Losing Access Missouri: The effects of losing needs-based financial aid based upon academic criteria

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Overview of the Study

• **RQ:** What is the effect of losing the Access Missouri Financial Assistance Program award on retention between a student’s 1\textsuperscript{st} and 2\textsuperscript{nd} academic year?

• **Empirical Strategy:** Regression discontinuity design

• **Sample:** Freshman in MO public higher education – 2007-12

• **Findings:**
  • 1) No negative effect of losing state financial aid on retention
  • 2) Renewal of financial aid increases within system transfer rates
Background – Access Missouri

• Needs-based financial aid program
  • Established 2007-2008 via MO state law
  • Initial qualifying criteria
    • File FAFSA and have EFC less than $12,000
    • MO resident enrolled full-time at a qualifying MO institution
  • Continuing qualifying criteria (up to 10 semesters)
    • Meet initial eligibility requirements
    • Have a cumulative GPA of 2.5 and meet SAP
• Awards
  • Maximum of $2,850 at 4-year and $1,300 at 2-year institutions (2019-2020)
  • Award adjusted based upon overall program budget
Motivation - Policy

• Policy contradiction
  • Needs-based programs are assigned to applicants who are from low-income families without considering their academic background.
  • Renewal typically happens with continuing eligibility and the addition of a SAP requirement (generally 2.0)
  • Generally, losing aid due to academic criteria reduces success

• Contribution of our study
  • Missouri Access adds in a higher GPA requirement for renewal
    • This GPA cutoff (2.5) occurs within the range of GPA for which a student is making progress towards graduation.
    • SAP criteria (2.0 GPA) confounds losing aid and academic probation
Data and Sample

- **Statewide longitudinal administrative data (MDHEWD)**
  - All students at public 2- and 4-year institutions
- **Sample**
  - First-time, full-time degree-seeking students from MO
  - All MO public 4 year universities and colleges
    - Restricted due to research design assumptions
  - 2007-08 to 2012-13 academic years
    - 2007-08 is the first year of the program
    - After 2012-2013 there are data quality concerns (working through them)
  - Received only Access Missouri (i.e. no other state grant programs)
## Sample Statistics

Table 2 Sample size by year and financial aid programs

<table>
<thead>
<tr>
<th>Year</th>
<th>Bright Flight or Access MO</th>
<th>Bright Flight and Access MO</th>
<th>Only Bright Flight</th>
<th>Only Access MO</th>
<th>Neither</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>6,480</td>
<td>509</td>
<td>1,258</td>
<td>4,713</td>
<td>7,952</td>
</tr>
<tr>
<td>2008</td>
<td>7,044</td>
<td>386</td>
<td>876</td>
<td>5,782</td>
<td>8,018</td>
</tr>
<tr>
<td>2009</td>
<td>7,061</td>
<td>370</td>
<td>898</td>
<td>5,793</td>
<td>7,568</td>
</tr>
<tr>
<td>2010</td>
<td>7,754</td>
<td>438</td>
<td>848</td>
<td>6,468</td>
<td>7,545</td>
</tr>
<tr>
<td>2011</td>
<td>7,611</td>
<td>365</td>
<td>792</td>
<td>6,454</td>
<td>7,338</td>
</tr>
<tr>
<td>2012</td>
<td>7,542</td>
<td>391</td>
<td>743</td>
<td>6,408</td>
<td>6,876</td>
</tr>
<tr>
<td>Total</td>
<td>43,492</td>
<td>2,459</td>
<td>5,415</td>
<td>35,618</td>
<td>45,297</td>
</tr>
</tbody>
</table>
Empirical strategy - Specifics

- Sharp Regression Discontinuity Design
  - Intent-to-treat interpretation

- Statistical representation
  - \( Y_i = \alpha + \beta Above_{2.5i} + \gamma' f(GPA_i) + \theta' X_i + \varepsilon \)
    - \( Y_i \) is the outcome variable
    - \( Above_{2.5i} \) is an indicator for whether the subject’s GPA was greater than 2.5
    - \( f(GPA_i) \) is a flexible form of the forcing variable
    - \( X_i \) is a set of control variables
    - \( \varepsilon \) is a random error term

- \( \beta \) can be interpreted as the causal effect of being offered a renewal of Access Missouri Grant on the outcome for subjects who are near the GPA cutoff value
Missouri Access 2nd Year Renewal Rate

