion stores is biggest rise in five years

Sarah Butler

🐦 @whatbutlersaw

Thu 2 May 2019 14:42 BST



Differences in city areas can shape the availability and variety of goods and services.

Changes in the neighborhood impact consumer demand and then affect the opportunities for local economic activities.

How do shifts the real estate prices generate endogenous changes in local economic activities?

Challenge: Housing price changes are potentially endogenous.

Where? Turin from 2012 to 2019.

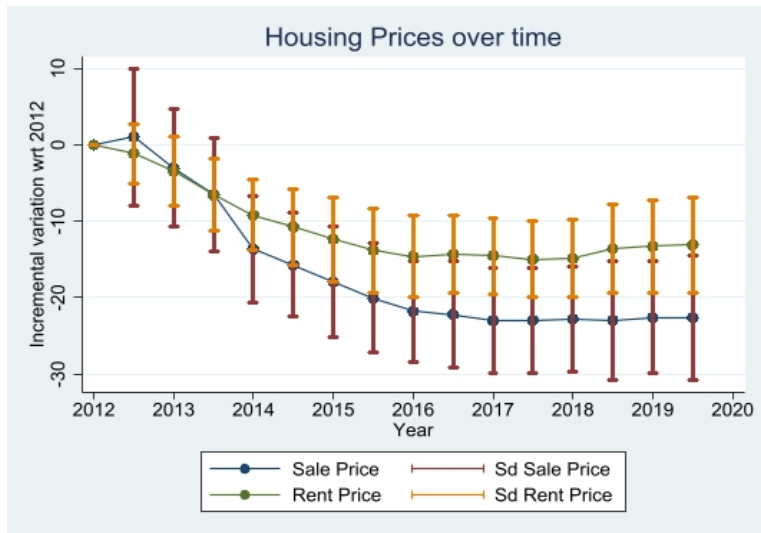
Preliminary findings:

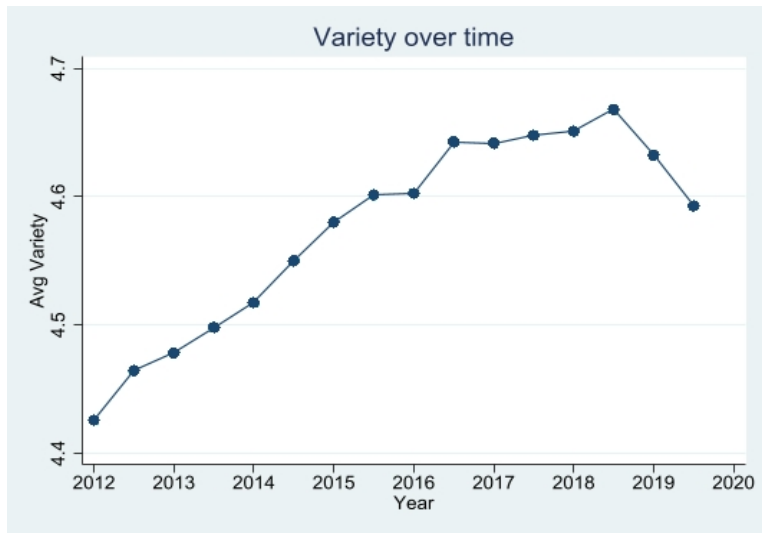
- **Positive** effect on product/services variety;
- **Negative** *direct* effect on the number of tradable good sellers and non-tradable service providers;
- **Positive** *indirect* effect on both tradable and non-tradable sectors.

