Public School Open Enrollment and Housing Capitalization

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**Empirical Models and Methodology**

A hedonic house price equation describes its sales price as a function of its characteristics, that include its location, house characteristics and other neighborhood characteristics:

$$ log(p) = \beta_0 + \beta_1 D_CFSD + \beta_2 D_AUSD + \beta_3 D_BUSD + \beta_4 Yearly + \beta_5 Location + \beta_6 Characteristics + \epsilon $$. $\text{where} \ p \ \text{is the sales price of house at time t}, \ \text{AUSD is the time-varying characteristics; } \text{CFSD} \ \text{includes time invariant observed house characteristics; } \text{D}Distributions is the set of district and boundary dummies, } \text{D_AUSD is the yearly dummy in which the house was sold, } \text{CFSD is the open-enrollment numbers in CFSD; as is the error term.}$$

**Methods cont.**

• This difference approach helps in controlling for any unobserved fixed effects. By differencing, we also remove all the time invariant characteristics.

• By using boundary discontinuity approach we evaluate the effect on houses in either side of CFSD boundary which were otherwise similar.

**Data**

• The dataset used is from six school districts in and around Tucson Metropolitan area in Pima County, Arizona for 2003-2012.

• CFSD is considered the best district in this study area. The immediate bordering districts are TUSD and AUSD.

• We consider all single-family houses sold in this period with 131,232 observations. Houses sold multiple times in this time period are used for difference in sales model.

**Introduction**

• House prices are higher in better school districts, all else equal. Homeowners pay premium for better schools along with other public amenities.

• With changes in government and state policies on open enrollment in public schools, it is important to evaluate the impact of schools on housing prices.

• In 1994, the state of Arizona approved open enrollment in all school districts which was contingent upon availability of classroom space.

**Results**

• The first column gives results using outer boundary houses that are within 2 miles and inner boundary houses within 1 mile of CFSD boundary. Column 2 gives the marginal effects. Similarly for columns 3 and 4:

<table>
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<tr>
<th>Dependent Variable (log(price))</th>
<th>Outside 2 mile &amp; In 1 mile</th>
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**Conclusions**

• Prices significantly increase in houses outside the boundary of CFSD. This effect is quite robust across specifications. We find similar results using the “better” difference models.

• This effect is quite similar for houses in first or second quartile. Thus OE has doesn’t have varying effects within the median price.

• The effect of OE is different for houses in the boundary than those closer to the center of the district. However, it is not much different in both the boundary zones that we considered.

• While the semi-log models exhibit a significant decrease in prices of houses inside the boundary, we don’t find significance in the difference models. This might be due to capacity constraint of enrollment in any school district.

• For every 1000 open enrolled students, the premium for a house in the outer boundary is $6,150.

**Acknowledgements**

This work has benefited from helpful comments by Bruce Beattey, Gary Thompson, George Frisvold and Douglas Larson. We thank Deborah S. Bobett of Pima County Assessor’s Office and Mary Korenstein, Superintendent of CFSD for help in collection of data. A special thanks to Jan for his help with construction of maps.

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