The Impacts of Initial Enrollment in Two-Year Colleges on Student Academic and Labor Market Outcomes

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Why Do We Care?

- Students are increasingly using community colleges as a stepping stone to four-year institutions.

- Groups with lower socioeconomic background are concentrated in community colleges and dependent upon these institutions to earn associate’s degrees and upon effective transfer to earn bachelor’s degrees.
What Do We Know?

- Consistent findings of a negative impact of initiating in two-year colleges on BA completion
  - e.g Alfonso (2006) – 30 percentage points lower (NELS88)
  - Long & Kurlaender (2009) – 15 percentage points lower (Ohio)
  - Monaghan & Attewell (2014) – 17 percentage points lower (BPS)

- An emerging literature on labor market outcomes: overall a negative impact on labor market performance
Research Questions

● How does initiating college in the two-year sector impact students’ probability of graduating with a bachelor’s and their labor market performance overall?
● Does the estimated impact vary when using different comparison groups?
● Do vertical transfer students perform equally well academically and in the labor market, compared to similar “native” students?
● What are potential mechanisms through which initiating in two-year colleges may influence student academic and labor market outcomes?
● What is the cost-benefit of starting in two-year colleges vs. in four-year colleges?
Data

● 2004-2005 cohort initiating in either two-year or four-year public and private not-for-profit colleges (SCHEV)
● Student award data matched with enrollment and graduation data from the National Student Clearinghouse (NSC)
● Student unit-record administrative data matched with UI data from Virginia
● Followed to 2012
Analytical Sample

- Sample 1: Restricted to BA-seeking students with term1 GPA (N = 43,735, 1/3 in community colleges)

- Sample 2: “Vertical transfers” and Native four-year college students
  - Released the restriction on BA-seeking
  - Transferred to SCHEV college only
  - Different matching strategies
Who Starts in CCs?

● More likely to be:
  ➢ older students, females, ESL students
  ➢ students who were ineligible for (or did not apply for) need-based financial aid
  ➢ Students who took remedial coursework and who had lower GPAs in their first semester.
  ➢ students who were employed for more pre-entry quarters and enrolled part-time during the initial term

● Decent explanatory power: $R^2=0.55$
How Similar Are Two-Year and Four-Year Starters

Probablity of Starting in Community Colleges

Density vs Probability of Starting in Community Colleges

- Non-selective Four-year
- Selective Four-year
- Community College Students
Propensity Score Matching

Started in 2-year

Started in 4-year

Identifies students in four-year colleges who are similar to community college students

Treatment Effects on the Treated
Results 1: CC Entrants vs. 4yr Entrants

<table>
<thead>
<tr>
<th></th>
<th>Regression on unmatched sample</th>
<th>Regression on matched sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA Attainment</td>
<td>-0.379***</td>
<td>-0.218***</td>
</tr>
<tr>
<td>Average Quarterly Earnings in 2012</td>
<td>-$1553***</td>
<td>-$256</td>
</tr>
<tr>
<td>Average Quarterly Earnings in 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(conditional on BA attainment)</td>
<td>-$1606***</td>
<td>-$535</td>
</tr>
</tbody>
</table>
## Results 2: Transfers vs. Natives

### Where do students transfer to?

<table>
<thead>
<tr>
<th>Institutional Characteristics</th>
<th>Transfer Students</th>
<th>Native Four-year Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Selectivity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inclusive</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Selective</td>
<td>73%</td>
<td>47%</td>
</tr>
<tr>
<td>More selective</td>
<td>17%</td>
<td>43%</td>
</tr>
<tr>
<td>SAT Critical Reading - 25th Percentile</td>
<td>486</td>
<td>509</td>
</tr>
<tr>
<td>SAT Critical Reading - 75th Percentile</td>
<td>586</td>
<td>609</td>
</tr>
<tr>
<td>SAT Math - 25th Percentile</td>
<td>485</td>
<td>509</td>
</tr>
<tr>
<td>SAT Math - 75th Percentile</td>
<td>583</td>
<td>608</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total headcount</td>
<td>15,605</td>
<td>14,146</td>
</tr>
<tr>
<td>Full-time equivalent (FTE) enrollment</td>
<td>21,062</td>
<td>17,594</td>
</tr>
<tr>
<td><strong>Total expenses per FTE student</strong></td>
<td>$19,836</td>
<td>$23,021</td>
</tr>
</tbody>
</table>
## Results 2: Transfers vs. Natives