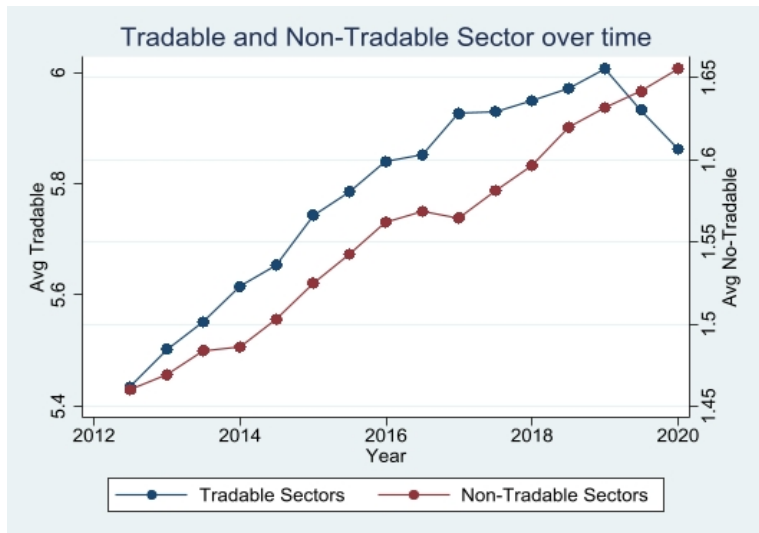
- Does gentrification destroy neighborhoods and generate negative externalities for existing neighborhood residents? (Vidgor, 2002; Vidgor, 2010; Glaeser et al, 2019; Glaeser et al, 2023)
- Retail Gentrification (Zukin et al, 2009; Mermet, 2017)
 - Plausible **casual effect** real estate prices and all local economic activities;
 - **Direct** and **demand induced effect** of housing prices;
 - **Unique** instrumental variable: **Teleriscaldamento power in the area.**
- Relationship between the housing market and grocery market (Stroebe and Vavra, 2019; Borraz et al., 2022)
 - Evidence of housing market on the **whole retail market** within city.
- Research on urban consumption amenities and urban revival in America (Glaeser et al, 2001; Couture, 2013; Almagro and Dominguez-lino, 2019; Davis et al., 2019; Baum-Snow and Hartley, 2020; Couture and Handbury, 2020, Behrens et al., 2022)
 - Evidence on endogenous changes in **retail amenities** within a **European** city.

- **Turin's retailers and bar/restaurants licences** provided by Turin's City Council. More than one license might be associated to one owner or one establishment. No additional cost for the request. Each license reports the location, the category, opening and closing date;
- The data for both **house and rental prices** from Idealista, a popular online real estate platform in Italy. The data is semestral, covering the years 2012-2019, and reports the **median asking price** per squared meters at the census track level. Chapelle and Eyméoud (2022) have shown that posted prices can be a good indicator of actual prices;
- The **Teleriscaldamento** data provided by Iren;
- **Sociodemographic characteristics** and **the 2011 National Census data**.

► Turin's Map







Baseline specification:

$$Y_{ikjt} = \beta \log(P)_{ikjt} + \gamma X_{ikjt} + \mu_k + \delta_j + \tau_t + \theta_{jt} + \epsilon_{ikjt} \quad (1)$$

- $\log(Y)_{ikjt}$ is the logarithm of variable Y in the census tract i , in neighborhood k , at a given semester j and year t
→ Share of Variety = Variety/41 and Number of Tradable/Non-Tradable shop/service providers;
- $\log(P)_{ikjt}$ is the logarithm of housing prices in the census tract i , neighborhood k , at semester j and year t ;
- neighborhood fixed-effects, μ_k
- semester fixed-effects, δ_j ;
- year fixed-effects, τ_t ;
- semester-year fixed-effects, θ_{jt} ;
- a vector of control variables, represented by X_{ikjt} .

Endogeneity issues:

- unobserved time-varying specifics and census tracts characteristics;
- reverse causality.

IV approach: kWatt of Teleriscaldamento provided in the area.

The idea: TLR is a more **cost-efficient** option than centralized heating systems → individuals selling or renting a house may attempt to **capitalize on these savings by raising their asking price** → the capitalization effect is **greater** when there is a higher amount of kilowatts supplied in the area. ▶ Costs avoided

The instrument variable **leverages the variation in time and space** of TLR in terms of power supplied in a given area, $\log(TLR)_{ikjt}$

Teleriscaldamento (TLR) is a **district heating network**, operated by Iren in Turin.

