Supplemental Appendix - For Online Publication

Appendix A   Description of school construction projects.

This supplemental appendix describes two representative school construction projects. An official description of the SCP as a whole and photographs of many of the new buildings are available online at `http://nhps.net/SchoolConstruction`. The text quoted here comes from a District-provided summary of SCP status as of May 2010.

The Fair Haven School at 164 Grand Avenue in New Haven was completed in 2004. The changes at this school illustrate the SCP's focus on improving the school environment and community access as well as adding basic amenities like heat and air conditioning.

The District describes the improvements as follows.

- 'When built in the late 1920s, this school provided an architectural anchor to the neighborhood... its disrepair was extensive by the end of the century.'

- '[C]lassrooms were enlarged, updated to current technology standards, and, heating and air conditioning were installed.'

- 'The interior of the school has been completely reordered and the library, cafeteria, and gymnasium repalced with those accessible to the students and the community. [A]n addition was required to build a regulation size gymnasium.'

- 'The light wells introduced natural light throughout the 4-story structure through the skylights and the stairwells, and terminated in the newly designed and greatly expanded library and cafeteria spaces at their bases. Each room, though located at the center of the building, receives natural light from two wells.'

The Mauro-Sheridan School at 191 Fountain Street in New Haven was completed in 2009. The changes at this school illustrate the ways in which the SCP improved students' access to technology. The District describes the changes as follows.

- 'The 1954 addition has been demolished and a new addition built... The 1922 building has been renovated and features such diverse technology offerings as robotics, high tech graphic arts studies, instrumental and electronic studies, as well as advanced computer studies.'

- 'The auditorium has been renovated as a flat-floor, multipurpose music space... The conversion of the balcony to a video lab allows for the recording of performances.'

- '[A] diverse technology curriculum includes: the NASA partnership (applied technology laboratory featuring mechanical design and robots); a video production lab that supports literacy skills; a distance learning lab for interactive global learning; computer labs; science labs; electronic music laboratories; and the integration of technology throughout the building to enhance instruction.'

Appendix B   Student selection

In this appendix we examine the relationship between selection into neighborhoods affected by school construction and the observable determinants of student test scores. If students moving into new neighborhoods are better students than the students there prior to occupancy, we might attribute changes in mean school scores across time to school construction when in fact they are a product of the changing student population. We address this question by looking at how the characteristics of neighborhood populations relate to time relative to occupancy.

To do this, we create an index of observable and predetermined characteristics weighted by the role each plays in determining test scores, and document how this index varies with time relative to treatment. We construct the index using the regression

$$T_{igz} = x'_{ig}\beta + e_{igz}, \qquad \text{(Appendix B.1)}$$

where x_{ig} is a vector consisting of dummies for race, sex, and free lunch status. We exclude other observable characteristics like special education status and ELL status because these are learning outcomes that could be endogenous to school construction. $x'_{ig}\hat{\beta}$ thus forms an index of observable score determinants. We assess selection on the observables by estimating the equation

$$x'_{ig}\hat{\beta} = \gamma_t + \gamma_z + \gamma_g + \delta^{sel}D(\ell) + e_{izg}. \qquad \text{(Appendix B.2)}$$

The γ_t are year fixed effects, the γ_g are grade effects, and the γ_z are neighborhood fixed

effects. We do not correct our standard errors for sampling error in $\hat{\beta}$,[18] but do allow arbitrary correlation in error terms within neighborhood-year cells. We graph our results in Figure B -1. We find that levels of observed selection on the reading and math indices are close to zero and insignificant until one year post-occupancy. In that year, values of both of the indices jump substantially, and the estimated coefficient in the reading specification becomes statistically significant at the ten percent level. The reading and math selection indices both remain at high levels for several years, though estimates become noisy. As we discuss in the main text, aggregating the year-specific effects into pre-and post-occupancy groups yields a finding of statistically significant post-occupancy selection in both reading and math.

---

[18]Intuitively, correcting for sampling error could only reduce the statistical significance of evidence for selection. In practice we find that such corrections have little effect because the β are tightly estimated.