![Graph showing the relationship between 1st Year Cumulative GPA and Access Missouri 1st to 2nd Year Renewal Rate. The graph indicates a trend where higher 1st Year Cumulative GPA is associated with higher renewal rate.](image-url)
## Sample Statistics

Table 3 Summary Statistics of Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>Full sample</th>
<th></th>
<th>Restricted Sample - GPA 2.0-3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Retention w/in institution</td>
<td>0.838</td>
<td>0.369</td>
<td>0.851</td>
</tr>
<tr>
<td>Retention w/in MO HE</td>
<td>0.944</td>
<td>0.230</td>
<td>0.954</td>
</tr>
<tr>
<td></td>
<td>25,639</td>
<td></td>
<td>8,970</td>
</tr>
</tbody>
</table>
Empirical Strategy - Assumptions

No manipulation of the forcing variable

• There is no jump in the distribution of the forcing variable at the treatment cutoff?
  • Evidence: density change plots
    • YES??

1st Year Cumulative GPA

Density

1st Year Cumulative GPA

Density

1st Year Cumulative GPA

Density

1st Year Cumulative GPA

Density

1st Year Cumulative GPA
Empirical Strategy - Assumptions

No manipulation of the forcing variable
- Solution: remove institutions with evidence of manipulation
  - Central Missouri
  - Truman State
  - Missouri State
  - UM-St. Louis
Empirical Strategy - Assumptions

Continuity of the outcome-forcing relationship

- Would the relationship between GPA and Retention be continuous in the absence of treatment?
- Evidence: show relationship for non-Access Missouri students

Non-Access Missouri Students
Findings – Retention in Same Institution

Retained w/in same institution
## Findings – Retention in Same Institution

### Table 5 Parametric method - Retained w/in Same Institution

<table>
<thead>
<tr>
<th></th>
<th>Parametric</th>
<th></th>
<th>Nonparametric</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Linear</td>
<td>Quadratic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BW: 2.0-3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligible</td>
<td>-0.010</td>
<td>-0.036</td>
<td>-0.108***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.023)</td>
<td>(0.038)</td>
<td></td>
</tr>
<tr>
<td>BW: 2.25-2.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligible</td>
<td>-0.024</td>
<td>-0.092***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.033)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Findings – Retention in MO Public HE

Retained w/in MO Public Higher Education
## Findings – Retention in MO Public HE

### Table 5 Parametric method - Retained w/in MO HE

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</thead>
<tbody>
<tr>
<td></td>
<td>Linear</td>
<td>Quadratic</td>
</tr>
<tr>
<td><strong>BW: 2.0-3.0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligible</td>
<td>0.004</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.014)</td>
</tr>
<tr>
<td><strong>BW: 2.25-2.75</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligible</td>
<td>0.005</td>
<td>-0.013</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.020)</td>
</tr>
</tbody>
</table>
Implications

• Loss of financial aid between 1st and 2nd year is not associated with decreased retention in higher education

• Some Evidence that retaining financial eligibility increased transfer within Missouri public higher education system

• Unknowns at this point:
  • How do institutions respond with financial aid packages?
  • Why do people below 2.5 GPA retain financial aid
Questions?

Thank you!

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Twitter: @cursbr
Motivation – Prior Literature

• Generally, losing aid due to academic criteria reduces success
  • Pell grant and SAP - reduces retention and success
    • Schudde & Scott-Clayton (2016) – 4-year
    • Scott-Clayton & Schudde (2019) – 2-year
  • Merit-based aid & GPA – decreased engagement in college
    • Carruthers and Özek (2016)

• Contribution of our study
  • GPA cutoff for needs-based aid occurs away from the SAP requirement
  • SAP criteria (2.0 GPA) confounds losing aid and academic probation
Empirical Strategy - Design

- Regression Discontinuity Design - Advantages
  - RDD approximates an experiment at the cutoff point, thus, causal inference can be made
    - Intuition: RDD compares very similar subjects (based upon the forcing variable) who receive very different treatments.
    - Intuition: Random error in the measurement of the forcing variable separates subjects with similar unobserved attributes to receive treatment or not
  - RDD allows you to get a causal estimate of a program effect without having to randomly hold back treatment to subjects who would likely benefit from that treatment
Empirical Strategy - Assumptions

EX: Missouri State University

1. No manipulation of the forcing variable
   - Some institutions show manipulation and others do not.
Findings – Retention in Same Institution

Retained w/in same institution
Findings – Retention in MO Public HE

Retained w/in MO Public Higher Education