In the 1970s, Iren sought to utilize the waste heat generated by its electricity production plants to hot water for buildings.

The company began constructing a pipeline infrastructure to connect its plants to its customers. In the building is installed a heating (or boiler) unit (HU).

The TRL's HU replace the **existing centralized HU**, not autonomous HUs.

Each HU has a defined power, whose **capacity depends on the dimension of the buildings served**.

For each HU, the data set includes information such as its coordinates, installation date, and power in kilowatts for residential HU only.

Figure: Snapshot of TLR

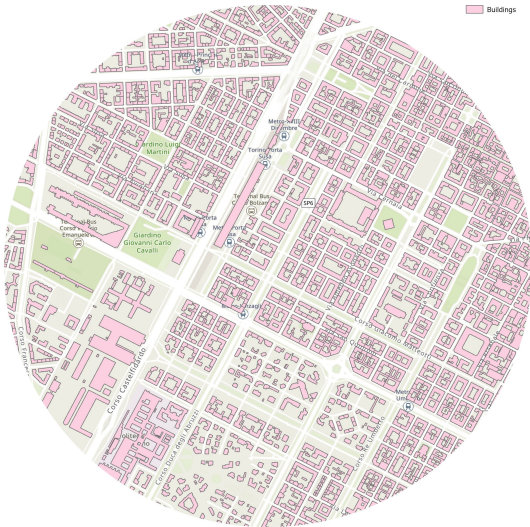
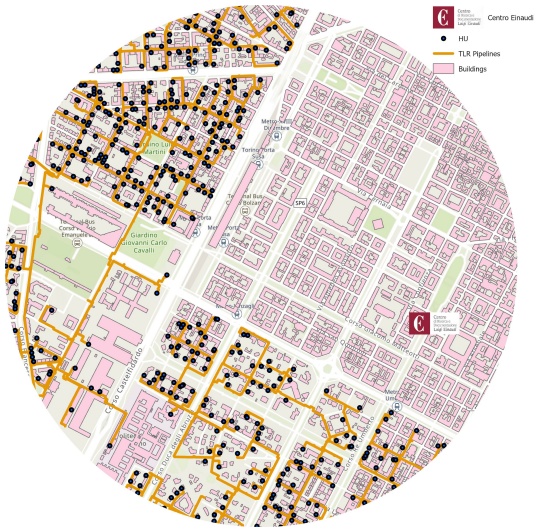
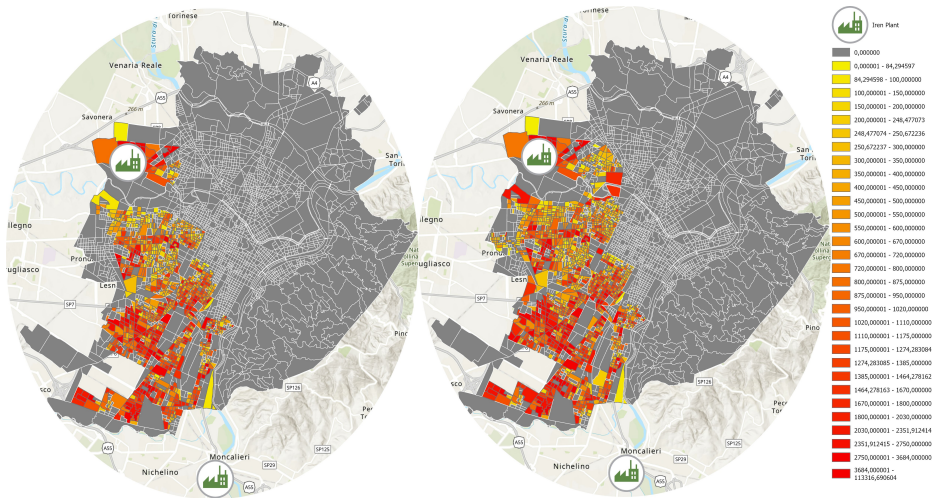


