

A Quantile Regression Analysis of Housing Price Distributions Near MRT Stations

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Question

- The impact of urban rail transit networks on non-landed private housing values in Singapore.
- Extension of the paper by Diao, Leonard, and Sing (2017) that uses the spatial autoregressive DID model to estimate the ATE of the CCL opening.
- This paper focuses on the heterogeneity in the treatment effects across different price quantiles.

Findings

- The average effect of the CCL opening is about 8.96%. But there exists significant heterogeneity across the distribution. Stronger effects are found at the 50th quantile whereas the two tails show relatively smaller effect.
- CCL opening causes compositional changes in transactions (transacted units are smaller) and price elasticity to increase significantly.

Specification

- The treatment effects are captured by the DID terms:

$$DID\Phi(\tau) = \delta_1(\tau) \times Post_i + \delta_2(\tau) \times Treat_i + \delta_3(\tau) \times (Treat_i \times Post_i)$$

- $Treat_i$ takes value 1 if the a unit belongs to the treatment group (within 600 meters) and 0 otherwise.

- Building fixed effects – more conservative.

- $Post_i$ also has time variation due to the following

Phase 1: 28 May 2009: (Bartley - Marymount)

Phase 2: 17 April 2010: (Dhoby Ghaut - Bartley) (Eastern stretch)

Phase 3: 8 October 2011: (Marymount – Harbour Front) (Western stretch)

- Event study specification - coefficient seems to suggest a price drop

DID and Spatial Spillovers

- A clean DID requires no spatial spillovers that may contaminate the control group.
 - Turner, Haughwout, and Klaauw (2014)
- I am not sure whether the spatial autoregressive term will be able to address the issue
- But if it does, I feel that we should observe an increase in the magnitude of the coefficient since the “contamination” to the controls should have been separately captured by the spatial weighting matrix, assuming it is sufficient.

Rationale for Distributional Heterogeneity

- Median price units receive the largest impact.
- Could this be due to
 - Speculation?
 - Difference in Preference?
- Not easy to separately identify but helpful to have an extensive discussion.

Uniqueness of the CCL

- Circle around the downtown core
- Not straightforward as a commuting path in a monocentric city model
 - Price increase may not be directly interpreted in the context of the traditional tradeoff between higher housing price and lower commuting cost to work.
 - It might be more meaningful and easier to interpret if to check the change in the extent of accessibility as Liao and Jing (2018).
- CCL connects a lot of places of interest that attract tourists.
 - Different households have different taste for the increase in tourists in the neighbourhood.

Cutoff Variation

- This paper uses 600 meters as the cutoff distance to separate the treatment group from the control group
- The result may or may not hold for units at different quantiles of the price range – difference in preference for high and low income households
- It may also vary with the existence of local transportation hub – convenience to travel to the MRT may flatten the bid-rent gradient from the MRT station