Figure B -1: Predicted Test Scores by Year Relative to Occupancy

Selection Effects - Reading

Selection Effects - Math
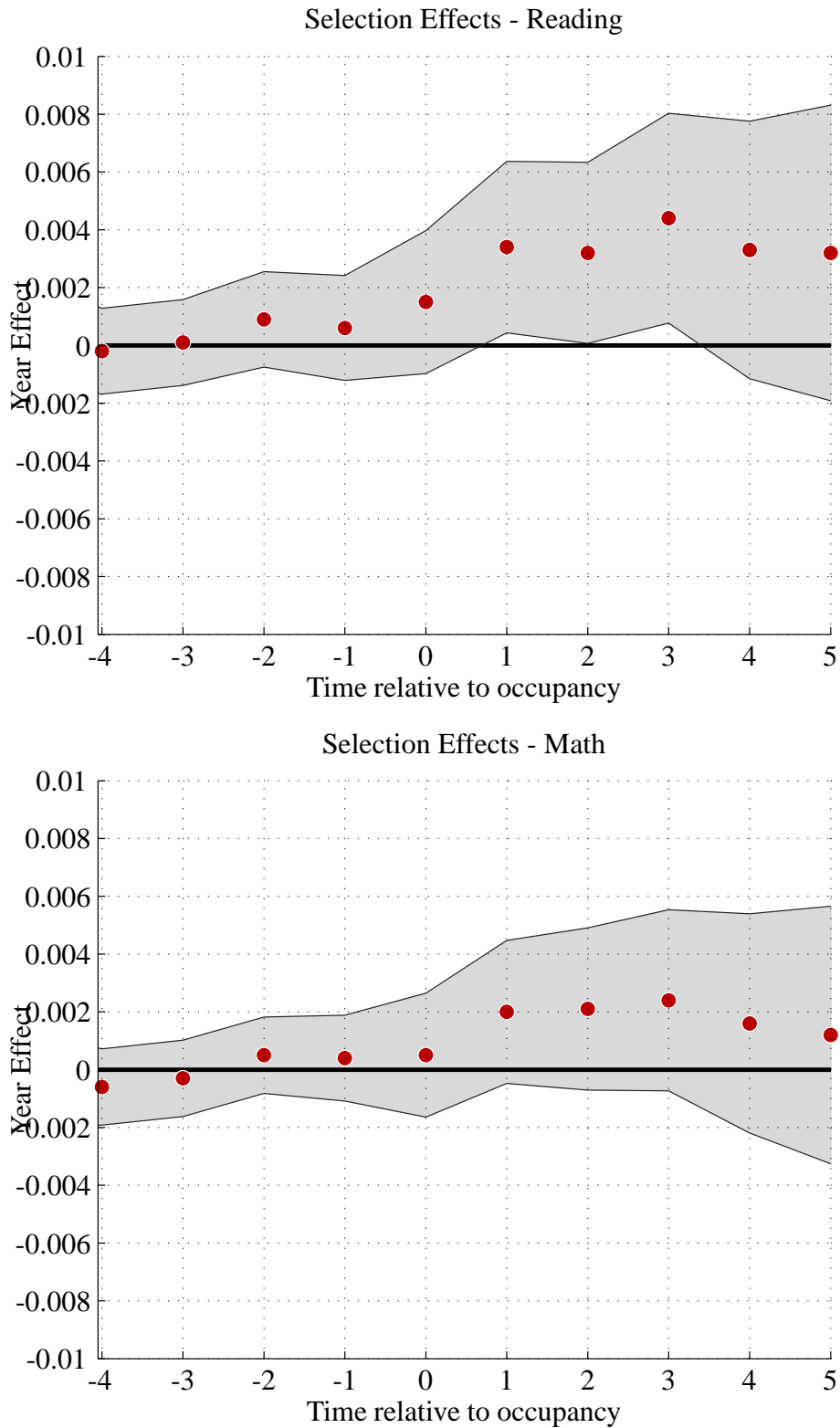
Note: Estimates of effects of per-capita school construction spending on indices of observable score determinants by year relative to treatment, as described in equations C1 and C2. Shaded areas show a 90 percent confidence interval, allowing for clustered errors at the neighborhood-year level.