Addressing the Needs of the Underprepared: The Role of Postsecondary Remediation

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The College Gatekeeper: Remedial & Developmental Courses

➤ Focus on HS-level skills (not college competencies) – does not include “Freshman Seminars”
➤ Also called developmental or basic education

➤ Nationally 35% to 40% of 1st year students (55% at community colleges)
  (1) Recent high school graduates
  (2) Adult students seeking developmental courses

➤ The remediation placement exam taken once arriving on campus has become the key academic gate-keeper to postsecondary study

Debates about Remediation

➤ Proponents: Opportunities for underprepared, many of whom did not have the chance to take in HS
➤ Critics: Provides disincentives for high school students; Double dipping; Not the appropriate place

➤ CUNY phased remediation out of its 4yrs (1999): “CUNY university system currently devotes far too much money and effort to teaching skills that students should have learned in high school.”

➤ CSU: Fall 2001 “kicked out more than 2,200 students – nearly 7% of the freshman class – for failing to master basic English and math skills.”

➤ 10 states, incl. FL and IL, restrict remediation to 2yrs; others limit funding or pass on the costs

The Florida Remediation Study

"The Impact of Postsecondary Remediation Using a Regression Discontinuity Approach: Addressing Endogenous Sorting & Noncompliance.”
Joint with Juan Carlos Calcagno.

➤ Developmental courses are only available at the CCs; all schools use the same placement instrument and have the same cutoff for placement

➤ Use a Regression Discontinuity design (RD)

➤ Sample: All first-time, degree-seeking CC students who began in Fall 1997 to 2000 (over 100,000 records)

➤ Transcript data through Spr 2006 along with all test scores (CPT, SAT, ACT) plus other controls
Regression Discontinuity Design

Beth and Becky are observationally similar

Beth and Becky both take the College Placement Test (CPT)

Beth scores just above the cut-off score
Becky scores just below the cut-off score

Beth to college-level courses
Becky to remediation

Crossover: Beth takes remediation anyway
No Show: Becky never enrolls in remediation

Endogenous Sorting: Beth retests to place out of remediation

Compare the outcomes of Beth & Becky

Noncompliance

Probability of Enrollment in Remediation by CPT Score and Subject

Endogenous Sorting around the Cutoff

Expect to see larger number who barely exceed the cutoff than those who barely failed \( \Rightarrow \) discontinuity of the conditional density at the threshold

Density of Reading CPT for Institution E

Endogenous Sorting around Cutoff?

Retesting: Some students may be permitted to take the placement exam multiple times to pass out

Problem A: Re-taking might invalidate the key assumption \( \Rightarrow \) Results subject to selection bias

Problem B: No information on a student's multiple test attempts; only the score used for placement is included

McCrary (2008) \( \Rightarrow \) “No-retesting institutions” (colleges where there is no statistical evidence of a discontinuity in the density function of the test score at the cutoff)

- Densities fairly continuous for math
- Retesting was likely allowed for reading remediation at many schools, but it differed by race
**Table 3: Impact of Math Remediation on Educational Outcomes**

<table>
<thead>
<tr>
<th></th>
<th>All Students With Controls</th>
<th>No-Retesting Sample</th>
<th>No-Retesting &amp; Narrow Band Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ITT (3)</td>
<td>RD-IV (4)</td>
<td>ITT (7)</td>
</tr>
<tr>
<td>Completion of First College-Level Course</td>
<td>-0.018 (0.011)</td>
<td>-0.030 (0.019)</td>
<td>-0.011</td>
</tr>
<tr>
<td>Fall-to-Fall Persistence</td>
<td>0.014 (0.011)</td>
<td>0.026 (0.019)</td>
<td>0.020*</td>
</tr>
<tr>
<td>Total Credits Earned</td>
<td>3.290*** (0.615)</td>
<td>5.690*** (1.023)</td>
<td>3.741***</td>
</tr>
<tr>
<td>Total Non-Remedial Credits Earned</td>
<td>0.011 (0.596)</td>
<td>0.019 (1.031)</td>
<td>0.884</td>
</tr>
<tr>
<td>Institutions</td>
<td>28</td>
<td>28</td>
<td>19</td>
</tr>
<tr>
<td>Observations (students)</td>
<td>96,724</td>
<td>96,724</td>
<td>68,337</td>
</tr>
</tbody>
</table>

**Impact of Math Remediation by Age Reference Group: Students less than 21**

<table>
<thead>
<tr>
<th>Assignment to Remediation</th>
<th>Completion of First College-Level Course</th>
<th>Associate Degree Completion</th>
<th>Transfer to 4 Year University</th>
<th>Total Non-Remedial Credits Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.013 (0.011)</td>
<td>0.001 (0.007)</td>
<td>-0.004 (0.006)</td>
<td>0.507 (0.575)</td>
</tr>
<tr>
<td>Remediation * Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 to 23 years</td>
<td>-0.004 (0.015)</td>
<td>0.017 (0.015)</td>
<td>0.014 (0.011)</td>
<td>1.410 (0.973)</td>
</tr>
<tr>
<td>21 to 23 years</td>
<td>-0.038*** (0.012)</td>
<td>-0.065*** (0.010)</td>
<td>-0.053*** (0.006)</td>
<td>-8.190*** (0.874)</td>
</tr>
<tr>
<td>24 yrs or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remediation * Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 yrs or more</td>
<td>0.036** (0.014)</td>
<td>0.040*** (0.011)</td>
<td>0.035*** (0.012)</td>
<td>2.491*** (0.790)</td>
</tr>
<tr>
<td>24 years or more</td>
<td>-0.056*** (0.011)</td>
<td>-0.027*** (0.009)</td>
<td>-0.065*** (0.006)</td>
<td>-4.732*** (0.745)</td>
</tr>
</tbody>
</table>