Figure: Snapshot of TLR



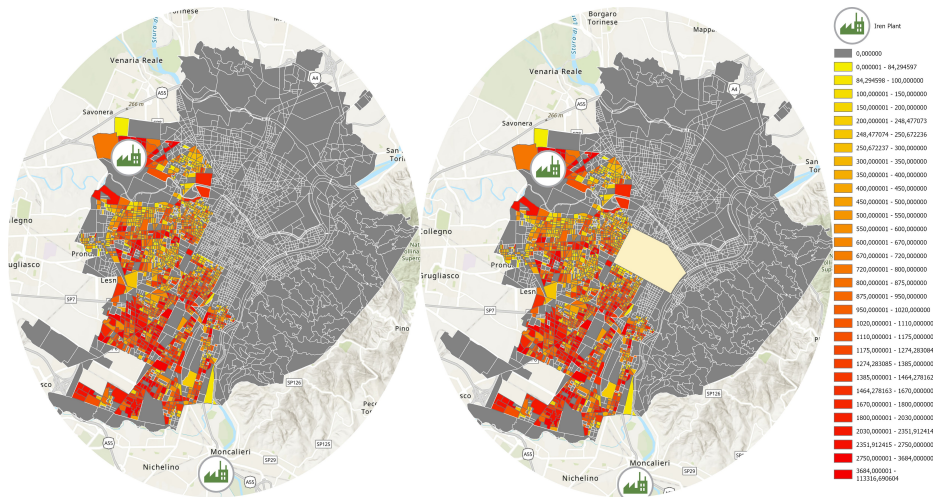
The Instrumental Variable

Figure: kWatt of TLR supplied on 2012 (left) and on 2019 (right)



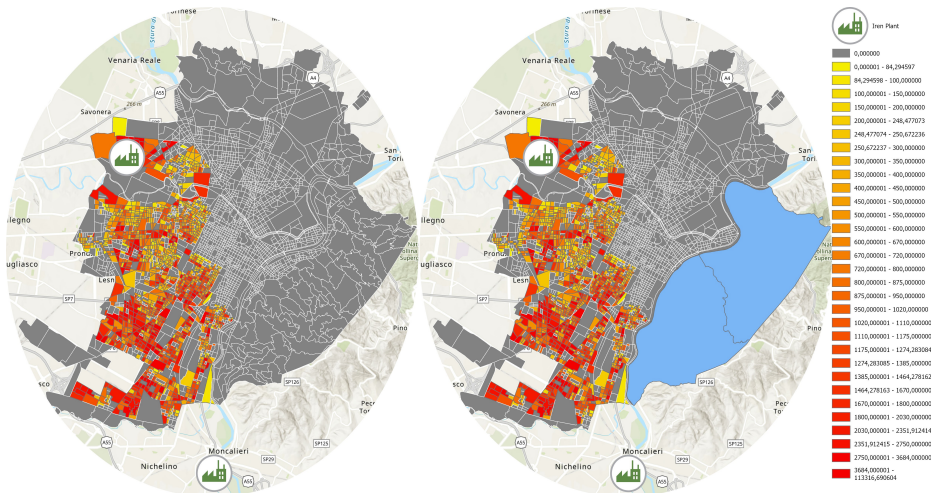
The Instrumental Variable - Exclusion Restriction

Figure: kWatt of TLR supplied on 2019 (left) plus the neighborhood Centro (right)



The Instrumental Variable - Exclusion Restriction

Figure: kWatt of TLR supplied on 2019 (left) plus the hill part of the city (right)



$$\log(P)_{ikjt} = \beta \gamma \log(TLR)_{ikjt} + X_{ikjt} + \mu_k + \delta_j + \tau_t + \theta_{jt}$$

Table: First stage of IV Estimates - TLR versus sale and rent prices

	(1)	(2)
	First Stage - Sale	First Stage - Rent
log(TLR)	0.0045*** (0.0002)	-0.0005*** (0.0002)
Sociodem. Control	Yes	Yes
Census 2011 Control	Yes	Yes
Buildings Control	Yes	Yes
Semester FE	Yes	Yes
Year FE	Yes	Yes
Semester*Year FE	Yes	Yes
Neighborhood FE	Yes	Yes
Number of Obs.	61568	61568
KP F-statistic	580.593	10.169

