Differential impact of new public housing announcement on property prices

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Introduction

We examined the differential effect of public housing announcement on the property prices in host neighbourhoods — suburbs where new public housing complexes were to be located. Using a novel hedonic quality-adjusted DiD method, our analysis found the announcement to negatively affect the more-expensive suburbs but not the less-expensive suburbs.

Our study is motivated by the fact that the cost-benefit analysis of building public housing complexes should include its' external effects on the community. This is important as, in many countries for decades, public housing has been providing subsidized shelter to low-income households but is believed to have a negative external effect. Analyzing local residents' attitude towards public housing is reflected in changes in preferences to living in that neighbourhood and thus can give some idea about the externality of such projects (Schwartz et al. 2006).

Background and literature

The ACT government, on 15 March 2017, announced the construction of new public housing in ACT, Australia. The announcement covered all 5 locations that would build 7 public housing complexes. The announcement was unanticipated as evidenced by the subsequent reaction of the local residents who fiercely criticized the locations of the new public housing complexes.

External effects of public housing in previous studies were found to be mixed (e.g., positive in Diamond and McQuade 2019, negative in Aliprantis and Hartley 2015). External effects of public housing thus can be conditional on location (e.g., Baum-Snow and Marion 2009). In the same line, impacts of public housing on nearby property prices were found to be positive, negative or null. However, a variety of factors impacted the results including methodology and data (Schwartz et al. 2006), type of public housing (Aliprantis and Hartley 2015) and compatibility between public housing and host neighbourhood (Diamond and McQuade 2019).

Empirical strategy

To estimate the impact of the new public housing announcement on property prices, we use a novel difference-in-differences (DiD) method that conducts the hedonic quality adjustment in a more appropriate framework. In the DiD method, the properties that are located in the suburbs where the public housing will be constructed constitute the treatment group while the rest of the ACT properties form the control group. To do so, first we run separate hedonic regressions for all four property groups –pre-announcement control, post-announcement control, pre-announcement treatment and post-announcement treatment – as follows: $Y_{ist} = Z_{ist}\theta + \epsilon_{ist}$. Then we predict prices ($\hat{Y}_{ist}$) for each group using the pre- (and for separate analysis, post-) announcement period property characteristics and the hedonic coefficients of the corresponding period. Finally, using those predict prices, we run the following DiD model:

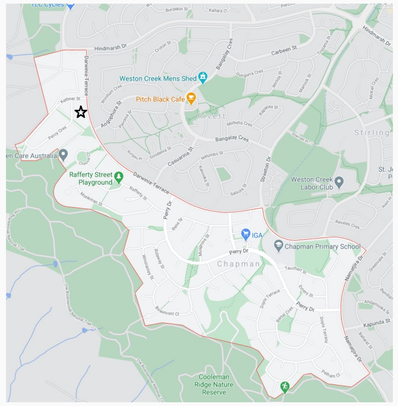
$\hat{Y}_{ist} = \delta_0 + \delta_1 Treatment_s + \delta_2 After_t + \delta_3 After_t \times Treatment_s + \epsilon_{ist}$,

where, $After$ indicates whether a property was sold before or after (both within one year range) the announcement.

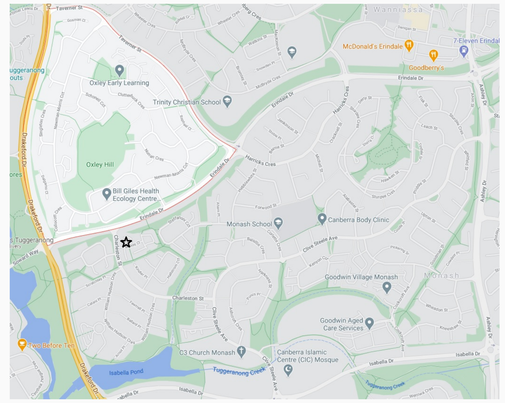
Data

The ACT property transaction (individual sales) data has been purchased from the Domain Holdings of Australia Pty Limited. Each observation includes information on a number of property attributes, address and transaction date. Our main analysis sample covers the period between 15 March 2016 - 14 March 2018 that contain 9,958 houses from 109 suburbs. Although public housing would be constructed in 5 of these suburbs, 2 other suburbs share borders with public housing complexes which are also taken as treatment suburbs (maps indicate a common boundary of public housing of Chapman with Rivett and Monash with Oxley). Comparing with the control group property prices, we divided treatment suburbs into more-expensive and less-expensive suburbs.

Map of Chapman & Rivett



Map of Monash & Oxley



Results

Table 7: **Regression results of DiD models run on imputed prices (dependent variable) obtained from hedonic regression models (step 2, method 3)**

	More-expensive suburbs (1)	Less-expensive suburbs (2)	All suburbs (3)
a. Using pre-announcement property characteristics			
Post	0.070***	0.070***	0.070***
	(0.004)	(0.004)	(0.004)
Treatment × post	-0.059***	0.015	-0.015
	(0.014)	(0.019)	(0.022)
Constant	13.267***	13.261***	13.266***
	(0.002)	(0.002)	(0.002)
Adjusted R^2	0.70	0.70	0.68
N	9,524	9,632	9,864
b. Using post-announcement property characteristics			
Post	0.071***	0.071***	0.071***
	(0.004)	(0.004)	(0.004)
Treatment × post	-0.081***	0.001	-0.025
	(0.009)	(0.013)	(0.018)
Constant	13.256***	13.252***	13.255***
	(0.002)	(0.002)	(0.002)
Adjusted R^2	0.67	0.67	0.65
N	9,680	9,874	10,052

Note: 1. The sample includes all properties in the ACT.
2. Standard errors, clustered at the suburb level, are reported in parentheses.
3. * p <0.10 ** p <0.05, *** p <0.01.

Table 8: **The differential effect of the disclosure of public housing location on property prices (Placebo test)**

	More-expensive suburbs (1)	Less-expensive suburbs (2)	All suburbs (3)
a. Using pre-announcement property characteristics			
Post (placebo)	0.053***	0.053***	0.053***
	(0.004)	(0.004)	(0.004)
Treatment × post (placebo)	-0.003	-0.023	-0.016
	(0.009)	(0.032)	(0.022)
Constant	13.236***	13.231***	13.236***
	(0.002)	(0.002)	(0.002)
Adjusted R^2	0.54	0.51	0.51
N	9,752	9,900	10,096
b. Using post-announcement property characteristics			
Post (placebo)	0.057***	0.057***	0.057***
	(0.006)	(0.006)	(0.006)
Treatment × post (placebo)	-0.027	-0.037	-0.033*
	(0.018)	(0.026)	(0.019)
Constant	13.211***	13.205***	13.211***
	(0.003)	(0.003)	(0.003)
Adjusted R^2	0.40	0.40	0.39
N	9,524	9,632	9,864

Note: 1. The sample includes all properties in the ACT.
2. Standard errors, clustered at the suburb level, are reported in parentheses.
3. * p <0.10 ** p <0.05, *** p <0.01.

Conclusion and policy implication

We found that the announcement of new public housing had a negative impact (7% of prices) in more expensive suburbs but no impact in less expensive suburbs. Our findings reconfirm that policymakers need to consider the negative external effect of public housing. However, while locating public housing complexes to high-priced suburbs would not be efficient, such decisions may contribute to reducing inequality and segregation. Thus, efficiency vs equity trade-off exists in the housing market, and our positive analysis may encourage planners to devise a mechanism for generating a socially desirable outcome.

References

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