The effects were more positive for older students.
Impact of Math Remediation by Income (Pell Grant Eligibility)

<table>
<thead>
<tr>
<th></th>
<th>Completion of First College-Level Course</th>
<th>Fall-to-Fall Persistence</th>
<th>Transfer to University</th>
<th>Total Credits Earned</th>
<th>Total Non-Remedial Credits Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment to Remediation</td>
<td>-0.016***</td>
<td>0.031***</td>
<td>0.002</td>
<td>4.182***</td>
<td>1.554**</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.006)</td>
<td>(0.665)</td>
<td>(0.615)</td>
</tr>
<tr>
<td>Remediation * PELL Recipient</td>
<td>0.020***</td>
<td>-0.026**</td>
<td>-0.016***</td>
<td>-1.525**</td>
<td>-2.176***</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.013)</td>
<td>(0.006)</td>
<td>(0.743)</td>
<td>(0.748)</td>
</tr>
<tr>
<td>Institutions</td>
<td>-0.001</td>
<td>0.071***</td>
<td>0.019***</td>
<td>6.350***</td>
<td>5.575***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.012)</td>
<td>(0.005)</td>
<td>(0.686)</td>
<td>(0.708)</td>
</tr>
<tr>
<td>Observations</td>
<td>68,337</td>
<td>68,337</td>
<td>68,337</td>
<td>68,337</td>
<td>68,337</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.114</td>
<td>0.040</td>
<td>0.102</td>
<td>0.109</td>
<td>0.133</td>
</tr>
<tr>
<td>Depend. Var. Mean</td>
<td>0.229</td>
<td>0.365</td>
<td>0.126</td>
<td>36.811</td>
<td>30.391</td>
</tr>
</tbody>
</table>

**Effects were less positive for low-income students...**

The Florida Remediation Study

**Conclusions – Overall Sample**

- Being assigned to remediation appears to increase the total number of credits completed for students on the margin of passing out of the requirement...
- But it does not increase the completion of college-level credits or eventual degree completion.
  - Remediation might promote early persistence in college, but it does not necessarily help students on the margin of passing the cutoff to make long-term progress toward a degree
  - More positive effect for older students and less positive for low-income students

The Ohio Study

With E. Bettinger. *Journal of Human Resources.*

- Nearly 66,000 first-time freshman in Fall 1998 (FT, traditional age, 4yr degree intent) for 6 years
- Compares observationally-similar students: one placed into remediation because his nearby college has a stringent policy while the other student does not because his school has a lax policy
- Students in remediation had better subsequent outcomes – Reduced the likelihood of dropping out and increases the likelihood of completing a degree
- Discouragement effect for certain majors

The Texas Study


- State with a single cutoffs and placement exam → RD methodology similar to Florida study
- Sample: students who took all three placement exams (math, reading, and writing) and passed the writing section
- Remediation appears to have little effect on educational and labor market outcomes. The estimates are small and statistically insignificant but suggest that students are neither harmed nor greatly benefited by remediation
- Did not address possible endogenous sorting; lacks some of the data available in Florida
Remediation in Tennessee

ACT/SAT score determines which placement exam (if any):
- Take COMPASS Arithmetic exam
- Take COMPASS Algebra exam

COMPASS Level
- College Level
- Developmental Algebra I
- Developmental Algebra II
- Remedial Arithmetic

Score
- COMPASS Algebra II test: Score 50-100
- COMPASS Arithmetic test: Score 0-29
- Developmental Algebra I: Score 0-27
- Developmental Algebra II: Score 28-49
- Remedial Arithmetic: Score 30-100

Go to College-level courses

The Tennessee Study
Does Remediation Work for All Students? How the Effects Vary by Level of Academic Preparation
(With Angela Boatman)

- Multiple cutoffs and changes in placement policy over time → Can investigate the effects of different types of remediation for students of different abilities
- Sample: 1st-time, full-time students who began in fall 2000; track over 6 years at 24 colleges and universities
  → Remediation helps or hinders students differently depending on their level of academic preparedness
    - Negative effects for those students on the margins of needing any remediation (similar to other research)
    - However, at the other end of the academic spectrum, the negative effects of remediation were much smaller and occasionally positive, especially in Writing

Reconciling the Results?

- Single placement exam and cutoff versus institutional autonomy
- Different locations of the cutoff (Where should it be? What is college ready?)
- Different student samples (all versus traditional-age) and institutions (only CCs vs. 2yrs and 4yrs)
- How the courses are organized (large lecture versus small sections) and who teaches them (adjuncts)

Conclusions

Is remediation worth the costs?

- Most estimates suggest small effects (positive or negative)
- “Given the thousands of hours that colleges and universities invest in remediation, it is not surprising that some success is achieved. Even the limited success, though, comes at excessive costs -- far beyond those measured in simple dollars and cents.”
- Costs of remediation should be given careful consideration in light of the limited benefits.
Conclusions (cont.)

On the other hand...

- But... positive effects for reading/writing
- Effects differ by background (more positive for older students)
- More positive effects for students with less preparation
- The elimination of remediation in higher education could “effectively end the American experiment with mass postsecondary education” (Time, Oct 2002)

Other Implications

- Why does remediation work for some students and not for others? → Implications for course design?
- States and schools need not treat remediation as a singular policy but instead consider it as an intervention that might vary in its impact according to student needs → Tennessee initiative to redesign remediation
- Found differences by institutional level – Has implications for the effects of limitations on remedial course-taking (e.g., only at CCs)?
- Explore noncompliance and retesting practices and consider potential consequences