Notes: The Table reports the OLS and IV specifications. Significance is indicated by * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.001$. Standard errors, in parenthesis, are clustered at level of IV's variation. Controls are grouped in i) Sociodem. Control includes the share of foreign residents, the share of young residents (0y-30y), the share of old residents (more than 66y), the log of population density, the log number of families, ii) Cesus 2011 Contr includes the share of illiterates people in 2011, the share of people with a primary school licence in 2011, the share of people with secondary school license in 2011, the share of undergraduate people in 2011, the share of graduate people in 2011, and log of families in rent apartment in 2011 iii) Building Control includes the log number of residential buildings in 2011, log number of residential building construction in 80s, log number of residential building construction in 90s, log number of residential building construction in 00s.

Two possible effects:

- *Indirect*: Demand $\uparrow \Rightarrow$ Sale Price $\uparrow \Rightarrow$ Good Sellers/Service Providers Profit $\uparrow \Rightarrow$ Number of Good Sellers/Service Providers \uparrow
- *Direct*: Sale Price $\uparrow \Rightarrow$ Good Sellers/Service Providers Cost $\uparrow \Rightarrow$ Number of Good Sellers/Services Providers \downarrow

What about the variety?

Table: OLS and IV Estimates - Share of variety versus sale price changes

	(1) OLS	(2) IV	(3) IV	(4) IV
log(Sale Price)	0.0095***	2.4113*** (0.1292)	0.6174*** (0.0375)	0.1357*** (0.0340)
Sociodem. Control	Yes	No	No	Yes
Census 2011 Control	Yes	No	No	Yes
Buildings Control	Yes	No	Yes	Yes
Semester FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Semester*Year FE	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes
Number of Obs.	61568	61568	61568	61568
Mean in 2019	0.1120	0.1120	0.1120	0.1120
1% Increase wrt Mean	0.08%	21.5%	5.5%	1.2%

Notes: The Table reports the OLS and IV specifications. Significance is indicated by * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.001$. Standard errors, in parenthesis, are clustered at level of IV's variation. Controls are grouped in i) Sociodem. Control includes the share of foreign residents, the share of young residents (0y-30y), the share of old residents (more than 66y), the log of population density, the log number of families, ii) Cesus 2011 Contr includes the share of illiterates people in 2011, the share of people with a primary school licence in 2011, the share of people with secondary school license in 2011, the share of undergraduate people in 2011, the share of graduate people in 2011, and log of families in rent apartment in 2011 iii) Building Control includes the log number of residential buildings in 2011, log number of residential building construction in 80s, log number of residential building construction in 90s, log number of residential building construction in 00s.

Table: OLS and IV Estimates - Tradable product seller versus sale price changes

	(1) OLS	(2) IV	(3) IV	(4) IV
log(Sale Price)	0.8216*** (0.2291)	137.9139*** (7.7028)	25.0513*** (2.4078)	-5.0821** (2.4091)
Sociodem. Control	Yes	No	No	Yes
Census 2011 Control	Yes	No	No	Yes
Buildings Control	Yes	No	Yes	Yes
Semester FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Semester*Year FE	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes
Number of Obs.	61568	61568	61568	61568
Mean in 2019	5.5150	5.5150	5.5150	5.5150
1% Increase wrt Mean	0.15%	25.00%	4.54%	-0.92%

Notes: The Table reports the OLS and IV specifications. Significance is indicated by * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.001$. Standard errors, in parenthesis, are clustered at level of IV's variation. Controls are grouped in i) Sociodem. Control includes the share of foreign residents, the share of young residents (0y-30y), the share of old residents (more than 66y), the log of population density, the log number of families, ii) Cesus 2011 Contr includes the share of illiterates people in 2011, the share of people with a primary school licence in 2011, the share of people with secondary school license in 2011, the share of undergraduate people in 2011, the share of graduate people in 2011, and log of families in rent apartment in 2011 iii) Building Control includes the log number of residential buildings in 2011, log number of residential building construction in 80s, log number of residential building construction in 90s, log number of residential building construction in 00s.

