The Distributional Effects of School Open-Enrollment on Housing Prices

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PAA Extended Abstract: April 2015

In the United States, typically students are assigned to public schools based on their residence. Open-enrollment programs permit students to choose the school that they would like to attend. Although these policies can take many forms, only Alabama, Maryland and North Carolina currently have no open-enrollment policy in place. All the other states have some form of mandatory or voluntary policy that covers either intra-district or inter-district open-enrollment. Most of the current open-enrollment policies are aimed at introducing competition to schools in order to improve education quality as well as providing students with access to good schools regardless of their socio-economic background.

I present a theoretical model that illustrates how the school open-enrollment policies could lead to an average decline in housing prices due to the uncertainty of school assignment. Furthermore, delinking or weakening the link between schools and homes is predicted to have a heterogeneous effect on housing prices.

While previous literature has established that housing prices reflect the quality of the assigned school (Black and Machin 2010), the introduction of school choice was theorized to weaken the link between schools and residential location (Nechyba 2003, Ferreyra 2007). Empirical studies focused more on how student outcomes (Cullen and Levitt 2006), residential sorting (Barrow 2002) and school productivity (Hoxby 2000) were affected. Reback (2005) used the implementation of inter-district open-enrollment in Minnesota to examine the effect of weaker district boundaries on housing prices. He found that houses in districts accepting students experienced a price decrease while districts losing students experienced an appreciation of housing prices. Reback (2005) estimates a 3% decrease in houses located in receiving districts in response to a one-standard deviation increase in the number of incoming students.

To test the theoretical model, I use data from the 1985 to 2011 American Housing Survey (AHS) in a difference-in-differences framework.[1] Preliminary results are based on data from 5

[1] The AHS is a sample drawn from the decennial census where the unit of observation is the house along with the household. I use the 1985 to 2011 waves including both metropolitan and national samples. The dataset offers a wide range of information on the dwelling and the composition of the household but most importantly it lists a transaction price, square footage, year built, lot size, numbers of rooms, and number of baths.

states that implemented open-enrollment policies between 1993 and 2000.[2] Figure 1 shows the de-trended price distribution before and after open-enrollment was introduced. There is a clear decrease in housing prices above the median which provides descriptive evidence of the negative effect of open-enrollment on housing prices for houses that were previously linked to good quality schools.

Preliminary results regress the log of price of house *h* in state s at time *t* on an indicator for having an inter-district mandatory enrollment policy in state *s* at time *t*, controlling for characteristics of the house, state fixed effects, year fixed effects, and state-specific time trends. We then re-estimate the model using quantile regression.

The baseline estimates presented in the table below indicate that the passage of inter-district mandatory open-enrollment policies were associated with a 6 percent decrease in house prices, on average. When considering heterogeneity in the treatment effect using quantile regression, I find no effect below the median. Above the median, we see a negative effect of the legislation. At the 60th quantile, the policy is associated with a nearly $5K decline in housing prices. The strongest effect is at the 80th percentile with a $10k decline in housing prices. Figure 2 shows the results graphically. The paper will also consider specifications with a house fixed effect for the small subset of the sample with multiple transactions.

References

Barrow. (2002). "School Choice through Relocation: Evidence from the Washington, DC Area". Journal of Public Economics 86, 155–189.

Bayer, Ferreira and McMillan. (2007). "A Unified Framework for Measuring Preferences for Schools and Neighborhoods". Journal of Public Economy 115 (4), 588–637.

Black. (1999). "Do Better Schools Matter? Parental Valuation of Elementary Education". Quarterly Journal of Economics 114, 577-99.

Black and Machin. (2010). "'Housing Valuations of School Performance". Handbook of the Economics of Education,Volume 3.

Cullen and Levitt. (2006). "The Effect of School Choice on Student Outcomes: an Analysis of the Chicago Public Schools". Journal of Public Economics 89, 729–760.

Ferreyra. (2007). "School finance reform: assessing general equilibrium effects". Journal of Public Economics 92, 1326–1351.

