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# The Effects of Urban Rail Transit on the Market for Pre-Owned Houses: Evidence from 30 Cities in China

## Introduction

### Incredible Growth in Urban Rail Transit

- In total 185 lines of 1713 km at 35 cities
- Annual investment reached 547 billion yuan
- Plan to build another 7611 km at 61 cities

*< the Statistics and Analysis Report of China Urban Rail Transit 2018>*

| | |
|---|---|
| Urban rail transit can bring significant economic benefits and increase the overall social welfare | Households enjoy these advantages at the cost of rising real property values |

Goal: To study the effects of the proximity to urban rail transit stations (i.e. less than 2000 meters) on the commercial house prices

## Data & Methodology

| | |
|---|---|
| Open Data from Lianjia.com | • 30 cities in total: 4 first-tier ones, 12 quasi-first-tier ones and 14 second-tier ones<br>• 500 observations of listing prices and final sale prices respectively for each city |
| Hendonic Model | Assume that the price of a product can be determined by a bundle of characteristics |
| Fixed Effects | Add city dummy variables |
| Interaction Term | Introduce a variable that represents the passenger volume per capita, which indicates negative externality (noise, crowded areas, air pollution etc.) |

## Comparisons between City Groups

*The Map of Mid-east China*
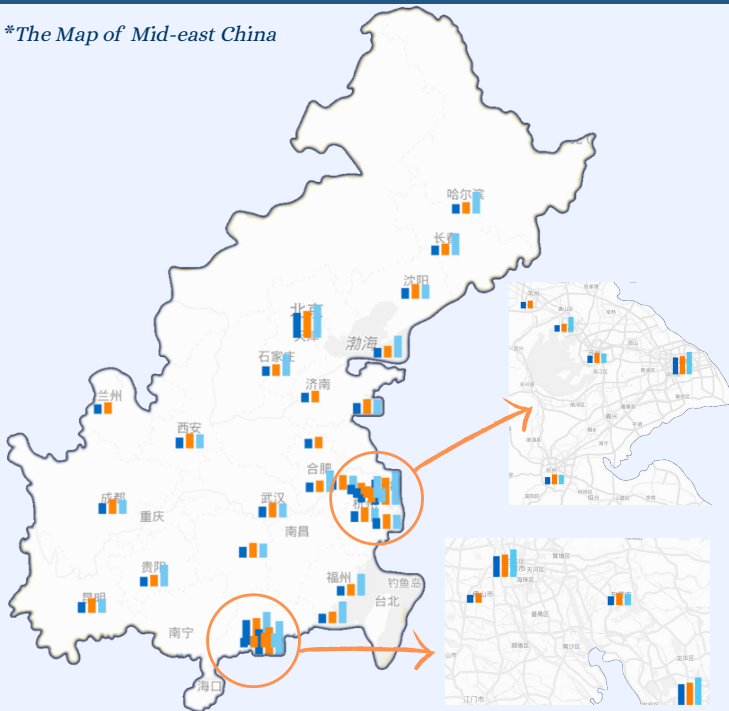


| Groups\Dep. Var. | Listing Price | Final Sale Price | Listing Price (with interaction term) | Interaction Term |
|---|---|---|---|---|
| First-tier Cities | 22.1% | 23.8% | 29.3% | -20.6% |
| Quasi-first-tier Cities | 9.50% | 13.0% | 12.4% | -6.71% |
| Second-tier Cities | 8.40% | 10.2% | 19.2% | -28.8% |

Value-added Effects Enjoyed:
First-tier Cities > Quasi-first-tier Cities > Second-tier Cities

Coefficient of Final Sale Price > Listing Price
→ Proximity to urban rail transit stations leads to second-hand house sellers' higher bargaining power

Coefficients increase after the interaction term is added to account for some negative impacts

## City-level Comparisons

| Dep. Var.\City | Foshan | Guangzhou | Harbin | Dongguan | Wuxi | Dalian |
|---|---|---|---|---|---|---|
| Listing Price | 22.0% | 18.9% | 13.6% | 14.4% | 21.0% | 17.3% |

### The Effectiveness of Intercity Lines

- Guangfo Line: Allows people to travel easily between this two cities
- The urban rail transit in Foshan makes similar high marginal contributions like that of first-tier cities

### The Mixed Influence of the Travel Speed

- The subway line at Dongguan travels the fastest while Harbin the slowest, but they share similar value-added effects
- Travel speed can pose mixed influences
  - The faster speed and long distances between stations can reduce negative externalities
  - Short distances between stations imply higher demands

### The Adverse Impact of High Passenger Volume

- Wuxi and Dalian: Both are second-tier cities, have the same number of subway lines, similar total length and travel speed
- The passenger volume per capita of Wuxi is much lower than that of Dalian → Wuxi receives a less impact from negative externalities caused by the metro system

## Policy Recommendations

### Reduce Negative Externality
Build green belts or separation barriers to alleviate the noise and air pollution

### Tighten Controls
Raise the threshold for urban rail transit construction to stabilize property values, especially for first-tier cities

### Ease the Problem of Increasing House Rents
Provide rental allowance to affected real estates

### Strengthen Supervision of the Pre-owned Housing Market
Crack down on illegal acts such as property hoarding or price rigging