

14.48, Economics of Education
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Lecture 16

Rouse Model:

Rouse uses a sample of students who either won or lost the lottery and looks at the number of years a student has been in the voucher program.

Student test scores: A_{it}

Say $t=1993$ and we want to position this against when the student applied to the voucher program.

z_{4t} = Dummy for 4-years after voucher application

$z_{-3t}, z_{-2t}, z_{-1t}, z_{0t}, z_{1t}, z_{2t}, z_{3t}$

$$A_{it} = \alpha_0 + \left(\sum_{k=-3}^4 \beta_{kt} z_{kt} \right) + \left(\sum_{k=1}^4 \delta_{kt} z_{kt} S_{t-1} \right) + \varepsilon_0$$

Results-

Math: Test score increase of 1.5-2.0 percentile points/year due do voucher program. This is equal to 7-8 percentile points (.32-.48 SD) over 4 years.

Reading: Very little gains.

How do we make sense of this?

-The white-black test gap is equal to approximately 1 SD.

-The return on math scores due do the voucher program is about equal to the return to smaller class sizes.

-The comparison groups used:

- 1) Randomized group of MPS students
- 2) P5- schools with extra funding aimed at very disadvantaged students, generally have smaller class sizes: higher gains in reading, similar in math
- 3) Citywide magnet schools: no difference in results

Voucher/private schools generally had smaller class sizes so we might just be picking up the effect of smaller class size on test scores.

Cullen, Jacob and Levitt:

Students are lotteried randomly into schools they've applied to. This program was implemented in response to desegregation efforts. $\frac{1}{2}$ of HS students go to a HS other than the one to which they were originally assigned.

What would you want to know about the program?

- 1) Which students were attracted to the program?
- 2) How much does it cost to run the program?
- 3) What school did individual students leave? What school did they switch to?
Are there any systematic differences? In other words, are students seeking out better schools?
- 4) Were there better outcomes for students who switched schools?

Did students move to better schools?

We need some way of determining whether a school is better than another.

Options:

- High test scores, but we may just be picking up the fact that some schools have higher students SES levels than others
- The percentage of students that graduate, percentage of students that go on to higher education
- Class size, computers/student
- A value added measure, in other words, some measurement of how good schools are at improving test scores
- School safety, a very real consideration in city schools
- Extracurricular activities

Results:

Better schools—based on test scores—had more students apply. How would you know this econometrically?

Using a sample of lottery winners and losers:

$$(\% \text{ of Free Lunch Eligible Students})_i = \alpha_0 + \sum \beta_j x_j + \delta w_i + \varepsilon_i$$

w=1 if individual wins lottery, 0 otherwise

x= various control variables

With the above regression, we measure how much of a difference the lottery makes, given a student's background.

The effect of winning on going to the school to which the lottery applied: .28

Schools in top quartile of CPS achievement: .063

% of students eligible for free school lunch: -.21

Index of crime in school neighborhood: .194 (1/3 SD of crime index)

Bottom line: Students end up in better schools than they would have without the lottery.

Did the shift make the lottery winners better students?

No. Not in terms of achievement test scores or reading percentile scores. However, students who won a lottery were less likely to be arrested, felt safer in their schools, and enjoyed higher computer/student ratios.

How do we interpret this? Is this program worthwhile?

These students are also more likely to be in an environment where their peers are going to college at higher rates, which might encourage students who otherwise would not have gone to college to consider going to college—this is known as a peer group effect. The CPS lottery may allow students to self-segregate into those who want to learn and those who don't. Does that mean that some schools will be turned into dumping grounds for difficult students?

Crime rates are very important to applicant students and their families. The *Moving to Opportunities* program run by the Department of Housing and Urban Development gave lottery winners vouchers to allow families to move from cities to working class suburbs. While these families didn't benefit from higher incomes, which is what the program was targeting. However, lottery winners had much higher mental health indicators than lottery losers, most likely attributable to living in lower crime neighborhoods, which reduced stress levels about family and property safety.

Questions from last lecture:

Q: Why can't we directly compare public and private school costs?

A: Private schools pay much lower salaries than public schools. Therefore, we may run into issues if we try to scale up private schools because there may not be enough teachers willing to work for lower wages to staff more private schools. Private schools may also benefit from more parents volunteer hours for which they don't have to pay. Additionally, the educations that public and private schools offer are not equal so how do we compare costs when the outcomes are not the same?

- 1) NAEP tests: Since 1978, there have been modest improvements in math and almost no improvement in reading.
- 2) Since the 1970s, the College-HS wage gap has increased greatly
- 3) Parental attitude towards schools: Generally, parents think their children's schools are doing ok but that the nation's schools are doing very poorly.

Implications:

Parents aren't well informed about the actual performance and the implications of the performance of their schools their children attend. There is a market failure due to insufficient performance information. Parents are often unwilling or don't have enough information to pressure schools to change.

To remedy the market failure, most states now have:

- 1) Educational standards
- 2) Assessments or tests to look at whether students and teachers are meeting the educational standards
- 3) Failure to meet standards often results in sanctions such as loss of funding, management change, teacher reassignment, or whole school reorganization

The goal is to produce statistics on the percentage of children in a particular school who are meeting an external, visible standard. Schools all have internal standards because they have grades which allow for comparison between students in the same class. External standards allow for a larger comparison. Visible means that the scores are published and easily accessible.

Problem: This sounds like a great idea, but how do you implement it?

Design issues-

- 1) What is the test? You want the test to measure worthwhile thinking skills and knowledge
- 2) What standards do you use for success? By applying one set of standards across a state, you aren't taking into account the effects SES can have on academic performance and achievement test results. If standards are too high, staff and at low performing schools may become discouraged, teachers may leave, and cheating might occur. How would teachers cheat? They could change answers after the fact or they could discourage students likely to perform poorly from coming to school on testing days.