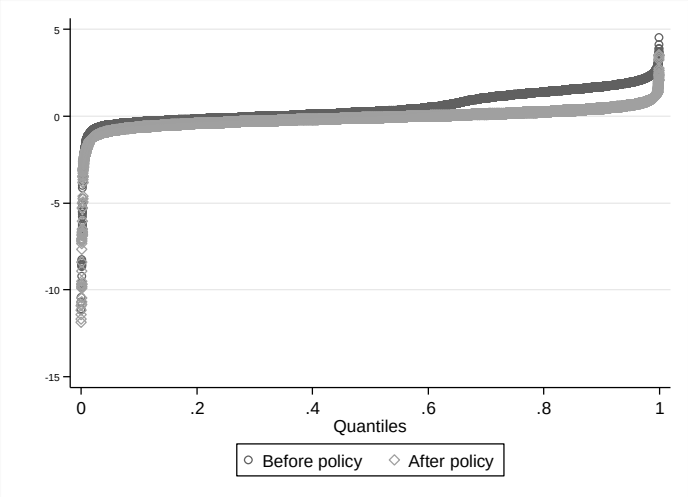
[2] Policy information is obtained through the Education Commission of the States and the individual states' statutes. We focus on inter-district open-enrollment because more students take advantage of inter-district choice options than charter schools and voucher programs combined (Brunner et al. 2012). We also ignore voluntary policies since mandatory policies are more likely to have a significant effect.

Hoxby. (2000). “Does competition among public schools benefit students and taxpayers?”. American Economic Review 90, 1209–1238.

Nechyba. (2003). “Introducing School Choice into Multidistrict Public School Systems”. The Economics of School Choice. The University of Chicago Press, Chicago, 145–194.

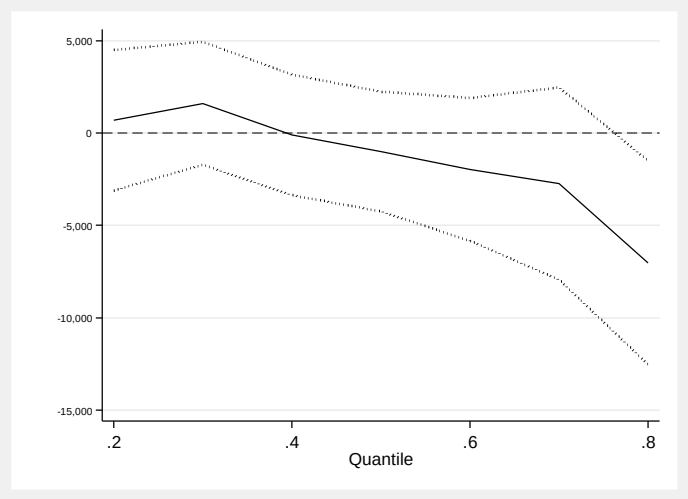
Reback. (2005). “House Prices and the Provision of Local Public Services: Capitalization under School Choice Programs”. Journal of Urban Economics 57, 275–301

Figure 1: De-trended distribution by quantile for control and treatment groups



Note: The figure shows a plot of the ordered values of the price distribution against the quantiles of a uniform distribution after accounting for house characteristics, time trend, state trend and state specific time trend.

Figure 2: The effect of open-enrollment policies on the price distribution



Notes: Solid black line shows the effect of the policy on the price quantiles. Dotted lines show the 95 percent confidence intervals. Dashed line set at zero for reference.

Table 1: Quantile regression results

Dependent variable: House price		
OLS: log-level		-0.068*
		(0.023)
Quantile Regression	25th	-2,385.83
		(2,562.56)
	50th	-3,417.57
		(2,485.58)
	60th	-4,691.68*
		(2,262.42)
	70th	-5,217.29
		(2,754.34)
	75th	-9,350.61*
		(4,206.83)
	80th	-10,226.88***
		(2,820.68)
	90th	-1,314.41
		(8,680.13)

Notes: 16,758 observations. Standard errors, clustered by state, are in parentheses. * p<0.05, ** p<0.01, *** p<0.001. Data are from the 1985-2011 American Housing Survey and include houses built in states that enacted inter-district mandatory open-enrollment. All regressions include state fixed effects, time fixed effects and state specific time trend.