Table: OLS and IV Estimates - Non-Tradable service providers versus sale price changes

	(1) OLS	(2) IV	(3) IV	(4) IV
log(Sale Price)	0.0631 (0.0787)	26.8976*** (1.7547)	0.2429*** (0.7672)	-5.6798*** (0.8445)
Sociodem. Control	Yes	No	No	Yes
Census 2011 Control	No	No	No	Yes
Buildings Control	No	No	Yes	Yes
Semester FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Semester*Year FE	Yes	Yes	Yes	Yes
Neighborhood FE	Yes	Yes	Yes	Yes
Number of Obs.	61568	61568	61568	61568
Mean in 2019	2.0031	2.0031	2.0031	2.0031
1% Increase wrt Mean	0.03%	13.42%	0.12%	-2.83%

Notes: The Table reports the OLS and IV specifications. Significance is indicated by * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.001$. Standard errors, in parenthesis, are clustered at level of IV's variation. Controls are grouped in i) Sociodem. Control includes the share of foreign residents, the share of young residents (0y-30y), the share of old residents (more than 66y), the log of population density, the log number of families, ii) Cesus 2011 Contr includes the share of illiterates people in 2011, the share of people with a primary school licence in 2011, the share of people with secondary school license in 2011, the share of undergraduate people in 2011, the share of graduate people in 2011, and log of families in rent apartment in 2011 iii) Building Control includes the log number of residential buildings in 2011, log number of residential building construction in 80s, log number of residential building construction in 90s, log number of residential building construction in 00s.

- Heterogeneous Analysis: ▶ Table

- Stronger effect on tradable sectors in the second quartile of the share of college student distribution and sparsely populated areas;
- Pronounced effect on non-tradable sectors in less educated and populated areas.

- Mechanisms ▶ Table

- Population Density;
- Population Composition.

- **Research question:** How are the local economic activities affected by the housing market prices?
- **Strategy:** unique and new instrumental variable.
- **Preliminary findings:** higher prices
 - increase variety;
 - negative *direct* effect and
 - positive *indirect* effect on shops/services provides.
- **Implications:**
 - Local benefits and costs are policy relevant;
 - Retail gentrification?
- **Next Steps:**
 - Further evidence and data to support the IV;
 - Theoretical Framework;
 - Who are the compliers?

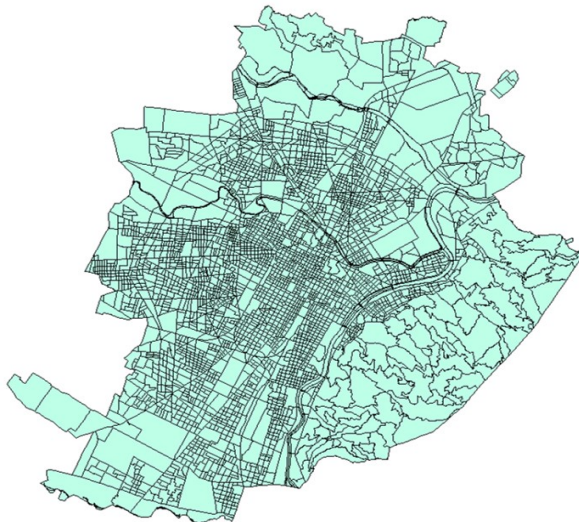
Thank you!