<table>
<thead>
<tr>
<th></th>
<th>BA Attainment</th>
<th>Earnings in 2012 (conditional on BA attainment)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Without Matching (48 credit restriction)</strong></td>
<td>-0.06***</td>
<td>-$1,413***</td>
</tr>
<tr>
<td><strong>Matched Across Destination Colleges (48 credit restriction)</strong></td>
<td>0.03</td>
<td>-$278</td>
</tr>
<tr>
<td><strong>Matched Across Destination Colleges (Matched on credits prior to transfer)</strong></td>
<td>0.09***</td>
<td>-$36</td>
</tr>
<tr>
<td><strong>Matched by the Destination College (Matched on credits prior to transfer)</strong></td>
<td>0.14***</td>
<td>-$124</td>
</tr>
</tbody>
</table>
Mechanisms: Early Academic Progress

- Lower credit loads for CC students
- Gradual divergence in course completion
- CC students completing approximately 3 fewer credits by the end of the second year
- Larger disparity in college-level credit accumulation: 5 fewer credits by the end of the second year
- CC students were 4 percentage points less likely to enroll in college for at least one year
Mechanisms: Transfer Patterns

- 23% transferred

- Transfer rate is unsatisfactory even among very successful CC students - 68% of associate degree earners, and only 57% of students who earned more than 60 college-level credits, ever transferred to a four-year institution.

- Untraditional transfer patterns - over 15% transferred in their first or second year, and another 15% transferred seven or eight years after entry.

- Varied widely in the number of college-level credits accrued at the time transfer ranging from 0 to 184 college-level credits, with a mean of 54 credits, a median of 59 credits, and a large standard deviation of 25 credits.

- Implication: no “well-trodden” highly-structured pathway for transfer students to follow.
Performance After Transfer

Term-by-Term Fluctuations in GPA

Transfers Natives
### Mechanisms: Delayed Graduation?

<table>
<thead>
<tr>
<th></th>
<th>Two-year</th>
<th>Four-year</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Matched Students</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of any credits</td>
<td>123</td>
<td>101</td>
<td>***</td>
</tr>
<tr>
<td>Number of college-level credits</td>
<td>119</td>
<td>99</td>
<td>***</td>
</tr>
<tr>
<td>Number of Terms Enrolled</td>
<td>14</td>
<td>11</td>
<td>***</td>
</tr>
<tr>
<td>Still Enrolled in 2012</td>
<td>40%</td>
<td>29%</td>
<td>***</td>
</tr>
<tr>
<td>Number of post-exit quarters</td>
<td>4</td>
<td>7</td>
<td>***</td>
</tr>
</tbody>
</table>

| **Among BA Earners**         |          |           |              |
| Total number of any credits  | 136      | 126       | ***          |
| Number of college-level credits | 133      | 125       | ***          |
| Number of Terms Enrolled     | 15       | 13        | ***          |
| Number of semesters until exit | 4        | 5         | ***          |
Structure at Community Colleges

Jaggars & Fletcher (2014). Redesigning the student intake and information provision processes at a large comprehensive community college.

• “The only thing I was told how to do was register for classes. I still know nothing about transferring, programs, degrees, etc.”

• “They just give you this great big list. And I asked the one lady, “Okay, so does this mean I have to take all these classes?” She’s like, “Well, yeah.” So I’m sitting here thinking that I have to take 50,000 classes—and [it turns out] I only need to take a few or one or two out of each group.”
Methodological Implications

- BA-intending students who started in two-year colleges are substantially different from native four-year students. Average effects on all students might be misleading.

- Majority of transfer students transferred to a “selective” institution, though less “selective” than colleges attended by 4yr entrants.
  - Restrictions to nonselective colleges may result in unrepresentative sample.
  - Matching on destination college.
Policy Implications

- Negative impacts of initiating in two-year colleges on student BA attainment
  - Divergence starts in early years
  - Low transfer rate seems to be a great hurdle
  - Negative transfer shock on academic performance

- Evidence for delayed graduation
  - Credit loss upon transfer
Bonus Slides: Cost-Benefit Analysis

By Year and Cumulative: Matched 2-year and 4-year entrants
Bonus Slides: Cost-Benefit Analysis

By Year and Cumulative: Matched 2-year and 4-year entrants (BA Only)
Bonus Slides: Cost-Benefit Analysis

By Year and Cumulative: Matched Transfer and Native 4-year Students
Bonus Slides: Cost-Benefit Analysis

By Year and Cumulative: Matched Transfer and Native 4-year Students (BA Only)
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