The impact of school choice on student outcomes: an analysis of the Chicago Public Schools

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Outline

- Introduction
- Background on school choice
- Model framework
- Data description and summary statistics
- Academic benefit associated with opting out
- Reasons why opting out results in better performance
- Conclusion
- Further research opportunities
Introduction

- Examination of public school choice in CPS
- CPS allows open enrollment
- More than 50 percent of CPS students are not enrolled at their neighborhood school
- Minority and disadvantaged students are disproportionately represented in CPS
- Findings show that students who opt out are more likely to graduate than their peers
  - Why?
Introduction

The problem with unobservables:
- There are systematic differences between students who opt out and those who don’t
- Use an instrument for opting out
- Analysis of outcomes within schools
Background on school choice

- **Aims of school choice programs**
  - Break link between neighborhood and schooling
  - Foster competition → improve school performance
  - Improve student opportunities

- **Consequences of school choice programs**
  - Intended
  - Increased student sorting → unequal benefits

- **No clear conclusions can be drawn**
  - Positive impact on movers
  - Negative impact on stayers
  - No impact
Model framework

- Impact of open enrollment on graduation rates
  - Sources of benefits
- Students vary along observable and unobservable dimensions
- Schools vary
- Students maximize utility
- Students prefer schools that are good matches for them and close to home
Expect students who opt out to have higher graduation rates
- Pay greater travel cost, so must be getting some benefit
- Highly motivated students are more likely to opt out and more likely to graduate

Is link between opting out and higher graduations rates causal or merely correlation?
Data description and summary statistics

- Three cohorts of 9th graders followed through high school years
  - 60,623 students
- Home and school addresses, used to attach neighborhood characteristics
- Additional variables available for random subsample of 1994 cohort
- Graduation rates for student characteristics, census tracts, and school types
  - Sorted on ‘ability’ as measured by 8th grade test scores
Opting out is associated with 8 percent increase of on-time graduation.

Without including individual characteristics, opting out is associated with 16 percent increase.

Including everything but 8th grade test scores, opting out is associated with 14 percent increase.
Academic benefit of opting out

Table 4
The value of opting out by ability and type of school attended

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable = graduates high school</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student ability quartile (lowest to highest)</td>
</tr>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Opt out</td>
<td>0.062 (0.011)</td>
</tr>
<tr>
<td>Opt out to career academy</td>
<td>0.092 (0.026)</td>
</tr>
<tr>
<td>Opt out to high-achieving school</td>
<td>0.154 (0.051)</td>
</tr>
<tr>
<td>Opt out to regular school</td>
<td>0.046 (0.011)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>14,898</td>
</tr>
</tbody>
</table>
Reasons opting out results in better performance

Three reasons

- Students who opt out are better along unobservable dimensions
- Students who opt out are traveling to “better” schools
- Students who opt out are finding schools that match them better based on idiosyncratic reasons
Reasons opting out results in better performance

Identifying the causal effect
- Do not observe counterfactuals
- Sources of bias
  - Systematic differences in unobservable characteristics (upward)
  - Systematic differences in quality of match (downward)
  - Stayers hurt or helped after movers leave (upward or downward)
- Identify instrument → distance to nearest of each type of school (excluding assigned school)
Do students differ on unobservables?

- **Proxies for unobserved characteristics**
  - Lagged test scores, school, and residential moves
  - 8\textsuperscript{th} grade survey for random subsample

- **Good predictors of graduation and opting out**
  - Students who have failed a course are 18 percent less likely to graduate
  - Students who opt into a career academy or high-achieving school are more than 10 percent less likely to have ever failed a course
Reasons opting out results in better performance

Using distance as instrument
- Large impact on student’s decision to opt out but uncorrelated with unobservables
- First stage regression
  - Dependent: opt out decision
  - Independent: distance

Table 6
The impact of distance on the likelihood of opting out

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Student ability quartile (lowest to highest)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>In(miles from closest career academy)</td>
<td>-0.025</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
</tr>
<tr>
<td>In(miles from closest high-achieving school)</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
</tr>
<tr>
<td>In(miles from closest regular school)</td>
<td>-0.105</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
</tr>
<tr>
<td>F-test of joint significance</td>
<td>11.42</td>
</tr>
<tr>
<td></td>
<td>[p=0.000]</td>
</tr>
<tr>
<td>Pr(opt out)</td>
<td>0.366</td>
</tr>
</tbody>
</table>
Reasons opting out results in better performance

Reduced form estimates

2SLS (assuming no spillovers) estimate on opting out to high achieving school for top quartile students is -0.071. (Negative! Points to systematic differences.)
Reasons opting out results in better performance

Additional evidence

- **Within school estimates**
  - Compare students in the same school, assigned and opted in

- **Add school fixed effects**
  - Only career academies have benefits for assigned and opted in students
  - For high-achieving and regular schools the beneficial effects are likely driven by unobserved characteristics of students who opt in

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**Table 8**
The impact of opting out controlling for school fixed effects

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable – binary indicator for whether graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Opt out to career academy</td>
<td>0.078 (0.022)</td>
</tr>
<tr>
<td>Opt out to high-achieving school</td>
<td>0.146 (0.016)</td>
</tr>
<tr>
<td>Opt out to regular school</td>
<td>0.043 (0.010)</td>
</tr>
<tr>
<td>Attendance area school sample</td>
<td>No</td>
</tr>
<tr>
<td>School-cohort fixed effects</td>
<td>No</td>
</tr>
<tr>
<td>School-cohort fixed effects × ability quartile</td>
<td>No</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>60,623</td>
</tr>
</tbody>
</table>
Conclusion

- Leading explanation for differences in graduation rate are unobserved characteristics, not necessarily arising from school choice programs
- Career academies seem to be the main exception to this finding
- Points to non-academic reasons for opting out
Further research opportunities

- **How are stayers affected?**
  - These authors were not able to capture subsequent spillovers
  - What could be done differently?

- **Some spatial considerations**
  - A high schooler may be affected by two, possibly different, environments
    - Classmates
    - Neighbors
  - How can these effects be separated?
Further research opportunities

- How does gentrification and neighborhood change play into this discussion?
- Does the presence of school choice programs result in a weaker link between neighborhood characteristics and school quality?
- Can this statement be further refined to show that neighborhoods experiencing “rebirth” do not transmit potential benefits to their respective schools?