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Table: List of categories

Category	Category
Animals Articles	Automatic Machines
Appliances and Electronics	Bar and Restaurants
Building Material	Candies
Children Articles	Clothing
Cosmetics and Perfumery	Coffee Pods
Extralimentary	Food
Fabrics and Rugs	Gift Articles
Flowers and Plants	Hairdressers and Beauticians
Fuels	Mixed
Furniture	Objects
Games	Second Hand
Hardware Store	Sport Articles
Health and Orthopedic Articles	Supermarkets
Home Articles	Newspapers
House and Person Hygiene Articles	Optics
Jewellery	Pharmacy and Herbalist Articles
Laundry	Photography
Libraries	Sexy Shop
Motor and Car	Spare Accessories
Musical Instruments	Stationery Articles
Tobacco	

Table: Turin's Map



► Back

Cost for a central heating system **avoided** with the TLR:

- ❶ cost to install the system (approx. 20000€/installation);
- ❷ cost for ordinary boiler maintenance (approx. 5000€/year);
- ❸ cost for reading and repairing the boiler (approx. 600€/year);
- ❹ cost for extraordinary interventions (depending on breakdowns);
- ❺ cost for fire prevention certification renewal (about 500€ every 5 years);
- ❻ cost for boiler renewal.

The average price for the annual management of a central heating system for an 80 m^2 flat is approx. 1800€

The Instrumental Variable - Exclusion Restriction

Table: Descriptive statistics for city areas

	All Tracks without Centro & Hill			Centro & Hill			All Tacks		
Share of graduate people in 2011	50896	.1285054	.1101622	10672	.2608681	.1596865	61568	.1514488	.1302394
Share of undergraduate people in 2011	50896	.2529958	.1199731	10672	.2343875	.1320833	61568	.2497703	.1223601
Share of people with secondary school license in 2011	50896	.2416164	.1232215	10672	.1479094	.1014285	61568	.2253735	.1248719
Share of people with a primary school licence in 2011	50896	.1339976	.0785082	10672	.0819234	.0720335	61568	.1249712	.0796161
Share of illiterates people in 2011	50896	.0067286	.0124406	10672	.0032928	.0121921	61568	.0061331	.0124658

Heterogeneous Analysis

Table: IV Estimates - Effect of the sale prices on the outcomes

	Inp. Var: log(Sale Price)				
Quartile	(1) All	(2) 1 st	(3) 2 nd	(4) 3 rd	(5) 4 th
<i>Panel A Share College Student 2011 Distribution</i>					
Dep var:					
Variety Share	2.4113***	3.9416***	3.8195***	1.5719***	0.3861***
Tradable	137.9139***	125.1159***	204.9355***	97.7083***	25.8370***
Non-Tradable	26.8976***	83.1140***	55.8328***	10.0060***	5.9010***
<i>Panel B: Population density Distribution</i>					
Dep Var:					
Variety Share	2.4113***	1.5880***	0.8004***	0.5580***	0.1712***
Tradable	137.9139***	89.6540***	38.3452***	34.3494***	8.0171***
Non-Tradable	26.8976***	30.6740***	21.6251***	12.2073***	-9.0449***
N	61568	15392	15392	15392	15392

Notes: The Table reports the IV specifications. Significance is indicated by * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.001$. Standard errors, in parenthesis, are clustered at the level of IV's variation. All specifications do not include control variables. Fixed effects: semester, year, semester*year and neighborhood.

Panel A subsamples the dataset following the distribution of the share of college students across areas in 2011.

Panel B subsamples the dataset following the distribution of the population density across areas in 2011.

Table: OLS Estimates - (1) Population density effect on the sale prices - (2) Cross-sectional effect of the share of college people on the house price in the first semester of 2012

	(1)	(2)
	OIS - Panel	OLS - Cross-sectional
Pop. Density	165.3327*** (2.0916)	
Share Collage 2011		6.2893*** (0.9224)
Semester FE	Yes	No
Year FE	Yes	No
Semester*Year FE	Yes	No
Neighborhood FE	Yes	No
Number of Obs.	61568	3848

Notes: The Table reports OLS specifications. Significance is indicated by * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.001$. Standard errors, in parenthesis, are clustered at the level of IV's variation.

(1) The OLS applies to the whole panel dataset and shows a positive correlation between population density and sale prices. (2) The OLS applies just to the first semester of 2012 and shows a positive correlation between the share of college students and sale prices.