Making public schools less selective: implications for equity and learning in Indonesia

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Starting point

How to allocate scarce resources, promote equity in a dynamic system?

What are the impacts of a policy that expands access to selective schools on students across the learning distribution?
Public junior secondary schools in Indonesia are oversubscribed and selective

**Public schools**
- Capacity for 50-60% of students in large districts
- Usually politically impossible to expand capacity
- Admissions based on 6th grade leaving exam (UASDA)
- Higher quality, eg value-added in Yogyakarta was ~0.3 SD higher in math, 0.4 SD higher in Indonesian

**Private schools**
- Less preferred
- Not free but subsidized (through vouchers) for qualifying students
Yogyakarta has 16 public and 41 private schools.

% of students with below median math UASDA

- 0-25%
- 26-50%
- 51-75%
- 76-100%

High performing: 13 of Yogyakarta public junior high schools were in the top 100-scoring schools on the gr9 leaving exam in Indonesia in 2019.
With the goal of expanding access, Yogyakarta changed its admissions policy for junior secondary schools.

<table>
<thead>
<tr>
<th>Share of seats allocated based on:</th>
<th>PRE-ZONING</th>
<th>ZONING 1</th>
<th>ZONING 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UASDA score (Yogyakarta residents)</strong></td>
<td>55</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td><strong>UASDA score (non-Yogyakarta residents)</strong></td>
<td>20</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Poverty status (UASDA rank)</strong></td>
<td>25</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td><strong>Proximity to school (Yogyakarta residents)</strong></td>
<td>0</td>
<td>75</td>
<td>30</td>
</tr>
<tr>
<td><strong>“Special talents” (UASDA rank)</strong></td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td><strong>Relocation (UASDA rank)</strong></td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

May 2018 | May 2019
We use testing data for 3 cohorts of students

<table>
<thead>
<tr>
<th>18 months</th>
<th>UASDA (gr 6)</th>
<th>SLA (gr 7)</th>
<th>SLA (gr 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-ZONING</td>
<td>2017</td>
<td>2019</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2019</td>
</tr>
<tr>
<td>ZONING 1</td>
<td>2018</td>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>ZONING 2</td>
<td>2019</td>
<td>2020</td>
<td>6 months</td>
</tr>
</tbody>
</table>

We tested students in
- all 16 public schools
- 30 (out of 41) private schools (89% of all students)

Administrative and survey data
- Residence locations for ~2/3 of the sample
- Student, teacher, and principal questionnaires
We estimate the effect for all students and by UASDA quintile

<table>
<thead>
<tr>
<th>Percent of students in public school by quintile</th>
<th>PRE-ZONING</th>
<th>ZONING 1</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quintile 5 (highest)</td>
<td>91</td>
<td>81</td>
<td>-10</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>86</td>
<td>73</td>
<td>-13</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>73</td>
<td>69</td>
<td>-4</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>49</td>
<td>66</td>
<td>+17</td>
</tr>
<tr>
<td>Quintile 1 (lowest)</td>
<td>17</td>
<td>65</td>
<td>+48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>PZ</td>
<td>Z1</td>
</tr>
<tr>
<td>0.49</td>
<td>0.09</td>
</tr>
</tbody>
</table>
We predict SLA scores under constant SVA

We estimate model for student $i$ in the pre-zoning cohort

$$Y_i^2 = \alpha_1 Y_i^1 + \alpha_2 X_i + \gamma_s + \varepsilon_i$$

$Y^2$ is the grade 8 or grade 7 math or Indonesian SLA score

$Y^1$ is the standardized UASDA score in the relevant subject

$X$ is a vector of control variables for gender, an asset index, an indicator for whether the mother completed tertiary education and neighborhood

$\gamma_s$ are school indicators that capture the average school value-added in the baseline cohort

Simulate grade 9 SLA scores for the zoning cohort, taking a draw from pre-zoning error distribution
We produce simulated and actual impact estimates

\[ Y_i^2 = \beta_0 + \beta_1 Z_i + \beta_2 Y_i^1 + \beta_3 X_i + \varepsilon_i \]

\( Y_i^2 \) is actual grade 8 test score or predicted score

\( Z \) is a dummy variable indicating the first zoning cohort

\( \beta_1 \) is the difference in learning levels between two cohorts for students in the same neighborhood and baseline score

We compare the predicted and actual impact

Benchmark estimates for \( \beta_1 \)

What happens when lowest quintile students move into public schools with much higher pre-zoning SVA? How do these schools respond?
Under constant school value-added, we would expect larger positive changes in lower quintiles (1\textsuperscript{st} policy change)
Overall results are worse than predicted. Slight, non-significant decline overall but larger changes by quintiles:

- Lowest Quintile: Difference = 0.16*, p-value = 0.02
- Q2: Difference = 0.10
- Q3: Difference = -0.25***, p-value = 0.03
- Q4: Difference = -0.18*, p-value = 0.13
- Highest Quintile: Difference = -0.26***, p-value = 0.04

Math and Indonesian scores are shown.
Slight bounce back effect (more similar to pre-zoning) after the second policy

Difference between pre-zoning & zoning 1

Difference between zoning 1 & zoning 2
Why don’t we see more positive results? Decline in student-reported tutoring?

<table>
<thead>
<tr>
<th>Subject</th>
<th>Public PZ</th>
<th>Public Z1</th>
<th>Public Diff</th>
<th>Private PZ</th>
<th>Private Z1</th>
<th>Private Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutoring outside teaching hrs (%)</td>
<td>70</td>
<td>35</td>
<td>-35***</td>
<td>63</td>
<td>49</td>
<td>-14</td>
</tr>
<tr>
<td>Tutoring in minutes per week</td>
<td>99</td>
<td>48</td>
<td>-51**</td>
<td>65</td>
<td>44</td>
<td>-21</td>
</tr>
</tbody>
</table>

-20% -15% -10% -5% 0%
Did this policy improve equity? Implications for considering large policy changes in a dynamic system

Grade 8 SLA difference between Q1 and Q5 1.9 SD → 1.5 SD. Mostly at the expense of Q5.

Limited effect Q1 students for whom access 17% → 65%. Compared to alternative private, learning only goes up a bit for Q1.

College-going aspirations ↓ 5pp overall from base ~80% (↓ 8pp Q1)

Effects are short-term (18 months of schooling)

When implementing a policy that redistributes students, not safe to assume schools will maintain learning levels with new student composition
Thank You

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